

Appendix A1 - Public Consultation and Disclosure Plan (PCDP)

1 INTRODUCTION

1.1 OVERVIEW

The Azerbaijan Republic, Georgia and Republic of Turkey have come to an agreement to implement the Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC Pipeline) Project. This dedicated crude oil pipeline system will transport crude oil extracted from the Caspian, from Sangachal in Azerbaijan (on the west coast of Caspian Sea), to Ceyhan, Turkey (on the north-eastern part of the Mediterranean Sea), with marine access to international markets.

Having completed the Basic Engineering (BE) Phase, the BTC Pipeline Project has reached the Detailed Engineering (DE) Phase. One of the main objectives of this phase is to undertake a full environmental and social impact assessment (EIA) in accordance with national and international standards and practices. Within this context, extensive public consultation will be carried out according to World Bank standards.

1.2 THIS DOCUMENT

This document is a Public Consultation and Disclosure Plan (PCDP) for the EIA of the Turkish section of the BTC Pipeline. It presents a plan for consultation designed to: provide timely information about the project and its potential impacts to project affected people¹ and other stakeholders²; provide opportunities to those groups to voice their opinions and concerns in a way that is most appropriate to their circumstances; and provide an opportunity for feedback to, and discussion with, those settlements concerning measures proposed. The activity is being managed by BP Exploration Caspian Sea Ltd (BP) and BOTAŞ, on behalf of the BTC Company (BTC Co), the group of petroleum companies involved in the Project.

The PCDP aims to:

- Identify key stakeholders and ensure there are adequate mechanisms for stakeholder feedback and information sharing
- Provide an outline for consultation at the local, national and international levels, starting at the project planning stage, and continuing throughout construction, operation and decommissioning of the pipeline and marine terminal
- Ensure issues raised by key stakeholders are addressed in the EIA report as well as in project decision-making and design phase
- Identify the level of resources required to implement the plan, and procedures to monitor implementation
- Outline a grievance mechanism for local stakeholders

The PCDP is a 'living' document and may continue to be revised over time to reflect information gained through consultation undertaken throughout construction, operation and

¹ Project Affected People are defined for the purposes of this project as those living within a 2km band either side of the pipeline corridor, and within 5km of a pump or pressure reduction station, a primary construction camp or pipe yard or the marine terminal facility, who may be affected by the activities of land acquisition, construction, operation and decommissioning

² For the purposes of this project, Stakeholders are defined as any persons or parties with an interest in the Project. This include the following: 'Local' refers generally to the project affected settlements and other local interested parties including local government; 'National' refers to interested parties within Turkey who are not 'local' including regional and national NGOs, academics, Government, media etc; International includes international NGOs, World Bank and other IFIs, UN Agencies etc.

decommissioning. This draft is for publication in September 2002 and reflects information gained from the public disclosure of the draft EIA Report between July and August 2002.

This PCDP contains the following sections:

Section 1:	Introduction
Section 2:	A brief description of the Project and the project participants
Section 3:	A summary of the regulatory context for public consultation
Section 4:	Consultation Plan for EIA and pre-construction phases
Section 5:	Consultation Plan during construction, operation and decommissioning
Section 6:	A summary timetable of consultation and disclosure activities
Section 7:	Resourcing issues relating to the implementation of the plan
Section 8:	Grievance mechanism

Appendices:

Appendix A1	Public Consultation and Disclosure Plan (PCDP)
Appendix A2	PCDP Material: Stakeholder Lists
Appendix A3	PCDP Material: ESIA Information Package, Project Leaflet and Sample Posters
Appendix A4	PCDP Material: Public Consultation Questionnaires
Appendix A5	Baseline Data Collection for Social Aspects
Appendix A6	PCDP Material: Exhibition Panels and Advertisements
Appendix A7	Community Pamphlet
Appendix A8	Consultation Results

2 PROJECT DESCRIPTION

2.1 ROLES AND RESPONSIBILITIES

The BTC Pipeline Project is being undertaken by a group of petroleum companies, including SOCAR, BP, Delta-Hess, TPAO, Itochu, Unocal, ENI and Statoil. For the purposes of this project, this group of companies is referred to as BTC Co. Within the BTC Co, BP is responsible for project development. BOTAŞ, a state-owned Turkish petroleum pipeline company, are the Turnkey Contractor for construction of the pipeline and marine terminal. The definition of the Turnkey Agreement includes design, commissioning etc.

BTC Co, in partnership with BOTAŞ, take overall responsibility for consultation with stakeholders in relation to the Turkish section of the BTC Pipeline Project, and participate in the design of all consultation activities. Both BTC Co and BOTAŞ actively participate in all NGO and authority meetings, where possible.

BTC Co and BOTAŞ have contracted both national and international consultants to carry out the environmental and social impact assessment studies. Hence, the consultants are supporting them in carrying out consultation throughout the development of the EIA.

The international consultants for the EIA are Environmental Resources Management (ERM). ERM's role is to assist in the coordination of the environmental and social aspects (SIA) of the impact assessment and consultation process, and to ensure that they meet the required international standards. The national consultants, KORA and Veri Arastirma, have been integrally involved in the SIA and coordinating and facilitating settlement meetings close to the pipeline route and marine terminal development. ENVY, as the national environmental impact assessment (EIA) consultants, is providing specialist environmental input at meetings with NGOs and government authorities and has been involved in conducting many of the environmental baseline studies.

2.2 PROJECT COMPONENTS

The BTC Pipeline Project aims to transport Caspian crude oil via the Azerbaijan Republic, Georgia and the Republic of Turkey to the Mediterranean Sea. The BTC Pipeline will be capable of transporting up to 50 million metric tonnes per year of crude oil/approximately one million barrels per day.

The Turkish section of the BTC Pipeline will start from the Georgia-Turkey border in the Posof district of Ardahan province and finish at Ceyhan in Adana province, with a total distance of 1,076km. It will cross the ten provinces of Ardahan, Kars, Erzurum, Erzincan, Gumuşşhane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana. The entire pipeline route is shown in Figure A1.1.

Crude oil will be supplied to the international markets via a marine terminal to be constructed in the Gulf of Iskenderun in Ceyhan. Crude oil will be stored prior to loading on to tankers. The BTC Marine Terminal will be built on an existing BOTAŞ site at Ceyhan, adjacent to existing BOTAŞ storage and marine terminal facilities.

In addition to the pipeline and marine terminal, the following temporary and permanent facilities will be considered in the EIA and supporting consultation process:

- Permanent facilities and other Above Ground Installations (eg pump stations, a pressure reduction station, block valve stations, scraper facilities, permanent access roads).
- Temporary facilities (eg temporary access roads and construction facilities such as material yards, fuel depots and construction camps).
- Effects on existing infrastructure and resources (eg use of existing roads, extraction of construction materials, use of water and the disposal of waste).

2.3 PROJECT TIMETABLE

During the Basic Engineering (BE) Phase potential route options were analysed. Consideration of financial, security, technical, environmental and social factors led eventually to the identification of a preferred 500metre pipeline corridor.

The next phase, Detailed Engineering (DE), is now underway and is due for completion August - September 2002. Environmental and social impacts have been assessed and fed into the DE process through the EIA. The draft EIA was released to the public at the end of June 2002, with comments solicited from the public for a period of 60 days prior to finalisation of the document. A summary of disclosure related activities is provided in Chapter 4 of this document.



Figure A1.1 BTC Pipeline Route

3 REGULATORY CONTEXT FOR PUBLIC CONSULTATION

3.1 INTRODUCTION

Public consultation activities identified in this PCDP will conform to:

- Turkish regulations;
- guidelines established by international organisations, specifically the World Bank, International Finance Corporation (IFC), and the European Bank for Reconstruction and Development (EBRD);
- European Commission requirements (though not required by law);
- relevant International Conventions for Public Participation;
- internal standards of the project proponents, specifically BP and BOTAŞ.

The main requirements are set out in the following sections.

3.2 NATIONAL REGULATIONS ON PUBLIC CONSULTATION

The principle legislation is the Environment Law (Law Number: 2872) of August 1983. Article 10 of the "Environment Law" requires an Environmental Impact Assessment (EIA) ⁽³⁾ report for investment projects that have the potential to create adverse environmental effects. The preparation of an EIA report is mandatory for the proposed BTC Pipeline Project since the diameter of the pipeline is greater than the regulation threshold.

However, the BTC Project in Turkey is governed by the Host Government Agreement (HGA).

This legislation requires that the impact assessments be released to the public for review and comment in accordance with the following procedures:

- Affected public and non-governmental organisations shall be notified about the nature of the proposed Project during the development of the EIA. This shall be done through dissemination of information to these organisations through meetings and exhibitions.
- Following the completion of the EIA, the public shall be provided with information on the environmental aspects of the project to enable it to comment with respect thereto. To facilitate this process, the EIA and a Non Technical Summary (in the Turkish language) shall be made available in a public place for review and comments. In addition, an information copy of the Non Technical Summary shall be submitted to the Turkish Government simultaneously.
- A maximum of 60 days shall be allowed for public comments, and the public concerns (through modification of the EIA, if necessary) shall be included in a final EIA that shall be submitted to the Turkish Government.

³ The legislation refers to an Environmental Impact Assessment, rather than an Environmental and Social Impact Assessment.

- Once approved by the Government, MEP Participants/BOTAŞ shall implement the mitigation and monitoring activities specified in the EIA. The results shall be published in reports available to the public and submitted to the appropriate State Authorities. The EIA monitoring programme shall be updated as required on an informal basis.

3.3 INTERNATIONAL STANDARDS ON PUBLIC CONSULTATION

3.3.1 World Bank Group (including the IFC)

The World Bank Group's *Environmental Assessment Policy (OP 4.01, January 1999)* requires that project-affected groups and local non-governmental organisations (NGOs) be consulted during the impact assessments process about the project's potential environmental and social impacts. The purpose of this consultation is to take local views into account in designing the environmental and social management plans as well as in project design. For complex projects where the environmental impacts and risks are high, the policy requires public consultation at least twice: first, shortly after environmental screening and before the terms of reference for the EIAs are finalised and secondly, once a draft EIA Report is prepared. Consultation during project execution is also required. Section 5 summarises the consultation programme for the EIAs, and confirms that the project meets and indeed exceeds these requirements.

The IFC's manual '*Doing Better Business Through Effective Public Consultation and Disclosure: A Good Practice Manual*' provides action oriented guidelines aimed at ensuring that consultation is both effective and meaningful. The guidelines emphasise the need for the project sponsor to ensure that the process of public consultation is accessible to all potentially affected parties, from national to local level. Emphasis is placed on the engagement of local stakeholders, namely people who are likely to experience the day-to-day impacts of a proposed project. On a practical level, the sponsor has to ensure that: i) all stakeholders have access to project information; ii) the information provided can be understood; iii) the locations for consultation are accessible to all who want to attend; and iv) measures are put in place which ensure that vulnerable or minority groups are consulted.

The consultation requirements for projects requiring physical or economic displacement are covered by World Bank '*Operational Directive 4.30: Involuntary Resettlement*⁴' and outlined in the IFC's '*Handbook for Preparing a Resettlement Action Plan*'. The pipeline does not involve any physical resettlement, but the Project is undertaking a land acquisition process to address the economic resettlement associated with the Project.

The project sponsor is required to initiate and facilitate a series of consultations with project stakeholders throughout the planning and implementation of the procedures outlined by land acquisition process. The objective of these consultations is to ensure the participation of affected parties in their own resettlement planning and implementation. In particular, the following areas require consultation:

- alternative project design;
- assessment of project impacts;
- resettlement strategy;
- compensation rates and eligibility for entitlements;
- choice of resettlement site and timing of relocation;

⁴ January 2002

- development opportunities and initiatives;
- grievance redress procedures and dispute resolution;
- methods and mechanisms for monitoring and evaluation and implementing corrective actions.

There are other World Bank Group policies including:

- *Operational Policy 14.70: Involving Non-Government Organisations in Bank-Supported Activities*
- *Operational Policy 4.04: Natural Habitats*
- *Operational Policy 4.11: Safeguarding Cultural Property*

These also include provisions for public consultation. These requirements focus on early consultation with affected people and NGOs, early disclosure of information, and providing information in a way that allows informed consultation with stakeholders and project-affected people.

In addition to the requirement for consultation with stakeholders, the World Bank Group has specific requirements for disclosure of documentation resulting from the EIA process. This includes:

- Preparation and publication of a Public Consultation and Disclosure Plan (PCDP) for consultation.
- Disclosure of the draft EIA in public places in - country and to the World Bank Infoshop (at least 60 days prior to the IFC board date⁵), including a Non Technical Summary in the local language to local stakeholders.
- Preparation of an Environmental Action Plan (EAP) containing social as well as environmental measures designed to manage, mitigate and monitor the impacts identified during development of the EIA. This also has to be released to the World Bank Infoshop and be made available locally prior to presentation of the project to the IFC board.

3.3.2 European Bank for Reconstruction and Development (EBRD)

The EBRD's principles of public consultation are documented in the Bank's Environmental Policy (EP), Environmental Procedures (EPr), and the Public Information Policy (PIP). While the EBRD requirements reflect some of the other international financial institution requirements (eg World Bank for public sector and IFC for private sector), there are some important additional requirements with reference to European Union requirements and international conventions and treaties.

The EBRD standards require that projects be held to the more stringent of national standards and European Union standards. For those areas where there are not European Union standards, the EBRD relies on the more stringent of national and World Bank Group standards. In the area of public consultation, the European Union requirements are set out in the EIA Directive. In addition, EBRD requires that the Espoo Convention in its Public Information Policy and Environmental Policy for any project that may have trans-boundary impacts be followed, regardless of whether the countries involved are party to the convention

⁵ The Pelosi amendment to the World Bank procedures for disclosure requires a 120 day disclosure period at the World Bank Info Shop prior to the Project Board date to ensure a positive vote at the board from the US Executive Director.

or are members of the United Nations Economic Commission for Europe (UNECE). This is in line with EU standards. EBRD also concurs with the principles of the Aarhus Convention, which is specifically mentioned in the Public Information Policy.

3.3.2.1 A-level requirements

In the case of significant 'greenfield', major expansion or transformation-conversion operations which have been classified as requiring an Environmental Impact Assessment, those potentially affected must have the opportunity to express their concerns and views about issues such as operation design, including location, technological choice and timing, before a decision on EBRD financing is made. At a minimum, sponsors must ensure that national requirements for public consultation are met and that EBRD's own public consultation procedures are met. The Bank's Board of Directors will take into account the comments and opinions expressed by consultees, and the way these issues are being addressed by sponsors, when considering whether to approve an operation.

3.3.2.2 Scoping

Both the EBRD Environmental Procedures and the Public Information Policy require a thorough scoping procedure for all 'A' level operations, which will involve the Project Sponsor consulting with representatives of the locally affected public and with government agencies, as well as with other organisations.

3.3.2.3 Disclosure of EIA documentation

Following the completion of environmental investigations, EBRD requires that the public is provided with adequate information on the environmental aspects of the operation to enable them to provide the Project Sponsor with comments on the proposals. To facilitate this, the Project Sponsor must make the Environmental Impact Assessment and an Executive Summary publicly available, in accordance with relevant national legislation, and allow sufficient time for public comment prior to the Bank's Final Review of an operation and its consideration by the Board. For private sector operations there will be a minimum of 60 days between the release of the EIA and the date of Board consideration.

EBRD strongly encourages project sponsors to place EIAs on their websites to improve public accessibility to the documents, and to otherwise release information in electronic, as well as written format. Where an EIA has been released on a website, the EBRD's website will provide a direct link to the project sponsor's website.

EBRD encourages project sponsors to leave EIAs in the public domain indefinitely, and at least for the life of the Bank's involvement with the project. In no case should the EIA be removed prior from the public domain prior to Project Completion, and will in any event, remain permanently in the public domain through EBRD offices in London and the country in which the project is located.

3.3.2.4 Project summary documents

A Project Summary Document (PSD) will be prepared for each project, and will be released on the Bank's website with an Environmental Annex which summarises the results of environmental due diligence and the environmental action plan, at least 30 days prior to consideration of the Board of Directors.

3.3.2.5 On-going consultation and disclosure

For projects that have raised significant environmental or health and safety issues, or which have aroused the particular interest of the public or NGOs, the EBRD encourages the commitment to on-going information and communication programmes. For example, the Bank may require the results of ongoing environmental monitoring to be made available to the public.

3.3.2.6 International conventions and treaties

The EBRD, within the framework of its mandate, supports the Convention on Environmental Impact Assessment in a Transboundary Context. In this context, the Environmental Policy and the Public Information Policy state that the requirements outlined in the Convention on Environmental Impact Assessment in a Transboundary Context (the Espoo Convention) must be followed regardless of whether the country affected has ratified the convention. In addition, the EBRD takes into account the Aarhus Convention, along with other relevant international conventions, in the implementation of its Environmental Policy.

3.3.3 European Commission

Although European Commission legislation does not apply to Turkey, this is included as best practice. European requirements for stakeholder involvement in the EIA process are specified in the 1985 Directive (85/337/EEC) on Environmental Assessment, as amended by Directive 97/11/EEC. The review of the implementation of the Directive 85/337/EEC is provided in Directive 85/337/EEC.

The 1985 Directive ensures that the Member States make information on proposed activities available to the public. The public concerned is given the opportunity to express an opinion before the project is initiated. The Directive requires that the Member States determine detailed arrangements for such information and consultation including identification of the public concerned, places where the information can be consulted, ways in which the public can be informed and consulted, and timeframe during which the consultation should be conducted.

The 1997 Directive supports the requirements put forward in the 1985 Directive, and adds a requirement to conduct public consultation for projects that are likely to have significant transboundary environmental effects. The Directive specifies that it is the responsibility of both a Member State in whose territory the project is intended to be carried out, and a Member State likely to be affected by the proposed project, to inform the public of the Member State likely to be affected by the proposed project.

3.4 CORPORATE POLICY

3.4.1 BP policy on social and environmental protection

BP aims to operate in a socially and environmentally responsible way, respecting the cultures and rights of individuals in the different countries in which BP works.

BP seeks to create mutual understanding and build constructive relationships with local people and non-governmental organisations interested in BP's business and concerned about its impact on individuals, society and the environment.

3.4.2 BOTAŞ environmental policy

A set of policies has been established for the execution of all work undertaken by, on behalf of, the BTC Project Directorate. The policies are referenced in Sections 3.2 and 3.3 of the Environmental Management and Monitoring Plan (EIA Appendix C1).

All BOTAŞ BTC Project personnel and the Contractors' personnel shall be individually and collectively responsible for adhering to, and effective application of, the policies and principles in the environmental policy statement.

Table 3.1 International Standards on Public Consultation

	World Bank Group (including the IFC)	European Bank for Reconstruction and Development (EBRD)	European Commission
Policy Requiring Public Consultation	Operational Directive 4.01 Environmental Assessment and its successor documents. Operational Directive 4.30 Involuntary Resettlement.	Public Information Policy, Environment Policy, and Environmental Procedures.	Directive 85/337/EEC on Environmental Assessment, as amended by Directive 97/11/EEC and Directive 90/313/EEC on Freedom of Access to Information on the Environment.
Requirements			
Who should be consulted?	Directly and indirectly affected stakeholders, and those with an interest who feel they may be affected.	The public should be informed of ongoing project developments supported by EBRD.	Directly and indirectly affected stakeholders, or representatives of affected groups.
Why involve the public?	Minimises conflict and delays; increases transparency; empowers people ensuring that their views are taken into account during project design and development of environmental and social management plans.	Minimises conflict and delays; increases transparency; empowers people ensuring that their views are taken into account during project design and development of environmental and social management plans.	Improves the quality and effectiveness of EIAs and project design and operation.
When should stakeholders be involved?	At a minimum, during scoping and screening stages, before the Terms of Reference for the EIAs are finalised and on the draft EIA. For complex projects where the environmental impacts and risks are high consultation during project execution is also required.	A project summary document (PSD) must be prepared for each private sector project and released at least 30 days prior to the consideration by the Board of Directors. An Environmental Impact Statement (EIA) must be prepared for Category 'A' projects (includes offshore gas and oil production) and released at least 60 days prior to consideration by the Board of Directors.	As early as possible in the EIA/project process and throughout the EIA/project cycle.
What areas require consultation?	Alternative project design; assessment of project impacts; resettlement strategies; compensation rates and eligibility for entitlement; choice of resettlement sites and timing of relocation; development opportunities and initiatives; grievance redress procedures and dispute resolution; methods and mechanisms for monitoring, evaluation and implementing corrective actions.	Operation design, including location, technological choice and timing.	Transboundary environmental effects.

	World Bank Group (including the IFC)	European Bank for Reconstruction and Development (EBRD)	European Commission
Responsibilities for Public Consultation	<p>Responsibilities should be allocated clearly and early on. Project sponsor should ensure that:</p> <ul style="list-style-type: none"> All stakeholders have access to project information The information provided can be understood; The locations for consultation are accessible to all who want to attend Vulnerable or minority groups are consulted. 	<p>It must be ensured that:</p> <ul style="list-style-type: none"> The EIA Executive Summary is made available in the local language The EIA and EIA Summary are made available in the EBRD's business Information Centre (BIC) in London (notice of this should be posted on the EBRD website) Clients are recommended to place EIAs on their own websites 	<p>The Member carrying out the Project and the Member State(s) likely to be affected by the Project must inform the affected public. It must be ensured that detailed arrangements within the Member States is made for:</p> <ul style="list-style-type: none"> Identifying the public concerned Providing places where information can be consulted Providing suitable methods for informing and consulting the public A suitable timeframe for consultation is developed
Other World Bank Group policies	<ul style="list-style-type: none"> Operational Policy 14.70: Involving Non-Governmental Organisations in Bank-Supported Activities Operational Policy 4.04: Natural Habitats Operational Policy 4.11: Safeguarding Cultural Property 		
Requirements of these OPs	<p>Early consultation with affected people and NGOs; early disclosure of information; providing accessible information.</p>		

World Bank Group (including the IFC)	European Bank for Reconstruction and Development (EBRD)	European Commission
<p>Comments</p> <p>Specific requirements for disclosure of documents relating to the EIAs on projects seeking international funding include:</p> <ul style="list-style-type: none"> • Preparation and publication of a Public Consultation and Disclosure Plan (PCDP) for consultation • Disclosure of draft EIA (at least 60 days before IFC board date) including a non-technical summary in public places (in-country and are WB Infoshop) • Preparation of an Environmental Action Plan (EAP) containing social and environmental measures to manage, mitigate and monitor the impacts identified in the EIA 		<p>The European legislation does not apply to Georgia. It is included as an example of best practice.</p>

4 THE CONSULTATION PLAN FOR PRE-CONSTRUCTION

4.1 INTRODUCTION

Consultation is an ongoing process that has taken place throughout both the EIA process and will continue during the construction and operational phases of the Project. It comprises the following discrete activities:

Phase 1: Stakeholder identification and preliminary consultation / scoping

- stakeholder categorisation and identification;
- preliminary consultation:
 - liaison with national and regional authorities;
 - identification of key project constraints.

Phase 2: Information distribution and introductory meetings

- distribution of ESIA Information Package and Project Leaflet;
- introductory meetings with authorities.

Phase 3: Impact identification

- meetings with provincial, district and settlement level authorities (elected and appointed)
- meetings with national NGOs, interest groups and media
- meetings with local NGOs, media and other local interest groups
- community meetings along the length of the pipeline
- consultation with residents in the vicinity of the proposed BTC Marine Terminal and fishermen in the Gulf of Iskenderun
- dialogue and meetings with International Finance Institutions (pre and post mandate)

Phase 4: Development of mitigation measures

- road testing project mitigation measures with key stakeholders

Phase 5: Disclosure of the draft EIA

- information distribution of disclosure materials;
- public announcements and engagement of the media;
- disclosure meetings with local residents, local NGOs and interest groups, local media, national NGOs, interest groups and media, international NGOs, local, provincial authorities and State authorities;
- collection and incorporation of comments and feedback.

Phase 6: Ongoing consultation during construction and operation (see Chapter 5)

The activities that have, or will be, carried out in each phase, are detailed in the following sections. The proposed timing of those activities not yet completed is summarised in Section 6. As noted in the introduction to this document, the public consultation activities will be reviewed throughout the project and plans will be amended to best serve the Project.

4.1.1 Consultation tracker

The consultation tracker is a computer database system referred to as a Property, Engineering, Referencing and Consultation System (PERCS) using Microsoft Access 2000 software. It is designed to manage and track data produced during the consultation activities and is being used to record and collate all consultation activities undertaken as part of the EIA. Specifically it has the ability to store details of all consultees/stakeholders, including information on the nature of the consultation undertaken, key issues raised, actions to be undertaken and the relevant contact details.

The tracker has been used to identify issues raised during settlement level consultation and other stakeholder meetings, in tracking such issues and delegating actions. It has also been useful in tracking correspondence with stakeholders and feedback from local residents outside of the planned activities. In addition, it enables data to be understood by province, settlement, individual or an NGO.

4.2 PHASE 1: STAKEHOLDER IDENTIFICATION AND PRELIMINARY CONSULTATION

4.2.1 Stakeholder identification

At the beginning of the EIA process in summer 2000, BTC Co, BOTAŞ and their respective consultants worked together to identify the key stakeholders that should be consulted at various stages of the Project. It was agreed that these stakeholders should be divided into the following categories, each requiring a different approach:

- **Authorities** comprising elected and appointed authorities at the national, provincial, district and settlement level (settlement heads known as Muhtars). The total number of authorities consulted is based on the number of provinces and districts traversed by the pipeline and districts affected by the marine terminal development, as well as all settlements that fall within the 4km pipeline consultation corridor. This gives a total of approximately ten provincial governors, 30 sub-governors and 326 Muhtars.
- **International, national and local non-government organisations (NGOs)** particularly those with an interest in environmental and social issues within the districts and provinces traversed by the pipeline and marine terminal and in Turkey as a whole.
- **Interest groups** comprising the media, university institutions and their foundations, people with local agricultural interests, cooperatives, local business establishments and business associations, chambers of commerce and others.
- **International finance institutions (IFIs)** including International Finance Corporation (IFC); Overseas Private Investment Corporation (OPIC); Export Import Bank of America (EXIM); Export Credits Guarantee Department (ECGD), Japan Bank for International Cooperation (JBIC) and European Bank of Reconstruction and Development (EBRD).
- **Residents** of the urban and rural settlements within a 4km corridor of the pipeline route in the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana. Also included are those people living in close proximity to the proposed BTC Marine Terminal as well as residents of coastal settlements along the Gulf of Iskenderun.

It is anticipated that, as the public consultation programme moves forward, other stakeholders will be identified and encouraged to participate. A complete list of all stakeholders identified and consulted thus far is provided in Appendix A2 to the EIA report.

4.2.2 Preliminary consultation

Preliminary consultation was carried out from September 2000 to January 2001, during the BE Phase of the BTC Pipeline Project. The aim of preliminary consultation was to inform national authorities and the relevant governors about the Project and to allow for the identification of key constraints within the proposed 10km pipeline 'Corridor of Interest'. Issues raised during early consultation, initial environmental baseline studies and EIA scoping led to the narrowing of the pipeline corridor to a 500m 'Preferred Route Corridor'. A list of all stakeholders consulted during this Phase is provided in Appendix A2.

The following activities were undertaken as part of the preliminary consultation phase:

- During the pre-work field survey activities in September to October 2000, ten provinces were visited along the BTC Pipeline route. The provinces visited include Ardahan, Kars, Erzurum, Erzincan, Gumshane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana. Within each of these provinces, meetings were held with the governors and other local authorities. The purpose of the meetings was to inform the relevant provincial authorities of the Project, the upcoming field survey activities and to gauge their initial feedback. Information at this stage was provided verbally through informal individual presentations at the governors offices.
- Following the above site visit, requests for information on project constraints⁶ were sent to the national authorities and governors during the period December 2000 to January 2001. These requests took the form of a letter accompanied by 1:100 000 maps showing the 10km pipeline corridor and a letter of authorisation from BOTAŞ. For each national authority, specific questions were asked, in relation to the authority of relevant ministries or directorates. All constraints highlighted have been recorded and will be included in the draft EIA.

4.3 PHASE 2: INFORMATION DISTRIBUTION AND INTRODUCTORY MEETINGS

4.3.1 Written information

The distribution of information on the Project allows stakeholders to familiarise themselves with the Project, thereby encouraging more meaningful participation in the consultation process.

Written material on the Project was prepared in two formats.

- An ESIA Information Package⁷ (see Appendix A3) was primarily prepared for, and distributed to, authorities (national to settlement level), NGOs and other interest groups (in English and in Turkish);

⁶ An example of a project constraint initially identified by national authorities and provincial governors is the existence of local infrastructure and development projects in the vicinity of the pipeline corridor.

⁷ The ESIA Information Package provides a summary of information on the Project participants, project description, relevant legislation, the EIA process and the consultation programme. Maps showing the pipeline route through Turkey and the location of the marine terminal are also included.

- A Project Leaflet (see example in Appendix A3) was primarily prepared for, and distributed to, people in the vicinity of the pipeline route and marine terminal development (in Turkish).

4.3.2 Introductory meetings

During August and September 2001, meetings were also held with provincial (10 Governors), district (22 sub-governors) and settlement heads (208 Muhtars⁸) falling within the 4km consultation corridor traversed by the pipeline. Both elected and appointed authorities were represented at these meetings in addition to other local representatives such as District Directorate representatives of Agriculture, Cultural Heritage etc and local security (gendarme) and police forces. These meetings allowed for:

- introduction and discussion of the Project and associated EIA and consultation process;
- distribution of Project Leaflets to the Muhtars (for distribution at the settlement level) prior to consultation with local residents;
- identification of additional stakeholders;
- discussion of issues of concern relating to the proposed Project.

Key materials that were distributed and discussed at these meetings included:

- the ESIA Information Package in Turkish;
- provincial maps with the suggested centreline of the route;
- a leaflet describing the Project;
- constraints maps.

The discussions held during these meetings assisted in refining the consultation process with local residents to ensure that they were appropriate to the local context.

4.4 PHASE 3: IMPACT IDENTIFICATION

4.4.1 Introduction

Information gathered during the impact identification round assisted in refining the terms of reference for the specialist EIA and SIA investigations and allowed for the ongoing identification of issues for input into project design. As part of the Detailed Engineering phase, feedback from stakeholder consultation was continually fed into the route development process leading to the determination of the 100m 'Specified Route Corridor', and finally to the 'Pipeline Centreline' and 'Construction Corridor'. More information on route modifications as a result of consultation is provided in Section 4.4.7. To meet this objective, the following consultation activities were undertaken:

- Meetings with provincial, district and settlement level authorities (elected and appointed)
- Meetings with national NGOs, interest groups and media
- Meetings with local NGOs, media and other local interest groups
- Community meetings along the length of the pipeline

The ESIA Information Package was updated when additional project information became available. Appendix D comprises the most up to date versions of the document.

⁸ 208 Muhtars of the total 326 number of Muhtars within the 4km corridor were consulted.

- Consultation with residents in the vicinity of the proposed BTC Marine Terminal and fishermen in the Gulf of Iskenderun
- Dialogue and meetings with international finance institutions (pre and post mandate)

4.4.2 Meetings with authorities

As detailed above, the meetings took place during Phase 2 of public consultation (refer to Appendix A8 for documentation of correspondence with State authorities during Phase 2).

4.4.3 Meetings with national NGOs and other interest groups

Participation of the national NGOs and other interest groups including the media was sought through three meetings: a meeting of national media was held in Istanbul on 11th October 2001; a meeting of national and international NGOs and interest groups was held in Istanbul on 12th October 2001; a meeting of national NGOs and interest groups was held in Ankara on 15th October 2001.

These meetings were led by BTC Co and BOTAŞ, with key specialist input from the SIA and EIA consultants. The focus of these meetings was to inform the stakeholders of the project scope, the EIA and SIA activities and schedule and to solicit feedback on both environmental and social impacts as well as feedback on the proposed EIA and SIA consultation process. The SIA consultants recorded these meetings and the main points have been incorporated into the draft EIA Report for disclosure.

ESIA Information Packages (in Turkish and English) were sent to NGOs, other interest groups and the national media prior to the meetings (see Appendix A3). Visual materials such as A0 sized project posters were displayed at the meetings (see Appendix A3).

Concerns arising from the national NGO and interest group meetings were captured in the consultation tracker and a series of meetings were held in Istanbul in December 2001 to follow up with seven NGOs who expressed specific concerns. These NGOs included Turkish Foundation for Combating Soil Erosion, Reforestation and the Protection of Natural Habitats (TEMA), Foundation for the Conservation and Promotion of the Environment and Cultural Heritage (CEKUL), Economic and Social Studies Foundation (TESEV), World Wide Fund for Nature (WWF) Birdlife/DHKD, Turkish Marine Environment Protection Association (TURMEPA) and representatives from Istanbul University Archaeology division.

Additional meetings with NGOs and interest groups were held prior to and during the disclosure period. To date additional meetings have been held with The World Bank, UNDP, TUDAV, CEKUL, WWF and the European Union Turkey representative.

4.4.4 Meetings with local NGOs and other interest groups

A total of eleven meetings were held with for local NGOs and other interest groups, with one in each province traversed by the pipeline, plus a meeting with local media in Adana. These meetings were held between the 17th September and the 28th September 2001.

These meetings were led by BTC Co and BOTAŞ with key specialist input from the national SIA and EIA consultants. The aim was similar to the above, though these stakeholders generally provided more detailed information on locally important EIA/SIA issues due to their local level involvement in the project area.

ESIA Information Packages (in Turkish) were sent to NGOs and interest groups at least one week prior to the meeting (see Appendix A3). Visual materials such as A0 sized project posters were displayed at the meetings (see Appendix A3).

4.4.5 International finance institutions (IFIs)

Informal dialogue with International Finance Institutions (IFIs) commenced in early 2001 and continued until June 2001. This consultation formed pre-mandate dialogue with IFIs such as International Finance Corporation (IFC), European Bank for Reconstruction and Development (EBRD) and Overseas Private Investment Corporation (OPIC) and comprised project overviews and updates held in Washington D.C, USA and London, England.

The first post mandate meeting with IFIs was held in January 2002 with IFC in Baku, Azerbaijan and an in-country field visit and formal meetings were held in April 2002 with IFC in Ankara, Turkey. An IFI Lenders group comprising IFC, JBIC, EBRD, OPIC and independent consultants Mott McDonald conducted in-country visits to Azerbaijan, Georgia and Turkey during July and August 2002.

4.4.6 Settlement level consultation

The objective of settlement level consultation was to share information about the Project, to solicit the views and attitudes of inhabitants to pipeline and marine terminal construction and to identify their key issues of concerns. To meet these objectives, the settlement level consultation comprised two main components: community meetings and interviews conducted at the settlement and household level on the basis of questionnaires. These activities, which were facilitated by the national consultants, were conducted over a 6-week period, from the 3rd September 2001 to 20th October 2001.

Community level meetings were held in 96 settlements (rural settlements) and eight district centres (urban settlements) along the pipeline route and in the vicinity of the marine terminal.

A total of 96 settlement level questionnaires were administered for the pipeline and marine terminal study areas. Interviews were undertaken with the Muhtars (settlement heads) or if they were not available, questionnaires were conducted with other key settlement representatives such as the Imam (religious officer), members of the Council of Village Elders, teacher or health workers.

The household questionnaire was administered to 1,328 households (an average of approximately 10 per settlement) along the pipeline and 200 households (22 per settlement) in the marine terminal area. Just under 50% of all settlements within the 4km pipeline corridor and 100% of the settlements in the area potentially affected by the marine terminal development were consulted.

The national consultants, Veri Arastirma and KORA (Centre for Black Sea and Central Asia Studies, Middle East Technical University), advised on methods of consultation that were both culturally acceptable and socially appropriate, and were able to be adapted to local circumstances⁹. Muhtars were always informed of the consultation field teams presence and schedule and the aims of the consultation activities in advance.

⁹ For example, before approaching individuals in settlements, the consultation teams verified with the Muhtars that the 'daily context' was normal, ie no large festivals, holidays, religious celebrations, markets or funerals. When interviewing people, the 'household head' which in Turkey generally means the senior male was approached. Consultation meetings were held in Turkish and facilitated by the national consultants to ensure understanding of a level of technical information.

See Plates A1.1 to A1.6, which illustrate consultation meetings and the administration of surveys by the national consultants.



Plate A1.1 National NGO Meeting



Plate A1.2 Local NGO Meeting in Adana

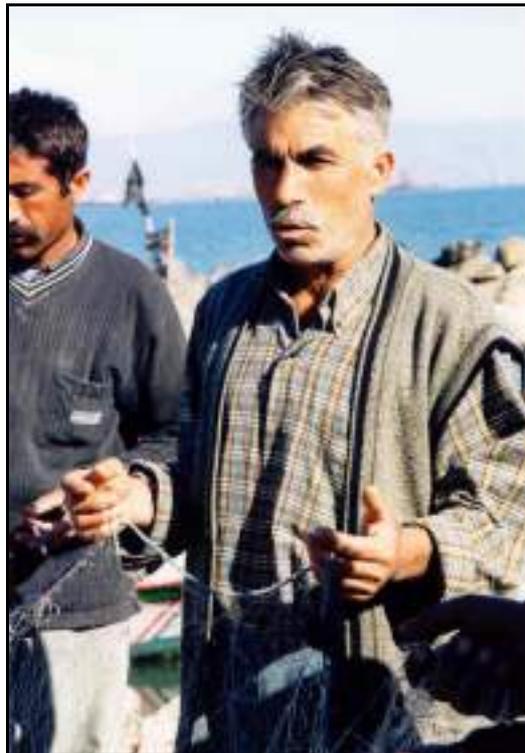


Plate A1.3 Marine Terminal Settlement Level Consultation



Plate A1.4 Women's Consultation Meeting in Osmaniye



Plate A1.5 Consultation Meeting in Gumushane



Plate A1.6 Settlement Level Consultation – Survey Administration in Osmaniye

Respondents were chosen using a combination of purposive, stratified random sampling and quota selection. Vulnerable households (eg households without land or access to subsistence livelihoods) were identified as being potentially more vulnerable to the impacts of the pipeline and were identified through the Muhtar. On average 50% of questionnaires were administered with these groups¹⁰. Quota selection was used to ensure a target for the number of women to be interviewed on the qualitative/perception questions were set (ie 40%).

The community meetings were scheduled to take place a few days in advance of the interviews, thus providing community members with information prior to the survey and also identifying key areas that could be explored in more depth through the questionnaires. More than one meeting was held if required to ensure that all sectors (eg women) are able to participate. See Plate A1.7, which presents a case study on the participation of women during project consultation.

¹⁰ This is known as purposive sampling which involves the use of judgement in the formation of the sample by selecting specific groups within the population.

ENGAGING WOMEN IN PUBLIC CONSULTATION

Ensuring the engagement and participation of women has been a focal point of the public consultation and disclosure process for the EIA. Many barriers had to be overcome to encourage the involvement of women in consultation meetings. In some cases women were unable to participate in village consultation meetings or specific women's meetings as a result of:

- male perception that women's interaction with 'outsiders' (especially other men) may damage family honour; and
- women were too busy to attend because of domestic tasks such as winter food preparations, upkeep of animals or daily food preparation.



WOMEN FROM ERZINCAN PROVINCE



WOMEN'S MEETING IN SIVAS (LEFT) AND KAYSERI (ABOVE)

Women attended 26 of the 36 disclosure settlement meetings

Over 30% of disclosure meetings were separate women's meetings



WOMEN'S PARTICIPATION IN SIVAS

The participation of women in some regions along the pipeline route was very high. Through a range of mechanisms, women were able to access project information and ask questions freely. These included:

- separate women's meetings;
- individual meetings with women in their homes;
- use of female field team members to facilitate meetings and encourage participation;
- use of local authorities and children to encourage participation.

The results of consultation and public disclosure indicate that women were generally more concerned with security and safety, health and impacts to local infrastructure and agricultural activities. Employment, environmental impacts and community relations with construction workers were also high on the agenda for women.

For example some women from Tasduz village (Kayseri province) said they want to work at the construction camps if jobs are available. Others were keen to see employment opportunities for their husbands and sons.



Plate A1.7 Case Study on Women's Participation

Community meetings were held and shortened questionnaires administered¹¹ in the vicinity of the four pump stations and one pressure reduction station AGIs) for the pipeline. This site-specific consultation was similar to initial settlement level consultation and comprised consultation meetings with settlements situated within a 5km radius of the AGIs and meetings with local authorities in large towns or district centres within a one-hour driving distance from the AGIs. These activities, which were facilitated by the national consultants, were conducted over a three-week period, from the 3rd December 2001 to 28th December 2001. In total, 21 settlements were consulted through community meetings and surveys in the vicinity of the AGIs. Additional meetings were held with Sogutlukaya settlement near Pump Station 1 (PT1) in Posof, Ardahan in April, August and September 2002 to further investigate community concerns.

Consultation with local settlements in the vicinity of the three primary construction camps in Erzurum, Sivas and Kahramanmaraş was undertaken in early February 2002. This activity was similar to the initial settlement level consultation included consultation meetings at 16 settlements within a 5km radius of a proposed site and the administration of shortened questionnaires at settlements (not previously surveyed) within a 2km radius of a proposed site. Consultation with local authorities, such as governors, sub-governors and mayors was conducted telephonically. Additional meetings with residents of Mehmetbey and Mahmutbey in Kahramanmaraş, adjacent to Lot C construction camp site were held in April 2002 to advise them of a change in the camps location and gather feedback on the new location.

The questionnaires used for the settlement and household level consultations are presented in Appendix A4 of this EIA report. The results of the questionnaires have been systematically documented in the EIA and used to assist the Project decision-making process. More detailed information on the methodology and approach taken for the consultation meetings and surveys is provided in Appendix A5 of the EIA report.

4.4.7 Overview of consultation results

The Phase 3 consultation activities yielded feedback on a range of issues associated with the EIA. An overview of the key issues raised during this round of consultation is provided below and originated from a range of stakeholders included local residents, State authorities, NGOs etc. This feedback, in addition to field studies, questionnaires and additional meetings with key stakeholders formed the basis of the development of mitigation measures and management plans for the EIA report.

Environmental

- damage to environmental resources (eg marine ecology, water resources, habitats);
- potential impacts on flora and fauna;
- risk of oil spills, leakages or explosions along the pipeline and at the marine terminal;
- earthquake, landslide and other geohazard damage to the pipeline.

Employment

- nature and extent of employment opportunities associated with the project;
- priority recruitment of project affected settlements including preference for Turkish workers and skills development and training;
- the need for a fair and equitable recruitment process which is not susceptible to corrupt processes or bias in the process and is overseen by an independent third party;

¹¹ Shortened questionnaires were administered to gather key socio economic information associated with settlements in close proximity to the AGIs. It was not necessary to administer full-length questionnaires during the station consultation as the sample for the pipeline consultation was representative, rather the aim was to understand the potential impacts of the AGIs on local settlements.

- suggestions as to how the recruitment process should be managed.

Land Acquisition and Compensation

- a fair and transparent land acquisition process;
- sufficient information about the process and how it would work;
- a fair and equitable compensation process for damage to buildings and agricultural infrastructure as a result of construction activities (irrigation system, drainage etc);
- timely payments of compensation;
- independent arbitrators for dealing with complaints.

Safety, Security and Health

- the integrity of the pipeline and whether or not settlements would be in danger from its proximity;
- injury to local residents during construction;
- injury to animals on the Right of Way during construction;
- the need for adequate security measures to protect the pipeline and nearby settlements;
- health impacts to settlements from pipeline construction;
- increased traffic on local roads.

Reinstatement, Infrastructure and Agricultural Activities

- degradation of roads and irrigation channels during construction;
- reinstatement of infrastructure such as roads to pre-construction levels;
- maintained access to grazing lands at all times and locations for animal crossings;
- mitigation of impacts on agricultural activities such as bee keeping and animal husbandry;
- mitigation / minimization of construction impacts such as traffic, dust and noise.

Marine Terminal

- impact on livelihoods particularly fishing;
- restrictions on fishing activities near existing marine terminal;
- impact on quality of environment (eg air pollution, marine ecology);
- permanent employment opportunities during construction and operation;
- decreased suitability of the Project area for tourism activities;
- in-migration of job-sectors and increased pressure on existing services.

Construction Camps

- direct or indirect economic benefits;
- potential employment opportunities;
- supply of local goods and services to camps;
- potential increases in noise, traffic and dust;
- disruption to social harmony of nearby settlements;
- increased crime associated with construction workers;
- damage to roads by construction machinery.

Above Ground Installations (AGIs)

- loss of communal pasture land;
- impacts on water resources;
- appropriate compensation and timely payment;
- employment opportunities at facilities;
- impacts from construction camps for AGIs;

- security of facilities;
- increased traffic, visual impacts and damage to infrastructure;
- disturbance to social harmony.

4.4.8 Interaction with project design

The design engineering and EIA teams have interacted closely throughout the development of the Project, particularly in key areas such as the identification of environmental and social constraints and determining the pipeline route, selecting the sites for the marine terminal and AGIs, undertaking environmental risk assessments and developing land reinstatement measures. This has enabled the majority of impacts of concern to be designed out of the Project or be reduced to an acceptable level.

In the course of DE there have been numerous route modifications influenced by both environmental and social considerations. Ongoing consultation has enabled the pipeline design to be routed away from sensitive cultural sites such as cemeteries, residential areas, planned development areas and ecologically sensitive areas.

The EIA and design engineering teams also worked closely together to identify and assess alternative locations for Above Ground Installations such as pump stations, the pressure reduction station and block valve stations, as well as the temporary construction camp locations and access roads, following feedback from consultation.

4.5 PHASE 4: DEVELOPMENT OF MITIGATION MEASURES

4.5.1 Introduction

Based on the SIA and EIA data gathering, and on the national and local consultation activities, the EIA and SIA consultants worked with BTC Co and BOTAŞ to develop appropriate mitigation measures for the environmental and socio-economic issues identified.

To meet this objective, several meetings were held to reality test specific mitigation measures with a number of key stakeholders. The aim of the meetings was to ensure that mitigation measures are locally appropriate to Turkey and have buy-in and support from stakeholders.

Five focussed meetings were held in Ankara to discuss the proposed mitigation measures relating to employment, pollution prevention, community relations, geological issues and health. The following stakeholders participated in discussion on the proposed employment and community relations strategy:

- DSI (State Hydraulic Affairs) Rural and Urban Development Foundation
- United Nations Development Programme (UNDP)
- Development Foundation of Turkey (TKV)

A meeting to discuss the proposed employment strategy was held with the state employment agency, (Turkish Employment Agency) and health issues were discussed with representatives from the Turkish Medical Association.

Attendees at the pollution prevention meeting included:

- Hacettepe University, Department of Environmental Engineering

- Chamber of Environmental Engineering
- Ministry of Environment
- Undersecretariat of Maritime Affairs
- Turkish World Life

Attendees at the meeting on geological issues included:

- Chamber of Geologists
- Middle East Technical University Geology Department
- Hacettepe University Geology Department
- Chamber of Civil Engineering
- MTA

The consultants (national and international) and representatives from BTC Co and BOTAŞ facilitated the workshops with the aim of exploring and refining mitigation measures to ensure that they are appropriate to the local context.

4.6 PHASE 5: DISCLOSURE OF DRAFT EIA AND PUBLIC 'ROAD SHOW' ALONG THE CORRIDOR

4.6.1 Summary of disclosure process

Following the publication of the Draft EIA for Disclosure on the 24th of June 2002, a disclosure period of just over 60 days (until 31 August 2002) has taken place in accordance with both international EIA standards and the HGA. The objective of the disclosure process was to solicit feedback from project affected settlements and interested stakeholders on the project impacts and proposed mitigation actions and where required make the necessary changes to the EIA to reflect comments received. Within the disclosure period, a formal public consultation process was conducted along the entire pipeline route. This was carried out by the BTC Project team working alongside the independent environmental and social consultants.

The main steps of the disclosure process were as follows and are explained in more detail below:

- preparation and distribution of disclosure materials;
- announcements and engagement of the media;
- disclosure meetings;
- collection and incorporation of comments and feedback.

4.6.2 Disclosure documentation

4.6.2.1 Preparation and distribution of disclosure materials

Approximately 95 complete copies of the draft EIA (including appendices), were made available in Turkish and an additional 10 in English prior to the disclosure period to the following organisations and public locations:

- International Finance Institutions;
- BTC Project office in Ankara;
- State authorities (ie government bodies);
- 10 provincial governorship offices;

- 35 district governorship offices;
- 10 national university libraries;
- 3 national public libraries;
- 6 local university libraries.

Over 600 electronic copies of the draft EIA (on CD ROM) were sent to interested stakeholders such as State authorities, national NGOs, interest groups and media.

The Non Technical Summary (NTS) was distributed with the draft EIA report to those stakeholders mentioned above (including electronic copies) and to the following organisations and public locations:

- National NGOs and interest groups (1,000);
- National media (300);
- Local NGOs and interest groups (1,250);
- Public libraries in the provincial and district centres (3,500);
- Muhtars (6,300)¹²;
- Project affected settlements (1,100).

In addition, the draft EIA and NTS in Turkish and English were posted on the Project Internet website: www.caspiandevlopmentandexport.com.

Community information pamphlets were distributed to all project affected settlements along the pipeline route prior to and during the community level meetings (approximately 21,300). They were also distributed to interested national (500) and local (500) NGOs and absentee landowners (500). Appendix A7 provides the English language equivalent of the Community Pamphlet distributed during disclosure.

All disclosure documentation was distributed to the relevant stakeholders approximately one week prior to the commencement of the official disclosure period, and at least two weeks prior to the disclosure meetings thus ensuring stakeholders had sufficient time to review the documentation prior to the meetings. Due to a high level of interest in project documentation additional copies of the NTS and Community Pamphlet were distributed by field teams prior to the meetings and during the meetings. Plates A1.8 and A1.9 illustrate the distribution of disclosure documents at the community level.

(1) ¹² There are approximately 326 Muhtars within the 4 km consultation corridor.



Plate A1.8 Review of Disclosure Documentation in Kayseri



Plate A1.9 Receipt of Disclosure Documentation in Sivas



Plate A1.10 Review of Disclosure Documentation in Sivas

4.6.2.2 Announcements and engagement of the media

Announcements of the availability of the draft EIA Report and associated disclosure meetings were made through the two most widely circulated national newspapers and 20 local newspapers. Other key national and local media sources (television and radio) also provided media coverage on the disclosure activities. Local channels of communication within the villages such as announcements from the mosques, notice boards in coffee houses, etc were also used. Separate media meetings were also held and are explained below.

4.6.2.3 Disclosure meetings

A series of disclosure meetings were convened during July and August to ensure that all interested stakeholders had the opportunity to access and comment on the draft EIA Report. The main objectives of these meetings were to:

- provide information on potential environmental and social impacts and present the final range of proposed mitigation measures;
- solicit feedback on proposed mitigation measures;
- provide an opportunity for involvement in the consultation process;
- raise awareness of the project.

To meet the above objectives, the following consultation activities were undertaken:

- national media meeting in Istanbul;
- meetings with national/international NGOs/organisations and other interest groups in Istanbul and Ankara;
- working group and individual meetings with State authorities (government bodies) in Ankara;
- meetings with local NGOs, media local authorities (governors and sub-governors) and other local interest groups at each of the ten provinces through which the pipeline

pass and marine terminal is situated. A separate media meeting was held in Adana province;

- community ‘road show’ meetings at a range of locations along the pipeline. These included the attendance of local residents and both elected and appointed authorities and leaders such as Muhtars, teachers, Imams and representatives of the Council of Village Elders.

At all disclosure meetings, a presentation of the project and the draft EIA report findings was made followed by an open-ended question and answer feedback session. Key representatives from BTC Co and BOTAŞ were present at all meetings and were supported by experts from the Project team, international consultants ERM and specialists from KORA (Middle East Technical University) and ENVY. Additional information was also provided via provision of the NTS, Community Pamphlets, and display boards or exhibition panels. All comments received were recorded through official minutes and feedback forms.

A video camera was used at the National NGO and media meetings and Local NGO meetings. A photographic record of all meetings held with project affected settlements, local NGOs and interest groups and national NGOs and media was kept. See Plates A1.10 to A1.17, which document a number of the disclosure meetings.

National media, NGO and interest group meetings

The national media meeting was held in Istanbul on 8th July, with attendance from 42 media organisations from TV, Newspapers etc.

The national NGO and interest group meeting in Istanbul was held on 9th July, with 40 representatives attending. A similar meeting was held in Ankara on 11th July 2002 at which 84 representatives attended, including media and international development organisations.

The presentation format of these meetings comprised a formal presentation of the project description, an update on project schedule and disclosure activities and an outline of the main findings of the draft EIA including key social and environmental impacts and associated mitigation measures. Following the formal presentation, a question and answer session was held enabling attendees to direct specific questions to experts present at the meetings.

On going disclosure meetings were held with national NGOs (WWF, TUDAV, CEKUL) to ensure feedback was provided in response to comments made during official disclosure meetings.



Plate A1.11 National Media Meeting

Local NGO, interest group, authority and media meetings

A series of meetings for local NGOs, interest groups, authorities and the media were held in each of the 10 pipeline provinces over a period of two weeks from 15th to 27th July. Individual visits to local authorities such as the Governors of each province occurred during this time. In addition, various local authorities including the provincial directorates of State authorities such as the Ministry of Culture attended the local NGO meetings. On average, levels of participation were between 20–50 participants at each meeting.



Plate A1.12 Local NGO Meeting in Ardahan



Plate A1.13 Local Authorities in Erzurum

State authority meetings

A series of working group and individual one-to-one meetings with State authorities (government bodies) were held throughout the disclosure period. These groups included the Ministry of Environment, Culture, Forestry, Public Works and Settlement, Transportation, Maritime Affairs, Highways, Agriculture, Health, Tourism and Energy and Natural Resources and associated departments¹³. The purpose of these meetings, in addition to informing the relevant authorities of the results of the draft EIA, was to enable open discussion and dialogue on specific areas of interest prior to submission of the final EIA for approval by the Ministry of Environment.

Community meetings

During mid July to early August, a 'community road show' was undertaken. This was comprised of two main components: formally organised meetings held at 36 settlement locations along the entire length of the pipeline, and the distribution of Community Pamphlets in Turkish to all known project affected communities. Participation levels at the community meetings were generally high as a result of neighbouring project affected settlements attending many meetings.

Community meetings were held in 36 project affected settlements, however due to separate men's and women's meetings being held in a number of settlements, the total number of meetings increased to almost 50. Some representatives from a further approximately 75 neighbouring settlements attended these meetings therefore of the total 326 project affected settlements, representatives from 111 settlements accessed the disclosure meetings.

Public disclosure at the marine terminal area was not held during the official disclosure period, as additional studies were being undertaken to further investigate potential impacts on fishermen, therefore the decision was taken to postpone disclosure meetings in that area until such studies had been finalised. The additional studies were completed in early September and thereof are undergoing final review. Disclosure of the results will follow for settlements in the vicinity of the proposed BTC Marine Terminal in addition to residents living within the existing BOTAŞ Marine Terminal.

It is important to note that although formal meetings were not held, these communities were sent the relevant disclosure documentation, ie NTS and the Community Pamphlet. They also had access to the full draft EIA – from various named sources and also had the opportunity to comment on the draft EIA via free phone, mail, fax, Internet and feedback forms.

The field teams comprised an organisational and meeting team. Representatives from Veri Arastirma formed the *organisation team*. They were responsible for:

- arranging the time and venue for the meeting in advance of the meeting;
- distributing additional disclosure documents to residents;
- publicising the meeting to neighbouring settlements and inviting them to the meeting;
- setting up the meeting on the day.

¹³ General Directorate of Mineral Research and Exploration, General Directorate of Rural Services, Ministry of Environment/Department of Waste Management, Ministry of Environment/General Directorate of Environmental Impact

Assessment and Planning, Ministry of Public Works and Settlement / General Directorate of Technical

Research and Application, Ministry of Transportation / General Directorate of Railways, Harbours and Airports Construction

Underscretariat of Maritime Affairs, Ministry of Environment/General Directorate of Environmental Impact Assessment and Planning, Ministry of Energy and Natural Resources / General Directorate of State, Hydraulic Works, Ministry of Public Works and Settlement / General Directorate of Highways

These representatives were both male and female and were selected to liaise with the local residents based on their previous experience with the Project and familiarity with the regions being visited. Two separate field teams were established to undertake the meetings along the entire pipeline route, and were divided into a northern region and southern region group. This assisted in enabling the completion of the meetings within the specified 60 day disclosure period.

The *meeting team* was led by a trained facilitator from KORA (Middle East Technical University) and comprised representatives from BOTAŞ (Land Affairs, Environment and Community Relations departments), Designated State Authority (DSA) regional representatives (responsible for land acquisition), with additional technical support provided by representatives of BTC Co and international consultants, ERM. Each *meeting team* also had a minimum of three minute takers to ensure that each session was recorded accurately. These representatives were both female and male – in particular to ensure the participation of women in more traditional and/or conservative areas.

The presentations included an outline of the purpose of the meeting, a brief description of the project and a summary of the timing and nature of construction activities. General environmental and social impacts, both positive and negative, were then explained, with an emphasis on provision of site-specific information on impacts and associated mitigation measures. The land acquisition and compensation procedure was presented, in addition to an outline of the projects community relations programme and complaints procedures. Employment and hiring practices were also explained, with an emphasis of the temporary nature of construction work and the limited job opportunities from the Project. Participants were then informed of the various mechanisms for providing feedback on the project, which led into an open-ended question and answer session.

To ensure all project-affected residents had equal opportunity to receive project information, raise concerns or make verbal or written comments, a number of approaches were taken. These included:

- holding separate women's meetings, either at a separate time and place to the men's meeting, in parallel with the men's meeting, or through private visits to individuals homes (facilitated by female members of the meeting team);
- allowing meeting participants to make comments formally during the meeting or informally on a one-to-one basis following the meeting;
- ensuring participants had opportunities to record their concerns in writing;
- ensuring participants who were unable to read or write had the opportunity to listen to presentations and verbally reflect their concerns to minute takers (either during or after the meetings);
- simplifying the language used during the meeting presentations and question and answer sessions to avoid misunderstanding or lack of understanding through the use of complicated or technical jargon;
- ensuring project affected settlements had the opportunity to access and attend the meetings regardless of their ethnicity, religion, gender etc.

The meetings were typically held at the local school, mosque, coffee house or outdoors in a centrally accessible location determined by the villagers themselves. Use was made of display boards and exhibition panels with maps showing the route of the pipeline and key environmental or social aspects of the project to graphically illustrate important messages during the meetings.

Cultural differences and varying levels of conservatism, particularly in some of the northern provinces, inhibited the receipt of extensive verbal feedback during some meetings. Despite proactive efforts to engage with local residents and encourage open participation, in some instances participants preferred to simply listen to the presentations, record their concerns in writing, express their concerns following the meetings in a more informal manner or use the mechanisms outlined for additional feedback should they have any.

Additional meetings are being held with residents in Akpınar settlement, in Sivas and Sogutlukaya settlement in Ardahan, following the formal disclosure meetings in order to further investigate site specific concerns raised during consultation. At Akpınar settlement, substantial concerns were raised regarding the routing of the pipeline, so revisits to the settlement are currently being undertaken (see Appendix A8 for more information). Due to concerns raised by residents near Pump Station 1 (PT1) in Posof, Ardahan, additional site visits are also being undertaken during September 2002. The results of this visit have been incorporated into Sections 7 and 15 of the EIA report.



Plate A1.14 Community Meeting in Sivas



Plate A1.15 Community Meeting in Ardahan



Plate A1.16 Community Meeting in Kars



Plate A1.17 Community Meeting in Erzincan

4.6.2.4 Criteria for determination of disclosure meeting locations

The methodology for determining appropriate locations for the disclosure meetings was based on previous consultation experience undertaken for the Project and in the case of the community meetings, a number of other criteria.

Previous consultation activities undertaken towards the end of 2001 indicated that convening formal meetings with national NGOs, media and interest groups in Istanbul and Ankara and meetings with stakeholders in each of the ten provincial centres was an effective approach to ensuring the participation of those stakeholders.

The methodology applied in the selection of sites in which the community level disclosure meetings were held was based on environmental, social and other important criteria. A clustering exercise was undertaken in order to determine the most appropriate locations for these meetings based on these criteria.

The **social criteria** for settlement selection included:

- close proximity to the BTC Pipeline;

- close proximity to the five AGIs and associated construction camps;
- a high number of land parcels to be expropriated;
- those with particularly complex land acquisition related concerns, such as forest areas;
- close proximity to the three primary construction camps;
- close proximity to both the East Anatolian Natural Gas Pipeline and BTC Pipeline;
- settlements not previously consulted or those only consulted via telephone during previous consultations;
- variations in population size;
- close proximity to neighbouring settlements and therefore ability to be clustered.

The **environmental criteria** for settlement selection included:

- presence of environmentally sensitive areas, such as Posof Wildlife Protection Area in Ardahan;
- presence of archaeological or culturally significant sites;
- sites of river crossings or major geological formations in close proximity to the pipeline route;
- sites where temporary short term impacts such as dust, noise and traffic may occur, for example AGIs;
- sites where visual impacts may be experienced.

The **general criteria** for settlement selection included:

- even geographical spread of meeting sites along the length of the pipeline route;
- accessibility for logistical reasons.

A logistics feasibility study was undertaken prior to the commencement of disclosure to ensure additional criteria were considered in the planning of the meetings. This exercise aimed to investigate the extent to which local agricultural activities such as harvesting and the timing of local events (eg weddings, market days and religious festivals) would affect participation at the meetings and the need for separate women's meetings to be arranged. Health and safety, accessibility, weather/climate, transportation and communication issues were also examined in this exercise prior to the commencement of the fieldwork. The outcomes of the study formed the basis under which disclosure activities were undertaken.

4.6.2.5 Collection and incorporation of comments/feedback

In addition to public meetings, comments on the EIA have been received via:

- **feedback forms**, which were distributed to project-affected settlements and other key stakeholders in advance of the disclosure meetings, and which were also available in Turkish at locations housing the draft EIA report. These forms could either be:
 - handed in to the field teams prior to, during or after the disclosure meetings;
 - mailed directly to the BTC Co Project office in Ankara; or
 - handed to local authorities such as Muhtars who had been provided with pre-paid addressed envelopes to return the forms to the Project office on the residents' behalf.
- the feedback page on the **Internet site**
- free **telephone hotline**
- the provision of the Project postal address, fax number and additional contact names and telephone numbers on project documentation such as the NTS and Community Pamphlet.

Comments and feedback from disclosure were collected from the sources outlined above and through the official recording of minutes during all meetings. A photographic record of all meetings was also kept. All feedback was sent to a central location within the Project office, where it was collated, translated and inputted into the consultation tracker database.

The consultation tracker database has been used by the environmental and social consultants to revise the EIA based on feedback from disclosure. An outline of how the tracker has been used during disclosure is provided below.

The purpose of this database was to record all comments received during disclosure and to code them according to the issues that were raised within the comments. The Project team identified the predominant issues based upon an initial review of the disclosure comments and from experience gained during the consultation phase of EIA. These issues were identified as follows:

- land use;
- land reinstatement;
- land acquisition;
- compensation;
- infrastructure and services;
- pollution prevention and risk assessment;
- archaeology, local heritage and culture;
- emissions;
- health and safety;
- construction camps and community relations;
- employment, livelihoods and recruitment;
- investment programmes;
- project background;
- marine resources/fisheries;
- river crossings.

These categories were then differentiated into additional sub-categories (approximately 90), which were developed and refined through an iterative process as the meeting minutes and feedback forms were collated during disclosure. Meeting minutes and feedback forms were initially recorded in Turkish and translated into English by BOTAŞ and ENVY with input from the BTC Co team.

The comments were coded manually and then entered into the consultation tracker database, making note of (where relevant) the name of the person who supplied the comment, the settlement name, telephone number, province, date, the type of consultee/stakeholder, the form of feedback (if a meeting, telephone call etc), whether the comment was social or environmental and lastly whether the comment required a response or action from the social or environmental team.

During the analysis of the comments the database was used to sort and filter the data according to the:

- type of consultee or stakeholder;
- province;
- issue(s) raised;
- form of consultation feedback (whether at a national NGO meeting, community meeting etc);

- whether the comment was social or environmental.

The database allowed searches to be conducted by issue type, province and form of consultation undertaken. The results of these searches enabled summary reports to be printed and issues to be analysed. An overview of the issues raised during disclosure is provided in Appendix A8 of the EIA, however additional data from the consultation tracking database is available on request from the BTC Co office in Ankara. An overview of the procedure for comments received during disclosure is provided in Figure A1.2 below.

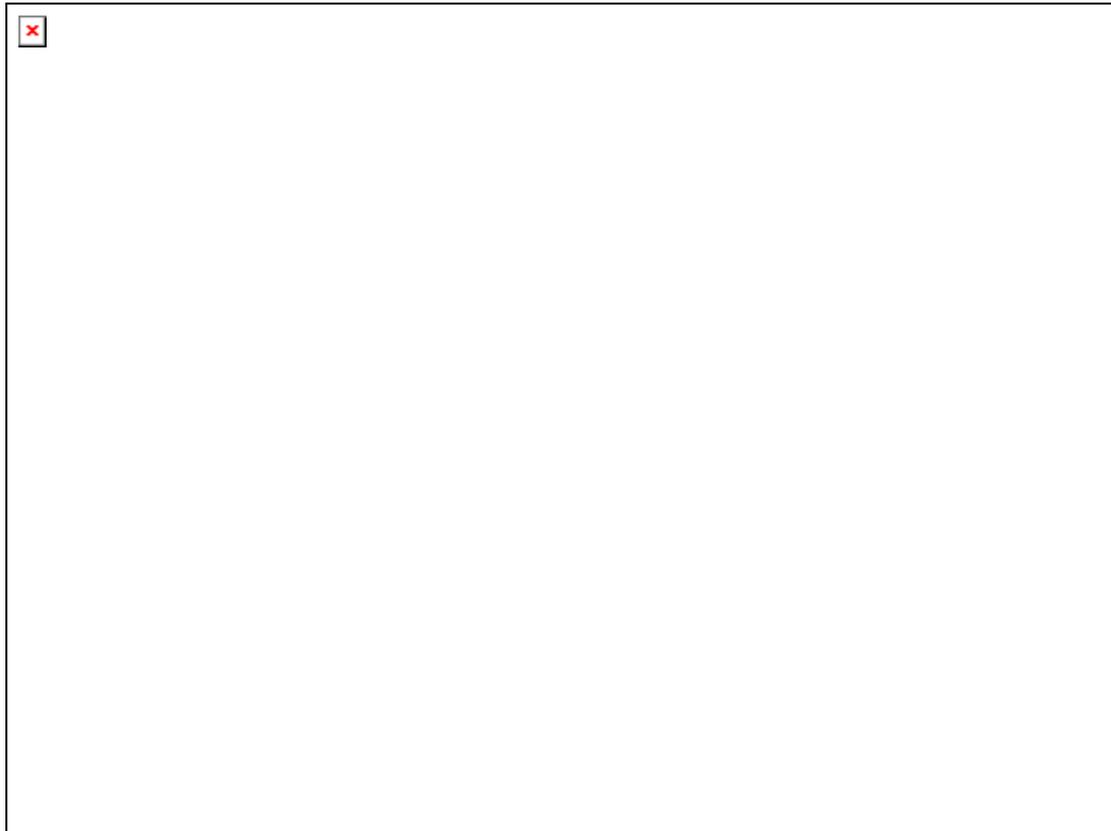


Figure A1.2 Procedure for Comments Received During Disclosure

4.7 PUBLIC RESPONSE TO THE DRAFT EIA

This section provides an overview of the nature and extent of comments received during the disclosure period. Specifically, it analyses how the comments were received (ie the response vehicle) and the proportion of comments relating to either environmental, social or project issues.

A more detailed examination of comments received during disclosure from all sources is provided in Appendix A8. This Appendix reviews the feedback received during disclosure in relation to a broad range of environmental and social issues and includes tabulated responses to feedback received from various State authorities.

4.7.1 Response vehicle

By 31st August 1,652 comments had been recorded in the consultation tracking database. Figure A1.3 provides a breakdown of how disclosure comments were received throughout the

**BTC PROJECT EIA
TURKEY**

60-day period. As outlined in Section 4.6.2.5, the main consultation vehicles for soliciting comments on the EIA and Project were: 1) public meetings; 2) feedback forms; 3) Internet feedback; 4) emails; and 5) calls made to the free phone number. The majority of feedback was received during the formal disclosure meetings and through the feedback forms.

Formal, written responses to the draft EIA were also received from various State authorities and national NGOs/interest groups. BTC Co and BOTAŞ acknowledge and appreciate the effort that went into producing these detailed responses. Copies of these written responses are provided in Appendix A8. In addition, upon request to BTC Co and BOTAŞ in Turkey, individuals and organisations are able to access the database, which contains all comments received.

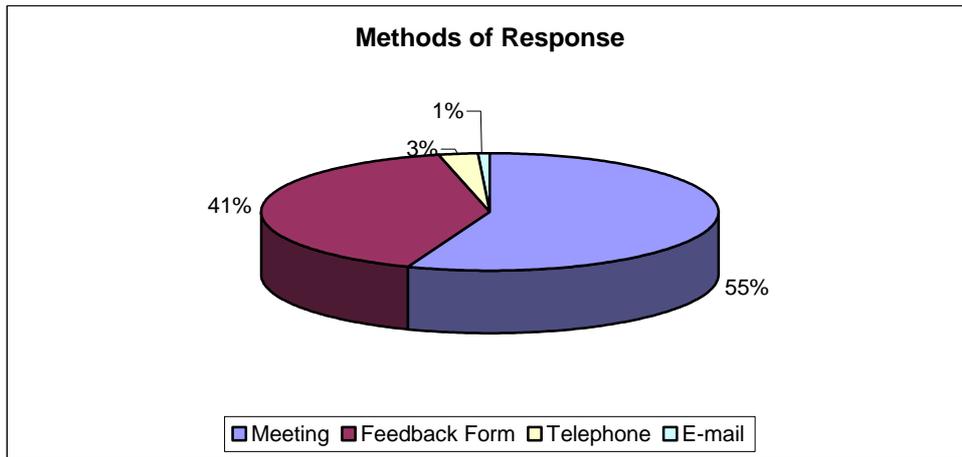


Figure A1.3 Response Vehicle

4.7.2 Response topic area

Of the 1,652 comments received by the end of August, 5% broadly relate to environmental issues, 73% to social or socio-economic issues and 23% to the BTC Project itself (see Figure A1.4). It should be noted, however, that not all disclosure comments are easily differentiated into one or other of these three broad categories. In cases of ambiguity, categorisation followed the divisions used in the consultation tracker (see Section 4.6.2.5).

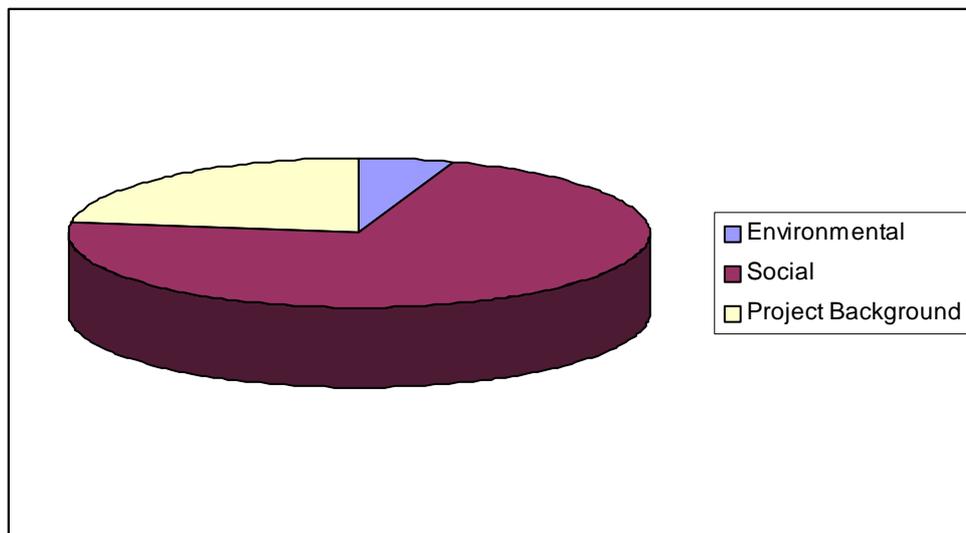


Figure A1.4 Responses by Topic Area

4.7.3 Ranking of environmental comments

4.7.3.1 Overall comments

Throughout disclosure, a range of stakeholders raised issues associated with the natural environment. Of these, the majority of environmental comments received relate to pollution prevention and risk assessment (see Figure A1.5). For example, a number of respondents were concerned about the proposed oil spill response. Others were concerned about geohazards. In addition, a number of respondents raised issues relating to archaeology and local heritage. Finally, the majority of comments focused on marine resources and fisheries.

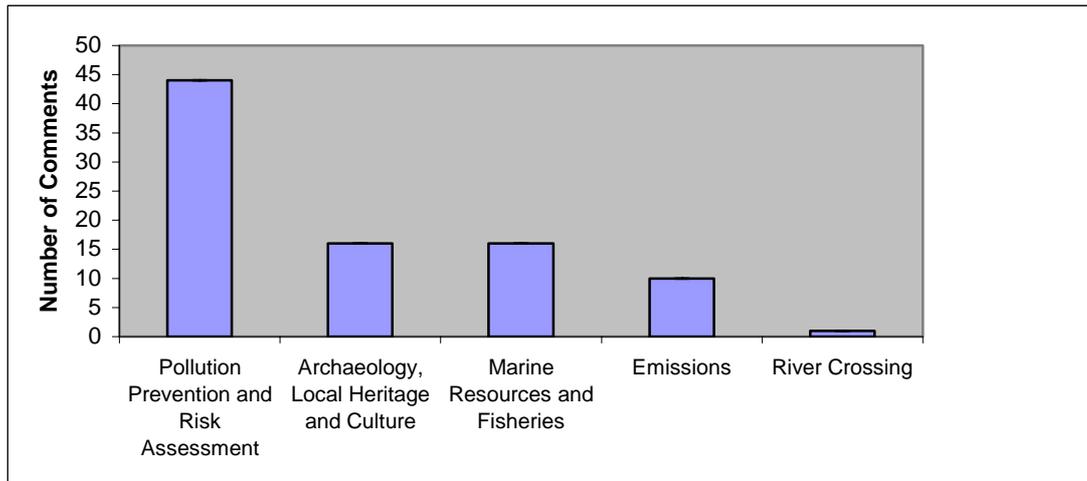


Figure A1.5 Analysis of Environmental Comments

4.7.3.2 Community disclosure comments

Only a small number of comments raised in the community meetings are directly concerned with impacts on the natural environment. Not one comment was repeatedly raised, however, the following issues were raised once or twice in separate settlements:

- the potential for the pipeline to create erosion;
- the impact of earthquakes on the pipeline;
- the potential for groundwater contamination;
- potential damage to flora and fauna;
- noise and dust disturbance during construction;
- visual impacts (eg whether the pipeline would be covered in asphalt or vegetation);
- impacts from construction traffic.

4.7.4 Ranking of social concerns

4.7.4.1 Overall comments

The majority of issues raised during disclosure relate to socio-economic issues. The largest number of comments (752) relate to land – for example the procedures for acquisition and compensation, land use during construction and operation, and reinstatement. Similarly, a high proportion of comments/ questions (171) on employment (opportunities and recruitment procedures) were received throughout the disclosure period.

**BTC PROJECT EIA
TURKEY**

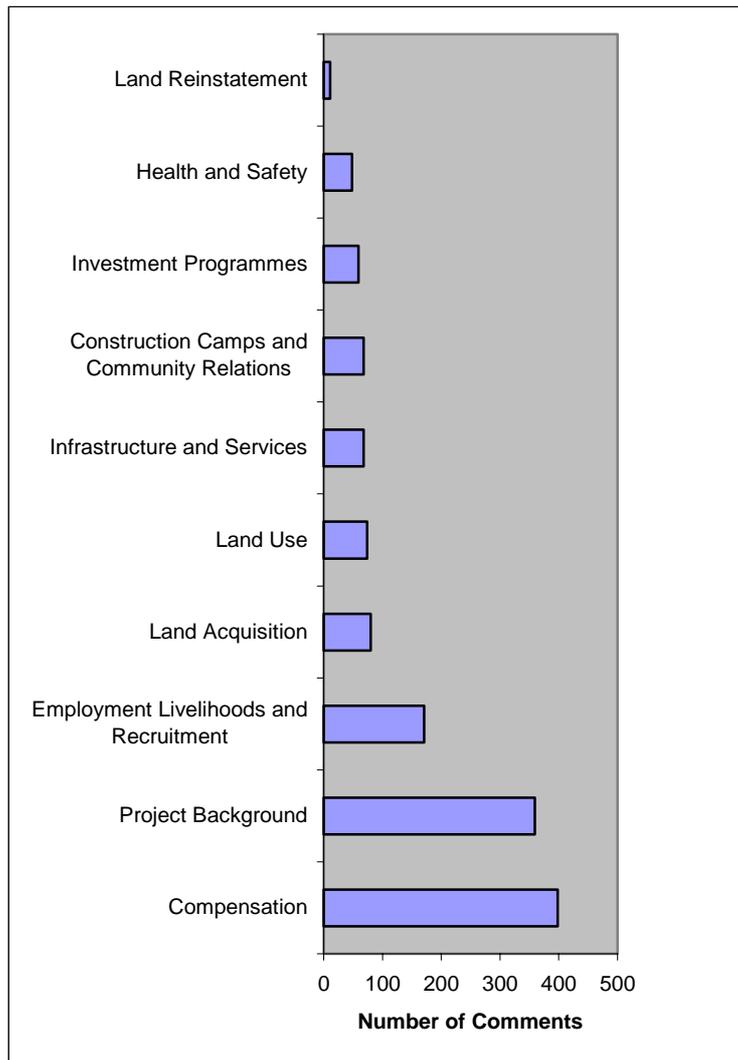


Figure A1.6 Analysis of Social Comments

4.7.4.2 Community disclosure comments

Many of the comments received during the community disclosure meetings relate to the impact of the proposed pipeline on the human and built environment, notably agricultural land, roads and irrigation channels. These comments were particularly prevalent in communities with previous pipeline experience associated with the East Anatolian Natural Gas Pipeline. In these settlements comments focused not only on potential damage to the built/human environment but given past experiences of reinstatement, how the previous damage is to be rectified and how it will be avoided for the BTC Pipeline.

4.7.5 Project background

General comments received on the project itself totalled 378. These comments included queries on the project design, pipeline routing, construction scheduling and project benefits. For example over 30 of comments focused on project alternatives and whether there were more suitable routes or whether the route would change. Nearly, 40 comments focused on the schedule of the Project, when construction will start and how long it will last. At least 20 engineering specific comments were made (eg on trench depth) and approximately 30 focused on consultation including appreciative comments on the consultation process. Approximately

**BTC PROJECT EIA
TURKEY**

25 comments were made on the EIA report including nine indicating that it had been beneficial. Additional comments related to the benefits of the project for Turkey, safety design, project management, general problems for Turkey, the use of contractors, and the issue of decommissioning.

5 PHASE 6: CONSULTATION DURING CONSTRUCTION, OPERATION AND DECOMMISSIONING

5.1 COMMUNITY RELATIONS IN CONSTRUCTION PHASE

This section set outs the proposed objectives, mechanisms and responsibilities for liaison with settlements affected by the Project during the construction phase. It identifies the approach to, and frequency of, consultation with affected settlements.

The primary responsibility for liaison will be borne by the Construction Contractor. BOTAŞ will therefore require the Contractor to develop its own plan and more detailed proposals for community liaison. This will build on the approach outlined in this section. All potential Contractors will be required to draw up this plan as part of the tender process.

5.2 OBJECTIVES AND DIVISION OF RESPONSIBILITY

The objectives of the Community Relations Programme will be to:

- Provide local residents affected by the Project with regular information on the progress of work and implications for these settlements
- Inform the Project/Contractor of any community related issues that may impact construction
- Monitor implementation of mitigation measures and the impact of construction via direct monitoring and feedback from settlements
- Identify any significant new issues that may arise during the construction period
- Manage any complaints against the Project/Contractors and local residents (ie provide a grievance mechanism)

The responsibility for the Community Liaison Programme, and employment of community liaison staff, will be divided between the BTC Co, BOTAŞ and the Construction Contractor. It is intended that, during the construction phase, the Contractor will have day-to-day responsibility for community liaison and will be the primary point of contact with affected settlements. During construction the teams in each spread will be laying the pipeline in approximately 20km section. Each spread team will also be working at discrete locations to construct above ground facilities, operate pipe dumps and run a construction camp. Communication with affected settlements will be achieved by the Construction Contractor providing adequate resources to manage community liaison on each pipeline spread and for the marine terminal construction.

The Contractor shall appoint full time dedicated Community Liaison Officer(s) (CLOs) as required in order to fulfil the Scope of Work as detailed in the Social Management and Monitoring Plan (see Appendix C8). CLOs will be appointed for each contract and will be responsible for the coordination of project public relations and external liaison needs. The CLOs will also manage the good reputation of both BOTAŞ and the Construction Contractor and liaise with third parties who are or may be affected by the execution of the Works as well as interface with landowners.

**BTC PROJECT EIA
TURKEY**

Both BOTAŞ and the BTC Co will appoint staff with responsibilities for community relations. In accordance with the role of BOTAŞ as the Turnkey Contractor and the assurance role of the BTC Co, the team will consist of the following.

- BOTAŞ: one Community Relations Manager and seven Community Relations Supervisors responsible for overseeing all works carried out by the Contractors, one of which will be based full time in the Ankara Project office.
- BTC Co: a Community Relations Manager who will oversee all community relations activities supported by six field staff (with environmental and social responsibilities)

The Community Relations Team of BOTAŞ and BTC Co will be empowered to stop the works if they are of the opinion and can demonstrate that the requirements of the Social Management and Monitoring Plan (SMMP) have been deviated from.

The community relation roles will be duplicated for each contract. At the present time it is envisaged that there will be separate contracts for the following:

- For each Lot (thus a total of three contracts) – including pipeline construction, pipe dumps, construction camps, access roads and block valve stations
- One Contract for Marine Terminal – onshore and offshore
- One Contract for the four pump stations and pressure reduction station

The interactions and roles of the community relations teams are outlined in Figure A1.7.

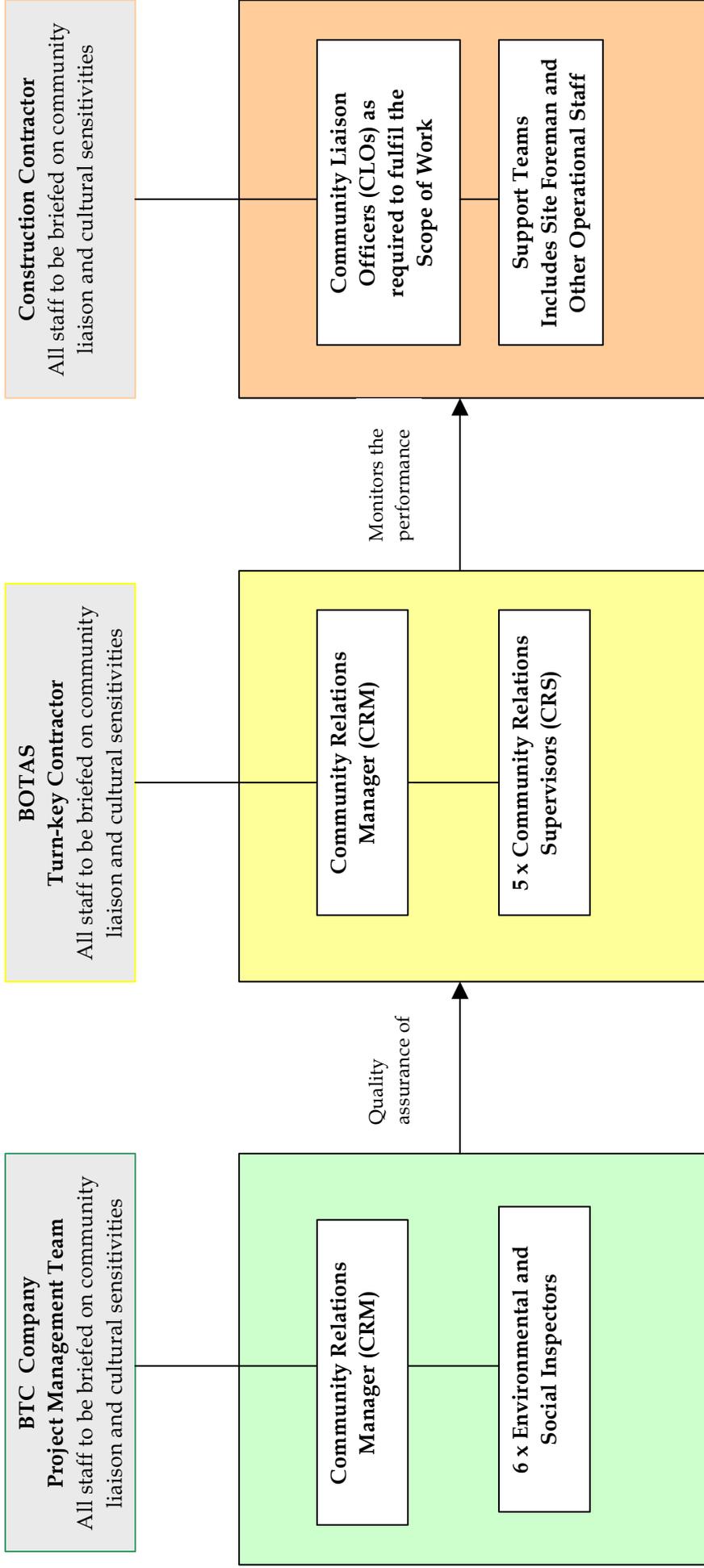


Figure A1.7 Roles and Responsibilities of Community Relations Teams

5.3 RECRUITMENT AND TRAINING

The Community Liaison team will be overwhelmingly made up of country nationals. The Community Relations Manager, employed by BOTAŞ, was appointed in April, when preparatory work began. The Community Relations Supervisors were appointed between April and September. The Community Liaison Officers of each Contractor will be appointed no less than one month prior to construction.

All other members of the Community Liaison team will also be in post at least one month prior to commencement of construction (ie during the construction mobilisation phase of the Project). This will be necessary in order to enable them to be fully briefed, integrated into the project team, given adequate training, and be in a position to provide training for other staff with community liaison responsibilities.

BTC Co, BOTAŞ and the Construction Contractor will brief all staff on community liaison and cultural sensitivities as part of the overall project induction training. The CLOs will be Turkish speaking, preferably with an understanding of English and the project area. They will preferably be graduates with a degree or diploma that has a social focus, with proven field skills in communications and a minimum of two years relevant experience, preferably in community relations. A minimum of one in every three CLOs will be female. All CLO appointments shall be subject to interview and approval by the BOTAŞ.

5.4 BOTAŞ ROLE IN COMMUNITY LIAISON

BOTAŞ will be accountable for overall community liaison. BOTAŞ will be primarily responsible for the following:

- Assist the Contractors to develop community relations procedures prior to construction start-up, including required management plans, recruitment procedures, contracting procedures, CLO recruitment and training;
- Agree dispute resolution process with Project Participants, Contractor and local settlements;
- Monitor implementation of/adherence to all relevant management plans through liaison with the Contractor and meetings with settlements;
- Identify breaches of management plans, and recommend corrective action. Stop work in the event of serious breaches that may cause serious impacts on local settlements or on the reputation of the Project;
- Track the social impact of the Project against the BTC Objectives and Key Performance Indicators as stipulated in the Social Management and Monitoring Plan (SMMP) and work with the Contractors where improvements are required;
- Monitor processing and resolution of complaints and ensure alignment with dispute resolution process and working practice of project security team;
- Provide regular information to the BTC Co on performance;
- Represent the Project at community meetings.

The Community Relations Manager (CRM) will have overall responsibility for community liaison during the construction period. She will ensure that the Contractor carries out their

**BTC PROJECT EIA
TURKEY**

responsibilities in relation to the social impacts of the Project, and that smooth relations with local residents are maintained. As part of this role, the CRM's responsibilities will include:

- Collecting and analysing the reports submitted by the CLOs and dealing with issues arising, alerting the BOTAŞ management team or BTC Co management as appropriate;
- Keeping a close eye on the overall levels of complaints reported and ensuring that the processes for dealing with those complaints and other related disputes are prompt and effective;
- Organising pipeline attitude surveys (as required by the mitigation and monitoring plan) and ensuring that the results are analysed and appropriate management responses implemented;
- Ensuring that there is an appropriate balance in community liaison between the pipeline spread itself and the construction camps and pipeyards, encouraging the reallocation of resources by the Contractor as appropriate.

Seven Community Relations Supervisors (CRS) will be in charge of all community relations associated with the construction of the pipeline. They will be supported by the Contractors' Community Liaison Officers (CLO).

The roles of the CRS will be as follows:

- Monitor implementation of the management plans for community relations, construction camps, and traffic, through liaison with the Contractor and meetings with local residents;
- Identify breaches of management plans, and recommend corrective action;
- Monitor construction Contractor recruitment strategy, through review of proposed processes and liaison with Contractor staff at recruitment centres;
- Monitor the processing and resolution of complaints;
- Provide regular information to the project team for communication to external audiences on the social impact of the Project and community liaison activities;
- Represent BOTAŞ at community meetings on occasion, as requested by the construction Contractor;
- Provide support to the Contractor in the development of their CL teams, in particular prior to construction;
- Agree a dispute resolution process between BOTAŞ, BTC Co, the Construction Contractor and local residents, based on the grievance procedure attached;
- Develop community relations procedures consistent with BOTAŞ and project social and security policies, and ensure that CLO training is consistent with this approach;
- Training of all Contractor staff with community liaison responsibilities;
- Communication with local residents affected by the Project;
- Provision of reports to BOTAŞ;
- Management of Contractor CLOs.

5.5 CONSTRUCTION CONTRACTOR ROLE IN COMMUNITY LIAISON

The Construction Contractor will be required to adhere to the requirements of the Social Management and Monitoring Plan (SMMP) that sets out how the Contractor will meet and monitor the mitigation measures recommended by the BTC Co and BOTAŞ in relation to the areas of social impact. This will be reviewed and finalised by BTC Co in agreement with BOTAŞ.

The role and responsibilities of the Contractor include:

- Provide primary interface between project and affected settlements;
- Coordinate and implement required pre-construction activities, namely;
 - produce management plans for community relations, construction camps and transport;
 - train staff with community relations responsibilities;
 - implement induction training workshops for all construction staff.
- Assist in local recruitment process;
- Ensure on-going communication with affected settlements through the following activities;
 - Meet with community leaders and hold community meetings prior to arrival of construction teams in a given locality to inform local residents about construction activities, work schedule, construction staff Code of Conduct, grievance procedure, safety issues, dates of future meetings and contact details of CLO staff;
 - Hold fortnightly meetings with directly affected settlements during construction (monthly close to pump stations and pressure reduction stations) to provide information on progress and provide channel for issues and queries to be raised;
 - Liase with contract representatives on major issues arising and ensure that the local residents are kept informed of any expected or unexpected disruption through leaders and by maintaining a community notice board;
 - Provide a focus for negotiation and resolution of specific disputes with residents if/when they arise, using the dispute resolution procedure;
 - Submit fortnightly and monthly social impacts reports to the Project;
 - Monitor processing and resolution of complaints and ensure alignment across the Project with the dispute resolution process.

Successful community liaison will be achieved through sharing this responsibility throughout the Construction Contractor's team. Each work team will allocate primary responsibility for community liaison to an individual. These individuals will liase with the team of dedicated CLOs, and involve them as necessary.

5.5.1 Community Liaison Officers (CLOs)

The construction teams in each spread will be working approximately along a 20-kilometre length at any one time. It is anticipated that the Contractors will provide CLOs to liase with settlements along the pipeline route. Their roles are likely to include the following:

- Meet settlement leaders and speak at settlement meetings prior to arrival of construction teams in a given locality, to inform them of the nature and length of activities in their area;

**BTC PROJECT EIA
TURKEY**

- Hold regular meetings with settlements adjacent to the pipeline worksite, AGIs and construction camps;
- Support implementation of the Construction Camp Management Plan;
- Advise the camp management and BOTAŞ Community Relations Supervisor of changes required to the Camp Management Plan;
- Meet with local residents close to smaller camps and AGIs on a monthly basis and advise Contractor management on issues arising from these meetings;
- Produce fortnightly reports on implementation of the camp management plan, specific incidents and actions taken to address community concerns;
- Provide a focus for negotiation and resolution of specific complaints from local residents if / when they arise, using the dispute resolution or grievance procedure;
- Liaise with Contractor staff with primary responsibility for community liaison in each work team.
- Liaise with the management of the spread team on major issues arising, and provide feedback to local residents on responses to these issues
- Monitoring implementation of the Traffic Management Plan, through liaison with other Contractor staff given responsibility for this
- Holding meetings, on a monthly basis, with settlements identified in the Traffic Management Plan as most affected
- Producing a monthly report on implementation of the traffic management plan

5.6 COMMUNITY RELATIONS IN OPERATIONAL PHASE

The objective of the Community Relations Programme in this phase will be to:

- Maintain constructive relationships between local residents and the pipeline operators, to assist in the operation of the pipeline;
- Maintain awareness of safety issues among local residents along the pipeline route;
- Ensure compliance with land use constraints among land owners along the pipeline route;
- Monitor community attitudes to the pipeline and operating company.

A freecall telephone 'hotline' was established in June 2002, thus enabling anyone with concerns about the Project to call during the disclosure period. Its ongoing function will be to enable stakeholders to contact the Projects community relations team during the construction and operation period. During that period there will also be an email address and a postal address to which written comments or complaints can be sent. Clearly, however, the telephone, email and postal contacts will be of limited use to residents outside the larger settlements. The Community Liaison Officer will therefore be an important link for individuals at the settlement level, both for registering opinions and comments and for keeping local residents informed of developments, up-coming meetings and consultations.

Although BOTAŞ, as the Turnkey Agreement, is required to resolve outstanding community relations matters or undertake any work necessary for a 12 month warranty period following construction, responsibility for community liaison during the operational phase will fall solely to the BTC Co. The precise nature of this team has not yet been finalised. It is currently

envisaged that the team will be managed in Ankara and that field members of the team will be locally recruited to perform a dedicated Community Liaison role. Members of this team during the operational phase will be required to:

- Hold regular meetings with settlements along the pipeline route, in the vicinity of the marine terminal and AGIs as appropriate;
- Maintain awareness of safety issues;
- Monitor the pipeline route, to ensure compliance with land use constraints;
- Provide monthly reports to the pipeline operating company on issues arising from liaison with local residents;
- Inform the operating company immediately of breaches of safety or land use constraints, or serious disputes from settlements along the pipeline route.

5.6.1 Decommissioning

In the event of decommissioning of the pipeline, liaison would continue to take place by the BTC Co with settlements prior to de-commissioning. This role would complement work carried out by the operating company and social investment team to reduce the negative impact of pipeline decommissioning.

6 TIMING OF CONSULTATION ACTIVITIES

The timing of the various consultation activities described above is shown in Table 6.1 below.

Table 6.1: Timing of Consultation Activities

Stakeholder group	Schedule
PHASE 1	
<ul style="list-style-type: none"> Stakeholder Identification Preliminary Consultation Consultation During Scoping 	<p>19th July – 6th August 2001</p> <p>27th August – 31st October 2001</p>
PHASE 2	
<ul style="list-style-type: none"> Information Distribution Introductory Meetings with Governors Introductory Meetings with Sub-governors, Muhtars and local authorities 	<p>6th August – 17th August 2001</p> <p>12th August – 28th August 2001</p>
PHASE 3	
<ul style="list-style-type: none"> Impact Identification Meetings with Local NGOs and Other Interest Groups Meetings with National NGOs, Interest groups, IFIs and Media Meetings with Settlements along the Pipeline and in the Vicinity of the Marine Terminal 	<p>17th September – 28th September 2001</p> <p>11-12th October (Istanbul), 15th October 2001 (Ankara)</p> <p>3rd September – 20th October 2001</p>
PHASE 4	
<ul style="list-style-type: none"> Development of Mitigation Measures Mitigation Testing Meetings 	<p>End January – early February 2002</p>
PHASE 5	
<ul style="list-style-type: none"> Disclosure of Draft EIA Consultation During Disclosure of the Draft EIA 	<p>End June – End August 2002</p> <p>Early July – Early August 2002</p>

Consultation is an ongoing process that will continue once the draft EIA is submitted to the Turkish government. It will continue to be an integral component of the design, construction, operation and closure of the BTC Project. Specifically, it will involve the following:

- ongoing opportunity to contact the Project through community relations free hotline and BTC Co and BOTAŞ contact details on Project documentation;
- specific community liaison activities;
- indirect feedback through the environmental and social investment programmes.

7 RESOURCE ISSUES: STAFF TIME AND COSTS ASSOCIATED WITH CONSULTATION

This section sets out the estimated resource implications of the proposals set out in this PCDP, as required by World Bank standards. It includes both staffing levels and specific costs associated with consultation.

7.1 PRE-CONSTRUCTION

The focus of consultation prior to construction is the development of the EIA. Section 4 outlined the specific consultation activities carried out as part of this process.

7.1.1 Staff time

Dedicated teams during the pre-construction phase will oversee the EIA process and related project activity. These teams will devote a significant proportion of their time to involvement in and support for the public consultation process. The team is committed to participating directly in all consultation at national level, and to participate as team members in consultation activities at the local level.

7.1.2 Resource implications

The EIA (national and international) consultants are responsible for public consultation at the local and national level. Over a period of approximately 12 months during which consultation will take place, the size of the team will have grown to at least 70 people working full time at peak periods of consultation and data collection. The resources to finance this consultation are provided by BTC Co and BOTAŞ.

7.2 CONSTRUCTION AND OPERATIONAL PHASES

7.2.1 Staff time

During the construction phase, a team of a minimum of seven (expatriate and national) BTC Co personnel will address community liaison and environmental and social compliance issues, ensuring that commitments made on the EIA are fulfilled, working directly with BOTAŞ and their Construction Contractors.

The precise staff implications for the operational phase have not yet been defined. BTC Co is committed to maintaining a presence along the pipeline route through a reduced Community Relations team.

7.2.2 Resource implications

The resource implication of the above activity is the employment of the staff proposed above by BTC Co. The appropriate rates of remuneration for these staff have not yet been determined.

8 GRIEVANCE MECHANISM

8.1 LOCAL RESIDENTS COMPLAINTS PROCEDURE

8.1.1 Purpose and scope

To ensure all complaints from local residents are dealt with appropriately with corrective actions being implemented and the complainant being informed of the outcome. It will be applicable to all complaints received from any project-affected settlements.

8.1.2 Responsibilities

The Community Liaison Officers will be responsible for collating written complaints and co-coordinating responses to all complaints.

8.1.3 Procedure

8.1.3.1 General complaints

All complaints shall be handled in accordance with the flowchart below. Both verbal and written complaints are to be entered on the Complaints Log (see below) and a Complaints Action Form (to be developed prior to construction).

When receiving a complaint all employees shall refer the complainant to the Community Liaison Officer or the HSE department. Any members of the HSE department receiving a complaint shall ensure that the Complaint Action Form is completed. The form shall then be forwarded to the Community Liaison Officer who will assign it a number. The Community Liaison Officer shall ensure that all actions are made to close out the complaint.

8.1.3.2 Complaints log

Ensures that each complaint has an individual number and that tracking and recording actions are carried out. It also records who is responsible for an individual complaint and records dates for the following actions:

- date the complaint was reported;
- information on proposed corrective action sent to complainant (if appropriate);
- the date the complaint was closed out;
- date response sent to complainant.

8.1.3.3 Complaints action form

This specifies the information required to ensure the complaint is dealt with. The form is split into four parts:

Part A: information about the complainant, the number of the complaint (taken from the Complaints Log).

Part B: the complaint section, where all the details relevant to the complaint are recorded.

Part C: for recording the immediate action required and identifies the long term corrective action (if required).

Part D: details how the corrective action shall be verified and signed off.

8.2 RESPONDING TO A COMPLAINT

All complaints shall be responded to in writing, though a verbal response will be provided as well if this is more appropriate in the circumstances (eg where the complainant can not read).

All complaints must be responded to within two weeks of being received, even if the response is just a summary of what is planned and when it is likely to be implemented. Further correspondence should be given once the complaint is closed out.

8.3 MONITORING COMPLAINTS

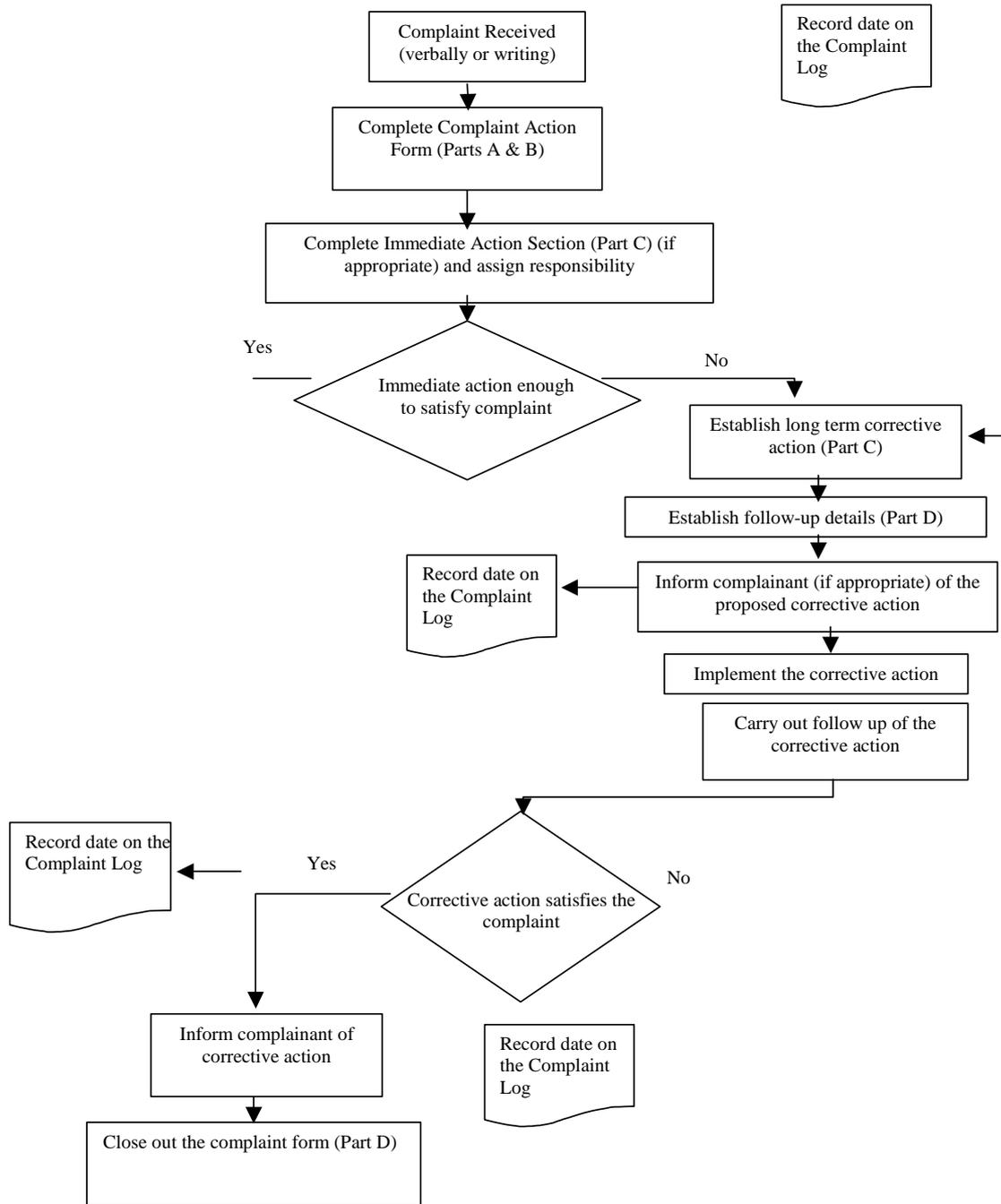
The head CLO will be responsible for providing BOTAŞ with a weekly report detailing the level of complaints and any outstanding issues to be addressed. Monthly reports will include analysis of the type of complaints, levels of complaints and action taken to reduce complaints.

8.4 RECORDS

The Community Liaison Officer shall file all documentation related to complaints in a file in his office. All complaint documentation shall be kept on file for two years then archived.

Levels and types of complaints will be monitored through the Community Impacts Management and Monitoring Plan, as well as the speed with which complaints are dealt. The procedure for handling complaints is provided in Figure A1.8.

**BTC PROJECT EIA
TURKEY**



Appendix A2: Complete Stakeholder List

**Stakeholders Consulted up to
August 2002**

**List of Authorities Consulted In
Phase 1**

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
STATE	<ul style="list-style-type: none">• Presidency• Turkish National Assembly (TBMM)• Democratic Left Party (DSP)• Nationalist Action Party (MHP)• Motherland Party (ANAP)• Happiness Party (Saadet)• True Path Party (DYP)• Republican People's Party (CHP)• People's Democracy Party (HADEP)• Assembly Environment Commission• Assembly Health, Family, Work and Social Affairs Committee• Assembly Agriculture, Forestry and Village Affairs Commission• Assembly Industry, Trade, Energy, Information and Technology Commission
GOVERNMENTAL ORGANIZATIONS	<ul style="list-style-type: none">• Republic of Turkey Prime Ministry• National Intelligence Organization (MIT)• National Security Council (MGK)• Republic of Turkey Prime Ministry Directorate General of Press and Information• State Planning Organization (DPT)• High Council for Human Rights• The Scientific and Technical Research Council of Turkey (TUBITAK)• Republic of Turkey Prime Ministry Undersecretariat of Treasury• Halk Bankası• Ziraat Bankası• Republic of Turkey Central Bank (TC Merkez Bankası)• Republic of Turkey Prime Ministry State Institute of Statistics (DIE)• Foundations Directorate General• Turkish Radio Television Directorate General

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Anadolu Agency Directorate General• Village Affairs Directorate General• South eastern Anatolia Project (GAP) Administration Directorate• Turkish Development Bank Directorate General• Marine Affairs Undersecretariat• Commandment of Naval Forces• Directorate of Navigation, Hydrography and Oceanography• State Meteorological Affairs General Directorate• Social Services and Child Protection Directorate General• Social Assistance and Solidarity Promotion Fund General Secretariat• Family Research Council Directorate• Women's Status and Problems Directorate General• General Directorate of Land Registry and Cadastre• Mineral Research and Exploration (MTA) Directorate General• Refugee Housing Coordinator's Office• Economic, Cultural, Education and Technical Cooperation Directorate• Press and Information Directorate General• Republic of Turkey Ministry of Energy and Natural Resources• Energy Undersecretariat• Mineral Affairs Directorate General• Energy Affairs Directorate General• Turkish Electricity Distribution Company (TEDAS)• General Directorate of Turkish Electricity Generation and Transmission (TEAS)• Petroleum Affairs Directorate General• Petroleum Pipeline Corporation (BOTAS)• Turkish Petroleum Corporation (TPAO)• (TPIC) Turkish Petroleum Int. Co. Ltd.• General Directorate of State Hydraulic Works (DSI)• Natural Resources Affairs (TKI) Directorate General

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• EIEI Directorate General• Republic of Turkey Ministry of National Defence• Ministry of National Defence, NATO Pipeline Directorate• Republic of Turkey Ministry of Interior Affairs• Directorate General of Security (Police)• Local Administration Directorate General• Civil Defence Directorate General• Provinces Affairs Directorate General• OHAL (Governorship of the region covered by Emergency Rule)• Republic of Turkey Ministry of Foreign Affairs• Directorate of Energy Affairs in MFA• Republic of Turkey Ministry of Education• Higher Education Directorate General• Republic of Turkey Ministry of Public Works and Settlement• Construction Affairs Directorate General• Disaster Affairs Directorate General• General Directorate of Provincial Banks• General Directorate of State Highways• Republic of Turkey Ministry of Health• Basic Health Services Directorate General• Republic of Turkey Ministry of Communications• Turk Telekom Directorate General• Land Transport Directorate General• Republic of Turkey Ministry of Agriculture and Rural Affairs• General Directorate of Agricultural Production and Development• General Directorate of Agricultural Protection and Control• Agricultural Economics Research Institute• Agricultural Research Directorate General• General Directorate of Agricultural Reform• General Directorate of Rural Services• Agricultural Economics Research Institution• Animal Health Information System• Regional Development Administration

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Republic of Turkey Ministry of Labour and Social Security• Regional Organized Industry Directorate General• Republic of Turkey Ministry of Culture• General Directorate of Preservation of Cultural and Historical Heritage• General Directorate of Monuments and Museums• Republic of Turkey Ministry of Tourism• Republic of Turkey Ministry of Forestry• General Directorate of Forestry• General Directorate of Afforestation and Erosion Control• General Directorate of National Parks and Game-Wild Life• General Directorate of Forestry and Village Relations (ORKOY)• Republic of Turkey Ministry of Environment• Special Environmental Protection Agency Directorate• General Directorate of Environmental Pollution Prevention and Control• Environment Protection Directorate General• APK Committee• CKOK Directorate General• CED Directorate General• Earthquake Research Department• Ministry of Transportation• General Directorate of Railways, Harbours and Airports Construction• General Directorate of State Railways• Turkish Council of Higher Education (YOK)• TODAIE
UNIVERSITIESALONG THE PIPELINE ROUTE	<ul style="list-style-type: none">• Kafkas University (Kars)• Ataturk University (Erzurum)• Cukurova University (Adana)• Sutcu Imam University (Kahramanmaras)

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Cumhuriyet University (Sivas)• Erciyes University (Kayseri)
OTHER UNIVERSITIES (NATIONAL)	<ul style="list-style-type: none">• Bogazici University• Istanbul Technical University (ITU)• Galatasaray University• Istanbul Culture University• Koc University• Middle East Technical University (METU)• Ankara University• Bilkent University• Hacettepe University
LABOR UNIONS	<ul style="list-style-type: none">• Confederation of Petroleum Workers' Trade Unions (PETROL-IS)• Confederation of Rights of Turkish Workers' Trades Union (HAK-IS)• Confederation of Turkish Revolutionary Workers Unions (DISK)• Confederation of Turkish Workers' Trades Union (TURK-IS)• Energy, Construction, Infrastructure Services Workers' Union (ENER-SEN)• National Oil Industry Association (PETDER)• Petrol-Is Union• Public Sector Enterprises Union (KAMU-IS)• Turkish Confederation of Employers' Unions (TISK)• Confederation of Turkish Trades people and Craftspeople (TESK)
INTERNATIONAL NGOs AND INSTITUTIONS	<ul style="list-style-type: none">• International Labour Organization (ILO)• United Nations Development Programme (UNDP)• World Bank (WB)• Amnesty International• Birdlife International

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Center for Eurasian Strategic Research (ASAM)• Greenpeace• World Wildlife Fund For Nature• European Commission• Amnesty International
CHAMBERS AND ASSOCIATIONS	<ul style="list-style-type: none">• DTO- Istanbul and Marmara, Aegean, Mediterranean, Black Sea Regions Chambers of Marine Trade• Istanbul Chamber of Trade• Ankara Tradesmen and Artisans Bail Cooperative• Ankara Bar Association• Ankara Construction Contractors' Association (ANIMDER)• Ankara Chamber of Commerce (ASO)• Istanbul Bar Association• Istanbul Chamber of Commerce (ISO)• TMMOB Union of Chamber of Turkish Engineers and Architects• TMMOB Chamber of Environment Engineers• TMMOB Chamber of Mapping and Land Surveying Engineers• TMMOB - Chamber of Civil Engineers• TMMOB Chamber of Architects• TMMOB Chamber of Forest Engineers• TMMOB Chamber of Landscape Architects• TMMOB Chamber of City Planning• TMMOB Chamber of Mechanical Engineers• TMMOB Chamber of Geologists• TMMOB Chamber of Agricultural Engineers• Turkish Bar Associations• Tradesmen and Craftsmen's Foundation of Turkey• Turkish Union of Chambers and Commodity Exchanges• Turkish Chambers of Agriculture• Turkish American Businessmen Association (TABA)• Turkish Environment Association

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Istanbul Environmental Protection Association
NATIONAL NGOs AND INTEREST GROUPS	<ul style="list-style-type: none">• Anatolian Modern Education Foundation (ANACEV)• Anatolian Environmental Protection Assembly• Anatolian Education and Social Solidarity Foundation• AKUT Search-Rescue Association• CETODER Association of Friends of the Environment• Euroasian Culture Foundation• West and East Mediterranean Environmental Assembly• ASIAD Ankara Industrialists and Businessmen Association• AAD Archaeology and Archaeologists Association• Association for the Beautification and Protection of Beyoglu• Contemporary Education Foundation (CEV)• Foundation for Support of Contemporary Living (CYDD)• Environment Protection Foundation• Environmental Technology Applicators' Association CEVRETED• Environment Volunteers Association (EVA)• Environment Services Association (CHD)• Izmir Bar; City and Environment Commission• Foundation for Environment Protection and Revaluation of Packing Material Waste (CEVKO)• Foundation for the Conservation and Promotion of the Environmental and Cultural Heritage (CEKÜL)• Environmental Protection and Research Foundation (CEV-KOR)• Foundation of Environment and Street Animals• Turkish Marine Environment Protection Association (TURMEPA)• Foundation of Earthquakes• Foreign Economic Relations Board of Turkey (DEIK)• Foundation of Protection of Natural Life (DHKD)• Society of Nature's Warriors• At Peace with Nature Society (DIB)• Association of Friends of Ecology and the Environment (ECED)

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Center for Economic and Social Research (ESAM)• Communication Network of ECO Villages (EKILAT)• Young Environmental Club• Young Manager and Businessmen Association (GYIAD)• Youth for Habitat• Istanbul Bar: Environment and City Commission• Istanbul Environmental Voluntaries Platform• Social and Solidarity Foundation of State of Istanbul• Istanbul Art and Culture Foundation• Istanbul Forestry Environment and Cultural heritage protection platform• Izmir Environment Protection Foundation• Quality Association• Black Sea Foundation for Education, Culture and Nature Conservation• Rural Environment and Forestry Problems Research Association• Kocaeli Turkish Health and Environmental Association• Foundation for Protection of Forestry and Nature• Health and Green Environment Society• Civic Communication Network-Civic Initiative• Union of Civic Societies• S.O.S Mediterranean Association• Sociology Society• Social Democracy Foundation• Turkish Social, Economic and Political Research Foundation (TÜSES)• Strategic Research Foundation (KOKSAV)• Association for Protection of Historical, Cultural and Environmental Heritage• Clean Energy Foundation• Foundation of Promotion and Protection of Environmental Values• Turkish Industrialist and Businessmen Association (TÜSIAD)• Turkish Social Sciences Association• Turkish Maritime Education Foundation (TÜDEV)• Foundation for the Protection of Turkish Monumental-Environmental-Touristic Assets

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Environmental Education Foundation of Turkey (TURCEV)• Turkish Environmental Foundation• Environmental Protection and Greenification Council of Turkey• Turkish Maritime Research Foundation• Turkish Earthquake Foundation• Society for Protection of Nature• Economic and Social Studies Foundation of Turkey (TESEV)• History Foundation• The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA)• Development Foundation of Turkey (TKV)• Turkish Association for the Conservation of Nature and Natural Resources• Turkish Foundation for Protection of Historical Houses• Foundation of Seaside Protection and Rescue• Biologist Society• Forestation Research Center• Agricultural Association of Turkey• Greenpeace Environmental Society• Green Turkey Foresters' Association (YTOD)• Green Generation Environmental Pioneers Group• S.O.S Environmental Voluntaries Platform• Underwater Research Society Seaside Area Management and Research Group• Istanbul Foundation• Marmara Group and Social Research Foundation• Chamber of Mapping and Land Surveying Engineers Istanbul Branch• Europe Asia Union, Turkish Economic, Social and Cultural Research Foundation• Basic Culture• The Arı Group• Education Volunteers Association of Turkey (TEGEV)• Association for Protection of Historical, Cultural and Environmental

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	Heritages (TAC) <ul style="list-style-type: none">• Foundation Of Development of Human Resources (IKGV)• Turkish Education Foundation (TEV)
LOCAL NGOs AND INTEREST GROUPS	
Ardahan	<ul style="list-style-type: none">• Ardahan Chamber of Commerce• Ardahan Chamber of Tradesman and Craftsman• Gole Agriculture Association• Turkish Air Association• Kızılay• Association of beatify Ardahan District and Village• Ardahan Kafkas Bees Assosiation• Ardahan Bar• Chamber of Medicine• Assosiation of Village Heads Ardahan• Ardahan Cooperative of Agriculture• Cooperative of Tradesman Bail• Posof Kızılay Association• Ardahan Trade Exchange• Ardahan Confederation of Merchants and Tradesmen• Ardahan Chamber of Agriculture• Ardahan Association of Protection of Farmers' Property• Site of Industry• Kızılay• Association of Social Help and Solidarity• Chamber of Trade and Industry• KASIAD• Association of Protection of Environment• Chamber of Mechanical Engineers• Chamber of Construction Engineers• Chambers of Geology Engineers• Chamber of Cartography Engineers• Chamber of Architecture

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
Erzurum	<ul style="list-style-type: none"> • Lovers of Philanthropy Association of Turkey • TEMA • Chamber of Commerce • Chamber of Tradesman and Artisans • Commerce Exchange • Chamber of Mechanical Engineers • Chambers of Geology Engineers • Chambers of Architecture • Chamber of Map Engineers • ERGIAD • Chamber of Agriculture • Lovers of Philanthropy Association of Turkey • Culture and Solidarity Association • Association of Environment Volunteers • Association to Protect the Consumer • Head of Organized Industrial Area • Turkish Women's Unity Association • Association of East Anatolian Journalist • Association of Erzurum Journalist
Erzincan	<ul style="list-style-type: none"> • Tradesman and Craftsmen's Foundation • Chamber of Trade and Industry • Chamber of Agriculture • Chamber of mechanical Engineers • Chamber of Maps Engineers • Lovers of Philanthropy Association of Turkey • Chamber of Architectures • Culture and Solidarity Association • Head of Organise Industry Area. • Kızılay • ERAYKUD Disaster Research and First Aid and Rescue Association. • Protection of Environment Association • TEMA
Gumushane	<ul style="list-style-type: none"> • Gumushane Young Businessmen Association

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Prosperity and Settling Directrote Assistance and Solidarity Association• Citizens of Gumushane and Lovers of Gumushane Service Foundation• Chamber of Commerce• Chamber of Tradesmen and Craftsmen• Chamber of Maps Engineers• Chambers of Geology Engineers• Gumushane Bars• Kızılay• Gumushane Modern City Association• Turkish Women Association Gumushane Branch• Village Affairs Assistance and Solidarity Association• Gumushane Kucakkaya Huntsmen and Marksmen Association• Technical Employee Association Gumushane Branch• Association of Strengthen and Improvement of Agricultural Service• Gumushane Culture and Art Association
Sivas	<ul style="list-style-type: none">• Sivas Culture Association• Lovers of Philanthropy Association of Turkey• Huntsmen and Marksmen Association• Kızılay• Chamber of Maps Engineers• North Kafkasya Culture Association• Tradesman and Craftsmen Association• Village Head and Assistance Association• Sancak Huntsmen and Marksmen Association• Olukmanlılar Solidarity and Foundation• Sivas Bars• T.M.M.O.B. chambers of Architecture• Chamber of Geology Engineers• Chamber of Agriculture Engineers• Chamber of Mechanical Engineers• Chamber of Agriculture
Kayseri	<ul style="list-style-type: none">• Chamber of Commerce• Sanayi Odasi

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Chamber of Industry• Chamber of Architecture• Chamber of Construction Engineers• Chambers of Mechanical Engineers• Chamber of Agriculture• Chamber of Doctors• Tradesmen and Craftsmen Association• Chamber of Agriculture Engineers• Lovers of Philanthropy Association of Turkey• Protection of Environment Association• Culture and Tourism Association• Morality,Culture and Environment Association• Kızılay• Turkish Education Association• Village Heads Association• MÜSIAD Businessmen Association• KAYSIAD Kayseri Businessmen Association• GESIAD Young Businessmen Association• Turkish Women Association• Kayseri Industry Association• Chamber of Map Engineers• Chamber of City Planners
Kahramanmaras	<ul style="list-style-type: none">• Kahramanmaras Bar• Chamber of Commerce• Chamber of Agriculture• Commerce Exchange• Chambers of Doctors• Craftsmen and tradesmen Association• Chamber of Electrical Engineers• Chamber of Architecture• Chamber of Construction Engineers• Chamber of Map Engineers• Chamber of City Planners

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Chamber of Mechanical Engineers• Chamber of Forest Engineers• Chamber of Chemistry Engineers• Kahramanmaras Lovers of Philanthropy Association• Tourism Association• Lovers of Philanthropy Association of Turkey• Kızılay• Young Businessmen Association (KAGIAD)• Little Industrialise Site
Osmaniye	<ul style="list-style-type: none">• TEMA• Chamber of Mapping Engineers• Osmaniye Protection of Environment Association• Osmaniye Environment friendship Association• Osmaniye Ethics, Culture and Environment Association• Hacibektas Veli Culture and Presentation Association• Village Head Association Osmaniye Branch• Kadirli Environment Protection Association• Tokalı Yorukleri Culture, Representative and Solidarity Association• Ulaşlı Top. Culture, Research, Improve and Science Association• Association to Support Contemporary Living• Osmaniye Service and Improvement Association• Osmaniye Culture, Tourism and Improvement Association
Adana	<ul style="list-style-type: none">• Chamber of Industrialisation• Chamber of Commerce• Commerce Exchange• Yuregir Chamber of Agriculture• Chamber of Doctors.• Farmers Association• Contractors Association• Chamber of Architectures• Adana Bar• Chamber of Electrical Engineers• Chamber of Mechanical Engineers

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Chamber of Mapping Engineers• Chamber of Geology Engineers• Chamber of Agriculture Engineers• Chamber of Construction Engineers• Chamber of Forest Engineers• Chamber of Geo-physic Engineers• Chamber of Mining Engineers• Chamber of City Planning Engineers• Association of East Mediterranean Environmentalists• Turkish Women Association• Chamber of Environmental Engineers
NATIONAL MEDIA	<ul style="list-style-type: none">• Akit• Aksam• Gunes• Platin• nadolu Ajansi• Anka Haber Ajansi• Associated Press• ATV• Marketing Turkiye• Kargo Haber• BBC News• 3E• Bizim Anadolu• BRT• Cihan Haber Ajansi• CNN Turk• Cumhuriyet• Capital• Ekonomist• Tempo• Dow Jones Wires• Dunya

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Dunya Enerji• Globus• Is Fikirleri• Enerji Petrol Gazetesi• Evrensel• Financial Times• Tasimacilik• Gazete 34• Istiklal• Gozlem• Haberturk• Ekovizyon• Dogan Haber• Gozcu• Hurriyet• Interstar• Istanbul Ekonomi• Istanbul Son An• Istanbul Tunaydin• Kanal 7• Kanal D• Finans Dnyasi• Milli Gazete• Yeni Devir• Finansal Forum• Milliyet• Posta• Radikal• Newsweek• Hurses• Nokta• CNBC-E• NTV• The New York Times

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Ortadogu• Reuters• Sabah• Sabah Haber• Takvim• Aktuel• Para• Power• Show TV• Son Saat• Star Gazetesi• STV• Tasiyanlar• Teba News• Dogal Gaz Lpg Petrol Ve Enerji Dergisi• Bizim Gazete• The Economist• Turkish Business World• Turkish Daily News• TV 8• Ihlas Haber Ajansi• Turkiye• Enerji• UTA• Wall Street Journal• Ekonomi Ve Politikada Trend• Yeni Mesaj• Yeni Safak• Aksiyon• Zaman
GOVERNORS	<ul style="list-style-type: none">• Ardahan Governorship• Kars Governorship• Erzurum Governorship• Erzincan Governorship

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Gumushane Governorship• Sivas Governorship• Kayseri Governorship• Kahramanmaras Governorship• Osmaniye Governorship• Adana Governorship
SUB-GOVERNORS	
Ardahan	<ul style="list-style-type: none">• Hanak Sub-governorship• Damal Sub-governorship• Posof Sub-governorship• Merkez (Gole) Sub-governorship• Gole Sub-governorship
Kars	<ul style="list-style-type: none">• MERKEZ (Selim) Sub-governorship• Selim Sub-governorship• Sarıkamis Sub-governorship
Erzurum	<ul style="list-style-type: none">• Horasan Sub-governorship• Senkaya Sub-governorship• Koprukoy Sub-governorship• Pasinler Sub-governorship• Merkez (Ilica) Sub-governorship• Ilica Sub-governorship
Erzincan	<ul style="list-style-type: none">• Askale Sub-governorship• Cayırlı Sub-governorship• Tercan Sub-governorship
Gumushane	<ul style="list-style-type: none">• Refahiye Sub-governorship
Sivas	<ul style="list-style-type: none">• Kelkit Sub-governorship• Imranlı Sub-governorship• Merkez (Zara) Sub-governorship• Zara Sub-governorship• Hafik Sub-governorship• Ulas Sub-governorship
Kayseri	<ul style="list-style-type: none">• Altınyayla Sub-governorship• Pınarbası Sub-governorship

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
Kahramanmaras	<ul style="list-style-type: none">• Sarız Sub-governorship
Osmaniye	<ul style="list-style-type: none">• Goksun Sub-governorship• Andırın Sub-governorship
Adana	<ul style="list-style-type: none">• Merkez (Kadirli) Sub-governorship• Kadirli Sub-governorship• Ceyhan Sub-governorship
VILLAGE HEADS (MUHTARS)	
Ardahan	Hanak District <ul style="list-style-type: none">• Cavdarlı• Avcılar• Cimlicayır• Koyunpınar• Bastoplu Damal District <ul style="list-style-type: none">• Burmadere Posof District <ul style="list-style-type: none">• Kayını• Asmakonak• Cakırkoc• Kumlukoz• Turkgozu• Ozbası• Ugurca• Cayırcimen• Merkez• Incedere• Dogrular Gole District <ul style="list-style-type: none">• Cakıruzum• Dereyolu• Yenidemirkapı• Salimbey Mah

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Tahtakıran• Senemoglu• Karlıyazı• Okcu• Callidere• Cobankoy• Kalecik• Balcesme• Gulistan• Kucuksutluce• Dagcı• Kartalpınar)• Besiktas• Kocakoy• Tepesu• Ortagecit
Kars	Selim District <ul style="list-style-type: none">• Sarıgun• Darbogaz• Bozkus• Baykara• Tuygun• Yaylacık• Baskoy• Karakale• Yenice• Hasbey• Beykoy• Akcakale• Bogaztepe• Kucukbogatepe Sarıkamıs District <ul style="list-style-type: none">• Kurbançayı

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
Erzurum	<ul style="list-style-type: none">• Yenikoy
	Horasan District
	<ul style="list-style-type: none">• Yukarı Bademozu• Yukarı Horum• Kırkdikme• Kalender
	Koprukoy District
	<ul style="list-style-type: none">• Yapagı• Yukarı Sogutlu• Cami Kebir Mah.• Asagı Cakmak
	Pasinler District
	<ul style="list-style-type: none">• Korucu• Alvar (belde)• Altınbasak• Ovakoy• Alvar• Cakırtas• Tepecik• Epsence• Buyuk Tug• Yigit Tası• Sunak
	Ilca District
	<ul style="list-style-type: none">• Alaybey• Kuscu• Alaca• Kayapa• Kahramanlar
	Askale District
	<ul style="list-style-type: none">• Yenikoy• Kukurtlu• Ortabahce

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Hacıamca• Catalbayır• Abdalcık• Gulludere• Karabıyık
Gumushane	Kelkit District <ul style="list-style-type: none">• Devekorusu• Gunbatur• Gulluce• Akdag• Eski yol• Kozoglu• Kusluk• Guzyurdu• Agılık• Yarbasi• Yenyol• Bindal
Erzincan	Cayırlı District <ul style="list-style-type: none">• Yesilyaka• Tosunlar Tercan District <ul style="list-style-type: none">• Begendik• Karacaoren• Mustafabey• Muftuoglu• Topalhasan• Yaylacık Refahiye District <ul style="list-style-type: none">• Halitler• Kom (Yukarı Kalkancı)• Konak• Olgunlar

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Pinaryolu• Sahverdi• Ulucak• Yenyurt• Yurtbası• Cıragedik• Sahverdi
Sivas	Imranlı Distric <ul style="list-style-type: none">• Aydıncıyü• Becek• Cukuryurt• Dogancal• Karacayır• Karatas• Kasaplar• Kermeli• Kevenli• Kızıltepe• Koyunkaya• Kuz• Piredede• Tokluca• Uyanık• Yaylacık Zara District <ul style="list-style-type: none">• Adamfakı• Mahmutaga Ciftligi• Nasır• Sucak• Akpınar• Bestepe• Harmancık• Sivritepe

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
Kayseri	<ul style="list-style-type: none">• Tahtakement• Tutmac• Yavu
	Hafik District
	<ul style="list-style-type: none">• Topcuyenikoy – Celal Gokcek• Golcuk – Servet Akın
	Ulas District
	<ul style="list-style-type: none">• Catalpınar (Yesilyurt Mah.)• Karasar• Bogazdere• Kurtlukaya• Cakıllıpınar
	Altnyayla District
	<ul style="list-style-type: none">• Basoren• Harmandalı• Kızılhoyuk• Kurkcuyurt• Mutubey• Pasakoy• Taslıhoyuk
	Pınarbası District
	<ul style="list-style-type: none">• Asağı Borandere• Asağı Kızılcevlık• Hilmiye• Kırkgecit• Methiye• Tasoluk• Ücpınar• Yukarı Borandere
	Sarız District
	<ul style="list-style-type: none">• Altısogut• Ayranlık• Corakdere

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Daridere• Fettahdere• Gumusali• Incedere• Incemagara• Karapınar• Karayurt• Kemer• Kurudere• Kuscu• Oglakkaya• Tekneli• Yaylacı• Yesilkent• Sarız
Kahramanmaraş	Goksun District <ul style="list-style-type: none">• Bozhuyuk• Degirmendere• Tasoluk• Dogankonak• Fındıklıkoyak• Iricek• Keklikoluk• Mahmutbey• Mehmetbey• Tahirbey Andırın District <ul style="list-style-type: none">• Akifiye• Altınboga• Altınoluk• Bektaslı• Canbaz• Gokceli

**BTC PROJECT EIA
TURKEY**

Stakeholder Group	Name of Organisation
	<ul style="list-style-type: none">• Haciveliusagi• Kumarlı• Orhaniye• Torun• Yesilova
Adana	Ceyhan District <ul style="list-style-type: none">• Burhanlı• Degirmendere• Erenler• Gunyazi• Kurtkulagi Kasabası• Kurtpınarı Kasabası• Catakli – Necati Ozyavuz• Gunluce• Hamdilli• Imran• Sagırlar• Selimiye• Sogukpınar• Burhanlı
Osmaniye	Kadirli District <ul style="list-style-type: none">• Asagi Bozkuyu• Cıgcık• Gokcedam• Karatepe• Koyyeri• Sakarcalık• Yenigun• Yukarı Bozkuyu

ANNEX A2: STAKEHOLDERS CONSULTED UP TO MAY 2002

Stakeholder Group	Name of Organisation
National NGO	
Istanbul 12.10.2001	<ul style="list-style-type: none">• Anatolian Environmental Protection Assembly• Ari Movement• Association for Protection of Historical, Cultural and Environmental Heritages• Black Sea Foundation for Education, Culture and Nature Conservation• Foundation for Environment Protection and Revaluation of Packing Material Waste (CEVKO)• Chamber of Mapping and Land Surveying Engineers• Chambers of Marine Trade• Contemporary Education Foundation• Foreign Economic Relations Board of Turkey (DEIK)• Confederation of Turkish Revolutionary Workers Union (DISK)• Education Volunteers Association of Turkey• Environment Protection Foundation• Environment Volunteers Association• Environmental Protection and Greenification Council of Turkey• Foundation for Environment Protection• Foundation for Protection of Nature Life (DHKD)• Foundation of Earthquakes• Foundation of Education, Health and Environment of Turkey• Foundation of Istanbul• Foundation of Social and Economical History• Greenpeace• Healthy and Green Environment Society• Istanbul Chamber of Industry• LIONS• Middle East Technical University• National Oil Industry Association (PETDER)• Sisli Mayorship• Society of Nature's Warriors

- SOS Istanbul
- The Turkish Foundation for Combating Soil Erosion, for Reforestation and the protection of Natural Habitats (TEMA)
- The Marmara Group
- TRT News Agency
- Turkish Marine Environment Protection Association (TURMEPA)
- Yeditepe University

National NGOs

Ankara 15.10.2001

- Tradesmen and Craftsmen's Association of Kars
- Agricultural Association of Turkey
- ALARKO Holding
- American Embassy
- Anatolian Modern Education Foundation (ANACEV)
- Ankara Chamber of Commerce
- Ankara University Faculty of Agriculture
- Ankara University Faculty of Sociology
- Atilla Dogan Private company
- British Embassy
- Chamber of Agricultural Engineers
- Chamber of Mechanical Engineers
- Confederation of Petroleum Workers' Trade Unions
- Development Foundation of Turkey
- European Commission
- Eurasian Culture Foundation
- Foundation for Protection of Forestry and Nature
- Foundation of Science and Utopia
- MEG
- Ministry of Energy Transit Pipeline Group
- Ministry of Environment
- Rural Environment and Forestry Problems Research Association
- SHELL
- Sociology Foundation
- Sustainable Rural and Urban Development Association Ertan Karabiyik

- The Turkish Foundation for Combating Soil Erosion, for Reforestation and the protection of Natural Habitats (TEMA)
- TESK Tradesmen and Craftsmen's Confederation
- TMMOB Union of Chamber of Turkish Environment Engineers
- TMMOB Union of Chamber of Turkish Engineers and Architects
- TOBB Union of Chamber of Turkish Engineers and Architects
- Tradesmen and Craftsmen's Foundation of Erzurum
- Tradesmen and Craftsmen's Foundation of K.ahramanMaras
- Tradesmen and Craftsmen's Foundation of Kayseri
- Tradesmen and Craftsmen's Foundation of Turkey
- TURK-IS Confederation of Turkish Workers' Trades Union
- Turkish Association for the Conservation of Nature and Natural Resources
- Turkish Environment and Education Association
- UCTEA Chamber of Environmental Engineers
- Union of Chamber of Turkish Engineers
- Union of Chambers of Turkish Engineers and Architects
- Union of Turkish Bars
- Youth Club of Mersin

National Media

Istanbul 11.10.2001

- Ekovizyon
- CNN Turk
- Bayrak Radyo Tv
- Aksam
- TGRT
- Ihlas Haber Ajansi
- Finansal Forum
- Radikal
- Posta
- Enerji
- Kargo Haber
- Ulastirma Dunyasi
- BBC News
- Turkish Business World
- Kanal 7

- Yurt Haber Ajansi
- Aktuel Para
- Hurses
- NTV
- CNBC E
- Tasiyanlar
- Star Haber Ajansi
- Interstar
- Istanbul Ekonomi Gazetesi
- Enerji Petrol Gazetesi
- Activeline
- TV 8
- Dunya Gazetesi
- Dunya Enerji
- Dogal Gaz Lpg Petrol Ve Enerji Dergisi
- Anadolu Ajansi
- Finans Dunyasi
- 3e Dergisi
- Hurriyet
- Samanyolu Tv
- Zaman
- Haberturk.Com
- Ekonomi Ve Politikada Trend
- Turkish Daily News
- Tasimacilik / Doruk Gazete

Regional Stakeholders

17-28.10.2001

Ardahan 17.10.2001

- Local newspaper
- Attorney in Law
- Union for Chambers of Craftsmen and Artisans
- Dogu Anadolu Newspaper
- Chambers of Craftsmen and Artisans
- Chamber of Independent Accountants and Financial Advisors
- Ardahan Caucasian Beekeepers Association

**BTC PROJECT EIA
TURKEY**

- Association for the Establishment of Universities and Faculties in Ardahan
- Chamber of Independent Accountants and Financial Advisors
- Attorney of Law
- The Red Crescent Association for the District of Posof
- Chamber of Craftsmen and Artisans
- Kars 18.10.2001**
 - Chamber of Geological Engineers
 - Chef of the Red Crescent
 - Directors of Kars Commercial Stock Exchange
 - Chamber of Commerce and Industry
 - TEMA
 - Halk Newspaper
- Erzurum 19.10.2001**
 - Association of Volunteers for Environment
 - Turkish Women's Union
 - Erzurum Cadastre Office
 - TEMA Foundations
 - Chamber of Geology Engineers
 - Association of Young Businessmen
 - Ataturk University
- Erzincan 20.10.2001**
 - Turkiye Press
 - Chamber of Mechanical Engineer
 - Association of Helpful People
 - Directorate of Agriculture
 - Erzincan Education Association
 - Erzincan Radio and Television Association
 - Ihlas News Agency
 - ATV-Sabah Press
 - Anadolu Agency
 - Dogan News Agency
 - Dogu Press
 - Sub-Governor Environmental Directorate
 - Bayburt Environmental Directorate
 - Sub-Governor Agricultural Directorate
- Gumushane 21.10.2001**
 - Kızılay Association

Sivas 22.10.2001

- The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats
- Gumushane Governor
- Association of Technical Employee
- Democratic Gumushane Newspaper
- Association of A-Environmental Protection
- Young Businessmen Association
- Tradesman and Artisans Bail Cooperative
- Gumushane Chamber of Trade
- Kusakkaya Newspaper
- Cumhuriyet University
- TEMA
- Environment Engineer Department
- Geology Engineer Association
- Sivas Province Representative
- TEMA Province Organisation
- Anadolu Agency
- Ovacık Village Headman
- Sivas Mechanical Engineer Association
- Cumhuriyet University
- Chamber of Agriculture

Kayseri 24.10.2001

- MHP Political Party Representatives
- DYP Political Party Representative
- Municipality
- Governor
- Kocasinan Sub-governor
- Association of Culture and Tourism
- Melikgazi Subgovernor
- Kayseri Governor
- Chamber of Mechanical Engineer
- Tradesman and Artisans Bail Cooperative
- Data technical Information Company
- Confederation of Rights of Turkish Workers Trades Union
- Association of Turkish Education

- The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats
- Directorate of Culture
- Erciyes University
- Anadolu Agency
- Kızılay Association
- Directorate of State Water
- Directorate of Environment
- Directorate of Agriculture
- Chamber of Agricultural Engineers
- Directorate of Forestry
- Directorate of Culture
- Directorate of Civil Protection
- Directorate of Electric Company
- Directorate of Electric Company Kayseri and villages
- Cifter Maps Company
- New Kayseri Newspaper
- Area of Organised Commerce
- Turkish Telecommunication
- Chamber of Commerce
- Directorate of Agriculture
- Sub-Governor Public Library
- Directorate of Museum
- Association of Environmental Protection
- Kahramanmaras Governorship
- Civil Engineer Association
- Mechanical Engineer Association
- Chamber Of Commerce And Industry Association
- Ministry Of Forestry
- Province Environment Directorate
- Province Member Of Board Of Directors
- Member Of Board Of Directors
- Chief Of Tekeli Yorukleri Association
- Member Of Board Of Directors Of Tekeli Yorukleri

Kahramanmaras 25.10.2001

Osmaniye 26.10.2001

Adana 27 / 28 .10.2001

- Yorukler Social Culture And Solidarity Association
- Tema Province Representative
- Tema Province Representative Assistant
- Tema Province Member Of Board Of Directors
- Member Of Ak-Cev Association
- Governorship
- 5 January Lions Club
- Adana Industrial and Businessman Association
- Gunay Rotary Club
- Cukurova University
- Environmental Friendship Association
- The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats
- Chamber of Geophysics Engineer
- Chamber of Mechanical Engineer
- Association of Environmental Protection and Problems in Adana
- Tradesman and Artisans Bail Cooperative
- Adana Bar Association
- Cukurova Association of Tourism and Hotels
- Rotary Club
- Zaman Newspaper
- Marjinal Newspaper
- Metro Television
- Anadolu Agency
- Ses Newspaper
- Adana Chamber of Trade
- Cumhuriyet Newspaper
- Voice of Nature Newspaper
- K Television Channel
- Channel A Television
- Duyur Newspaper
- Ihlas News Agency
- Turkish Radio and Television
- D News Agency

Meeting with Major NGOs

13 / 14 . 12 . 2001

- Metro Television
- Local News Newspaper
- WWF/Bird Life/DHKD (WWF and Birdlife International are represented by DHKD)
- Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats (TEMA)
- Foundation for the Conservation and Promotion of the Environmental and Cultural Heritage (CEKUL)
- Turkish Marine Environment protection Association (TURMEPA)
- IFC
- Economic and Social Studies Foundation of Turkey (TESEV)
- Istanbul Technical University
- Greenpeace

Geology Meetings 25.01.2001

- Chambers of Geologists
- METU Geology Department
- Chambers of Civil Engineers
- Chamber of Environmental Engineers
- Turkish Environmental Association
- MTA
- Hacettepe University Geology Department

Pollution Prevention Meeting

Ankara - 31.01.2002

- Turkish World Life
- Hacettepe University department of Environmental Engineers
- Chamber of Environmental Engineers
- MoE
- Maritime Export

Community Relations Meeting

Ankara 01.02.2002

- DSI Rural and Urban Development foundation
- UNDP
- Development Foundation of Turkey (TKV)
- Social Sciences Foundation
- Development Foundation of Turkey

Employment Meeting

Ankara - 04.02.2002

- State Employment Agency (ISKUR)

**ANNEX A2: STAKEHOLDERS CONSULTED DURING PUBLIC DISCLOSURE PERIOD
JULY-AUGUST 2002**

State Authority

Meetings 04.07.2002

– 16.08.2002

- Ministry of Forestry
- Ministry of Agriculture
- General Directorate of Mineral Research and Expropriation
- General Directorate of Rural Services
- Ministry of Environment Department of Waste Management
- Ministry of Environment general directorate of Environmental Impact Assessment and Planning
- Ministry of Public Works and Settlement / General Directorate of Technical Research and Application
- Ministry of Transportation / General Directorate of Railways , Harbors and Airports Construction
- Under secretariat of Marine Affairs
- Ministry of Health
- Ministry of Culture
- Ministry of Tourism
- Ministry of Energy and natural Resources General Directorate of State Hydraulic Works
- Ministry of Public Works and Settlement General Directorate of Highways

Governor Meeting

Ankara – 15 / 28

.07.2002

- Ardahan Governorship
- Kars Governorship
- Erzurum Governorship
- Erzincan Governorship
- Gumushane Governorship
- Sivas Governorship
- Kayseri Governorship
- Kahramanmaras Governorship
- Osmaniye Governorship

- Adana Governorship
- Sub-Governor**
22-30.07.2002
- Ardahan**
- Hanak Sub-governorship
 - Damal Sub-governorship
 - Posof Sub-governorship
 - Merkez (Gole) Sub-governorship
 - Gole Sub-governorship
- Kars**
- MERKEZ (Selim) Sub-governorship
 - Selim Sub-governorship
 - Sarıkamıs Sub-governorship
- Erzurum**
- Horasan Sub-governorship
 - Senkaya Sub-governorship
 - Koprukoy Sub-governorship
 - Pasinler Sub-governorship
 - Merkez (Ilica) Sub-governorship
 - Ilica Sub-governorship
- Erzincan**
- Askale Sub-governorship
 - Cayırlı Sub-governorship
 - Tercan Sub-governorship
- Gumushane**
- Refahiye Sub-governorship
- Sivas**
- Kelkit Sub-governorship
 - Imranlı Sub-governorship
 - Merkez (Zara) Sub-governorship
 - Zara Sub-governorship
 - Hafik Sub-governorship
 - Ulas Sub-governorship
- Kayseri**
- Altınyayla Sub-governorship
 - Pınarbası Sub-governorship
- Kahramanmaraş**
- Sarız Sub-governorship
 - Göksun Sub-governorship
 - Andırın Sub-governorship
- Osmaniye**
- Merkez (Kadirli) Sub-governorship
 - Kadirli Sub-governorship

Adana

- Ceyhan Sub-governorship

**VILLAGE HEADS
(MUHTARS)**

Ardahan

Hanak District

- Cavdarlı
- Avcılar
- Cimlicayır
- Koyunpınar
- Bastoplu

Damal District

- Burmadere

Posof District

- Kayını
- Asmakonak
- Cakırkoc
- Kumlukoz
- Turkgozu
- Ozbası
- Ugurca
- Cayırcimen
- Merkez
- Incedere
- Dogrular

Gole District

- Cakırzum
- Dereyolu
- Yenidemirkapı

- Salimbey Mah
- Tahtakıran
- Senemoglu
- Karlıyazı
- Okcu
- Callıdere
- Cobankoy
- Kalecik
- Balcesme
- Gulistan
- Kucuksutluce
- Dagcı
- Kartalpınar)
- Besiktas
- Kocakoy
- Tepesu
- Ortagecit

Kars

Selim District

- Sarıgun
- Darbogaz
- Bozkus
- Baykara
- Tuygun
- Yaylacık
- Baskoy
- Karakale
- Yenice
- Hasbey
- Beykoy
- Akcakale
- Bogaztepe
- Kucukbogatepe

Sarıkamış District

- Kurbançayı
- Yenikoy

Erzurum

Horasan District

- Yukarı Bademozu
- Yukarı Horum
- Kırdikme
- Kalender

Koprukoy District

- Yapagi
- Yukarı Sogutlu
- Cami Kebir Mah.
- Asagi Cakmak

Pasinler District

- Korucu
- Alvar (belde)
- Altınbasak
- Ovakoy
- Alvar
- Cakirtas
- Tepecik
- Esemce
- Buyuk Tug
- Yigit Tası
- Sunak

Ilca District

- Alaybey
- Kuscu
- Alaca
- Kayapa
- Kahramanlar

Askale District

- Yenikoy
- Kukurtlu
- Ortabahce
- Hacıamca
- Catalbayır
- Abdalcık

- Gumushane**
- Gulludere
 - Karabiyık
- Kelkit District**
- Devekorusu
 - Gunbatur
 - Gulluce
 - Akdag
 - Eskiyol
 - Kozoglu
 - Kusluk
 - Guzyurdu
 - Agılık
 - Yarbasi
 - Yenyol
 - Bindal
- Erzincan**
- Cayırlı District**
- Yesilyaka
 - Tosunlar
- Tercan District**
- Begendik
 - Karacaoren
 - Mustafabey
 - Muftuoglu
 - Topalhasan
 - Yaylacık
- Refahiye District**
- Halitler
 - Kom (Yukarı Kalkancı)
 - Konak
 - Olgunlar
 - Pınaryolu
 - Sahverdi
 - Ulucak
 - Yenyurt
 - Yurtbasi

Sivas

- Cıragedik
- Sahverdi

Imranlı Distric

- Aydınkoyu
- Becek
- Cukuryurt
- Dogancal
- Karacayır
- Karatas
- Kasaplar
- Kermeli
- Kevenli
- Kızıltepe
- Koyunkaya
- Kuz
- Piredede
- Tokluca
- Uyank
- Yaylacık

Zara District

- Adamfakı
- Mahmutaga Ciftligi
- Nasır
- Sucak
- Akpınar
- Bestepe
- Harmancık
- Sivritepe
- Tahtakement
- Tutmac
- Yavu

Hafik District

- Topcuyenikoy – Celal Gokcek
- Golcuk – Servet Akın

Ulas District

- Catalpınar (Yesilyurt Mah.)
- Karasar
- Bogazdere
- Kurtlukaya
- Cakılıpınar

Altınyayla District

- Basoren
- Harmandalı
- Kızılhoyuk
- Kurkcuyurt
- Mutubey
- Pasakoy
- Taslıhoyuk

Kayseri

Pınarbaşı District

- Asağı Borandere
- Asağı Kızılceviklik
- Hilmiye
- Kırkgecit
- Methiye
- Tasoluk
- Ücpınar
- Yukarı Borandere

Sarız District

- Altısogut
- Ayrınlık
- Corakdere
- Dardere
- Fettahdere
- Gumusali
- Incedere
- Incemagara
- Karapınar
- Karayurt
- Kemer

- Kurudere
 - Kuscu
 - Oglakkaya
 - Tekneli
 - Yaylacı
 - Yesilkent
 - Sarız
- Kahramanmaraş**
- Goksun District**
- Bozhuyuk
 - Degirmendere
 - Tasoluk
 - Dogankonak
 - Fındıklıkoyak
 - Iricek
 - Keklikoluk
 - Mahmutbey
 - Mehmetbey
 - Tahirbey
- Andırın District**
- Akifiye
 - Altınboga
 - Altınoluk
 - Bektaslı
 - Canbaz
 - Gokceli
 - Haciveliusagi
 - Kumarlı
 - Orhaniye
 - Torun
 - Yesilova
- Adana**
- Ceyhan District**
- Burhanlı
 - Degirmendere
 - Erenler
 - Gunyazı

Osmaniye

- Kurtkulagi Kasabası
- Kurtpınarı Kasabası
- Cataklı – Necati Ozyavuz
- Gunluce
- Hamdilli
- Imran
- Sagırlar
- Selimiye
- Sogukpınar
- Burhanlı

Kadirli District

- Asagi Bozkuyu
- Cıgıcık
- Gokcedam
- Karatepe
- Koyyeri
- Sakarcalık
- Yenigun
- Yukarı Bozkuyu

National Media
Istanbul 08.07.2002

- Transportation World Newspaper
- Hurriyet
- Yeni Devir Newspaper
- CNBC-E
- Aksam
- Ege University
- TV 8
- Anadolu Agency
- Dünya
- Türkiye
- Enerji
- UTA Logistic
- Tasımacılık
- 3E Electrotech

- Radikal
- Zaman
- IBS Energy Line
- Turkish Business World
- CNN Turk
- Dogan News Agency
- Energy Petrol & Gas
- Petrolcü Magazine
- Milliyet
- NTV
- Samanyolu TV
- Metro plaza Gazetesi
- Turkish Daily News
- Cumhuriyet
- Finansal Forum
- UBA
- Sabah
- Gürsu Haber Ajansı
- Teknik Publishing

**National NGO
Meeting
Istanbul
09.07.2002**

- Peace with the Nature
- Sisli Mayor ship
- TÜRCEK
- Nature Warriors
- Turkish Marine Research Center
- Mimar Sinan University
- Turkish Straits Traffic Control Directorate
- Turkish Environmental Protection and Greenification Foundation
- TÜSİAD(Turkish Businessmen Association)
- Black sea Foundation
- Foundation for Support of Contemporary Living
- Chamber of Marine Trade

**BTC PROJECT EIA
TURKEY**

- Peace with the Nature
- Environment Volunteers Cooperative
- TESEV (Economic and Social Studies Foundation of Turkey)
- TEMA (The Turkish Foundation for Combating Soil Erosion, for Reforestation and the Protection of Natural Habitats)
- Health and Green Environment Society
- CEVRE TED
- GREENPEACE
- Istanbul Chamber of Commerce
- MARMARA Group Foundation
- EGE University
- Istanbul Chamber of Commerce
- CEKÜL (Foundation for the Conservation and Promotion of the Environmental and Cultural Heritage)
- Anatolian Environment Assembly
- GYIAD (The Young Businessmen's Association)
- ARI Movement
- Yıldız Technical University
- Environment and Stray Animals Protection Foundation

**National NGO
Meeting
Ankara
11.07.2002**

- Foundation of Archeology
- ANACEV(Anatolian Modern Education Foundation)
- Anatolian Modern Education Foundation
- Ankara Construction Contractor's Association (ANİMDER)
- Ankara University
- Ankara University (Energy Studies)
- Ankara University (Rural and Urban Development Foundation)
- Ankara University (Engineering Faculty)
- Ankara University (Faculty of Agriculture)
- Ankara University Agriculture Department
- Ankara University Agriculture Department(Soil branch)
- ASAM

**BTC PROJECT EIA
TURKEY**

- Association of Protection of Black sea
- United Nations ULD Turkey Representative
- Calık Energy Industry and Trade
- Ministry of Environment
- Chamber of Environmental Engineers
- CNN Türk
- DHKD (Society for Protection of Natural Life Ankara Branch)
- Dünya Daily Newspaper
- EBA Energy Magazine
- Ministry of Energy
- Engineering Arch.Institute
- Engineering Arch.Institute
- Environment Protection Foundation)
- ESAM (Association of Economic and Social Research)
- EU
- Financial Forum Newspaper
- Foundation of Protection of Turkey's Nature
- Gazi University
- Chamber of Environmental Engineers
- Chamber of Mapping and Land Surveying Engineers
- HKMO
- ILO
- INTES (International Construction Contractors Association)
- Chamber of Geologists
- Kardesler Construction Company
- KOKSAV (Strategic Research Foundation)
- Chamber of Mechanical Engineers
- Middle East Technical University
- Chamber of Petroleum Engineers
- PUİS (Confederation of Petroleum Workers' Trade Unions)
- Research Association of Rural Environment and Forestry
- Rural and Urban Development Foundation
- Chamber of City Planning
- Soil Science Society
- Sustainable Rural and Urban Development(SÜRKAL)

**BTC PROJECT EIA
TURKEY**

- TABA (Turkish American Businessmen Association)
- TESK (Tradesmen and Craftsmen's Foundation of Turkey)
- TMMOB (Chamber of Turkish Engineers and Architects)
- TPAO
- TPIC
- Türk-İs Labour Union
- Turkish Bar Associations
- Turkish Contractors Association
- Turkish Development Foundation
- UNDP
- UNOCAL
- UNOCAL Khazar
- US Embassy
- WB

**National NGO
and Media
Meetings**

**Ardahan
15.07.2002**

- Chamber of Trade and Commerce-Chairman of the Chamber
- Major
- Union of Chambers of Tradesmen – Chairman of the Union
- İstiklal Ghazi
- 23rd of February Ghazi
- Directorate of National Education
- Kazar East Anatolia
- Director of City Planning
- Muhtar of Ortagecit Village

Kars 16.07.2002

- Public Works Branch Director
- Public Works and Settlements Deputy Director
- Muhtar of Kozkale Village
- Muhtar of Yagiacak Village
- Muhtar of Selim Akcakale Village
- Muhtar of Porsuklu Village
- Muhtar of Susuz B. Catak Village

- Chairman of Kızılay/ Kars Branch
- Chambers of Tradesmen and Craftsmen
- Chairman of Small-scale Industry Site
- City Council
- State Institute of Statistics/ Regional Director
- Provincial Director of Tourism
- Directorate of Provincial Administration
- Provincial Director of Rural Services
- Chairman of Kars NorthEast Journalists Society
- Engineer of Küçük Bogaztepe
- Muhtar of Caglayan Village
- Muhtar of Hasbey Village
- Muhtar of Beyköyü
- Chamber of Geology Engineers Representative of Kars Province
- State Hydraulic Works-Environmental Engineer
- Directorate of Health – Provincial Directorate
- The Turkish Foundation for Combating Soil
- Erosion, for Reforestation and The Protection of Natural Habitats-
Representative of Adana Province
- Aksam Newspaper
- Representative of Chamber of Agricultural Engineers
- Social Charity and Solidarity Foundation
- Halk Newspaper
- Muhtar of Sürmeli Village
- Muhtar of Selim Tuygun Village
- Muhtar of Bozkurt Village
- Muhtar of Karekale Village
- Muhtar of Gürbüzler Village
- Provincial Director of Culture
- Director of National Education
- Provincial Director of Agriculture
- Provincial Director of Rural Services
- Directorate of Provincial Administration
- Provincial Director of Tourism
- Regional Director of State Hydraulic Works

**BTC PROJECT EIA
TURKEY**

- City Council

Erzurum
17.07.2002

- TEMA
- Chairman of Chamber of Mechanical Engineers
- Anadolu Agency
- Ufuk 2000 Newspaper
- Erzurum Newspaper
- Zaman Newspaper
- Palandöken Newspaper
- Canal 25 TV
- Chamber of Mapping Engineers
- Chamber of Agricultural Engineers- Branch Chairman
- Association of Environmental Volunteers
- Erzurum Trade Exchange
- Turkish Charity Association
- Chamber of Erzurum Trade and Commerce
- Ataturk University Center of Research for Environmental Issues-
Director of the Center
- Representative of Confederation of Turkish Workers' Trades Union
9th Region

Gümüşhane
18.07.2002

- Provincial Directorate of Environment-Provincial Director
- Trade and Commerce
- Director of Dumlupınar Primary School- representative of TEMA
- Chamber of Trade and Commerce
- Provincial Director of Planning and Coordination
- Provincial Directorate of Environment
- Provincial Directorate of Health – Provincial Director
- Provincial Directorate of Environment
- Directorate of Public Works and Settlement
- Provincial Directorate of Tourism
- Branch of Kızılay- Chairman
- Association of Rural Services - Chairman

**BTC PROJECT EIA
TURKEY**

- Provincial Directorate of Rural Services
- Director of Public Works and Settlement
- Anadolu Agency
- Owner of Kusakkaya Newspaper
- Democratic Gümüşhane Newspaper-Editor Assistant
- Provincial Directorate of Culture
- Provincial Directorate of Rural Services- Trainee

Sivas 19.07.2002

- Chamber of Trade and Commerce
- Municipality
- National Education Deputy Director
- Chamber of Mechanical Engineers
- Food and Environment Director of Kars Branch
- Regional Directorate of Chamber of Agriculture, 7th Region
- Union of Chambers of Tradesman and Craftsman - General Secretary
- Provincial Directorate of Culture
- Provincial Director of Tourism
- Representative of Museum Director
- Directorate of Forestry
- Sivas Radio TV
- Hürdoğan Newspaper
- Sivas Radio TV
- Association of Culture in Sivas
- Branch Directorate of Labour
- Branch Directorate of Labour
- Muhtars Association
- Provincial Directorate of Agriculture
- TEMA
- General Directorate of State Hydraulic Works
- Directorate of Industry and Trade
- TRT Regional Representative
- Provincial Directorate of Environment
- Director of Public Works and Settlement
- Deputy of Major

Erzincan

22.07.2002

- Kızılay's Branch
- Organised Industry Region
- İhlas News Agency
- Provincial Directorate of Culture
- Provincial Directorate of Agriculture
- Chamber of Commerce and Trade
- Chambers of Turkish Engineers and Architects
- Provincial Director of Commerce and Trade
- TEMA
- Sabah Newspaper –Can TV
- Cihan News Agency
- Star TV
- Erzincan Radio TV
- Owner of Özsöz Newspaper
- Provincial Directorate of Environment
- TRT Erzincan Reporter
- Provincial Directorate of Agriculture
- Governor
- Deputy Governor

Kayseri

23.07.2002

- Erciyes University Engineering Faculty
- Chamber of City Planning
- Provincial Directorate of Environment
- Morals, Culture, Environment Association
- Chamber of Architects
- Chairmanship of Kızılay Branch
- Chamber of Agriculture –Kayseri Branch
- Chamber of Mapping and Land surveying Engineers
- Provincial Directorate of Environment
- Provincial Directorate of Environment
- Chairman of Kayseri Muhtars Association
- Chairman of Chamber of Doctors – Kayseri
- Owner of Erciyes Magazine, Lawyer, Association of Kayseri Culture

and Tourism

- Melek Gazi Chamber of Agriculture
- Turkish Women Union
- GESİAD General Secretary
- MUSIAD- Chairman
- Chamber of Commerce
- Director of Health
- Provincial Director of Environment
- Governor Deputy
- Erciyes TV Reporter

Kahramanmaras

24.07.2002

- Dean of KSU Engineering and Architecture Faculty
- Deputy Rector of KSU
- Provincial Directorate of Environment
- KSU Dept. of Geography
- A.U.D.T.C.F. Geography Dept
- Provincial Directorate of Environment
- Andırın Postası Newspaper
- Union of Chambers of Tradesmen and Craftsmen
- Kahramanmaras Yorum Newspaper
- Anadolu Agency – TEMA Representative
- Representative of TEMA
- Chamber of Trade and Commerce
- Chamber of Electrical Engineers

Osmaniye

- Ak Party
- Muhtar of Bozkuyu Vilage
- Muhtar of Cigdemlik Village
- Kadirli District Commandership of Gendarme
- Osmaniye Province Commandership of Gendarme
- Kadirli District Police Headquarter
- Osmaniye Province Police Headquarter
- Deputy Director of Forestry Management
- Director of City Agriculture Affairs

- Düziçi Erdem Newspaper
- Tekeli Yuruks
- Chairman of Muhtars Association
- Chamber of Mapping and Land surveying Engineers
- Chairman of Osmaniye Anatolian Workers Association
- Osmaniye Morals, Culture and Environment Association
- Muhtar of Yenigün Village
- Muhtar of Kesin Village
- Muhtar of Karasuyu Village
- Muhtar of Yukarı Cıyanlı Village
- Confederation of Turkish Workers' Trades Union
- TEMA
- Muhtar of Cıgıcık Village
- Gazi Uni. Public Administration
- Muhtar of Y. Bozkuyu
- Muhtar of Topraktepe Village
- Merhaba Newspaper- Kadirli
- Provincial Director of Environment
- Provincial Directorate of Environment
- Directorate of Public Works and Settlement
- Provincial Directorate of Culture - Osmaniye
- Deputy Treasurer
- Provincial Directorate of Industry and Trade
- Association of the Friends of the Environment
- DYP Central District Deputy Chairman
- Chamber of Trade, Kadirli Branch, Member of Administration Committee

Adana Medisa Meeting 25.07.2002	
--	--

- Adana Governorship Press Consultancy Director
- Chamber of Trade
- Cukurova Press Association
- Press Association
- Provincial Directorate of Environment

- Doruk Newspaper
- Anadolu Agency
- Zirve Newspaper
- Metro TV
- Toros Newspaper
- Anadolu Agency
- NTV
- Ekspres newspaper
- Zaman Newspaper
- Bölge Newspaper
- TRT
- Chamber of Trade
- Yeni Adana Newspaper
- Aksam Newspaper
- Director of City Environment Affairs
- Chamber of Industry-Adana

**Adana NGO
Meeting
26.07.2002**

- Provincial Directorate of Tourism
- Governor of Ceyhan & Yumurtalık
- Ministry of Forestry- Regional Directorate/East Mediterranean
- Regional Directorate of Forestry
- Provincial Directorate of Health-Engineer
- Provincial Directorate of Environment-Provincial Director
- Directorate of Preservation of Cultural and Natural Entities
- 6. Regional Directorate of State Hydraulic Works
- Directorate of Public Works and Settlement
- National Real Estate Treasury Board
- Provincial Directorate of Rural Services
- Regional Directorate of Mineral Research and Exploration/East Mediterranean
- General Directorate of State Rail Ways
- Chamber of Turkish Engineers and Architects
- President of Kurtkulagi Municipality

**BTC PROJECT EIA
TURKEY**

- President of Kurtpınarı Municipality
- Provincial Director of Industry and Trade
- Provincial Directorate of Health-Director
- Chamber of Environmental Engineers
- Provincial Bank 8.th Region- Deputy Regional Director
- Chamber of Mechanical Engineers
- Chamber of Geology Engineers
- Chamber of Mapping and Land surveying Engineers
- TEMA
- East Mediterranean Environmental Protection Assembly (CETKO)
- Chamber of Electrical Engineers
- State Highways
- Village Military Police
- Regional Directorate of Rural Services
- Provincial Directorate of Agriculture
- Chamber of Agricultural Engineers
- Provincial Commandership of Gendarmerie

Community Meetings	
Ardahan	<ul style="list-style-type: none">• Posof - Cakirkoc Village• Posof – Türközü Village• Hanak – Cimlicayır Village
Kars	<ul style="list-style-type: none">• Sarıkamıs – Yeniköy Village• Merkez – Büyükbogatepe Village• Selim – Tuygun Village• Selim – Akcakale Village
Erzurum	<ul style="list-style-type: none">• Ilıca – Kahramanlar Village• Ilıca – Pasayurdu Village• Pasinler – Alvar Village• Pasinler – Cakirtas Village• Akcakale – Yeniköy Village
Erzincan	<ul style="list-style-type: none">• Refahiye – Alacaathı Village• Cayırlı – Basköy Village• Cayırlı – Yesilyaka Village• Tercan – Cadırkaya Village

- Tercan – Cadırkaya –Gözeler Quarter
- Gümüşhane**
 - Kelkit - Yenyol
- Sivas**
 - Zara – Tekkeköy Village
 - Zara – Nasır Village
 - İmranlı – Koyunkaya Village
 - Altınyayla – Tashhöyük Village
- Kayseri**
 - Pınarbası – Yukarıborandere Village
 - Sarız – Karayurt Village
- Kahramanmaraş**
 - Andırın – Geben Village
 - Andırın – Kesim Village
 - Andırın – Altınboga Village
 - Göksun – Mehmetbey Village
 - Göksun – Tasoluk Village
- Osmaniye**
 - Kadırlı – Topraktepe Village
- Adana**
 - Ceyhan – Günlüce Village
 - Ceyhan – Yenigün Village

ANNEX A2: AUTHORITIES CONSULTED DURING PHASE 1 CONSULTATION

AUTHORITIES

- General Directorate of State Hydraulic Works
- General Directorate of State Highways
- General Directorate of Forestation and Erosion Control
- BOTAŞ Petroleum Pipeline Corporation
- Ministry of Environment
- General Directorate of Bank of Provinces
- General Directorate of Rural Services
- General Directorate of Preservation of Cultural and Historical Heritage
- General Directorate of Mineral Works
- General Directorate of State Railways
- General Directorate Turkish Electricity Generation and Transmission Corporation
- NATO Pipeline Directorate
- General Directorate of Forestry
- General Directorate of Turkish Electricity Distribution Corporation
- General Directorate of National Parks and Game-Wildlife
- General Directorate of Workshops and Organized Industrial Districts and Estates
- General Directorate of Agriculture Production and Development
- General Directorate of Railways, Harbours and Airports
- Governorship of Ardahan
- Governorship of Kars
- Governorship of Erzurum
- Governorship of Erzincan
- Governorship of Gumushane
- Governorship of Sivas
- Governorship of Kayseri
- Governorship of Kahramanmaras
- Governorship of Osmaniye
- Governorship of Adana

**Appendix A3: ESIA Information Package,
Example Project Leaflet and
Project Posters (English)**

BAKU-TBILISI-CEYHAN PIPELINE PROJECT

Turkey Section

Environmental and Social Impact Assessment (ESIA)

Information Package

Date of Issue: 9th October 2001

TABLE OF CONTENTS

1	<i>INTRODUCTION</i>	4
1.1	<i>THE PROJECT</i>	4
1.2	<i>THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT</i>	4
1.3	<i>THIS DOCUMENT</i>	4
1.4	<i>PROJECT TIMETABLE</i>	5
1.5	<i>FURTHER INFORMATION</i>	5
2	<i>THE BTC PIPELINE PROJECT</i>	7
2.1	<i>OVERVIEW</i>	7
2.2	<i>BACKGROUND AND PROJECT ALTERNATIVES</i>	7
2.3	<i>PROJECT BENEFITS</i>	11
2.4	<i>THE PROJECT PARTICIPANTS</i>	11
2.5	<i>PROJECT COMPONENTS</i>	12
2.5.1	<i>Pipeline and Associated Facilities</i>	12
2.5.2	<i>Above Ground Installations (AGIs)</i>	12
2.5.3	<i>Ceyhan Marine Terminal</i>	13
3	<i>REGULATORY CONTEXT</i>	14
3.1	<i>REGULATORY FRAMEWORK</i>	14
3.2	<i>REQUIREMENTS FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT</i>	14
3.3	<i>TURKISH REGULATIONS, STANDARDS AND GUIDELINES</i>	15
3.4	<i>INTERNATIONAL PROTOCOLS AND CONVENTIONS</i>	15
3.5	<i>REQUIREMENTS OF INTERNATIONAL INSTITUTIONS</i>	15
3.6	<i>BOTAŞ ENVIRONMENTAL POLICY</i>	15
4	<i>THE EXISTING ENVIRONMENT</i>	17
4.1	<i>BASELINE STUDIES</i>	17
5	<i>POTENTIAL IMPACTS AND MITIGATION</i>	19
5.1	<i>INTRODUCTION</i>	19
5.2	<i>POTENTIAL IMPACTS</i>	19
5.3	<i>MITIGATION</i>	19
6	<i>PUBLIC CONSULTATION AND DISCLOSURE</i>	22
6.1	<i>PUBLIC CONSULTATION AND DISCLOSURE PLAN (PCDP)</i>	22

**BTC PROJECT EIA
TURKEY**

6.2	<i>PHASE 1: INFORMATION DISTRIBUTION</i>	23
6.3	<i>PHASE 2: IMPACT IDENTIFICATION AND MITIGATION</i>	23
6.4	<i>PHASE 3: DISCLOSURE OF THE DRAFT EIA</i>	23
6.5	<i>PHASE 4: DURING CONSTRUCTION AND OPERATION</i>	24

1 INTRODUCTION

1.1 THE PROJECT

The Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC P/L) Project aims to transport Caspian crude oil via the Azerbaijan Republic, Georgia and the Republic of Turkey to the Mediterranean Sea. Crude oil will be supplied to the international markets via a marine terminal to be constructed on the Gulf of Iskenderun in Ceyhan. The BTC P/L will be capable of transporting up to 50 million metric tonnes per year / 1 million barrels per day of crude oil. The entire pipeline route is shown on Figure 1.1.

1.2 THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

In line with international best practice and Turkish standards and guidelines, a full Environmental and Social Impact Assessment (EIA) will be undertaken for the BTC P/L Project. The aim of an EIA process is to ensure that all potential environmental and social impacts of a project are fully investigated and where necessary, mitigated.

Essential elements of an EIA are:

- identification and documentation of existing environmental and social baseline conditions
- identification and assessment of potential impacts that may arise during construction and operation of the pipeline and the marine terminal
- consultation and dialogue with stakeholders (local, national and international) to ensure that all issues and concerns are identified and addressed
- development of management measures to mitigate potential impacts and enhance positive impacts associated with the development
- disclosure of the EIA to ensure that stakeholders have a full understanding of the environmental and social impacts of the Project, and associated mitigation measures

1.3 THIS DOCUMENT

This ESIA Information Package deals solely with those parts of the BTC P/L Project that are within the Republic of Turkey. It is intended to provide initial information about the Project to parties interested in the Turkish section of the Project.

This ESIA Information Package is structured into the following sections:

- Section 1: Introduction
- Section 2: The BTC Pipeline Project. A description of the Project, the benefits of the Project and the organisations that are undertaking project description and operation
- Section 3: Regulatory Context. An overview of the regulations and standards that will govern the Project and in particular the completion of the EIA
- Section 4: The Existing Environment. An overview of the environment through which the pipeline will pass

- Section 5: Potential Impacts and Mitigation
- Section 6: Public Consultation and Disclosure

1.4 PROJECT TIMETABLE

The key milestones for the Project are outlined below:

- Basic Engineering: October 2000 – May 2001
- Detailed Engineering: June 2001 – June 2002
- EIA: July 2001 – April 2002
- Construction: June 2002 for 32 months
- Operation: 2005

1.5 FURTHER INFORMATION

The following material will be developed as the EIA progresses and made available to interested parties during the consultation process:

- Project Summary document, describing the Project's key features
- Leaflet describing the proposed project, for wider dissemination
- ESIA Information Package (this document)
- Public Consultation and Disclosure Plan (PCDP), outlining the approach for stakeholder consultation
- Draft EIA including an executive summary
- Final EIA including an executive summary

For further information please contact:

ŞÜKRAN ÇAĞLAYAN
(Representing the Project Participants)
(1) BP Exploration (Caspian Sea) Ltd

Söğütözü Mahallesi, Söğütözü Caddesi No:
31 Kat: 7

06520 Söğütözü / ANKARA
Phone: 0 (312) 287 1234
Fax: 0 (312) 287 4009

EBRU DEMIREKLER YILDIZ
BOTAŞ
Baku-Tbilisi-Ceyhan Crude Oil
Pipeline Directorate, Söğütözü
Mahallesi, Söğütözü Caddesi No: 31,
Kat: 1
06520 Söğütözü / ANKARA
Phone: 0 (312) 285 44 55 / 2067
Fax: 0 (312) 284 11 34

Figure 1.1 BTC P/L Project Route



2 THE BTC PIPELINE PROJECT

2.1 OVERVIEW

The Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC P/L) Project will comprise four key stages:

- Basic Engineering (B.E)
- Detailed Engineering (D.E)
- Pipeline and Marine Terminal Construction; and
- Operation

The routing of the pipeline and main project components as determined during Basic Engineering (B.E) in Turkey is shown on Figure 2.1. The proposed location for the marine terminal at Ceyhan is shown on Figure 2.2. The alignment of the BTC P/L route will be further refined during the ongoing Detailed Engineering (D.E) phase of the Project.

The Turkish section of the BTC P/L is routed between the Georgia-Turkey border in the Posof District (Turkgozu border gate) and Ceyhan, with a total length of about 1,070km. From the border, the pipeline will cross the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana, to the marine terminal, which is to be constructed at Ceyhan.

Land acquisition and pipeline construction is planned to begin in June 2002, lasting for 32 months. The start date for operation of the pipeline is 2005.

2.2 BACKGROUND AND PROJECT ALTERNATIVES

Determination of the proposed pipeline route for the export of Caspian oil to world markets was a time-consuming and complex task. In addition to the traditional assessment criteria for routing, other significant factors have had to be assessed, including security issues, political considerations and the environmental and social issues associated with the transport of the oil.

During 1997, feasibility studies undertaken by World Bank and BOTAŞ considered seven alternative route corridors for the pipeline from Baku to Ceyhan. As part of the feasibility study, issues were identified which might influence the pipeline route selection.

Primary importance was placed on the selection of a route that could be constructed and operated with a minimum risk for potential pipeline failure and one that minimized potential environmental and social impacts. This was followed by a more detailed determination and evaluation of various constraints that had the potential to affect the construction and operation of the pipeline, including environmental issues, social issues and ease of constructability. The outcome of this assessment was the definition of a 10km wide corridor that was presented to the governments of Azerbaijan, Georgia and Turkey in December 2000. From this 10km wide corridor a 500 m pipeline corridor has been defined. During the course of the design process, the optimum pipeline route will be identified from within this corridor.

**BTC PROJECT EIA
TURKEY**

Extensive studies have been undertaken to ensure that the pipeline route both minimizes environmental and social impacts and avoids geological features and processes (known as geohazards) that may threaten the integrity of the pipeline. Where potential geohazards have to be crossed, such as faults, specific design measures are undertaken to minimize the risk of pipeline failure.

Where possible the route follows existing roads, pipelines or other already impacted corridors. The pipeline also avoids all areas classified by the international union for the conservation of nature ¹ (IUCN). Furthermore, no requirement to resettle individuals is envisaged

⁽¹⁾ The IUCN is an umbrella environmental organisation representing governments and environmental NGOs.

BTC Crude Oil Pipeline - Turkey Section



FIGURE 2.1

BTC PROJECT EIA
TURKEY

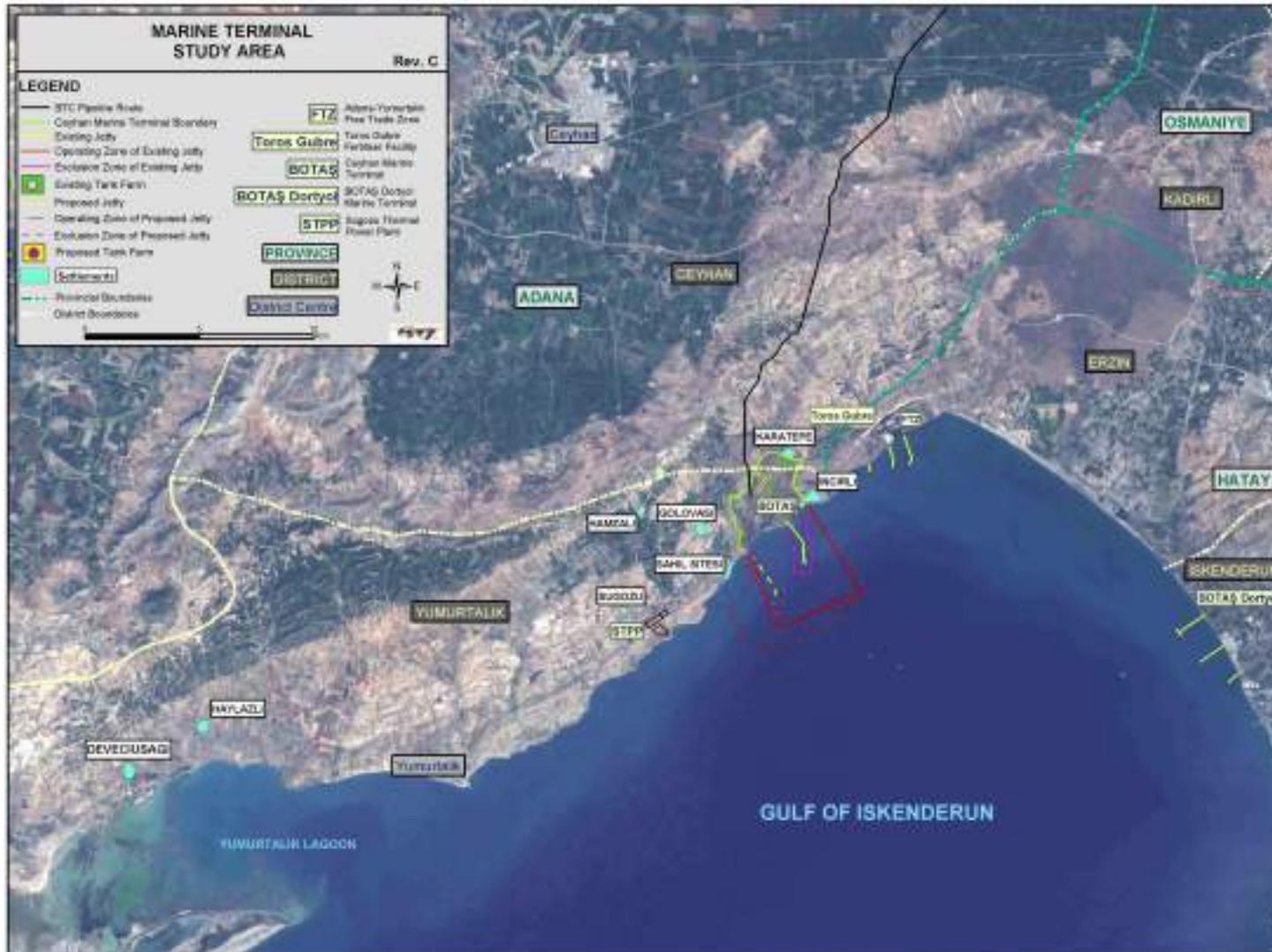


FIGURE 2.2: Proposed location of the marine terminal facilities at Ceyhan

2.3 PROJECT BENEFITS

The BTC P/L Project will enable crude oil transport to international markets in a more economic, safe and environmentally friendly way. Key areas of improvement will be the following:

- crude oil will be transported to refineries in a much shorter period of time, therefore saving a considerable amount of money in transportation
- BTC P/L will not increase the volume of oil passing through the Turkish Straits, thereby reducing the associated environmental risks
- routing the BTC P/L through Turkey will strengthen Turkey's role in providing an energy corridor between the Caspian region and international markets in Europe and beyond. This will deliver economic benefits to Turkey, specifically from the pipeline transit fee and the fixed tariff for oil. Limited employment opportunities and economic benefits will also be generated at the local level during the construction and operation phases

2.4 THE PROJECT PARTICIPANTS

The BTC P/L Project is being undertaken by a group of petroleum companies, including SOCAR, BP, Delta Hes, TPAO, Itochu, Unocal and Statoil. For the purposes of the BTC P/L Project, this group of companies is referred to as the Project Participants. As shown in Figure 2.3 below, BP is coordinating project development at this stage. BOTAŞ, a state owned Turkish petroleum pipeline company, are the Turnkey Contractor for design, engineering and construction of the pipeline and marine terminal.

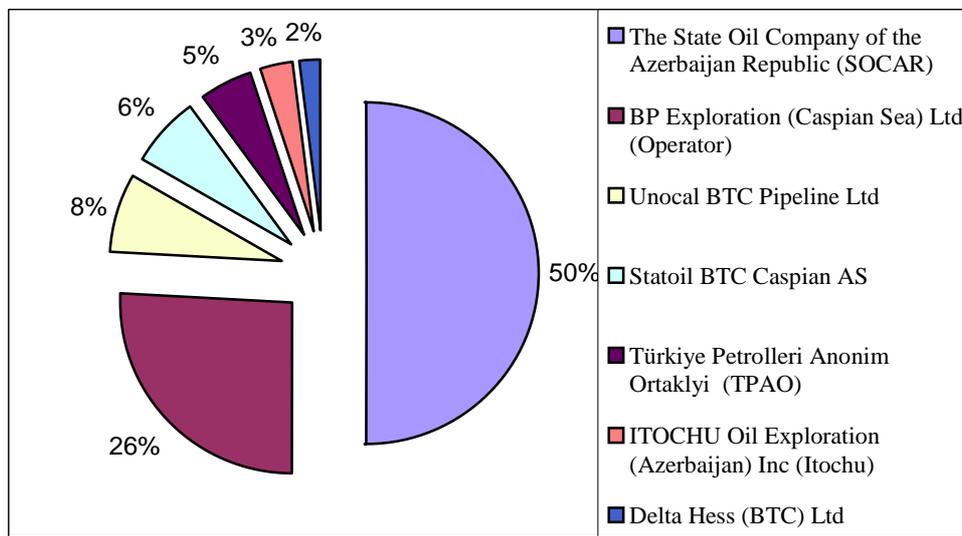


Figure 2.3: Shareholding of Project Participants

The BTC P/L Project will cost approximately US\$2.9 billion to build across the Azerbaijan Republic, Georgia and the Republic of Turkey. The Turkish section of the BTC P/L Project will cost US\$1.4 billion. The Government of Turkey has provided a guarantee for a limited amount of any cost overrun should this occur.

The Project Participants are financing the initial stages of the Project. Discussions with these and other potential stakeholders are ongoing to fund the Project beyond the Detailed Engineering phase.

2.5 PROJECT COMPONENTS

2.5.1 Pipeline and Associated Facilities

The pipeline will be buried along the entire route and will require a corridor of 22 meters to be cleared during construction. Of this eight meters will be permanently acquired and 14 meters will be temporarily acquired (for construction purposes). Some additional land will be required during construction for camps (for workers) and storage areas.

The design and operation of the pipeline will be to the highest international standards. Factors that will optimise the reliability of the pipeline are the following:

- the pipeline will comprise continuously welded steel
- once in operation, the pipeline will be properly maintained. Regular inspection of the pipeline - both inside and outside - will identify any deterioration in the condition of the pipeline
- the pipeline will be equipped with a 'Leak Detection System' to respond immediately to operational problems
- block valves located along the pipeline will be able to be operated manually and remotely in order to isolate sections of the pipeline. They will normally be placed at intervals of approximately 30km and either side of sensitive areas such as river and fault crossings, areas of dense population, areas rich in endemic species etc; and
- the pipeline will be able to be controlled centrally via a Supervisory Control and Data Acquisition (SCADA) system.

Specific details such as pipe diameter, coating systems, wall thickness, cathodic protection, burial depth and the exact number and location of the pump stations will be determined during the Detailed Engineering phase of the Project. Special designs will be implemented at river and fault crossings and in areas of potential land instability. The pipeline will be operated continuously and will only be out of service during maintenance.

2.5.2 Above Ground Installations (AGIs)

Some additional land will be required for the following permanent Above Ground Installations (AGIs):

- intermediate pump stations to ensure the flow of oil through the pipeline. The first pump station near the Georgian border will include custody transfer and metering facilities to record the flow rate of the crude oil through the pipeline. The second pump station is likely to be located in the vicinity of Baskoy sub-district
- pressure reduction station at Ceyhan marine terminal
- scraper facilities for monitoring and maintaining the internal integrity of the pipeline
- block valves

2.5.3 Ceyhan Marine Terminal

A new tank farm and loading jetty complex will be constructed at Ceyhan and will be used to store the transported crude oil prior to loading on to marine tankers. The Ceyhan storage terminal will be built on land owned by BOTAŞ, immediately adjacent to the existing facility. A pipeline will gravity feed the crude oil via the new jetty located some 2200m south of the existing jetty to waiting tankers. The new terminal will operate as a stand-alone facility.

The new Ceyhan terminal will comprise the following facilities:

- up to seven storage tanks with floating roofs for the storage of transported crude oil;
- a jetty which will be 2562m long (approximately 500m longer than the existing jetty);
- pipeline loading facilities (capacity of 60,000 barrels of crude oil / hour);
- marine loading facilities designed for ships with a deadweight tonnage (DWT) of between 80,000 and 300,000 tonnes;
- pipeline monitoring and control system;
- metering facilities.

The Host Government Agreement (HGA) stipulates that Segregated Ballast Tankers (SBT) will be used in the marine loading process therefore there will be no need for ballast water reception facilities.

3 REGULATORY CONTEXT

3.1 REGULATORY FRAMEWORK

Two key agreements have been signed between the governments of Turkey, Azerbaijan and Georgia and the Project investors.

- The “Inter-Government Agreement” (IGA) was published in the Official Gazette on 10th September 2000 (number 24166). This agreement supersedes and nullifies any prior protocol, agreement or treaty between or among any of the three states with respect to the transportation of crude oil through the BTC P/L.
- The “Host-Government Agreement” (HGA) was published in the Official Gazette on 10th September 2000 (number 24166). This agreement supersedes all standards and practices of Turkey regarding crude oil transportation within the context of BTC P/L Project. In particular the agreement supersedes the Turkish “Environmental Impact Assessment Regulation”, dated 27th June 1997.

The IGA and HGA therefore provide the regulatory framework for the BTC P/L Project. The agreements define the capital and resources that each signatory will provide to the Project, the timetable by which it will be developed in the three countries and the standards that it will meet.

BOTAŞ, as the Turnkey Contractor for design, engineering and construction of the pipeline and marine terminal are required to meet minimum standards and requirements (such as scope, programme and price) as set out in the Lump Sum Turnkey Agreement (LSTK) between the BTC Company and BOTAŞ.

3.2 REQUIREMENTS FOR THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The HGA establishes that the Environmental and Social Impact Assessment (EIA) will be undertaken in accordance with the following requirements:

- Turkish regulations, standards and guidelines
- relevant international protocols and agreements such as the conventions of the International Labour Organisation (ILO) that have been ratified by Turkey
- requirements of International Financial Institutions such as the World Bank
- BOTAŞ environmental policy

Each of these requirements are summarised below. Details of their requirements will be provided in the full EIA report.

3.3 TURKISH REGULATIONS, STANDARDS AND GUIDELINES

The principle legislation is the Environment Law of August 1983. Article 10 of the "Environment Law" requires an EIA report for investment projects, which have the potential to create adverse environmental effects. The types of projects for which an EIA report will be required and the specific topics that should be covered for different cases are described in the "EIA Regulation" issued by the MoE (revised 23rd June 1997). This article is in conformity with the pertinent international legislation and guidelines, such as those of the World Bank (1991 and 1996) as well as those of European Commission (1985 and 1996). The preparation of an EIA report is mandatory for the proposed BTC P/L Project since the diameter of the pipeline is greater than the regulation threshold.

All regulations associated with Turkish Environment Law will be complied with, unless they are superseded by the "Host-Government Agreement".

3.4 INTERNATIONAL PROTOCOLS AND CONVENTIONS

The Turkish Government has signed and has agreed to a number of international agreements and conventions relating to environmental protection. The EIA process will consider the impacts of the BTC P/L Project in the context of these.

3.5 REQUIREMENTS OF INTERNATIONAL INSTITUTIONS

The HGA states that "Creation of the Environmental Strategy Product (which includes Environmental and Social Impact Assessments) and implementation of the environmental strategy reflected therein shall be in accordance with the standards and practices generally prevailing in the international petroleum pipeline industry".

The International Agencies, such as the World Bank and the European Union, have guidance for EIAs. Relevant guidance includes:

- World Bank Operational Policy 4.01
- EC Directive 85/337/EEC

The EIA that will be undertaken for the BTC P/L will comply with the guidance for a full EIA.

3.6 BOTAŞ ENVIRONMENTAL POLICY

Protection of the environment is a high priority for the BTC P/L Project. As a result, Environmental Management is an integral part of the Project Quality Management System, thereby ensuring that environmental requirements are identified, planned, achieved, maintained, documented and, where possible, improved.

BOTAŞ BTC P/L Project Directorate recognises that it has a responsibility to ensure that through the implementation of good environmental management practices, all the potential adverse impacts on the environment associated with the Project are either avoided or appropriately mitigated.

Accordingly, all work will be conducted in compliance with applicable environmental laws and regulations as well as the standards and best-practices generally prevailing in the international

**BTC PROJECT EIA
TURKEY**

petroleum industry in a manner which supports the protection, preservation and enhancement of the environment. To achieve this aim, the BOTAŞ BTC Project Directorate has developed and established a set of policies to guide the execution of all work performed.

4 THE EXISTING ENVIRONMENT

4.1 BASELINE STUDIES

Detailed information on baseline conditions is required for a sound identification, prediction, evaluation and mitigation of the potential effects related to the BTC Project. The main studies that contribute to the baseline environmental data include:

- World Bank Feasibility Study Report (1997 / 1998);
- Desk top studies collating existing data on the environmental conditions along the proposed corridor compiled from literature reviews relating to protected areas, archaeology and cultural monuments, flora, fauna, air quality, geology, and soils
- data from State Authorities
- maps and aerial photos
- project-derived field data that were generated during the Pre-Work Program undertaken in September 2000 and other field investigations carried out during BE phase

Field surveys and other environmental studies that have been or are currently being undertaken include:

- routing surveys
- terrain evaluation: geohazards survey (including landslides, active faults, liquefaction areas and karstic areas)
- resistivity
- risk assessment
- preliminary Oil Spill Response Plan
- terrain protection and restoration
- marine ecology (winter and summer)
- sea turtle survey
- bird survey
- archaeological survey
- ecological survey (Phases 1 and 2)
- chemical analyses and soil sampling, Ceyhan Marine Terminal tank farm
- water quality survey
- oceanographical studies

Much of the information collected from the above sources has been integrated within a Geographical Information System (GIS). The principal data themes included in the GIS database can be classified as follows:

- physical data (ie topography, surface geology, soil types, hydrology and hydrogeology);
- biological data (ie vegetation, designated areas such as national parks, nature reserves, restricted access areas, and ecologically important areas);
- socio-economic data (ie land use, roads, power lines, dams and settlements);

**BTC PROJECT EIA
TURKEY**

- archaeological sites and culturally sensitive areas (ie cemeteries, historical monuments and previously unrecorded sites).

5 POTENTIAL IMPACTS AND MITIGATION

5.1 INTRODUCTION

This section identifies and provides a review of the BTC P/L Project's potential impacts. These impacts will be investigated as part of the EIA process.

5.2 POTENTIAL IMPACTS

In terms of potential impacts (positive and negative), the most important phases of the BTC P/L Project are construction, operation and accidental impacts. Table 5.1 presents key issues associated with the proposed project and gives examples of potential impacts.

5.3 MITIGATION

Mitigation is regarded as a critical part of the EIA process. It has the primary aims of ensuring that potential negative environmental and social impacts or risks associated with the Project are managed, reduced or prevented wherever possible. By investing in appropriate mitigation measures, issues such as route and site selection of facilities, control of construction activities and compensation for land can be identified early and adequately mitigated.

In addition to ensuring that impacts are adequately mitigated, it will be important to design a monitoring program to ensure compliance with relevant environmental standards and to assess the performance of the mitigation measures.

Table 5.1 Key Issues for the EIA and Potential Impacts

KEY ISSUES	EXAMPLE OF POTENTIAL IMPACTS
Construction	
Air emissions	Local dust nuisance, impacts on ecological habitats, and emissions from construction vehicles and marine traffic.
Archaeology	Demolition of sites or deposits as a result of ground disturbance and excavation.
Ecosystems	Disturbance, sedimentation and other impacts on fish, marine mammals, birds, benthic environment. During pipeline construction, temporary loss and fragmentation of habitats and damage to adjacent habitats and species.
Landscape resource	Stripping and temporary storage of topsoil along the working width, interruption of agricultural use of the working width. Loss of integrity to some long-established landscape features.
Visual impact	Removal of trees and other permanent vegetation cover, vehicle movements and construction lay-down areas, stripping and temporary storage of soils along the working width.
Noise and vibration	Disturbance to nearby communities and marine and terrestrial animals and birds.

**BTC PROJECT EIA
TURKEY**

KEY ISSUES	EXAMPLE OF POTENTIAL IMPACTS
Socio-economic	<p>Temporary employment opportunities. Locally supplied services and materials.</p> <p>Temporary and permanent land take along the pipeline corridor (22m and 8m respectively).</p> <p>Impacts associated with the construction workforce, including increased market for local goods, potential disruption to local communities, health and safety issues.</p> <p>Disruption to commercial and artisanal fishing and navigation at the marine terminal.</p> <p>Increased exclusion zone in the vicinity of the marine terminal and jetty development.</p>
Soils	Alteration of soil structure during top soil separation/ storage. Slope instability and erosion. Contamination of soils.
Transportation	<p>Increase of traffic loads.</p> <p>Increased marine traffic in vicinity of the marine terminal and jetty development.</p>
Water	<p>Disturbance of water quality during construction (site drainage, dredging, compaction, dewatering etc.), support vessels at the marine terminal.</p> <p>Changes in the physical characteristics of, drainage patterns of and re-suspension of sediments in watercourses and wetlands. Increased demand on resources.</p>
Operation	
Air emissions	Hydrocarbon emissions from storage tanks and tankers at the marine terminal.
Archaeology	None are anticipated for this phase of the Project.
Ecosystems	At the marine terminal, potential disturbance, sedimentation and other impacts on fish, marine mammals, birds, benthic environment.
Landscape and visual impacts	Storage tank farm, jetty and tankers at the marine terminal.
Noise and vibration	Disturbance to nearby communities and marine and terrestrial animals and birds.
Socio-economic	<p>Land occupation within the 8m right of access area.</p> <p>Indirect employment opportunities.</p> <p>Disruption to commercial and artisanal fishing activities and navigation at the marine terminal.</p> <p>Increased exclusion zone in the vicinity of the marine terminal and jetty.</p>
Soils	Potential erosion.
Transportation	<p>Increase of traffic loads.</p> <p>Increased tanker traffic in vicinity of the marine terminal and jetty.</p>
Water	Impacts from sanitary effluents, cooling activities and support vessel discharges at the marine terminal.

**BTC PROJECT EIA
TURKEY**

KEY ISSUES	EXAMPLE OF POTENTIAL IMPACTS
Accidental	
Ecosystems	Contamination due to spillage. Aquatic and terrestrial pollution including threats to marine mammals, sea shore birds from chronic and catastrophic oil spills.
Soil quality	Contamination due to spillage.
Water pollution	Contamination due to spillage.
Socio economic	Impact on economic livelihoods of fishermen due to spillage.

6 PUBLIC CONSULTATION AND DISCLOSURE

6.1 PUBLIC CONSULTATION AND DISCLOSURE PLAN (PCDP)

A Public Consultation and Disclosure Plan (PCDP), to World Bank standards, has been prepared for the Turkey BTC P/L Project EIA. The PCDP outlines a plan for public consultation and information disclosure that starts at the Project planning stage, and continues throughout construction, operation and decommissioning of the BTC P/L.

Given the size, nature and complexity of the BTC P/L Project and associated issues, BTC Co and BOTAŞ are committed to undertaking public consultation on five levels:

- international
- national
- provincial
- district
- settlement level

This includes government authorities, national and local NGOs, media and other interest groups, 10 provincial governors, 34 sub-governors and a large proportion of Muhtars and settlements within the 4km pipeline corridor and in the vicinity of the marine terminal. In order to make this commitment a reality, the PCDP outlines the actual plan for consultation. Key issues that are covered in the PCDP include:

- an outline of roles and responsibilities
- a brief description of the Project
- a summary of the most important international standards on public consultation
- a summary of national government regulations on public consultation as part of EIA, land acquisition or the like
- a list of stakeholders involved in the consultation process
- a summary of the consultation and disclosure activities to date
- a plan for consultation at the national, regional and local level during the EIA process, and for continuing consultation during construction and operation of the pipeline
- a timetable for consultation and disclosure activities

The PCDP is a 'living' document and may be revised over time to reflect information gained during the consultation process. Although consultation will be on-going throughout the EIA process, there are three key stages during which public consultation will be facilitated. These are:

- Phase 1: Information distribution
- Phase 2: Impact identification and mitigation
- Phase 3: Disclosure of the draft EIA

6.2 PHASE 1: INFORMATION DISTRIBUTION

The key objective of Phase 1 consultation was to distribute project information to all stakeholders. For this purpose, the EIA Information Package (this document) and leaflet were compiled and distributed. The EIA Information Package has been prepared for distribution to authorities (national to village level), NGOs, media and other interest groups. The leaflet, although available to all stakeholders, is intended for wide distribution at the village level.

In order to maximise involvement of village level stakeholders during detailed consultation (Phase 2), the Phase 2 meetings with provincial, district and village level authorities (Muhtars) were brought forward to coincide with Phase 1 activities. This allowed for distribution of project information to the Muhtars (for distribution at the village level) prior to village consultation, and also for discussions with local authorities regarding the proposed village level consultation process. These discussions were aimed at refining the consultation process to ensure that it is appropriate to the local context. These Phase 2 meetings were undertaken during the month of August 2001.

6.3 PHASE 2: IMPACT IDENTIFICATION AND MITIGATION

Following the combined Phase 1 and Phase 2 activities during August 2001, the remainder of Phase 2 commenced in early September 2001, extending over a total period of 2 months. Specifically this phase includes:

- meetings with national NGOs and national media;
- meetings with local NGOs, academics, local media and other local interest groups;
- community meetings along the length of the pipeline;
- consultation specific to the Ceyhan Marine Terminal and Jetty, including with local authorities, residents and fishing industry in the vicinity;
- issues management / mitigation workshops with local specialists.

The overall objectives of the second phase of consultation is to ensure that all stakeholders are given the opportunity to raise issues of concern relating to the proposed pipeline and marine terminal, as well as discuss potential mitigation measures which will help decrease the negative impacts and optimise the benefits associated with the development. The information gathered during the first phase of consultation assists in refining the terms of reference for the specialist investigations and allows for the early identification of issues for input into project design.

6.4 PHASE 3: DISCLOSURE OF THE DRAFT EIA

The third phase of public consultation will commence after publication of the draft EIA Report at the beginning of February 2002. A non-technical summary of the draft EIA and other materials will be distributed to all stakeholders prior to actual consultation. Copies of the full draft EIA will also be made available. The PCDP (revised and updated where necessary) will be issued as part of the draft EIA. The draft EIA will be publicly disclosed for at least 60 days. The objective of this phase of consultation is to provide all stakeholders with the opportunity to comment on the contents of the draft EIA prior to its finalisation and submission to the Ministry of Environment and International Finance Corporation at the beginning April 2002.

6.5 PHASE 4: DURING CONSTRUCTION AND OPERATION

The revised PCDP will serve as a guide for on-going public consultation during project construction and operation. The objective of the measures that will be devised will be to keep those affected by the Project informed of on-going changes in the Project activities, manage issues and grievances as they arise and monitor the effectiveness of environmental and social impact mitigation and compensation.

In accordance with best practice, independent environmental audits of project facilities and procedures will be commissioned. The audits will be designed to check compliance with all project regulatory requirements and with industry best practice.

As part of the environmental management of the Project, an Environmental Management Plan (EMP) will be developed. This plan will set out the requirements for monitoring the environment potentially affected by the pipeline and marine terminal construction and operation both internally and by independent bodies.

EXAMPLE PROJECT LEAFLET (ENGLISH)

Distributed in September – December 2001



- QUESTIONS AND ANSWERS**
- ★ How much land will be acquired along the pipeline route?
 - ✓ The land acquisition activities will be carried out within a corridor of 22 meters along the total pipeline route. Of this, 8 meters will be permanently acquired (along the centre of the corridor) and 14 meters will be temporarily acquired (for construction purposes). Some land will be acquired for permanent aboveground installations. Land acquisition activities (including compensation) will be carried out in accordance with the Turkish Expropriation Acquisition Law and World Bank standards.
 - ★ When will land acquisition begin?
 - ✓ Land acquisition will only start after authorisation for the pipeline has been granted. The expected date for authorisation is June 2002. Thereafter, land acquisition will begin.
 - ★ What will happen to the land following construction?
 - ✓ The land will be returned to minimise environmental impacts along the route. Drains if adjacent land will be consulted and informed about access to the pipeline route following construction.
 - ★ Will the surrounding environment, especially soil and groundwater, be impacted during the construction and operation phases?
 - ✓ Environmental factors are analysed in detail for each phase of the project, from the route selection to operation and beyond. Moreover, pipeline systems are made safe by means of technologies designed to minimise environmental risks. The pipelines are equipped with several additional safety measures that operate if there is an accident. Thus, in the event of an accident, systems will be put in place for immediate notification and shut down to minimise potential damage to the environment.
 - ★ Will there be marine pollution at the Ceyhan Terminal? Will fisheries be affected?
 - ✓ Activities at the Terminal and offshore jetty will be carried out in accordance with national and international environmental law. Results from environmental investigations will be used in the design of equipment and the establishment of procedures to mitigate against negative impacts.
 - ★ Will local people benefit from the pipeline?
 - ✓ Yes. There may be employment opportunities during construction. In addition, local communities will benefit from indirect employment opportunities through the provision of services to construction teams.

Introduction

A consortium of companies, known as the Project Participants and led by BP, have proposed the development of the Baku-Tbilisi-Ceyhan (BTC) crude oil pipeline project. The proposed pipeline runs over a total distance of 1730 km, passing through Azerbaijan, Georgia and Turkey. In order to gain authorisation for the pipeline development, the Project Participants have to undertake an environmental and social impact assessment (ESIA).

This leaflet forms part of the on-going consultation for the environmental and social impact assessment (ESIA) for the BTC pipeline. The purpose of an ESIA is to identify, investigate and manage any potential impacts that might occur as a result of the construction and operation of the pipeline. A key method of identifying these impacts is through consultation, whereby people potentially affected by the project, are given the opportunity to raise any concerns that they might have. These concerns will then be investigated as part of the ESIA. Where necessary, measures for managing the impacts will be formulated.

The purpose of this leaflet is to provide you with information about the proposed BTC pipeline.

Project Description

The proposed pipeline runs over a total distance of approximately 1730 km, passing through Azerbaijan, Georgia and Turkey. The Turkish section of the BTC pipeline is routed between the Georgia-Turkey border in the Posof District (Turkgozu border gate) and Ceyhan, with a total length of about 1,065 km. Starting at the border, the pipeline will cross the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaraş, Osmaniye and Adana, to the marine terminal to be constructed in Ceyhan. The turnkey contractor of the Turkish section of the BTC pipeline will be BOTAŞ.

The pipeline will be buried along the majority of this route. Key facilities associated with the BTC pipeline include 2 pump stations to ensure the flow of oil through the pipeline and an export terminal at Ceyhan. At the terminal crude oil will be stored and loaded onto tankers ships for export to international markets.

Land acquisition and pipeline construction will begin in June 2002, lasting for 32 months. The starting date for operation of the pipeline is 2005.

Benefits of the Project

- It will enable the supply of crude oil from Azerbaijan to the Mediterranean via Georgia and Turkey.
- Routing the pipeline through Turkey will allow Turkey to act as a bridge and an energy corridor between Europe and Asia.
- The pipeline will allow crude oil to be transported to refineries in a much shorter period of time (under 2 days). A considerable amount of money will therefore be saved from transportation.
- It will decrease the volumes of crude oil transported by tankers via the Turkish straits each year. This will ensure that the crude oil is transported to international markets in a more economic, safe and environmental-friendly way.

Environmental Measures Taken

The pipeline will be equipped with several safety measures that operate in case of any accident. Above all, the pipeline will be constructed and operated in accordance with all relevant national and international standards on environment.

FOR INFORMATION:

Country: Turkey
 Project: Baku-Tbilisi-Ceyhan Crude Oil Pipeline
 Marine Phase A (Tbilisi to Ceyhan)
 Project No: 02/04/06
 Phone: 0312 285 50 12 Fax: 0312 285 50 62 E-mail: bota@bota.gov.tr

City: Ceyhan
 Project: Baku-Tbilisi-Ceyhan Crude Oil Pipeline
 Marine Phase A (Tbilisi to Ceyhan)
 Project No: 02/04/06
 Phone: 0312 285 50 12 Fax: 0312 285 50 62 E-mail: bota@bota.gov.tr

EXAMPLE PROJECT POSTERS (ENGLISH)

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS DESIGN PHASE: ROUTE SELECTION

The objective of the Baku-Tbilisi-Ceyhan (BTC) Crude Oil Pipeline Project is to achieve the design, construction and operation of a technically feasible and environmentally sustainable pipeline system, which is capable of transporting up to 50 million metric tonnes of oil per annum from the Caspian Sea to the Mediterranean Sea.

10 km - CORRIDOR OF INTEREST

Selection of 10 km corridor considered numerous options and a "corridor of interest" based on:



- * Environmental,
- * Social,
- * Constructability,
- * Security,
- * Cost,
- * Access.

500 m - PREFERRED ROUTE CORRIDOR TO 100 m - SPECIFIED CORRIDOR

Determination of the preferred route corridor involved both major changes and minor changes to the centreline, mostly in response to geological, environmental and archaeological constraints. Constraints included: geohazards, hydrology, hydrogeology, mines, ecology and archaeology.

GEOHAZARDS



FAULTS

LANDSLIDE

LIQUEFACTION

KARST

ENVIRONMENT



HYDROLOGY



PROTECTED AREA

CEYHAN MARINE TERMINAL

The Site Location Selection Study for Ceyhan Marine Export Terminal indicated that the preferred option would be the construction of the Marine Export Terminal for the export of Caspian crude oil inside the land already owned by BOTAS adjacent to the existing facility near Ceyhan.



Site location selection study included:

- * Landtake,
- * Substrate,
- * Elevation,
- * Proximity to existing facilities,
- * Water depth,
- * Environmental sensitivity,
- * Geohazards.

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS DESIGN PHASE: PIPELINE & TERMINAL

Baku-Thilisi-Coyhan (BTC) Crude Oil Pipeline Project Team have commissioned the international consultancy, Environmental Resources Management (ERM), and the local consultants ENVY, KORA and VERI ARASTIRMA, to conduct Social Impact Assessment (ESIA) of the BTC Crude Oil Pipeline and Marine Terminal to International Standards.

BASELINE SURVEYS



ORNITHOLOGY



ECOLOGY



LARGE MAMMALS



LANDSCAPE



NOISE LEVEL
MEASUREMENT



MARINE



WATER QUALITY



TURTLE SURVEY

ENGINEERING

The ESIA is a planning tool that will ensure that decisions made today will minimize environmental and social impacts in the future. Here are some illustrative examples of how the ESIA findings influence the engineering design phase of the project.



AIR QUALITY



WASTEWATER TREATMENT



SECONDARY CONTAINMENT &
TANK COLOUR SCHEME
TO REDUCE VISUAL IMPACTS



CATHODIC PROTECTION



FLOATING ROOF FOR
VOC CONTROL

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS CONSTRUCTION PHASE

The Baku-Tbilisi-Ceyhan (BTC) Crude Oil Pipeline Project Team will undertake a number of studies and carry out compliance monitoring encompassing a wide range of issues in response to commitments detailed in the Management Plan of the Environmental and Social Impact Assessment.

MONITORING



As part of Main Export Pipeline's commitments to environmental protection, field based environmental liaison officers will be assigned to compliance monitoring during construction activities.



Turkey has rich cultural heritage and is protected under Turkish Law by the Ministry of Culture. Prior to construction activity, a protocol will be agreed with the Ministry of Culture which will include archaeological monitoring during construction.

The BTC Crude Oil Pipeline Project Team will continue to carry out ornithological and air quality monitoring throughout construction and into the operational phase.



Construction activities will be closely monitored to ensure potential impacts on local communities are minimized. This will be facilitated by on-going public consultation throughout the construction period.



Top soil segregation and management



Reinstatement (Engineering)

Pipeline reinstatement is essential as an aid to erosion prevention and to improve the aesthetics of the landscape following construction. Reinstatement comprises three main elements: erosion and sediment control; surface and subsurface engineering; and revegetation.



Revegetation



Revegetation

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS OPERATIONAL PHASE

The Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project Team is committed to "best international industrial practice" and is therefore dedicated to a continued responsible environmental management throughout the operational period of the pipeline and terminal.

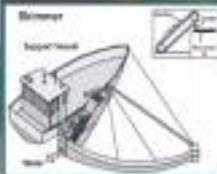


OIL SPILL RESPONSE

In order to be able to respond to any emergency, an Emergency Response Plan (ERP) will be developed. An important element of the ERP, are the oil spill plans for both onshore and offshore operations. These plans define the manner in which BTC will respond to a spill and ensures that key personal within the organisation understand their role in such a response.



SUPPLY VESSEL



TRAINING



GEOGRAPHICAL INFORMATION SYSTEMS

A GIS system for the BTC Pipeline and terminal is being developed. This is a powerful PC based tool that can map many different parameters onto any given reference plan in order to visually display the information. Information includes routing, construction, socio-economic, environmental, public consultation, land acquisition and pipeline design.



CONTINUED ENVIRONMENTAL
MONITORING



INTELLIGENT PIGGING
PIG RECEIVER

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT PROCESS PUBLIC CONSULTATION

Aims of the public consultation program:

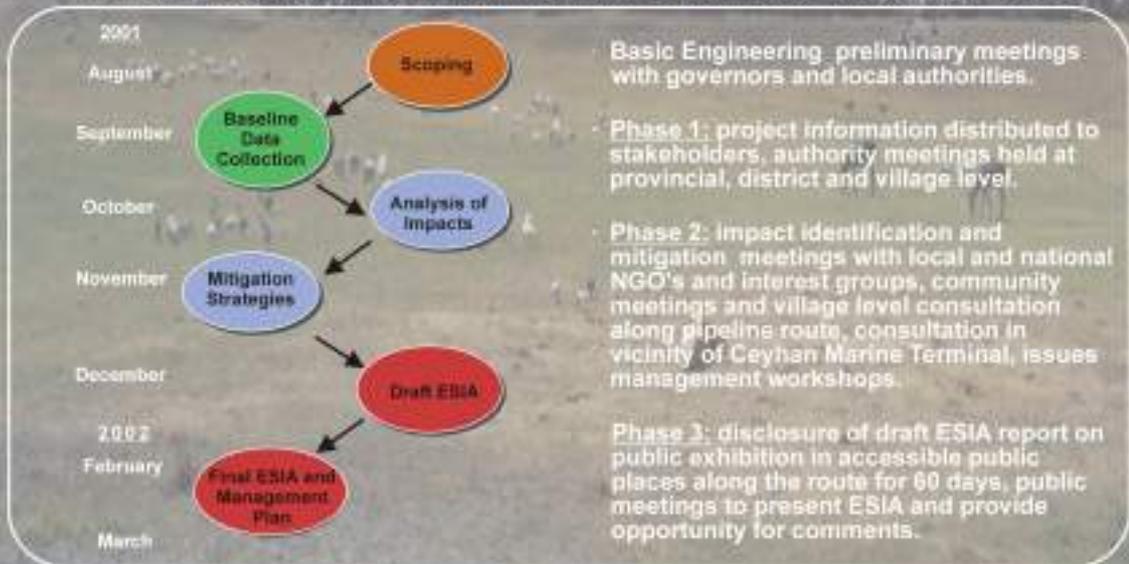
- to identify key stakeholders and ensure there are adequate mechanisms for stakeholder feedback and information sharing;
- to facilitate consultation at local, national and international levels, starting at the project planning stage, and continuing throughout construction, operation and decommissioning of the pipeline; and
- to ensure issues raised by key stakeholders are addressed in the Environmental and Social Impact Assessment (ESIA) report as well as in project decision-making and design phase.



VILLAGE LEVEL CONSULTATION



Public Participation in the Environmental and Social Impact Assessment Process



GOVERNOR MEETING



LOCAL NGO MEETINGS

Stakeholder Identification

The following stakeholders will be consulted during various stages of the project:

- authorities at national, provincial, district and village level;
- relevant national and local non-government organisations;
- interest groups comprising the media, university institutions, local business establishments etc;
- residents within the 4 km corridor of the pipeline route; and
- residents living in close proximity to the Ceyhan Marine Terminal and potentially affected coastal villages along the Gulf of

Appendix A5 - Baseline Data Collection for Social Aspects

1 OVERVIEW OF SOCIO-ECONOMIC BASELINE DATA COLLECTION

1.1 INTRODUCTION

This Section provides a detailed outline of the methodology adopted for consultation and baseline socio-economic data collection at firstly for the pipeline, Above-Ground Installations (AGIs) (pump stations, pressure reduction station and block valves), construction camps and the marine terminal development. For both the pipeline AGIs and marine terminal the consultation activities conducted with national and local NGOs and relevant governors and sub-governors are covered in Appendix A1.

1.2 OBJECTIVES AND APPROACH

The approach adopted for the socio-economic data collection for all components of the BTC Project was designed to fulfil the following objectives:

- To *understand* key social, cultural, economic, and political conditions in areas potentially affected by the pipeline and marine terminal.
- To *provide data* to predict, explain and substantiate possible impacts.
- To *understand* the expectations and concerns of a range of stakeholders (eg impacted settlements, authorities and NGOs) of the development of the pipeline marine terminal, associated Above Ground Installations (particularly the pump stations) and temporary facilities (particularly the construction camps).
- To *inform* the development of mitigation measures.
- To *benchmark* future socio-economic changes/ impacts and assess the effectiveness of mitigation measures.

In order to meet the objectives, a process was adopted which allowed for the gathering of both quantitative and qualitative information. Key components included:

- Consultation:
 - community meetings with local settlements
- Survey:
 - settlement level questionnaires administered with the Muhtar¹ (or other key representatives) of each settlement
 - household level questionnaires administered at the household level in the settlements

¹ A Muhtar is the settlement head responsible for overseeing settlement affairs. He or she is elected by the village assembly for a term of five years, is responsible for handling local administrative issues and represents the local government at the settlement level.

Box 1: Definition of Settlements and Household Level Questionnaires

SETTLEMENT LEVEL QUESTIONNAIRES

Settlement level questionnaires allowed for the gathering of information on the settlement as a whole. These interviews targeted *Muhtars* and, where necessary, other authorities or key representatives within the rural settlement (eg members of the Council of Village Elders, teachers, *Imams* [head of the mosque] and health workers). These questionnaires sought to gain quantitative information about the settlement, for example, total population, total area of land, total number of plots, extent of immigration etc.

HOUSEHOLD LEVEL QUESTIONNAIRES

Household questionnaires allowed for the gathering of in-depth information at the household level. All the information gathered, from each surveyed household, was then aggregated to create a baseline for the settlement as a whole. These questionnaires explored both quantitative information (eg monthly income, amount of land owned, levels of literacy etc) and qualitative information (eg what benefits do you expect to derive from the BTC Project? What are your main concerns about the Project?). Doing this allowed links to be made between socio-economic conditions / status and areas of concern. The household questionnaires were administered through face –to-face interviews. On average, 60% of the questionnaires (qualitative and quantitative sections) were administered solely with the household / family head (largely male). In order to ensure female contribution to the data gathered, a target on the number of women to be interviewed on the qualitative/perception questions was introduced², namely 40% (women to be >15 years and resident in the settlement). Vulnerable households, as identified by the *Muhtar*, were also targeted, comprising 50% of the total number of households.

1.3 APPROACH TAKEN FOR PIPELINE, AGIS AND CONSTRUCTION CAMPS

1.3.1 Pre-Fieldwork Activities

Prior to the fieldwork activities in late August 2001, a formal Social Impact Assessment (SIA) Induction Training Workshop was held for the national consultants. This three-day workshop was facilitated by the international and national consultants and the Project and had the following aims and objectives:

- to generate a common understanding of the BTC Project;
- to share experience and knowledge on SIA;
- to review proposed consultation methodologies and tools;
- to design the settlement level and household level questionnaires.

² The target relates specifically to the qualitative/perception section of the questionnaire and not the quantitative section. It was decided that the household head (largely male) would have better access to the information required in the quantitative section (eg income levels, ownership of land, percentage of land under irrigation, input and output costs, main sources of livelihood etc). This target did not preclude women from undertaking the full questionnaire, but did ensure that at least 40% of all perception sections administered were answered by female respondents. The qualitative/perception section dealt with issues such as quality of services (eg education and health), main settlement problems and attitudes towards the proposed marine terminal.

The workshop combined formal presentations with small focus group discussions and covered the following issues.

- Project description (project construction and operation).
- The environmental and social impact assessment process.
- Generic socio-economic impacts associated with pipeline projects and marine terminals.
- Data collection process (design, review and familiarisation of questionnaires and survey methodologies).
- Health and safety training (including driver training).
- Role play of settlement level consultation meetings.
- Overview of field team communication and responsibility.
- Outline of report back formats and consultation materials.

A Field Survey Response Pack was developed for the field survey teams to provide them with information about the Project and help them to respond to local concerns or queries.

Following the Induction Training Workshop, a pilot study was undertaken to 'road test' the effectiveness of the household and settlement level questionnaires prior to settlement level consultation. The study was undertaken in two sample settlements close to Ankara. Following the pilot study, the questionnaires were revised to reflect feedback from the study.

Box 2: Field Survey Response Pack

RESPONDING TO QUESTIONS RECEIVED FROM THE PUBLIC

A **Field Survey Response Pack** was developed for field survey leaders undertaking field surveys during the Detailed Engineering phase of the BTC Pipeline Project. The **aim** of the pack is to ensure that a consistent message about the Project is given to the public and any individual concerns are recorded and a response provided. The pack will help field teams gain further knowledge of the Project and the importance of responding to comments and concerns from local settlement.

Why is this important? Providing a written or verbal response to residents concerns is a critical part of the public consultation process because of the potential for development projects such as this to affect people's lives in some way. By enabling the public to raise concerns and ask questions about the Project, a greater understanding of the opinions, perceptions and concerns of the public is achieved by the project team.

This process was developed to help avoid potential conflict with the public, reduce risks of misinformation and to identify potential social and environmental impacts and concerns eg construction impacts including noise, traffic, dust, influx of construction workers, pressure on existing resources and infrastructure, possible temporary employment etc.

What does the Field Survey Response Pack include?

- copies of the project leaflets to be handed out if survey teams are approached by members of the public
- a copy of the ESIA Information Pack detailing some background to the Project (for the benefit of the field survey leaders and their teams)
- copies of a proforma record sheet to document specific comments from the public, which includes details of where the completed record sheet should be forwarded
- a series of Questions and Answers related to the Project to enable field survey teams to provide additional information to the public while in the field.

Sign-off Prior to Field Work

All field survey teams were required to sign a term demonstrating their acceptance of the aims and objectives of this process prior to commencing any fieldwork. Both BOTAŞ and BTC Co, and their Contractors participated in this process to ensure a consistent approach to ensuring good community relations and communication associated with the Project.

1.3.1.1 Selection of settlements

Pipeline

248 settlements (rural settlements and district centres) within the four kilometre pipeline corridor (ie two kilometres either side of the centreline) were initially identified from maps ³. Determined firstly to align with the surveys in Georgia and Azerbaijan, but more importantly because it was assumed a sufficient width to capture the majority of impacted settlements.⁴

Of these (248 settlements), 102 settlements were selected for consultation (94 rural settlements and eight district centres) and 88 settlements (80 rural settlements and eight district centres) for the survey. Selection of settlements also took into account population size, settlement location and settlement structure (ie the socio-economic and cultural composition of a settlement).

The 102 settlements *consulted*, represent **41%** of the total settlements in the pipeline corridor. However, in terms of percentage of the population, the 102 settlements *consulted* represent **84%** of the total corridor population (79% of the rural population and 100% of the urban). Further analysis of these figures indicates the following:

In terms of **settlements surveyed**, the 80 rural settlements surveyed represent 34% of *all rural settlements* in the pipeline corridor, and 71% of the *total rural population*.

Additional settlements

Following the initial pipeline consultation and survey activities, a list of 301 settlements whose land is likely to be intersected by the pipeline corridor was prepared ⁵. Of this total, 72 of the settlements had been consulted previously. The remaining 229 rural settlements were therefore targeted for additional data gathering. Of these, 210 were reached. Due to weather conditions (and associated logistical constraints) these activities were conducted by telephone with the *Muhtars* of these rural settlements.

AGIs

The proposed locations of the four pump stations (PT) and one pressure reduction station (PRS) were determined in December 2002. The proposed locations are in the following provinces and districts:

- PT1: in Ardahan province, Posof district, near the Georgia/Turkey border at Posof.
- PT2: in Erzurum province, Pasinler district.

³ The 248 settlements represent *all* settlements (rural settlements and district centres) within the 4km pipeline corridor, based on the routing of the pipeline at the time of the survey.

⁴ Settlements that were not within the 4km corridor, but had land intersected with the pipeline were also included into the study and the muhtars were interviewed by telephone.

⁵ There are two reasons why this total differs from the initial 248 settlements identified: 1) due to re-routing of the pipeline and thus additional settlements affected and 2) due to settlements outside of the 4km corridor whose land is intersected by the pipeline corridor.

- PT3: in Erzincan province, Cayirli district.
- PT4: in Sivas province, on the border of Altinyayla and Ulas district.
- PRS: in Kahramanmaras province, Andirin district.

A discrete study was undertaken between 4th and 27th December 2001 to consult and survey settlements within approximately 5km of the pump stations and pressure reduction station.

Community meetings and socio-economic surveys were held in 21 settlements within a 5km radius of the pump station and pressure reduction station locations. This included four community meetings in the vicinity of PT1 in Ardahan province, six in the vicinity of PT2 in Erzurum province, three in the vicinity of PT3 in Erzincan province, five in the vicinity of PT4 in Sivas province and three in the vicinity of the pressure reduction station in Kahramanmaras province.

An additional community meeting was held in the settlement of Sogutlukaya, Ardahan in April 2002 (in the vicinity of PT1) to further discuss concerns raised during the initial meetings and surveys.

The locations for the 52 block valves along the pipeline route were determined in March 2002. Settlements within 2km of the proposed block valves and associated access roads were identified and a desk top study undertaken, based on aerial photos. Due to their location within the existing pipeline corridor, no consultation or socio-economic surveys were undertaken. Their locations and associated impacts (although of low significance) will be disclosed as part of the disclosure process.

Construction Camps

The proposed locations of the three primary construction camps were determined in January 2002. These camps are located in the following provinces and districts:

- Erzurum province, in Pasinler district, (Lot A / Camp 1);
- Sivas province, in Zara district, (Lot B / Camp 2);
- Kahramanmaras province, in Goksun district, (Lot C / Camp 3).

The community meetings were held with residents of those settlements located within a 5km radius of the proposed construction camp locations. This included five community meetings in the vicinity of the proposed construction camp in Erzurum province, four in the vicinity of the proposed construction camp in Sivas province and seven in the vicinity of the proposed construction camp in Kahramanmaras province. In addition to the community meetings, socio-economic surveys were undertaken with settlements within 2km of each construction camp and held with relevant local and provincial authorities.

Two additional community meetings were held in April 2002 with residents in two settlements (Mehmetbey and Mahmutbey) in the vicinity of the construction camp in Kahramanmaras to discuss and get concerns on a change in the proposed camp location.

1.3.1.2 Consultation

Pipeline

The objectives of consultation were to:

- share information about the Project;
- solicit the views and attitudes of residents to the pipeline;
- identify key issues of concern.

All consulted and surveyed settlements were first visited by an organisational team, typically several days prior to the planned consultations. Their job was to: liaise with the Muhtar (or other local authorities where necessary); to arrange the consultation meetings; to identify any conditions that might hinder data collection (eg local bazaars, weddings etc) and to distribute the consultation materials, namely, an ESIA Information Package and leaflet (for Muhtars and local residents respectively). These materials are provided in Appendix A3.

The consultation activities were then held a minimum of two to three days prior to the survey. This staggering gave local residents time to consider the information that was provided to them in the consultation process, and allowed for more informed discussions when gathering views on the BTC Project during the socio-economic survey. It also ensured that the survey teams were able to respond to any findings or gaps identified in the consultation meetings.

Consultation and survey activities along the pipeline route took place over a six-week period, from the 3rd September 2001 to 20th October 2001.

The format of the meetings, which were facilitated by the national consultants, comprised a presentation on the BTC Project and a question and answer open forum session, enabling attendees to raise issues of concern or clarify areas of uncertainty. The meetings were generally held either in the local school, the Muhtars room or another communal meeting place such as the coffee house or grounds of the mosque. Separate community meetings were held for men and women, where required, to ensure the participation of the latter group

AGIs

This study had a number of objectives:

- To inform local residents of the preferred locations of the pump stations and pressure reduction station.
- To solicit the views and attitudes of residents on the establishment of a station adjacent to their settlement.
- To identify and understand the potential socio-economic impacts associated with the establishment of the station.

The format of the meetings was the same as those held for pipeline consultation, including separate meetings being held for men and women, where necessary.

Construction Camps

A discrete study was undertaken between 26th January and 8 February 2002 to consult and survey settlements potentially affected by the proposed camps. The first phase of consultation, conducted during September and October 2001, indicated mixed reactions to the location of construction camps in the vicinity of local settlements. The study for the construction camp therefore aimed to inform local residents and solicit their comments on the proposed locations and to identify the specific socio-economic impacts associated with the proposed locations.

The format of the meetings was the same as those held for pipeline consultation, although information pamphlets, prepared specifically for construction camp consultation, were distributed. Where necessary, separate meetings for men and women were held to ensure the participation of the latter.

1.3.1.3 Socio-economic Survey

Pipeline

After the consultation meetings, survey field teams visited 88 settlements and applied both the settlement level questionnaire and the household level questionnaire (see Appendix A4). A total of 1328 household questionnaires were completed from the 88 settlements (446 in the 8 district centres and 882 questionnaires in the 80 rural settlements) (see Boxes 3 and 4 below for rationale). The Muhtars from all 88 settlements were interviewed using the settlement level questionnaire. Other authorities or key representatives within the rural settlements, such as members of the Council of Village Elders, the *Imam* (head of the mosque) or the school head, were also asked relevant questions (eg on religious or education matters).

Box 3: Reliability of Data

An total of **1328** household level questionnaires were administered in order to attain a 95% Confidence Level in survey findings for the whole pipeline corridor (with an associated 'Sampling Error' of +/- **2.69%**). On average, 10 questionnaires were conducted per settlement surveyed. This even distribution allowed for comparison between settlements and prevented a bias in quantity of information from the larger settlements.

For each settlement, households were selected through a combination of three sampling techniques: 1) purposive sampling, 2) systematic random sampling, and 3) quota sampling. These techniques are explained in more detail in the box below. All information was recorded and analysed using the computer software, Statistical Package for the Social Sciences, Version 11.0 (SPSS). (See Box 5).

Box 4: Sampling Techniques

Purposive Sampling: this technique involves the use of judgement on the part of the researcher. The researcher forms a sample by selecting specific groups within the population (in the case of this study, poor households were selected as they were identified as being potentially more vulnerable to the impacts of the pipeline). This method is viable if the boundaries of a study population are impossible to define or, as with this study, the time available is too limited to allow probability sampling. Thus, the Muhtar was asked to identify the poor households using his own criteria (eg households without land or access to subsistence livelihoods or households with no male head). On average, 50% of the household questionnaires (for each settlement) were conducted with vulnerable households.

Systematic Random Sampling: this technique randomly selects interviewees (households) based on a criteria which does not introduce any biases into the sample. For example, selecting the third house on the right hand side of randomly selected roads within a settlement will give you an unbiased, random sample group. Interviewees (households) are selected at random until the desired sample size is reached. Within the random and purposive sample groups, a quota sampling technique was introduced.

Quota Sampling: this technique aims to obtain a cross-section of the population by setting a quota for number of questionnaires per category identified. A quota sample can be based on either one or a combination of variables (eg gender, levels of income, ethnicity). A designated number of respondents for each category is then selected from the population. In the socio-economic survey for this project, a quota on the number of vulnerable households to be interviewed was introduced (50% of the questionnaires). In addition, a target for the number of women to be interviewed on the qualitative/perception questions was set (ie 40%).

Box 5: Statistical Package for the Social Sciences (SPSS)

SPSS is a computer software package utilized by market research organizations and social research bodies to undertake statistical analysis of socio-economic data. The package is designed to aid entry, access and management of data. SPSS also enables analytical data preparation and reporting through statistical procedures such as aggregation, counts, cross tabulations etc. SPSS also has graphical functions (eg for the development of charts). SPSS was used in the EIA through the establishment of a database to manage and analyse the results of the household and settlement level questionnaires. Statistical procedures such as cross tabulations were also used to analyse baseline data and graphical tools were used to produce bar and pie charts to visually represent the baseline data collected at the settlement level.

Additional Settlements

The objectives of these activities were as follows:

- To ensure that all potentially affected populations in close proximity and with land intersected by the to the pipeline were aware of the Project prior to disclosure.
- To gather information for the 'walk down the route' which comprises tables and corresponding maps highlighting specific socio-economic characteristics, impacts and mitigation measures at the settlement level.

The Muhtars of the additional settlements were interviewed by telephone between 11th January and 20th January 2002. The socio-economic survey for the additional settlements targeted the Muhtars or other authorities (eg *Imam*, member of the Council of Village Elders etc) of the 210 rural settlements. The survey was conducted via telephone interviews in the form of a shortened,

targeted questionnaire (see Appendix A4). Seventeen of the 210 Muhtars were unable to be reached and two rural settlements could not be located⁶.

The telephone interview comprised an introductory explanation of the purpose of the interview and the provision of general project information, followed by a questionnaire that included key socio-economic questions taken from the original settlement level pipeline questionnaire.

The Muhtars were given the opportunity to ask questions or provide additional feedback at the conclusion of the questionnaire and were provided with the contact details of Project representatives should they have additional queries.

AGIs

The socio-economic survey involved administering shortened household and settlement level questionnaires which focussed on questions that gathered data necessary for understanding the potential impacts of pump stations, and pressure reduction station and associated construction camps. All settlements within a 2km radius of the four pump stations or one pressure reduction station were selected for the household questionnaire (unless previously interviewed). A target of 15 questionnaires per settlement was set. This is higher than the target set for the pipeline survey (10 questionnaires) since additional information, related specifically to settlements potentially impacted by the pump station, needed to be collected. The settlement level questionnaire was administered in 11 settlements.

As with all other consultation activities, a target for the number of women to be interviewed on the qualitative/perception questions was introduced, namely 40% (women to be >15 years old and resident in the settlement).

Construction Camps

The socio-economic survey involved administering shortened household and settlement level questionnaires that focussed on questions that gathered data necessary for understanding the potential impacts of construction camps. These questionnaires were administered to settlements within an approximate 2km radius of the proposed construction camps (unless previously surveyed).

All eight settlements within the 2km radius were selected for the household questionnaire. A target of 15 questionnaires per settlement was set. This is higher than the target set for the pipeline survey (10 questionnaires) since additional information, related specifically to settlements potentially impacted by the construction camps, needed to be collected. However, due to a number of very small settlements and other variations⁷, the overall target size of 120 questionnaires was not met. Thus, only 77 households were surveyed, with an average of 9 household questionnaires per settlement. Seven settlement level questionnaires were administered across the three provinces.

⁶ The reason two settlements were not found during the telephone interview process was either because they were registered under a different name to that provided on the map or the local residents migrate elsewhere during the winter period and were therefore unavailable at the time of the survey.

⁷ For example, Kadiriye village in Sivas had no winter population, with the Muhtar residing in Zara district during winter. Camkopru, Buyuk Pinar and Gumgum in Kahramanmaras also have very small populations, with 6, 3 and 5 households respectively.

As with all other survey activities, percentage targets for female contribution to the qualitative/perception section of the questionnaire (ie 40%) and targets for number of vulnerable households interviewed (50% of total) was adhered to. The settlements surveyed provided in Appendix B6 at the end of this section.

The relevant governors, sub-governors and mayors administrating the provinces or districts in which the proposed camps are to be located and any major settlements within one-hour driving distance were notified by telephone of the proposed construction camp locations. The process for this consultation was: to provide the governors, sub-governors and mayors with information on the Project and the proposed construction camps; to ask questions specific to the construction camps; and to provide authorities with an opportunity to raise issues of concern. A total of 10 authorities were interviewed telephonically from the districts of: Pasinler, Horosan and Askale in Erzurum province; Zara, Hafik, Ulasli and Imranli in Sivas province; and Andirin, Goksun and Pinarbasi in Kahramanmaras.

1.3.2 Approach taken for the Marine Terminal

1.3.2.1 Selection of Settlements

The community meetings and socio-economic survey took place over a two week period, from the 8th to the 19th October 2001. Key steps in this process were as follows.

- An initial area of influence and associated stakeholders were identified for the marine terminal.
- Following interviews with key stakeholders, a preliminary understanding of the potential socio-economic impacts of the marine development was gained. Based on this understanding, those settlements that are likely to be directly impacted by the proposed development were identified. These settlements are directly adjacent to the existing and proposed marine terminals and are referred to as **neighbouring settlements** in this study. They include the following: Golovasi, Sahil Sitesi, Karatepe and Incirli. All are located within 1.5km of the marine terminal.
- Five other settlements were also selected for survey and consultation. Three of these are located within 6km of the marine terminal and are referred to as **non-neighbouring settlements**. They include the following: Sogozu, Karayilan⁸ and Hamzali. The two remaining settlements, Haylazli and Devecikusagi, are located between 6 and 30km from the terminal. For the purposes of this study, all five additional settlements surveyed are jointly referred to as **non-neighbouring settlements**.

⁸ Although Karayilan is 1.5km north of the marine terminal, it is not directly adjacent to the proposed development and is therefore not categorised as a directly impacted settlement.

Box 6: Definition of Neighbouring and Non-neighbouring Settlements

Neighbouring Settlements: these are defined as those settlements that are likely to be the primary receptors of impacts associated with the marine terminal. These settlements neighbour the marine terminal development and receive priority focus in both the baseline section and in the subsequent assessment of impacts.

Non-neighbouring Settlements: these are defined as those settlements that are likely to be affected by secondary impacts associated with the marine terminal development (a secondary impact is a 'knock-on' effect [eg a change in diet] resulting from a direct impact [eg a decrease in fishing]). These settlements are located up to 6km from the marine terminal. For the purposes of this study, two settlements within the **broader project area** (Haylazli and Devecikusagi) are also included in this category. Although the likelihood of these settlements being indirectly impacted is considered minimal, data from these settlements contribute towards an understanding of the Iskenderun Gulf area, in which the marine terminal is located.

An additional study was conducted on the 8th and 9th February 2002 to verify data and gather additional information on fishing activities within the settlements of Golovasi, Sahil Sitesi and Incirli. Data was gathered through focus groups and mapping exercises aimed at understanding issues best explained visually (eg extent of fishing grounds, frequency with which they are used by local fishermen, marine resources per fishing grounds etc).

1.3.2.2 Consultation

The objectives of consultation were to:

- share information about the Project;
- solicit the views and attitudes of residents to the marine terminal development; and
- identify key issues of concern.

To meet these objectives, consultation in the rural settlements comprised community meetings. The format of the meetings, which were facilitated by the national consultants, comprised a presentation on the BTC Project and a question and answer open forum session, enabling attendees to raise issues of concern or clarify areas of uncertainty. The meetings were generally held either in the local school, the Muhtars room or another communal meeting place such as the coffee house or grounds of the mosque. Separate community meetings were held for men and women, where required, to ensure the participation of the latter group.

Consultation meetings were conducted with the following groups of stakeholders:

- Local authorities, including the Governor of Yumurtalik, the Sub-governor of Yumurtalik and Ceyhan district, the mayors of Yumurtalik and Ceyhan district centres, and the Muhtars⁹ of all settlements in the broad project area.
- Local fishermen, fishing associations and commercial fishermen in Yumurtalik, Incirli and Golovasi.
- Residents from the settlements of Karatepe, Incirli and Golovasi, including secondary homeowners in Sahil Sitesi and residents in the BOTAŞ property¹⁰. Where possible,

⁹ A *Muhtar* is a village head, democratically elected by residents of the rural settlement.

separate consultation meetings were arranged for men and women to ensure the participation of the latter.

The additional consultation meetings conducted on the 8th and 9th February 2002 were held with the following stakeholders:

- Local fishermen from Golovasi and Sahil Sitesi.
- Local authorities, including a representative of Yumurtalik Municipality, the Muhtars of Incirli and Golovasi and a representative from Petro-Trans Security Office in Incirli.
- Local tradesmen from Yumurtalik and Incirli.
- Non-local fisherman.

1.3.2.3 Socio-Economic Survey

After consultation, the field teams visited all nine settlements and carried out both settlement level and household level questionnaires. The Muhtar from each settlement was interviewed using the settlement level questionnaire. Members of the Council of Village Elders, the Imam (head of the mosque) or the school head were interviewed if the Muhtar was not available or when clarity on specific matters (eg religious or educational matters) was required.

A total of 200 questionnaires were administered within the survey area, distributed evenly between the nine settlements. Thus, 22 interviews were conducted in each settlement of varying population size. The 200 questionnaires administered allowed for a confidence level of 95% and a sampling error of +/- 4%. For each settlement, households were selected through a combination of three sampling techniques: 1) purposive sampling; 2) systematic random sampling; and 3) quota sampling. These sampling methodologies are explained in more detail in Box 4.

The household questionnaires were administered through face-to-face interviews. Sixty percent of the questionnaires (quantitative and qualitative sections) were administered with the 'family head', defined as the *'person who provides and distributes income for the family'* (largely men). In order to ensure female contribution to the data gathered, a target of the number of women to be interviewed on the qualitative/perception questions was introduced, namely 40% (women to be >15 years old and resident in the settlement). Where the family head was not resident in the settlement (eg if working at a district centre), another household would be selected in order to meet the targets for men and women interviewed. Vulnerable households, as identified by the Muhtar, were also targeted, comprising 50% of the households. All information was recorded and analysed using the computer software, Statistical Package for the Social Sciences, Version 11.0 (SPSS).

¹⁰ Due to the difficulty in interviewing secondary homeowners, information packages were sent to their primary home. Information packages were also distributed to BOTAŞ residents.

**APPENDIX A6 – SAMPLE EXHIBITION PANEL
AND DISCLOSURE
ADVERTISEMENT**

**APPENDIX A6: SAMPLE EXHIBITION PANEL USED DURING NATIONAL
NGO/INTEREST GROUP MEETINGS**



**EXHIBITION PANELS ON DISPLAY AT ISTANBUL NATIONAL
NGO/INTEREST GROUP MEETING, JULY 2002**





DISCLOSURE OF BAKU-TBILISI CEYHAN CRUDE OIL PIPELINE PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT STUDIES

BTC Owners and BOTAS are pleased to announce that the Draft Environmental and Social Impact Assessment (EIA) Report of the Baku-Tbilisi-Ceyhan (BTC) crude oil export pipeline is available for public review and comment for a period of 60 days from late June to late August 2002. Following the 60-day disclosure period, all comments received will be addressed and incorporated as appropriate into the EIA, prior to formal submission to the Ministry of Environment of the Turkish Government.

The EIA describes the existing environmental and social conditions along the pipeline route, the design, construction and operation of the pipeline, the predicted effects of the activities and the measures which will be taken to prevent, minimise and mitigate any potential adverse effects on the ecology and population.

Copies of these documents have now been placed at the following locations in Turkey for public review:

Provincial (10) and District Governorship offices (35) along the pipeline route

- ⇒ Ardahan Governorship (Hanak, Damal, Posof, Merkez Sub-governorships)
- ⇒ Kars Governorship (Selim, Sarıkamış, Merkez, Susuz Sub-governorships)
- ⇒ Erzurum Governorship (Şenkaya, Horasan, Köprüköy, Pasinler, Ilıca, Aşkale and Merkez Sub-governorships)
- ⇒ Erzincan Governorship (Çayırılı, Tercan, Refahiye Sub-governorships)
- ⇒ Gümüşhane Governorship (Kelkit Sub-governorship)
- ⇒ Sivas Governorship (İmranlı, Zara, Hafik, Ulaş, Altınayla and Merkez Sub-governorships)
- ⇒ Kayseri Governorship (Pınarbaşı, Sarız Sub-governorships)
- ⇒ Kahramanmaraş Governorship (Göksun and Andırın Sub-governorships)
- ⇒ Osmaniye Governorship (Kadirli and Merkez Sub-governorships)
- ⇒ Adana Governorship (Ceyhan and Yumurtalık Sub-governorships)

National and Local University Libraries

- ⇒ Boğaziçi University (Istanbul)
- ⇒ İTÜ (Istanbul Technical University)
- ⇒ METU (Middle East Technical University (Ankara)
- ⇒ Bilkent University (Ankara)
- ⇒ Hacettepe University (Ankara)
- ⇒ Ege University (İzmir)
- ⇒ 9 Eylül University (İzmir)
- ⇒ National Library in Ankara
- ⇒ Beyazıt Library in İstanbul
- ⇒ Kafkas University (Kars)
- ⇒ Atatürk University (Erzurum)
- ⇒ Cumhuriyet University (Sivas)
- ⇒ Erciyes University (Kayseri)
- ⇒ Sütçü İmam University (K. Maraş)
- ⇒ Çukurova University (Adana)

**BTC PROJECT EIA
TURKEY**

In addition to the EIA report, approximately 40,000 Community Pamphlets and 15,000 copies of a Non-Technical Summary of the report will be distributed to settlements along the pipeline route and near the proposed BTC Marine Terminal together with feedback forms to allow comments on the EIA to be received and considered during the disclosure process.

We welcome all comments on the draft EIA. Tell us what you think through visiting our web site at www.caspiandevlopmentandexport.com or through completing the feedback form provided with the above documents.

Further information can be obtained from either BTC Owners or BOTAŞ, whose contact details are provided below. Please also submit your comments on the EIA to the same address by end of August. Substantive comments will be carefully considered and addressed as far as possible.

<p>ŞUKRAN ÇAĞLAYAN BP Exploration (Caspian Sea) Ltd – representing the BTC Owners Soğutozu Mahallesi, Soğutozu Caddesi No:31, Kat: 7 Soğutozu / ANKARA Ph: (0312) 287 1234 Fax: (0312) 287 20 09 <i>Email: sukran.caglayan@bp.com</i></p>	<p>EBRU DEMIREKLER YILDIZ Environment Department BOTAŞ-Baku-Tbilisi-Ceyhan Crude Oil Pipeline Directorate Soğutozu Mahallesi, Soğutozu Caddesi No: 31 Soğutozu / ANKARA Phone: (0312) 285 44 55 Fax: (0312) 284 11 34 <i>Email: ebru.demirekler@btc.com.tr</i></p>
---	--

Pipeline route through Azerbaijan, Georgia and Turkey



Introduction

Project description



The BTC Owners¹ are committed to the construction, delivery, and operation of the Baku-Tbilisi-Ceyhan Pipeline Project as the most environmentally sound crude oil export route from the Caspian Sea to world markets. Safety, sensitivity to the environment and social responsibility are core values to making the BTC Project a reality. As a result, BTC Owners is committed to comply with national and international health, safety, environmental and social requirements and seeks opportunities to consult on the proposed project with the widest audience possible.

Note: All construction photographs in this brochure are of the Western Route Export Pipeline in Azerbaijan and Georgia and are included to illustrate the types of activities you can expect to see during construction of the new pipeline.

This pamphlet provides background information on the BTC Pipeline and answers some of the most frequently asked questions regarding the BTC Project. It also summarises the key findings arising from the Environmental and Social Impact Assessment (referred to as the EIA) undertaken for the project and the associated actions that will be implemented.

- temporary construction camps, other buildings and work sites
- permanent buildings/Above Ground Installations (AGIs)
- health and safety
- roads and other infrastructure
- the environment and cultural heritage
- your involvement in the process
- how you can contact us if you have any comments or concerns.

Specifically, the pamphlet addresses the following issues:

- the environmental and social impact assessments that have been undertaken
- plans for pipeline and marine terminal construction, operation and ultimate closure
- employment opportunities
- the land expropriation and compensation process

We would like you to read through this pamphlet and if you have any questions, or comments, please contact us via the community relations team.

The Caspian region is currently estimated to contain between 17 to 33 billion barrels of recoverable reserves of crude oil. The BTC Project is essential in order to export crude oil from the South Caspian without creating unacceptable risks to people and the environment by transporting those volumes through the Turkish Straits. Construction and operation of the BTC Pipeline will also generate revenues that will bring a lasting benefit to the people of the countries involved.

The use of pipelines is a well-established and safe method of transporting crude oil from oil fields to refineries or to a port from which the oil may be shipped in tankers to world markets.

In 1995, a group of international petroleum companies – led by BP – started working on plans for a 1,760 kilometre length, buried pipeline to transport crude oil from Azerbaijan to the Turkish Mediterranean coast via Georgia. This pipeline is now referred to as the BTC Pipeline.

The Turkish section of the pipeline will be 1,076 kilometres in length, stretching from Turkgozu in the Posof district on the Georgia-Turkey border, to the marine terminal near Ceyhan on the Mediterranean coast. It will cross the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaraş, Osmaniye and Adana, and will include several surface facilities (AGIs) including four pump stations, one pressure reduction station and 52 block valve stations. BOTAŞ, the state-owned Turkish Petroleum Pipeline Corporation, will design, construct and operate the Turkish section of the BTC Pipeline.

A new marine terminal will be constructed for the BTC Project on BOTAŞ property, next to the existing storage and marine facilities. It will comprise storage tanks, loading facilities, a 2,612 metre jetty and backup control for the monitoring and operation of the entire pipeline system, and will be capable of exporting 50 million tonnes of crude oil per year.

It is envisaged that main pipeline construction activities will commence in early 2003 and will be completed by the end of 2004 or early 2005. Some preliminary activities such as the establishment of camps and construction at the marine terminal may begin towards the end of 2002. The pipeline is designed to be in operation for at least 40 years.

Benefits of the BTC Pipeline to Turkey

Routing the BTC Pipeline through Turkey to Ceyhan will allow Turkey to develop a new energy corridor linking Asia to Europe that is safer and more environmentally friendly than oil tanker transportation via the Turkish Straits. In addition, Turkey will be capable of earning up to US \$200 million a year in operating fees (through the participation of BOTAŞ) for the first 16 years of production, rising to around US \$290 million a year in operating fees at peak production. Moreover, Turkey will benefit from a share of the profits, as TPAO (Turkish Petroleum Company) is also involved in the Project. Construction and operation of the pipeline will create employment and skills training opportunities for local Turkish people.

¹ The BTC Owners are TPAO, SOCAR, BP, Statoil, Unocal, Itochu, ENI and Delta Hess. From mid-2002 this group of companies will legally be called the BTC Company as BTC Co.

Community relations



Environmental Impact Assessment (EIA)



A number of community relations personnel will be employed to act as points of contact for people living in settlements along the pipeline route, near the BTC Marine Terminal, and specific AGIs (the four pump stations and the pressure reduction station). Members of the community relations team will be available for you to talk to, prior to the commencement of construction, during the construction and operation phases of the BTC Project. They will be responsible for community relations activities with all settlements potentially affected by pipeline and marine terminal construction activities and associated facilities such as the pipe storage yards, construction camps and access roads.

In the weeks prior to construction, the community relations team will hold meetings with people living in settlements close to the pipeline and marine terminal, and those that may be affected by a significant increase in traffic.

The purpose of the community relations team will be to inform and help local residents to address their queries or discuss any other issue

related to the BTC Project. Alternatively, if you have a complaint about the project, then you should also speak to the community relations team. We will try to respond to all complaints within seven days. Where this is not possible, a plan on how to resolve the issue will be agreed with local residents within this seven-day timeframe.

In addition, we have set up a special free telephone line to handle comments and complaints. The telephone will be answered in person between 8.30 am and 5.30 pm, Monday to Friday. You can leave a message at all other times. We will take down details of your question and, if you give us your contact details, we will ensure that we respond to you. If you are making a complaint, we will ask where and when (date/time) the problem occurred and who was involved. A member of the community relations team will investigate the complaint. If you do not have access to a telephone, complaints can be made direct to the community relations team during their visits to your settlement.

Throughout the planning process we have worked towards minimising any negative impacts of the BTC Pipeline on both the environment and local residents. To ensure this, we have commissioned independent environmental and social impact assessments for the entire length of the Turkish section of the BTC Pipeline. Similar studies have also been conducted for the pipeline in Azerbaijan and Georgia.

The aim of the EIA process has been to ensure that all potential positive and negative impacts of the BTC Project on the physical, biological and human environments are fully investigated, reported and, where necessary, managed.

The EIA explains how the Project has addressed issues such as potential employment opportunities, land use, construction workers, temporary and permanent buildings access roads, electricity and water supplies. It also covers environmental issues such as ecology, marine life, archaeology and landscape, and explains how we have designed the Project to minimise pollution.

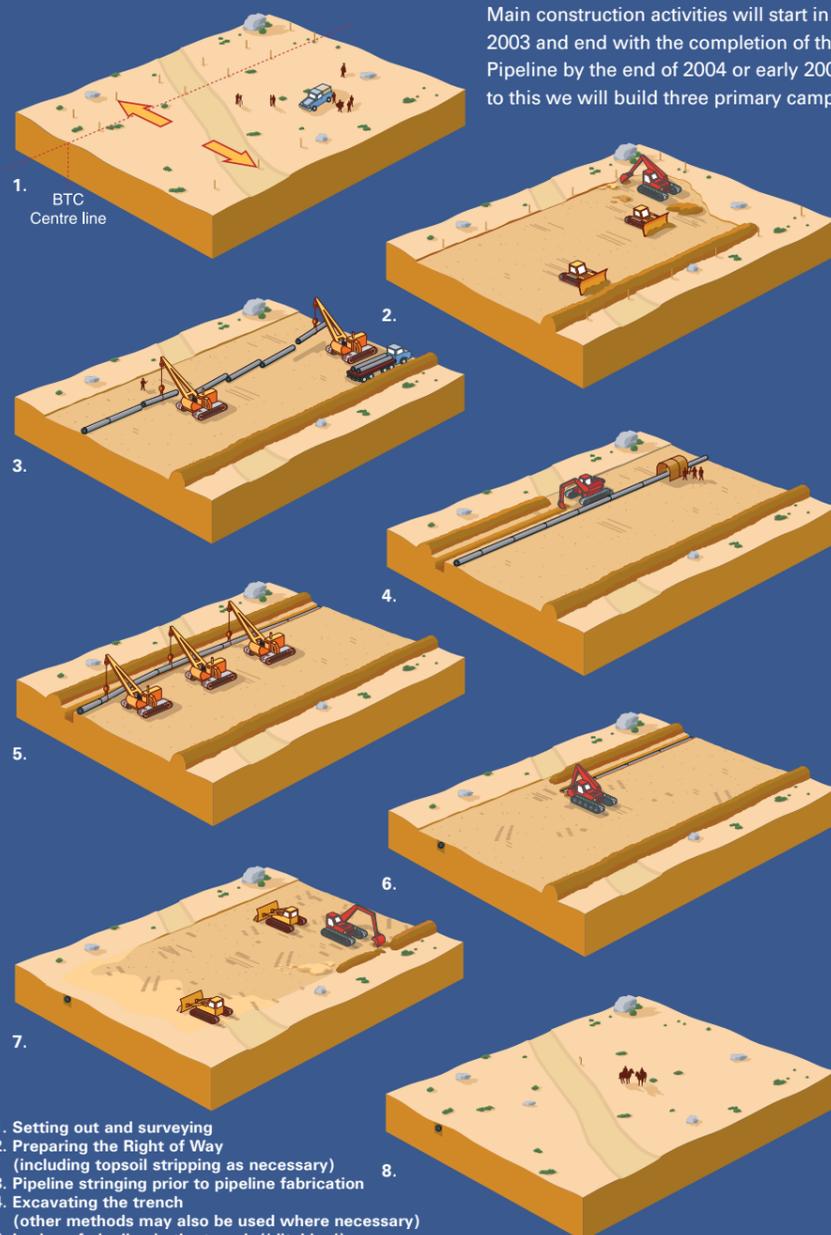
In addition to conducting the EIA, we have also looked at a number of alternative project

options. During the very early stages we considered other ways to transport the oil, including moving it by sea, rail or road transport but concluded that building a pipeline was the best option. The pipeline will provide a safe, cost-effective and environmentally-friendly way of transporting crude oil.

All of the issues discussed in this pamphlet are described in detail in the EIA which you can read at your local university library or governorship/sub-governorship building. A summary document has been produced called the 'Non-Technical Summary', which may be obtained from your Muhtar.

The EIA will be in draft form and available for viewing and comment during a 60-day public disclosure period from late June to late August 2002. The draft EIA will be updated with your comments and those of government ministries and other stakeholders as appropriate. The EIA will then be submitted to the Ministry of Environment for approval.

Pipeline construction



Main construction activities will start in early 2003 and end with the completion of the BTC Pipeline by the end of 2004 or early 2005. Prior to this we will build three primary camps to

house construction workers. These camps will be located near Pasinler (Erzurum), Zara (Sivas) and Goksun (Kahramanmaras). We will also build a number of smaller construction camps along the route as work progresses, for example to house people working at pump station sites.

Construction is expected to advance by between 0.5 kilometre and 1 kilometre a day. Each work front or 'spread' will be around 20 kilometres long. The first job will be to clear and level a 28 metre-wide strip of land as a working area² (Right of Way). Within this strip, we will dig a 2.5 metre-deep trench (which is expected to be open for a maximum of 40 days), in which the new pipeline will be buried. We will carefully store topsoil so that it can be replaced once the pipeline has been installed. This entire process is expected to take between two to four months for each spread, depending on local conditions.

The pipe itself will be transported to the pipeline route in 12.5 metre long sections by rail and truck and positioned along the route before being welded together and lowered into position. We will also erect a number of facilities (AGIs) that will house important control equipment such as pumps, pressure reducing equipment and block valves.

When the pipeline crosses a railway line, road or watercourse, special measures will be undertaken to ensure that trains, road traffic and water flow are not affected. For example, the pipeline will be buried beneath a railway, without disturbing the track. When crossing roads, at least one lane of traffic will be maintained at all times; and when crossing watercourses (e.g. rivers) the flow of water will be maintained. The pipeline will cross five major geological faults. In these areas we have designed special trenches to ensure land movements will not damage the pipeline.

After installing the pipeline and constructing the AGIs we will reinstate agricultural land to allow farmers to continue using the land, with certain restrictions on deep ploughing, planting of trees and digging of trenches, in order to ensure the integrity of the pipeline.

²In forest areas and Environmentally Sensitive Areas (ESAs), this strip of land is reduced in width.

Marine terminal construction



The marine terminal construction activities will start towards the end of 2002 and should be completed by late 2004. The marine terminal will occupy an area of approximately 70 hectares. We will also build a stone causeway of approximately 360 metres, from which a jetty will extend a further 2,252 metres. This jetty will be used to allow up to two tankers at a time to berth and load crude oil.

Marine restrictions

Marine restrictions will be extended from around the existing Ceyhan Marine Terminal to include the new BTC Jetty. The marine terminal will be considered a high security area, falling under the protection of the Turkish Coast Guard.

A 400-metre security exclusion zone around the BTC Jetty will be enforced. Unauthorised vessels will not be permitted in this exclusion zone by law. We will also extend the existing manoeuvring zone for tankers to one nautical mile (1,853 metres) from the new jetty. This is to allow for the safe movement of tankers and other vessels. Line fishing and recreational activities can still be carried out within this manoeuvring zone, with the exception of within two hours of a ship entering or departing the marine terminal. Net fishing, however, will be prohibited. The Port and Harbour Authorities will control access to the area.

Pipeline, AGI and Marine Terminal Operation

When the pipeline has been built it will be tested, ready for operation. We will make sure that the pipeline does not leak by pressure testing it with water.

We will also make sure that the pipeline, AGIs and the marine terminal remain in good condition throughout their working life by undertaking regular checks and maintenance. Any problems will be investigated immediately. We will use special equipment to check the condition of the inside of the pipe and local inspectors will regularly check the pipeline route above ground. They will report any disturbances to the ground that could potentially damage the pipeline. At the marine terminal, full access to Golovasi harbour, which is next to the BTC Marine Terminal, will be maintained.

Pipeline, AGI and Marine Terminal Closure

The pipeline and the associated AGIs are designed for a minimum lifetime of 40 years. However, the decision on exactly when to shut down the pipeline will be dependent on the condition of the pipeline, and the availability and continued need to transport oil. In general, it is intended to remove buildings and all related AGI infrastructure after the shut down of the pipeline. The pipeline itself will be cleaned and capped and will remain in the ground to prevent disturbance to restored areas.

Employment



Construction of the pipeline will be divided into three sections or 'Lots' in Turkey. A Contractor will be responsible for the construction of each Lot. In addition to the contracts for the pipeline construction Lots, there will be separate contracts to build the AGIs and the onshore and offshore facilities at the marine terminal. The different contractors on the Project may employ as many as 5,000 workers at the peak of construction. They will need skilled, semi-skilled and unskilled workers. All people employed by the Project will be required to attend health and safety training. Residents from directly impacted settlements³ along the pipeline and near the marine terminal will receive priority consideration for employment.

The majority of skilled and some semi-skilled workers involved in pipeline construction will be part of each Contractor's permanent workforce. These workers will follow the pipeline construction from start to finish. The remaining semi-skilled and the majority of unskilled workers will be employed locally as the pipeline passes through each district. Such local employment is likely to last for periods of between one to three months, with employment at the construction camps, for example, potentially lasting longer. There will also be employment opportunities at the marine terminal.

What do we mean by 'skilled' workers?

A skilled worker has recognised qualifications and approximately 10-15 years' experience in pipeline construction. These include experienced

professional staff such as engineers, managers, as well as specialist personnel such as welders and machine operators. These workers are likely to be employed for the duration of the project (including construction and operation).

What do we mean by 'semi-skilled' workers?

Semi-skilled workers will generally be required to have between 5-10 years' experience. These workers may be employed for the project duration. Likely roles may include experienced drivers, mechanics and clerks.

What do we mean by 'unskilled' workers?

Unskilled workers will require no prior construction experience. Likely roles will include labourers, watchmen, catering assistants and cleaners. These workers will be employed for anywhere between one to three months, as pipeline construction passes near their settlements.

How do you get a job on the construction project?

An employment strategy will be developed by the BTC Project. No recruitment will take place at construction camps or at the workplace (i.e. along the pipeline or at the marine terminal).

For skilled workers, recruitment will take place nationally in major cities, and for semi-skilled workers in provincial and district centres along the pipeline route. The construction Contractor will select skilled workers on the basis of their previous experience (often having worked for the company in previous pipeline construction projects).

Unskilled workers will be recruited locally.



Priority will be given to local people, firstly those from directly-affected settlements, secondly those from the districts and provinces through which the pipeline passes. The community relations team will inform local residents about where to register for employment on the Project. When registering, applicants will be required to present a document (Ikametgah) authorised by the Muhtar confirming where they live and how long they have lived there.

Using the information provided at registration, the Contractor will prepare lists of unskilled worker candidates for the BTC Project. People will be prioritised according to where they live, their previous experience and their availability. These lists will be available for inspection and there will be a draw of names in the presence of the Muhtar and other local representatives such as the Council of Village Elders, teachers or Imams, public notary, and including community relations personnel. If your name is drawn you will be notified and informed of the duration of your work contract, and where and when to report for work and for your health and safety training. BOTAŞ, together with the Contractor will determine how you will be informed.

How much will you earn?

Earnings will be based on the type of work the job entails. All payments will exceed the minimum wage in Turkey.

Are there any restrictions to employment?

All workers must be aged 18 or over, be physically fit, and be able to read and write.

We will try to employ the majority of the unskilled workforce from the settlements closest to the pipeline and marine terminal. All workers will be required to pass a basic medical examination.

Can you sell food and other supplies to the project?

We will need a range of services including catering, laundry, security, vehicles, food, construction equipment and materials. We will try and buy as many local goods as we can from recognised markets, shops and companies where the quality of the products, guaranteed supply, and the prices are competitive and meet our standards. We will not buy any products at camp locations or work sites.

What about when construction is finished and the pipeline is in operation?

It is anticipated that up to 150 people will operate the pipeline and its AGIs in Turkey, and about 200 people will operate the marine terminal. Many of these people will be skilled or semi-skilled. We will aim to train local workers for these positions so that the majority of workers will be Turkish.

³ Project Affected settlements are defined for the purposes of this project as those living within a 2 kilometre band either side of the pipeline corridor, and within 5 kilometres of a pump or pressure reduction station, a primary construction camp or pipe yard or the marine terminal facility.

Land acquisition



The BTC Project has been carefully planned to completely avoid residential areas, including homes and other structures. It will not be necessary for anyone to move from their house.

We will, however, require the use of land to build the pipeline and all associated facilities. For most of the pipeline route we will only need land on a temporary basis, until construction is complete. However, an 8 metre strip of land directly over the pipeline, and additional land at the AGIs, will be required permanently.

We will need to acquire – or, in legal terms ‘expropriate’ – about 3,000 hectares of land along the pipeline corridor. This will involve the expropriation of a 28 metre temporary corridor for construction and, within this, an 8 metre wide permanent corridor. This means that we will acquire a small portion of some 10,000 parcels of land, affecting around 25,000 landowners or users for a period of time.

We are currently preparing a strategy for land acquisition to ensure we address land acquisition issues in a fair and transparent way.

How will we calculate compensation?

We are currently identifying the owners and users of affected land. In accordance with the Turkish Law and good practice guidelines, we hope to reach an agreement with all landowners on the price of the land as well as for physical assets (trees, fences, water wells, etc.), and any

crops on it. We will pay in full, the fair market value (for land, physical assets and crops) before using the land.

We will obtain records of recent land and crop transactions to determine the market value of the land as well as the crops. When negotiated agreements are successfully reached, our contractors will complete construction work as quickly as possible. This will ensure that wherever possible, land is returned without delay for use by its owners and tenants.

How will we acquire the land?

Under Turkish law⁴, the state is entitled to acquire land through a process called ‘expropriation’. This means that specific land, physical assets and crops can be acquired for a public purpose in return for payment to affected owners. The BTC Pipeline is considered to be in the public interest because it will bring significant economic benefits to Turkey.

Recent changes to Turkish Laws have introduced major improvements that will deliver greater benefits to people affected by projects such as BTC. For instance, Turkish Law now encourages negotiation of a settlement and ensures that people receive payment within 45 days of reaching an agreement with us.

How does the new law work in practice?

Firstly, we will establish a dedicated ‘land evaluation team’ to determine the value of each affected parcel of land. This will be done by consulting widely and developing a list of assets (trees, crops, wells, etc) that could be damaged or destroyed. Independent experts will make asset and crop evaluations. A letter will be written to all affected landowners informing them of any decisions and any further plans.

An offer will be made for the land, any crops and other assets based on the market value for that area. When agreement is reached, the new land ownership will be registered at the title deeds office and we will pay the full amount agreed by the court into a nominated bank account. We will also pay other expenses associated with the expropriation of land.

If agreement is not reached, we will apply to the court for the affected land to be registered in our name. The Court will notify the owner with an official letter and in appropriate newspapers. If the owner responds, the Court will ask the two sides to reach an agreement and the agreed amount will be paid. If no agreement is reached, the Court appoints a panel of experts, and a judge then decides an appropriate level of compensation. We will then pay the amount agreed within 15 days.

In cases where agreement cannot be reached before construction work commences, the court will appoint another commission to re-value the affected asset and to allow its expropriation.

Landowners are advised to take their identity cards to negotiations and land registration offices.

What if you don’t agree with Court decisions?

As the decision to acquire land via the expropriation process has been taken, the only issue that can be addressed by the Courts is the amount of compensation to be provided.

Landowners who continue to disagree with the compensation values determined in the provincial court system have the right to appeal their case to the Supreme Court. However, physical land acquisition is allowed to proceed and construction work may commence while the Supreme Court decision on compensation is pending. If the Supreme Court does not agree with the compensation value that has been provided by the provincial court, it will instruct the Court to re-evaluate the amount of compensation. This compensation will be deposited in a new bank account in the name of the owner.

Recent experience shows that in non-negotiated cases, courts sometimes provide lower and sometimes higher valuation assessments. Landowners are advised to carefully examine the full range of evidence that the land evaluation team collects to support the compensation levels we offer, and to reject these only if they are truly convinced that they can receive more favourable assessments through the Courts.

⁴The Expropriation Law (No 2492) as amended in 2001.

Pipeline route



Land acquisition

How will we ensure customary ownership rights (zilliyet) are respected?

People holding customary ownership rights will receive the same benefits as those with registered title deeds. We have already surveyed and identified the customary land holdings through consultations with owners, the Muhtars and members of the Council of Village Elders. Customary ownership records will be submitted to the Court for finalisation and official registration. Compensation claims can also be made to the Court. We will only register the ownership of that portion of the affected land parcels (8 metre pipeline corridor and land for AGIs and access roads) that will be permanently expropriated. We will pay all registration fees.

What happens if you have not yet registered your inheritance?

There are cases where heirs have not registered their inherited rights to land. We have identified these instances through the birth registration office. Such heirs will be invited to negotiations, in the same manner as registered landowners and customary landowners. Should there be disputes of ownership between heirs, these disputes will be resolved between the parties themselves or through the Courts after the land expropriation process. We will pay the heirs in accordance with their birth certificate held at the registration office and relevant shares of the property.

What happens if you are a tenant?

Tenants will be compensated for their crops if they can prove their tenancy agreement with a written statement between the landowner and the user, or where this is not possible, with a written statement from the Muhtar.

What about other users of land?

If any informal users of land (such as those with no tenancy agreement or written statement) can demonstrate that their source of income has been reduced, then some form of compensation will be agreed.

What about land that is officially designated as forest?

Payment will be made to the Forest Authorities for the use of registered forestlands. Throughout Turkey there are registered or customary owners of land in areas designated as 'forests' by the Forest Authorities. Discussions with the Ministry of Forestry are ongoing in order to find a solution for compensating owners and customary owners of such land. We will hold public meetings in order to explain the outcome of our talks with the Ministry.

What about land that is officially state-owned?

Where state-owned land is currently used for grazing or pasture, land payments will be provided to the Treasury⁵. Where possible, alternative grazing or pasture lands will be made available.

Will you be compensated if any livestock is injured or killed as a result of construction activities?

Any compensation for livestock that is injured or killed by the project will be assessed on a case-by-case basis. We will determine the value of the asset and whether the accident or loss was as a direct result of project activities and will pay accordingly.

What will happen when construction is completed?

As the construction and reinstatement activities for each pipeline spread are completed you will be able to use the land again, except where permanent above ground facilities have been constructed. There will, however, be a number of

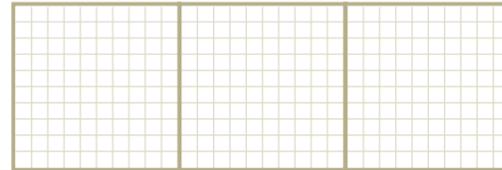
restrictions on the use of the land within the 8 metre corridor. In particular, you will not be able to plant trees directly above the pipeline, as their roots can damage the pipe. You will also not be able to construct any new buildings very close to the pipeline nor construct deep irrigation channels, or carry out any deep digging and deep ploughing over the pipeline. The exact position of the pipeline corridor will be permanently marked by above-ground marker posts.

Will you be compensated for the loss of access to fishing grounds?

Studies are currently being undertaken to determine the impacts of the new jetty on fishing activities near the BTC Marine Terminal. This study, together with observations from consultation activities, will determine the extent of the project impact on the local fishing settlements.



Temporary construction camps, pipe storage yards, and work sites



Permanent above ground installations (AGIs)



We will build three temporary primary construction camps along the pipeline, one each in Pasinler district (Erzurum), Zara district (Sivas) and Goksun district (Kahramanmaras), and one at the Marine Terminal (Ceyhan). We will also build smaller temporary construction camps alongside pump station sites and several pipe storage yards.

How big will the construction camps be?

The three primary pipeline construction camps will occupy between 14-18 hectares each. Each camp will house between 300-400 workers, mainly Turkish people, but also other nationalities. Special buses will carry local workers to and from their settlements each day – local workers will not be housed at the camps. The smaller campsites will occupy approximately 10 hectares each. The marine terminal campsite will be located within the existing BOTAŞ property, adjacent to the existing terminal.

What will there be in the construction camps?

Each camp will contain sleeping and eating facilities as well as project management offices. Entertainment facilities will be provided to encourage workers to stay within the camp. Entry to construction camps will be strictly limited to the workforce.

What are pipe storage yards?

There will be two types of temporary pipe storage yards where we will store sections of pipe before they are buried in the trench. The main pipe storage yards will be located close to a major port such as Iskenderun, Trabzon and Samsun. There will also be smaller pipe storage yards along the pipeline route. Wherever possible, rail will be used to transport sections of pipe to these yards. The pipes will then be moved by trucks to the pipeline route where they will be welded together and lowered into the trench. Some of these pipe storage yards will form part of the three primary construction camps.

What will happen to the construction camps and pipe storage yards when construction is finished?

After construction is completed, these facilities will be removed and the land will be reinstated to its former condition.



A number of permanent buildings (i.e. in place for approximately 40 years) will be located along the pipeline. These AGIs will include four pump stations, one pressure reduction station and 52 block valve stations.

Pump Stations and Pressure Reduction Station

There will be five larger stations along the route that will house equipment to pump and control the flow of oil through the pipeline. Four pump stations – PT1 at Posof district (Ardahan), PT2 at Pasinler district (Erzurum), PT3 at Cayirli District (Erzincan), PT4 at Altinyayla District (Sivas), and a pressure reduction station (IPT1) in Goksun district (Kahramanmaras) are planned. Each pump station will be situated within a fenced area of between 13-20 hectares, and the pressure reduction station in a fenced area of about 6 hectares.

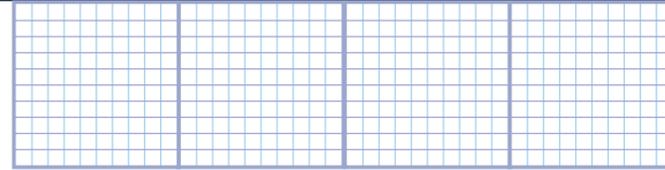
Block Valve Stations

There will be 52 smaller fenced areas along the pipeline that will house block valves. These will be used to isolate sections of the pipeline for safety or other operational reasons. Each one will be situated within a fenced area of approximately 0.15 hectares.

Marine Terminal

The BTC Marine Terminal will be located within existing BOTAŞ land. It will include storage tanks, loading facilities, a new jetty and a backup control room for monitoring and control of the entire pipeline system.





Roads and other infrastructure

Health and safety



Like all big construction projects we will need to carefully manage activities to make them as safe as possible. We will train all workers and brief local residents to ensure that we minimise the risk of accidents. An aim of the Project is '**no harm to people**'. We will need your support to achieve this.

How will you find out about safety?

In the weeks before construction begins near a settlement, the community relations team will hold meetings with local people. In particular they will discuss safety issues, including both road safety and hazards posed by construction activities.

What will we do to protect people from construction traffic?

We will identify roads that we will use for construction traffic and roads that are used by children to reach schools. We will do this together with local residents and schools. Where these roads are to be used by construction traffic we will provide road safety awareness information in local schools. Vehicle traffic will be kept to a minimum during the hours that children are travelling to and from school. There will also be restrictions on the speed of vehicles and careful route planning to avoid populated areas during busy times of the day.

Will the working site be safe?

During construction, our aim will be to ensure the safety of local residents, BTC workers and livestock from accidents caused by construction machinery or by falling into the pipeline trench. Access to the work areas will be restricted to the workforce. Where the pipeline is within 500 metres of a residential area we will erect protective fencing along open sections of the trench. All heavy machinery will be secured in an agreed location overnight. The community relations team will require full assistance from local residents to ensure the success and safety of the Project.

Will construction be noisy?

Residents will not be subject to continuous noise from pipeline construction activities. However, there will be peaks lasting for only one or two days at a time. At certain locations, for instance where the pipeline crosses a highway or a railroad, construction will last up to three or four weeks. Residents close to the marine terminal may face higher noise and vibration levels as construction will require the use of earth-moving machinery, diesel generators, piling, air compressors and some blasting. Some night-time activities may also be required.

Will it be safe to live near the pipeline?

The finished pipeline will be buried underground and will have many safety features to ensure that it is maintained and operated in a safe condition, and any problems identified by computer-controlled systems. In addition, there are 52 individual block valves located along the pipeline, which serve the function of isolating sections of the pipe if a problem occurs. Periodically, the condition of the pipeline will be checked using electronic instruments. Regular patrols will also monitor the condition of the land above the pipeline, specifically checking on unauthorised activities near the pipeline. Emergency plans also exist and people will be trained to ensure rapid response in the unlikely event of an oil spill, either on land or at the jetty.

Will you be able to get oil from the pipeline?

Under **NO** circumstances should anyone interfere with the pipeline to obtain oil. The crude oil pipeline will be run under high pressure and any attempt to interfere with it could result in an explosion and almost certain death of the individual(s) attempting to break into the pipeline, including causing severe danger to the local residents from potential fire and pollution of fields, irrigation water and drinking water supplies.

The Project is likely to require the construction of new roads to reach permanent pipeline facilities. We may also need to improve some existing roads. The Project will be largely self-sufficient for telephone services, waste management and sewerage, and the energy requirements will not impact on the needs of local settlement. We will try to ensure that where water is needed for construction camps, that we do not disrupt existing supplies. We will consult with nearby settlements on a regular basis to make sure that our use of services or infrastructure is not impacting negatively on local users.

Will we notify you if there is any need to disrupt power, water or telephone supply?

We will inform you at least three days ahead of any planned disruption. If the planned disruption will last more than 12 hours we will talk with the affected settlements and appropriate authorities to ensure that disruption will not represent a risk to health or impact on local activities. The community relations team will ensure that local announcements are made and that notices are posted in public places.

What if services are disrupted without warning?

We will try to minimise unplanned disruption as far as possible and inform local authorities within two hours of any disruption, telling them the reason for the disruption and how long we expect it to last. Within one day we will provide information to the local authorities (Muhtar and/or Mayor) providing details of the measures we have taken to assess and resolve any damage. We will ensure that local announcements are made and that notices are posted in public places. Should you wish to lodge a complaint, contact details will be provided. All complaints will be addressed promptly.

Will we build new roads?

We will need to build some temporary roads and temporarily upgrade others to allow for the increase in traffic, we will also need to build some short, permanent, access roads to AGIs. After construction we will repair roads that have been damaged by construction traffic to their original condition.

Will we need to close any roads?

If road closures are required, alternative routes and diversions will be planned and communicated to local authorities (particularly emergency services) and affected residents. This will be done in advance at a pre-construction community meeting. All diversions will be short and will be well signposted.

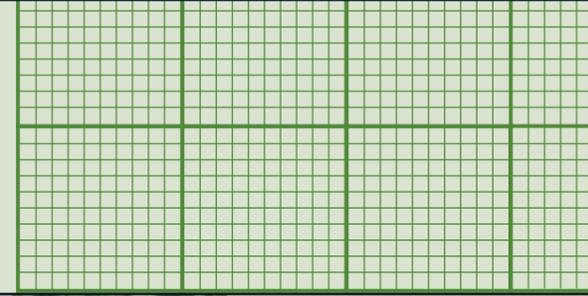
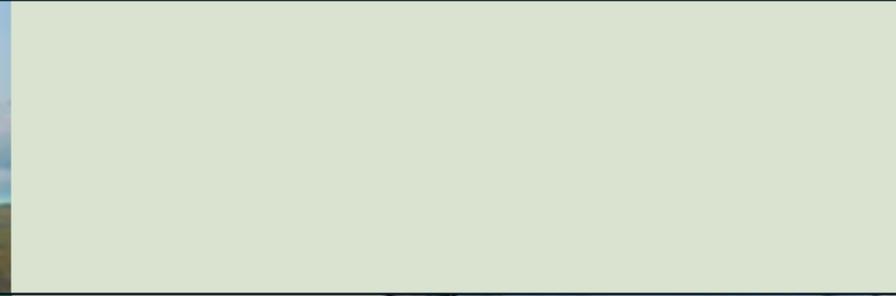
How will we obtain our water?

Boreholes may be required to provide water to construction camps and pump stations along the pipeline. We will also need a large amount of water to test that the pipeline does not leak before it is filled with oil. Whenever possible, any boreholes developed by the Contractors will be left in a safe and useable condition for the benefit of the local residents.

Will construction affect irrigation channels?

Where possible we will maintain flow in all irrigation channels. If disruption is unavoidable we will liaise with the State Hydraulic Works or the General Directorate of Rural Affairs and provide sufficient notice to land owners so that other measures may be implemented before work starts. Following construction, these areas will be fully reinstated.

Environment



We will carefully manage environmental impacts associated with the construction and operation of the pipeline and the marine terminal. One of our main aims is **'no damage to the environment'**.

Many of the impacts of the pipeline will be temporary. Once the pipeline has been laid in the ground, the trench will be filled and the surface restored to its original level and condition. For the majority of the agricultural areas, normal farming activities can then be resumed and the pipeline itself will not be visible.

In some areas, generally where soils are too poor for arable land or the slopes are too steep, reinstatement of the land will take longer. It may be necessary to sow seed to help establish plant cover and prevent erosion. Special engineering techniques will be employed to ensure that the slopes are stable.

We will carefully manage a number of important issues including the effects of the project on indigenous animals and plants, cultural heritage, and the countryside. The design of the pipeline and ongoing maintenance will ensure that the possibility of oil releases to the environment is minimised.

The countryside

How will the project affect the landscape?

There are many different landscapes along the pipeline route – from the Yalniczcam Mountains near the Georgian border to the Cukurova Plain near Ceyhan. Detailed plans have been developed to stabilise and restore the natural vegetation. Some areas may take a number of years to re-vegetate, particularly in high mountain areas with poor soils and a harsh climate. Trees and shrubs will also be planted around the AGIs to hide the facility.

Will you be able to see the pipeline when it is finished?

The pipeline will be buried one metre below the soil surface and will only be above ground level at the various AGIs along the route. A few settlements will be able to see the AGIs.

Will we be undertaking additional works on the route of the East Anatolian Natural Gas pipeline?

For part of its length the new BTC Pipeline will follow the route of the existing East Anatolian Natural Gas Pipeline. We will be addressing reinstatement issues associated with the Natural Gas Pipeline prior to the start of, and during, BTC Pipeline construction.



Will pipeline or marine terminal construction work affect water quality?

There are underground sources of water along the route at Pasinler Plain, Erzurum Plain, Goksun Plain and Adana-Ceyhan Plain. Engineering design measures and construction methods are included to minimise soil damage and to ensure that no contamination of water occurs. In addition, we will treat all discharges. No facilities will be constructed and no discharges or abstractions will take place within 50 metres of a spring or well.

How will we cross rivers?

As stated under 'Pipeline Construction' we will bury the pipeline beneath any rivers it crosses. The necessary burial depth has been calculated to ensure that the river will never expose the pipeline. We will schedule construction works to avoid fish spawning and migrating seasons.

How would we deal with an oil spill?

The pipeline and the marine terminal are designed to ensure that the potential for accidental releases of oil is minimised. Regular patrols will identify any activities that could damage the pipeline. We will also develop detailed Oil Spill Response Plans during construction of the pipeline and the marine terminal, which will cover the procedures that will be followed in the event of an oil spill. Regular emergency training programmes will also be undertaken.

Will the marine terminal bring a risk to the marine environment?

Oil is transferred from the storage tanks via pipelines on a jetty and through a loading arm to a waiting tanker moored at the jetty. This is a practice undertaken safely at many locations around the world. At the new BTC Marine Terminal, detailed operational procedures and trained personnel will help to ensure that the chance of an oil spill is minimised.

In the unlikely event of an oil spill, systems and procedures will be in place that will allow for a rapid and appropriate response to such incidents. All operators will be trained in oil spill response and equipment will be on hand to recover oil.

Environment



Your involvement in the process



Plants and animals

How will we avoid and protect rare animals and plants?

Botanists have been employed to survey the entire pipeline route and where possible the route has been chosen to avoid areas where rare plants and animals exist.

The pipeline route passes through the Posof Wildlife Protection Area, Sarikamis Forest, close to the Gumushane-Kelkit-Cemali Wildlife Protection Area. The route will also pass by Ulas and Alacorak Lakes, which are a series of five lakes being considered by the Ministry of Environment for designation as Internationally Important Wetlands under the International Ramsar Convention that lists world protected sites.

We will schedule construction in sensitive areas to minimise disturbance and to avoid the bird breeding seasons, in particular those of the Caucasian Black Grouse in Posof and the globally threatened White-headed Duck in Ulas and Alacorak lakes.

In the vicinity of the proposed BTC Marine Terminal we carried out a sea turtle survey to confirm that the new jetty would not impact turtle breeding areas.



Cultural heritage

Are there any culturally or archaeologically sensitive sites along the pipeline route?

Archaeologists have walked the entire pipeline route to identify archaeological features or artefacts of interest. Nearly 200 archaeological sites have been identified in the vicinity of the route. The majority of these have been avoided by careful routing of the pipeline. However, there are approximately 12 sites where archaeologists will be undertaking further investigation prior to the start of construction activities.

What if we find something when work has begun?

If archaeological remains are found during construction, work will be stopped, appropriate authorities informed and archaeological investigations will be undertaken. Archaeologists will be employed to monitor activities. A Cultural Heritage Management Plan has been agreed with the Ministry of Culture. This identifies what we will do in the event of archaeological sites or artefacts being uncovered.



All around the world big projects like new pipelines are required to undertake environmental and social impact assessments to meet legal requirements and international standards. These assessments are carefully designed to evaluate positive and negative impacts of the project – and to ensure that the negative impacts are avoided or reduced, and that the positive impacts are increased.

The assessment for the Turkish section of the BTC Project has taken over two years to complete and has involved many discussions and scientific investigations to understand the likely impacts and to identify what should be done to minimise them. A team of national consultants supported by internationally recognised and independent consultants undertook the work.

We have met and talked with groups and individuals at international, national, provincial, district and settlement level. This includes national authorities, national and local non-governmental organisations, local and national media, scientists, academics and other interest groups, 10 provincial governors, 33 sub-governors, mayors and the majority of Muhtars and settlements within a 4 kilometre corridor of the pipeline.

This is the first time such extensive public consultation has been undertaken in Turkey. Consultation with local residents and other interested parties will continue to be undertaken along the pipeline route throughout the construction, operation and closure phases of the Project. This is to ensure that you will have ongoing opportunities to tell us about any concerns or issues you have regarding the Project.

We are now at a stage of the BTC Project called 'Public Disclosure'. This is a 60-day period during which we inform people about the draft EIA and provide you with the opportunity to read it, the Non-Technical Summary, or this Community Pamphlet, and to provide us with your comments. We will also be visiting a number of settlements along the pipeline route and holding disclosure meetings that you are welcome to attend. Following receipt of your comments we will finalise the EIA and submit it to the Ministry of Environment for approval. Following Turkish Government approval, construction of the pipeline and marine terminal will begin.

If you would like to read the EIA report, or the parts of it that relate to your settlement, you can see a copy, in Turkish, at the governorship buildings in provincial centres, sub-governorship buildings at district centres, and at local and national university libraries. We have also given several copies of the shorter Non-Technical Summary of the document to Muhtars, and to public libraries in provincial and district centres.

Announcements on when and where the draft EIA report is available to read, and public disclosure activities will be made in the national and local media. In addition, we will place public notices and will inform Muhtars of disclosure meetings that we will hold in settlements along the pipeline route during July and August 2002.

We very much welcome your comments. You can telephone, write, fax or email us with your comments, and if you have any queries or concerns during construction, please call our community liaison free phone telephone number.

We very much welcome your comments. You can telephone, write, fax or email us with your comments, and if you have any queries or concerns during construction, please call our community liaison free phone telephone number.

For further information on the BTC Project, please refer to the following web-sites:
www.caspiandevlopmentandexport.com (where you can make comments on the BTC Project)
www.btc.com.tr (BOTAS web site – linked to www.caspiandevlopmentandexport.com)

For comments to be directed to the COMMUNITY RELATIONS TEAM please call the following number:
Free phone: 0800 314 1001 (answering machine outside of normal working hours and weekends)

For comments directed to BOTAS
EBRU DEMIREKLER YILDIZ
Environment Department
BOTAS-Baku-Tbilisi-Ceyhan Crude Oil Pipeline Directorate
Sogutozu Mahallesi, Sogutozu Caddesi No: 31
Sogutozu/ANKARA
Phone: (0312) 285 44 55
Fax: (0312) 284 11 34
Email: ebru.demirekler@btc.com.tr

For comments directed to BP
(representing BTC Owners)
SUKRAN CAGLAYAN
BP Exploration (Caspian Sea) Ltd
Sogutozu Mahallesi, Sogutozu Caddesi No: 31
Kat: 7
Sogutozu/ANKARA
Phone: (0312) 287 1234
Fax: (0312) 287 20 09
Email: sukran.caglayan@ec1.bp.com

Appendix A8 - Consultation Results

- 1. Disclosure Results**
- 2. Response to Comments**
- 3. State Authority Responses**
- 4. Correspondence from Phase 1 Consultation**

1 RESULTS OF DISCLOSURE

1.1 OVERVIEW

This Appendix to the EIA Report presents a summary of each of the main issues raised during the disclosure period, along with the response/action taken to enable appropriate revision of the EIA. The issues examined are either the most frequently raised comments or those requiring specific action by the Project. They are outlined on the basis of feedback associated with the following:

- general project background;
- social issues;
- environmental issues;
- monitoring and implementation;
- investment programmes.

Statistics generated by the Project's consultation tracking database, which provides an overview of all comments made during disclosure, are provided in Appendix A1.

The feedback received is from a range of stakeholders consulted during the disclosure period including State authorities, local and national non-governmental organisations (NGOs) and interest groups, and local residents. A large proportion of responses to these issues comprised clarification of proposed mitigation and management measures outlined in the draft EIA report.

A large proportion of the comments, concerns or observations made by stakeholders relate to similar themes or common issues and thus have been addressed collectively in Section 2 of this Appendix. The comments have been grouped into common issues and each issue is stated in *italics*, followed by a response to the issue (in plain text). For those comments dealing with specific issues from a particular party, responses have been provided in the summary below. Responses to comments made by State authorities are presented in tabulated format in Section 3 of this Appendix. For practical reasons, responses to all individual comments received have not been documented or responded to in this section, however records of all comments and information on the nature and extent of the Projects response, where required, are available upon request to the BTC Project office in Ankara, Turkey.

2 RESPONSE TO COMMENTS

2.1 COMMENTS RELATED TO THE PROJECT AND ITS REGIONAL CONTEXT

2.1.1 Project benefits, revenue and legal issues

The benefits of the Project on a local, national, regional and international level were a focus of interest across all stakeholder groups. Many of those consulted were positive about the benefits the Project would bring for Turkey, both economically and politically, particularly within the region. Interest in the revenue Turkey will earn through transit tariffs and BOTAS' involvement was also high with many interested in the anticipated use and distribution of the revenue earned by the Turkish government.

A large proportion of comments received indicated support for the Project, an appreciation of the information provided to date and of the Project's ongoing involvement of stakeholders via the EIA process. A number of NGOs expressed particular gratitude in relation to their continued participation and engagement by the Project throughout the development of the EIA, with several commenting that this process is a 'first' for Turkey. Many also referred to the fact that they had never before seen such a detailed and comprehensive EIA undertaken in Turkey.

Clarifications were sought regarding the relationship between Turkish EIA legislation, the Host Government Agreement (HGA) and international standards, particularly from NGOs at the national and local level. Questions were also raised at the community level on specific aspects of land acquisition laws that will be followed during the Project, such as the recently amended Turkish Expropriation Law.

The above comments do not require specific Project actions as they are generally endorsing the Project design or consultation process. Information on the benefits of the Project was provided at all disclosure meetings and in the disclosure documentation. Financial and legal aspects of the Project are explained in the overall Project description and where necessary, additional information or clarification was provided during the question and answer sessions of the meetings. Legal queries related to land acquisition were responded to by the Designated State Authority (DSA) and BOTAS Land Affairs representatives during the meetings. Feedback received on this issue was collated and reviewed in relation to the Projects land acquisition process.

2.1.2 Regional and international issues

The strategic importance of the Project in the region was a frequently raised comment. Specific questions were received about the relationship and differences between the Azerbaijan, Georgia and Turkey sections of the pipeline; the knock on effects of potential problems for Azerbaijan, Georgia or Turkey; and other pipeline Projects in the region, including Blue Stream and the proposed Shah Deniz Natural Gas Pipeline.

Several national NGOs and interest groups who attended the Istanbul NGO meeting raised local concerns about the risks of continued transportation of Caspian oil reserves and other materials through the Turkish Straits, while others such as Greenpeace expressed concern at the impact of the Project in enhancing greenhouse gas emissions.

The Project description presented at all disclosure meetings and in the disclosure documentation included information on the relationship between the Azerbaijan, Georgia and Turkey components of the Project and the various linked EIA studies being undertaken in each of these three countries (referred to as ESIA's in Azerbaijan and Georgia). In response to specific queries received, stakeholders were informed of a separate study being conducted by the Project to investigate regional level issues¹. Stakeholders were informed that the Cumulative Impacts section of the EIA (Section 16) addresses potential cumulative impacts of the proposed Shah Deniz pipeline on BTC and identifies other important pipelines in the region.

During the national NGO and interest group meetings it was emphasised that by routing the pipeline through Turkey the Project would not be contributing to the already high levels of tanker traffic through the Turkish Straits. Concerns about greenhouse gas and VOC emissions are addressed in Section 2.3 of this Appendix.

2.1.3 Construction schedule and activities

In anticipation of construction commencing, many queries were received requesting clarification on the Project schedule. Specific questions included:

- *exact timing of overall construction activities including duration, commencement and completion dates;*
- *timing of regionally specific activities;*
- *impact of climate and other factors on construction activities;*
- *timing of the establishment of construction camps and construction of AGTs;*
- *extent of prior notification of construction activities;*
- *clarification on the design life of the pipeline and decommissioning phase of the Project.*

Project schedule information has been provided at all disclosure meetings and in the disclosure documentation. Whatever information was known about the schedule at the time of the disclosure meetings was communicated to stakeholders in an effort to ensure there is an understanding of the overall Project schedule and planned activities.

2.1.4 Pipeline routing

A number of comments and queries received were related to pipeline routing. Specific queries included clarification on the routing of the pipeline through certain areas of particular interest and the criteria used in determining the optimum route such as avoidance of ecologically sensitive areas, earthquake prone areas and settlements.

Suggestions for alternative routes were also provided by a few communities. For example, during a disclosure meeting in Akpınar settlement in Sivas, concerns were raised regarding the routing of the pipeline in close proximity to the settlement. Specific feedback received during the meeting, through feedback forms and a call made to the free telephone hotline included:

- *previous negative experience associated with the NGP construction and reinstatement;*

(1) ¹ 'BP Azerbaijan: ACG, BTC and Shah Deniz Projects – Economic, Social and Environmental Review in the National and Regional Context'

- *impact of the BTC Pipeline on fertile agricultural land and the potential for an alternative route to be taken;*
- *concern about impacts of the route on planned expansion of the settlement.*

The disclosure meeting presentations and disclosure documentation provided information on pipeline routing, including an explanation of the alternative options investigated by the Project and the careful determination of the route to avoid sensitive areas. Where further clarification was required, references to the draft EIA and associated environmental and social constraints maps were made.

As a result of the substantial feedback received from Akpınar settlement in Sivas, additional site surveys are currently being conducted to investigate and evaluate the community's concerns and whether alternative routes are feasible in the vicinity. Results from these surveys will be forthcoming.

2.2 COMMENTS RELATED TO SOCIAL ISSUES

Feedback received in relation to social issues is summarised below according to the following categories:

- employment;
- community relations and complaints procedure;
- infrastructure and utilities;
- safety and security;
- procurement of goods and services;
- livelihoods;
- land acquisition.

In early September, the BTC project received a letter and accompanying report from “an international NGO Fact Finding Mission” comprising the following NGOs:

- The Corner House
- Kurdish Human Rights Group Platform
- Campaign to Reform the World Bank
- Bar Human Rights Committee
- Friends of the Earth International

The principle findings of their report are categorised under the following headings:

- The Host Government Agreement
- Consultation
- Land Expropriation and Compensation
- Ethnic Minorities

Although the report raises a number of issues, the BTC project believes most of the issues are covered in the EIA and there is no substantial case to answer. The report, however is under evaluation and further discussion with the authors is being undertaken directly.

2.2.1 Employment

Approximately 10% of the formal feedback collected during disclosure related to the issue of employment. Most of the comments were requests for clarification on employment

opportunities expected within the Project, recruitment procedures and direct requests for jobs.

Specific issues that were raised during the disclosure meetings, particularly at the community level, but also at the provincial and national level, included requests for the employment strategy and procedure for recruitment to emphasise the following:

- *fairness and transparency, with no local stakeholders (eg political representatives) biasing the selection of workers;*
- *priority to be given for all positions to local people and not 'outside' workers;*
- *the importance of ensuring that local skilled workers are prioritised for skilled positions;*
- *recognition of the high levels of unemployment along the pipeline route and the need for such benefits to be experienced at the local level;*
- *clarity on the need for documented evidence of qualifications and experience for skilled and semi-skilled positions;*
- *equal employment opportunities, particularly for women.;*
- *concern over working conditions, particularly health services, insurance coverage and wage levels;*
- *role of community liaison officers and independent monitors in the recruitment process;*
- *timing and duration of employment.*

At the national level, feedback was received from the Turkey representative of the International Labour Organisation (ILO) on the Project's proposed Employment Strategy. Specifically, concern was raised on the recruitment process for unskilled workers and a request made for the lottery system to be replaced by a strategy that specifically enabled those most disadvantaged along the pipeline route to be prioritised for employment through a scoring system. Clarification was also asked about the proposal of establishing recruitment offices along the route contrary to Turkish legislation and whether ISKUR the Turkish Employment Organisation, was consulted in the development of the strategy.

A union representative also queried the use of a lottery system stating the opinion that it would be difficult to implement. The representative also commented on the need for workers to be trained and covered by insurance and to have the right to unionise and to participate in collective bargaining.

2.2.1.1 Recruitment procedures

Following comments made by ILO and a union representative at the Ankara NGO meeting, the employment strategy has been revised by BTC and BOTAS. The key modifications to the strategy include the introduction of a scoring system focussing on the determination of disadvantaged people. Dialogue with ILO has been undertaken prior to the finalisation of the EIA and the agreed framework for the strategy is outlined in Section 6 and 12 and in the Employment and Training Management Plan (Appendix C8) of the EIA. Discussions are ongoing with regard to the development of the scoring system.

Due to the feedback received from the ILO at the beginning of disclosure regarding the proposed Employment Strategy, information provided to other stakeholders was modified to reflect the fact that the strategy was undergoing review and would be communicated to Project affected settlements once finalised. During the local NGO and community level meetings, however, emphasis was still placed on the short-term nature of the majority of positions, the relatively limited number of opportunities available and the Project's commitment to a fair and transparent recruitment procedure.

Responses to queries regarding training, worker health and safety and the involvement of ISKUR were provided during the disclosure meetings. It was emphasised that all workers would receive HSE training by the Project prior to commencement of work, that both Turkish regulations and international standards for workers would be adhered to by the Project and that ISKUR were in fact consulted during development of the employment strategy in January and February 2002.

2.2.1.2 Direct requests for jobs

During the community meetings, residents were advised by the BOTAŞ Community Relations Supervisors that specific information on available jobs, skills required, the application process and other conditions of work would be widely distributed following the finalisation of the employment strategy. Direct requests for employment were recorded both during the meetings and on the feedback forms collected during disclosure. All feedback was inputted into the Projects consultation tracking database (see Appendix A1 for more information on the database).

In addition, in the lead up to construction, community liaison teams will continue to provide clear information on employment opportunities as well as where and when additional information can be obtained.

2.2.1.3 Ensuring appropriate working conditions

The Construction Contractors will be required by the terms of specific provisions in their contract to abide by national and international employment legislation and the specifications of the Employment and Training Management Plan with regard to ensuring appropriate working conditions. These requirements include information on provision of health services within construction camps, compliance with the BTC Project HSE policies, wage levels and protection of workers. Monitoring of the Construction Contractor by both BOTAŞ and BTC Co will include regular review of human resource management procedures. In addition, third party monitoring will occur where necessary with regard to the implementation of employment procedures.

2.2.2 Community relations and complaints procedure

During the community meetings clarifications were sought by many local residents on the Project's procedures for handling complainants and the responsible bodies for informing Project affected settlements of construction activities.

A detailed presentation was made by BOTAŞ Community Relations personnel at all disclosure meetings on the Project's Community Relations Programme and associated complaints procedure. Specific information was provided on the roles and responsibilities of the Construction Contractor, BOTAŞ and BTC Co with regard to community liaison, provision of Project information, handling of complaints, monitoring and reporting. Where additional information was required, the Community Liaison Management Plan (see Appendix C8) was referred to, in addition to disclosure documentation, which provided a summary of key community relations information including Project contact details.

In several instances, the BTC Co representative attending the community meetings provided additional assurances on the mechanisms for ensuring appropriate communication with local residents, reinforcing the international standards applicable to the Project and the mechanisms for monitoring construction and operational activities to ensure compliance with Project commitments and management plans.

2.2.3 Infrastructure and utilities

The potential impact of the Project and construction activities on local infrastructure and utilities was raised at community level meetings and by some local NGOs and authorities. Specific comments were made with regard to the following:

- impact of the construction activities on surrounding irrigation channels and water supply lines;
- disruption to local utilities service provision such as interruptions to power and gas supply;
- use of local roads and infrastructure such as bridges during construction and operation;
- upgrading and/or repair of local roads.

Several residents asked whether the Project would leave behind facilities at construction camps and other Project infrastructure for their use following construction. Specific comments included requests for facilities such as camp buildings, roads and Project utilities to be left for local use.

2.2.3.1 Disruptions to local infrastructure

During the disclosure meetings a detailed explanation of the potential impacts of the Project on local infrastructure and utilities was provided. In summary, it was explained that the Project is committed to avoiding and preventing damage and disruption to local infrastructure, for example, irrigation channels and water, power and gas supply lines. However, in cases where preventions of impacts is not practicable, appropriate mitigation measures would be implemented to minimise such impacts, as outlined in Sections 6 and 12 and in the Social Management and Monitoring Plans (SMMP) in Appendix C8 of the EIA.

2.2.3.2 Use of local roads

Stakeholders were informed that certain local roads and infrastructure such as bridges would be used to access the construction site and Project facilities during both construction and operation. Emphasis was placed on the necessity for infrastructure upgrades to be undertaken by the Project in some instances where the condition of the roads or bridges would otherwise be insufficient to ensure appropriate standards of safety. The Traffic Management Plan (Appendix C5 of the EIA) and the Social Management and Monitoring Plan (Appendix C8 of the EIA) were quoted as mechanisms to ensure that these potential impacts are mitigated against by the Construction Contractors. Should damages occur, stakeholders were informed that appropriate repairs would be conducted and where necessary, compensation paid.

2.2.4 Safety and security

Safety and security concerns were raised by all stakeholder groups and through most feedback mechanisms, including the feedback forms and telephone hotline. At the community level, the following feedback was received:

Safety:

- *safety of local residents, particularly children and also livestock, associated with construction traffic;*
- *the nature and extent of fencing along the pipeline Right of Way;*
- *compensation for injuries or accidents caused by construction activities;*
- *safety of workers and the potential for accidents at the construction site.*

Security:

- protection and patrolling of the pipeline Right of Way;
- potential for attacks or vandalism towards the pipeline.

In general, women typically raised more concerns associated with safety, particularly with regard to safety of their children and livestock near the pipeline trench and construction worksite, whereas men were typically more concerned with security issues.

At the provincial and national level, safety and security were also raised as specific concerns in relation to the following:

- responsibility for ensuring pipeline safety and security;
- potential for planned terrorist attacks or unrest associated with the Project.

During all disclosure meetings it was stated that the safety of neighbouring residents was of utmost importance to the Project and therefore all measures would be taken to prevent accidents or injury associated with Project activities. Specific measures outlined in the Traffic Management Plan (Appendix C5) and SMMP (Appendix C8) were explained in detail to participants at the meetings. These measures include traffic safety awareness training for local settlements; fencing in residential areas within 500m of the Right of Way (ROW) and at animal crossing points; commitments for compensation to be paid for any accidents caused by the Project; and mechanisms to ensure the protection of the pipeline through security patrols.

In response to queries from a number of national NGOs/interest groups regarding security, information was provided on the Host Government Agreement, which stipulates that protection of the pipeline for the BTC Turkey section is the responsibility of the Turkish Government. It was also outlined that the route selection process included avoidance of areas with known potential security concerns and that the most effective way in which security and safety issues can be mitigated is through local community support and awareness raising of potential hazards.

2.2.5 Procurement of goods and services

Residents from those settlements in close proximity to the construction camps and AGIs were particularly interested in learning how they could provide locally produced goods such as dairy products and vegetables and services such as transportation and machinery to the construction camps and workers.

It was explained in the disclosure meetings that a specific plan, the Procurement and Supply Chain Management Plan (see Appendix C8) has been prepared for implementation by the Construction Contractors. This plan outlines opportunities for using local goods and services for construction activities and also to provide the construction camps with local produce. Many of these opportunities such as supply of vehicles and materials will be let through supply contracts. Although the cost of local supply will generally be competitive, there are common barriers to realising these opportunities such as the ability of local companies to provide the quality and quantity of supply necessary, to prepare adequate tenders etc. Details of this Plan were provided during the meetings, where requested, with an emphasis placed on the role of the Contractor in procuring goods and services necessary for construction. The importance of building the capacity of local businesses through the tendering process and maximising opportunities for local procurement was also emphasised.

2.2.6 Livelihoods

The impact of construction and operational activities on local residents' source of livelihood was raised during the public disclosure period. Feedback was received in relation to the following activities, reiterating more substantial concerns raised during the first round of consultation in September – October 2001:

- *impact on bee keeping and the need for advance warning to enable bee keepers to move their hives away from construction areas;*
- *impact on agricultural activities and seasonal grazing and the likelihood of compensation being paid for negative impacts of construction activities.*

Detailed information was provided during all disclosure meetings on the potential impacts and proposed mitigation measures for various sources of livelihood, including bee keeping and seasonal grazing along the pipeline route. Participants at the community level meetings, for example, were asked during the meeting to confirm the presence of such activities within their settlement. Following this, where necessary, additional information was provided on a settlement-by-settlement basis with reference to Section 6 and the SMMP (Appendix C8) from the draft EIA report.

2.2.7 Land acquisition

Issues related to land designated for temporary or permanent use during construction and operation were the most frequently raised issues by local residents during the community meetings. Land related issues were also raised during local NGO meetings, which together with community meetings and other feedback mechanisms comprised some 34% of all comments received during disclosure. A summary of general issues raised on land and specific comments received on land acquisition and compensation is provided below.

General Land Issues

- *clarification on the timing of construction and potential impacts on land cultivation including:*
 - *cessation of cultivation prior to construction;*
 - *requests for prior notification of the construction schedule to enable planning for cultivation;*
 - *timing and extent to which land can be reused following construction;*
 - *restrictions that apply to the reuse of land;*
 - *potential impacts associated with the ability to irrigate and cultivate land parcels severed by the pipeline.*
- *clarification sought on the extent of Project landtake requirements, on a temporary and permanent basis;*
- *concern raised regarding restrictions on access to land and ownership of land above the pipeline.*

Land Acquisition and Compensation Procedure

- *requests for further information on the land acquisition process, including timing and compensation procedures;*
- *requests for the land acquisition process to be fair and transparent;*
- *clarification sought on the determination of compensation payments and composition of land valuation commissions:*
 - *local community representation on commissions;*
 - *extent to which market values would be used in determining compensation;*

- whether tax declarations and undervaluation of land by local residents would influence compensation values;
- process for making compensation payments.
- clarification on variations in compensation payments for different land types (eg irrigated versus dry land) and physical assets, for example crops or Poplar trees;
- clarification on procedures for compensation of land owners versus land users/tenants;
- clarification sought on the potential seasonality issues associated with land acquisition;
- clarification sought on extent of compensation for customary ownership and the acquisition procedure for lands without cadastral surveys;
- clarification on compensation for inherited lands, multiple owners, lack of title deeds, etc;
- clarification on extent of compensation for pasture land (meras);
- requests for further information on legal requirements for land acquisition;
- details of the new expropriation law and how it differs from the previous law;
- extent to which Turkish law and international standards will be followed for land acquisition;
- clarification on negotiation mechanisms and court procedures;
- role of BOTAS and Designated State Authority in land acquisition process;
- clarification sought on extent of monitoring of land acquisition and the compensation procedure.

A detailed explanation of the land acquisition and compensation procedures was provided by the BOTAS Land Affairs representative and DSA regional officers during all disclosure meetings and an overview provided in all disclosure documentation. All feedback on land related issues was provided to the Project's land acquisition team to ensure stakeholder concerns are reviewed and addressed where necessary in the land acquisition process, which summarises the procedures for land acquisition and compensation. A summary of this document is provided in Appendix C9. A separate Resettlement Action Plan (RAP) is currently being developed for submission to the International Finance Corporation in November 2002.

2.3 COMMENTS RELATED TO ENVIRONMENTAL ISSUES

Feedback received in relation to environmental issues is summarised below according to the following categories:

- greenhouse gas emissions;
- Volatile Organic Compounds (VOCs);
- reinstatement;
- East Anatolian Natural Gas Pipeline;
- pollution and oil spills;
- ecology;
- archaeology;
- forestry;
- waste management;
- marine terminal and surrounding environment.

2.3.1 Greenhouse gas emissions

A number of questions have been raised at various consultation meetings concerning greenhouse gas emissions attributable to the Project and their potential contribution to global warming.

Emissions from the four pump stations and the BTC Marine Terminal will include carbon dioxide, methane and nitrous oxide, three of the six so-called greenhouse gases identified under the United Nations Framework Convention on Climate Change (UNFCCC). When operating at full capacity, total emissions from the Turkish section of the Pipeline will contribute 0.10% of Turkey's forecast emissions of greenhouse gases and 0.0016% of the UNFCCC's forecast of global greenhouse gas emissions.

While the contribution of these Project-related operations emissions to global warming will be small, the Project has nevertheless sought to minimise greenhouse gas emissions. Combustion efficiency was a key factor in selection of the pump drivers. Section 16 (Cumulative Impacts) provides further information on this issue.

2.3.2 Volatile Organic Compounds (VOCs)

Questions have also been raised regarding emissions of volatile organic carbons (VOCs), which can be of concern to local air quality, particularly with regard to its implications in the formation of photochemical smog.

The Project has included a number of measures (such as storage tanks being fitted with either internal floating roofs or external floating roofs combined with double seals) to minimise emissions of VOCs. The single significant source of Project related VOCs will be those emitted during tanker loading operations at the BTC Marine Terminal. In this regard, a highly efficient (99.5% VOC destruction efficiency) enclosed ground flare will ensure that such emissions are minimised. The choice of this mitigation measure is the result of an extensive technology review to identify the option that will result in lowest emissions of VOC.

2.3.3 Reinstatement

Reinstatement was a common issue raised during disclosure and raised at the community level meetings in relation to the existing East Anatolian Natural Gas Pipeline (NGP) and the planned BTC Pipeline. A more detailed explanation of issues raised in relation to the NGP is summarised below in Section 2.3.4. General comments from local residents and some local NGOs / interest groups received on reinstatement for BTC, included:

- *procedure for reinstatement of land following construction;*
- *effective separation of topsoil and subsoil prior to and following construction;*
- *prevention of erosion and damage to land;*
- *impact on fertility and yield following construction;*
- *timing of reinstatement procedures;*
- *guaranteed ability to reuse land for cultivation following reinstatement;*
- *clarification on any restrictions on use that will apply after reinstatement;*
- *requests for assurances for reinstatement of the land to previous condition and compensation for any associated damages;*
- *clarification on how reinstatement measures will help minimise erosion risks, especially in areas of difficult terrain along the route;*
- *clarification on how reinstatement and restoration will ensure protection of plant species and sensitive habitats;*

- *ownership of land following reinstatement.*

All disclosure presentations and documentation included information on the Project Reinstatement Plan (see Appendix C2) and the measures contained within it, which address a number of the above concerns and aim to prevent soil erosion risk, restore the land to its previous condition, ensure reuse and cultivation etc. Where necessary, specific detail was provided from the plan to satisfy concerns from meeting participants. No additional actions were therefore required in response to this issue.

2.3.4 East Anatolian Natural Gas Pipeline

Reinstatement issues were raised by local residents and NGOs with specific reference to the existing NGP. The feedback was received from several specific locations along the pipeline route, with provinces such as Erzurum, Erzincan and Sivas indicating the greatest level of concern in relation to this issue due to their previous experience with the NGP construction. Such concern stemmed from previous poor reinstatement of NGP and associated damages to irrigation channels, roads and agricultural lands. Several specific comments included:

- *compensation difficulties associated with NGP;*
- *compensation associated with potential damages during BTC;*
- *extent of BOTAS' and other contractors' involvement in BTC;*
- *clarification on responsible authorities for complaints associated with BTC;*
- *proximity of the NGP to BTC.*

A clear outline of the Project's commitment to address these concerns was provided at all disclosure meetings and in all disclosure documentation. Specific information was given on the Project's Reinstatement Strategy, including the two-phased approach to reinstatement for BTC, which addresses the need for remedial reinstatement in some areas where the NGP runs parallel and in proximity to BTC. The Project's commitment to reinstate the BTC Pipeline right of way to its previous condition was clearly stated. The Project's Reinstatement Plan (see Appendix C2) was also described, where stakeholders requested additional information or clarification.

2.3.5 Pollution and oil spills

The subject of oil spills and potential for pollution, leakages etc were raised both at the local, regional and national level disclosure meetings and comprised approximately 3% of all comments received during disclosure. Feedback was received in relation to the following:

- *potential for an oil spill or leakage from the pipeline to occur;*
- *potential impact of a spill or leakage on nearby water resources and human and animal health;*
- *measures proposed to prevent potential risks;*
- *measures proposed to mitigate against spills and leakages;*
- *clarification on how the Project would respond in the event of a spill;*
- *clarification on extent of compensation for damages associated with a spill.*

Specific comments were received from national and international NGOs during the disclosure meetings including:

- *the risk of oil spills associated with increases in tanker traffic in the Mediterranean and tanker loading at the marine terminal;*

- *potential impacts on the marine environment associated with spills or leakages in the vicinity of the marine terminal.*

The information provided during the disclosure period outlined the Project's commitment to minimising the potential for oil spills by conforming to international standards for pipeline and marine terminal design and operation. Information was provided to stakeholders on facilities such as the 52 block valves, which will be installed with an aim of limiting the amount of oil spilled should a leak occur.

Confirmation on the development of an oil spill response framework and plan was provided during the disclosure meetings and potential measures for the prevention of risks and mitigation of accidents were discussed. Appendix C6 presents the Framework Oil Spill Response Plan. The Plan has been developed further during the disclosure period to include more detailed information on oil spill preparedness and response in Turkey. This additional information comprised the following:

- legislative issues;
- Turkish institutions involved in oils spill preparedness and response and their roles;
- existing contingency plans at the national and local levels;
- technical capabilities and locations where a response provision is currently stockpiled for dealing with both onshore and offshore incidents.

The Framework Oil Spill Response Plan is being developed further into a rigorous fit-for-purpose Plan.

2.3.6 Ecology

General comments were raised at all disclosure meetings on the potential for damage to the environment and proposed mitigation measures. More specific concerns that were raised included:

- *measures for the protection of plant species;*
- *measures for avoiding ecologically sensitive areas.*

Specific comments raised by the World Wide Fund for Nature (WWF) Turkey representative during the national NGO in Istanbul included the following issues:

- *that the EIA should have included a methodology enabling quantitative values for the ecological value of the land to be determined (to assess the dollar value of damage caused through construction) thus enabling a cost benefit analysis against a known value allocated for reinstatement measures to be undertaken;*
- *a potential lack of compliance of contractors in respect of commitments made in the EIA and the need for an 'independent organisation' to undertake monitoring to ensure such compliance;*
- *ability of the Construction Contractor to adequately implement the Management Plans under BOTAŞ guidance.*

Responses to general environmental comments were provided during the disclosure meetings, with the relevant sections of the EIA report referred to for additional information. An explanation was provided on the habitat surveys and assessments undertaken for the project and on the route selection and narrowing process to ensure the protection of habitats and sensitive areas. No specific modifications of the report were required following the general concerns on ecological issues outlined above.

A follow up meeting was held with WWF in August 2002 to discuss the issues raised by the organisation and to provide the Project's response on the issues of concern. The BTC Co representative conveyed that due consideration was given to the suggested approach and that independent expert advice has been taken in this regard. This advice has confirmed that the practical constraints of the approach proposed would not deliver a rational basis for achieving the objectives ie determining either the level of reinstatement/mitigation required or the priority of different areas for mitigation. Rather, the BTC Project has given a public commitment to undertake all practicable measures to mitigate the potential environmental impacts arising from the construction and operation of the pipeline and its associated facilities. As such, the mitigation measures that have been proposed are focussed on achieving clearly stated, and internationally benchmarked, standards and the resources mobilised are not limited by any (potentially questionable) valuation of the resources impacted.

It was also stressed that the BTC Project is committed to the appointment of independent auditors and inspectors to monitor and report on compliance with the EIA requirements (see the EMMP in Appendix C1). The remit of the independent environmental auditor will include the audit of BOTAS' performance in fulfilling its environmental obligations. The requirements of the EIA will be a condition of contract for all works undertaken on the Project and the public disclosure commitments made by the BTC Project will enable all interested parties to track ongoing compliance.

2.3.7 Archaeology

A meeting was held with the Ministry of Culture on 1st August 2002. A number of issues relating to both the EIA and the Cultural Management Plan were raised. These included the following:

- *the technical accuracy of certain statements;*
- *defining the term 'cultural heritage' in accordance with Articles 3, 6 and 23 of Law 2863;*
- *clarification on the designation of certain sites of nature conservation value;*
- *certain procedures contained in the Cultural Heritage Management Plan, notably for chance finds during construction;*
- *the registration status of a number of cultural heritage sites in the vicinity of the route.*

Terms used in the Draft EIA and Cultural Heritage Management Plan have been amended in the Final EIA Report in accordance with how they are expressed in Protection of Cultural and Natural Entities Law 2863.

References made to certain sites of nature conservation value (Sarikamis Forest, Yumurtalik Lagoons) have been amended to reflect their current status, and in the case of Sarikamis Forest, the decree of the Directorate of Protection of Cultural and Natural Assets of Erzurum, dated 10th May 2002, to allow the BTC Pipeline to traverse the forest has been identified.

The Cultural Heritage Management Plan has been modified so that chance find procedures will be implemented from topsoil stripping onwards in accordance with Article 4 of the Protection of Cultural and Natural Entities Law. Chance finds outside of currently known sites will also involve assessment by the relevant protection committees.

The Environmental Impact Tables in Section 6 of the EIA have been substantially amended to reflect the Ministry of Culture's advice in terms of a number of cultural heritage sites currently being 'Proposed for Registration'.

2.3.8 Forestry

A meeting was held with the Ministry of Forestry, General Directorate of Forestry on 31st July 2002. The main issues raised by the Ministry comprised the following:

- *quantification of the areas of forest affected by the pipeline and AGIs;*
- *quantification of distances of forest areas from the pipeline and AGIs;*
- *the measures to be used for the prevention and management of forest fires.*

In addition the Ministry also raised the possibility of it using areas of cleared forest along the RoW as fire breaks

In response to the Ministry's instruction, the extent to which forest lands will be affected by the proposed Pipeline has been quantified, as has the proximity of the Pipeline and AGIs to forest areas. This information has been included in the EIA Report (Appendix B8).

An outline Fire Prevention Strategy has been included in the EIA Section 6. This addresses how the risk of fire in forest areas will be managed and how prevention measures will be developed and focused on high risk areas. Measures will revolve around prohibition of certain activities, awareness training of the workforce and contingency plans and procedures. These measures will be developed further in conjunction with the relevant departments of the Ministry of Forestry.

2.3.9 Waste management

A meeting was held with the Ministry of Environment, Department of Waste Management in July 2002. The main issues raised included the following:

- *incineration using mobile incinerators to be located at strategic locations on the pipeline construction spreads and at the marine terminal construction site and the most appropriate means of licensing these temporary facilities;*
- *the classification of certain types of waste and differences between typical international classifications and those required under Turkish legislation;*
- *transfer of waste to be undertaken using appropriately licensed vehicles;*
- *various technical and legislative clarifications.*

Appendix C3, the Project Waste Management Plan, has been restructured to provide greater clarity. Where appropriate, certain wastes (eg bitumen, cables) have been reclassified and their proposed treatment modified accordingly. The Plan now includes a commitment to utilise licensed contractors for the transport of waste materials.

The main issue to be addressed was to do with incineration. During the disclosure meetings, the Ministry of Environment (MoE) stated that a licence is not required for the temporary use of mobile incinerators and that these can be used for specified hazardous and non-hazardous waste types (as listed in the Waste Inventory tables of the Waste Management Plan). However, it is a requirement of MoE that measurements of ambient air quality and stack emissions shall be carried out and monitoring reports shall be submitted to MoE every six months. The residual ash arising after the incineration will be temporarily stored and then sent to the licensed ZAYDA hazardous waste facility in Izmit.

In addition to amendments in the Waste Management Plan, minor amendments have also been made in the EIA, primarily in Sections 4 and 9.

2.3.10 Marine Terminal and surrounding environment

General comments were made by several stakeholders in relation to the marine terminal and the impact of the marine terminal construction and operation on the surrounding marine environment.

The Turkish Marine Research Foundation (TUDAV) raised specific concerns about the documentation of information on alien species in Section 13 of the draft EIA report. Specific feedback was received in relation to the following:

- *request for clarification on species status in terms of IUCN categorisation;*
- *the need for references to exotic species of the Mediterranean, Aegean Sea, Black Sea, Sea of Marmara, Azov and Caspian;*
- *the need for references to Lessepsian migration and impact on the eastern Mediterranean sea;*
- *coverage of toxic phytoplankton under Marpol 73/78;*
- *the need for information on the new Ballast Water Convention (IMO), which will be introduced in 2003 and its associated guidelines on ballast water sampling.*

The general comments raised related primarily to the potential risks to the marine environment associated with oil spills and thus have been addressed in Section 2.3.5.

A follow up meeting was held with TUDAV in order to fully understand the extent of their concerns. Subsequent changes to the EIA report as a result of comments received and discussions held include:

- thorough referencing to the conservation and protection status of species using appropriate classifications and conventions, including the IUCN Red List;
- an examination of the existing assessment of alien species within the report;
- incorporation of references to exotic species and Lessepsian migration and impacts in the eastern Mediterranean as appropriate;
- confirmation that toxic phytoplankton is not referred to in Marpol;
- incorporation of information on IMO guidelines and the new convention.

2.4 MONITORING AND IMPLEMENTATION

Monitoring of the implementation of mitigation measures proposed in the EIA was a frequently raised comment by local and national NGOs and organisations. Clarification was sought regarding responsible parties for monitoring of construction activities and to a lesser extent during the operational phase. A number of meeting attendees asked whether the project would be engaging groups such as NGOs to undertake independent third party monitoring of the Construction Contractor and construction activities. Feedback was also received in relation to the transfer of responsibility from the Project to the Construction Contractor.

The mitigation measures outlined within the EIA form the basis of the environmental and social management plans that will be implemented by the Construction Contractor. The Contractor will be required to implement all of the measures specified within the Contract, which included extensive social and environmental requirements.

The BTC Project is fully committed to implementation in full of all the provisions of the EIA. As the Turnkey Contractor and Designated Operator of the BTC Project, BOTAS will have management responsibility for implementing the procedures, systems and measures necessary to fulfil the Project's environmental and social commitments, including the development and implementation of the Management and Monitoring Plans and other supporting management plans. BOTAS will be responsible for the performance of all its Contractors and for ensuring that all EIA commitments are translated into Contractors' requirements and that these requirements are implemented to the full intent and extent of the original commitment as stated in the Final EIA Report.

In addition to the management structure established for the day-to-day overseeing of the Contractor's environmental and social performance, BOTAS will maintain an oversight and audit role for all aspects of the monitoring programme. This will include independent monitoring at selected sites throughout construction to verify the results of contractors monitoring programmes. In addition, compliance monitoring and inspection programmes will be undertaken by independent auditors (on behalf of the BTC Co.), the Turkish authorities and international financial institutions (IFIs). Contractors will provide access to all sites and all necessary assistance to facilitate monitoring by BOTAS or any other approved organisation.

In addition, independent third party monitors will be involved where appropriate. For example, NGOs, university institutions or other third parties will participate in the monitoring of the employment recruitment procedure.

2.5 COMMUNITY AND ENVIRONMENTAL INVESTMENT PROGRAMMES

Clarification on, and suggestions for, the community and environmental investment programmes were received mainly during community meetings and on community level feedback forms. Most of the requests for investment and assistance were to improve local infrastructure and services such as drinking water supply lines, water supplies in general, repair/refurbishment of schools or other municipal buildings, road repairs and provision of health centres.

During the public disclosure meetings the framework for the community and environmental investment programme was explained where specific questions regarding the potential for investment were asked. Information on the development of the programmes was provided where requested. An emphasis was placed on the fact that the programmes were not being developed as a substitute for appropriate mitigation measures and that the Project would not take on the role of government in infrastructure or service provision.

Specific suggestions for projects or programmes were recorded during the meetings and on the feedback forms and passed to the Project community and environmental investment teams for consideration in programme analysis and development.

3 STATE AUTHORITY RESPONSES

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
MINISTRY OF ENVIRONMENT, DEPARTMENT OF WASTE MANAGEMENT										
A1	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The sentence in the third paragraph on page C3-10 regarding the Hazardous Waste Control Regulation. The existing sentence leads to incorrect interpretation about obligations in the context of the Basel Convention and needs to be rewritten.	Y					<i>Translation in Turkish corrected. No change required to EIA report.</i>
A2	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The word "zararlı (in Turkish)" in the third paragraph on page C3-11 has to be changed to "tehlikeli (in Turkish)" in the Turkish EIA Report.	Y					<i>Translation in Turkish corrected. No change required to EIA report.</i>
A3	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	It is not clear where the recycle process will take place. In addition, bitumen and cables are considered as solid waste, which is incorrect. They are classified as hazardous waste according to Turkish Legislation.	Y	App C3	3.2	3-13	Table 3-1	<i>Related waste type in the third column of Table 3.1 has been changed according to requirements.</i>
A4	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	What is meant by slop handling system?	Y	9	9.4.13.2			<i>Description provided in Section 9.4.12 and cross referencing inserted into 9.4.13.2. At the end of the statement, the following explanation has been written "...the slop handling system where a slop tank will exist to collect the recycled oily wastes for returning them to the crude oil storage and loading system via a pump". This is obtained from the BOTAS/BTC Directorate Engineering department.</i>

**BTC PROJECT EIA
TURKEY**

A5	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	What is meant by slop handling system?	Y	9	9.4.13.5		See comment A5 above. Cross reference inserted into 9.4.13.5. At the end of the statement, the following explanation has been written "...the slop handling system where a slop tank will exist to collect the recycled oily wastes for returning them to the crude oil storage and loading system via a pump". This is obtained from the BOTAS/BTC Directorate Engineering department.
A6	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement " <i>In addition, a number of wastes generated during construction (eg excess bitumen, oil wastes, paint sludge, polystyrene etc) will be incinerated</i> " in Section 9.8.3.1 page 9-32 should be changed to include 'in a licensed facility'.	Y	9	9.8.3.1	9-32	<i>Inserted into Section 9.8.3.1.</i> This issue was discussed with the Ministry and instead of licensed incineration system, it was all agreed that incineration will be monitored throughout construction. Therefore, the statement has been changed as " <i>In addition, a number of wastes generated during construction (eg excess bitumen, oil wastes, paint sludge, polystyrene etc) will be incinerated and this process will be monitored (i.e., measurement of ambient air quality and stack emissions)</i> "
A7	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement " <i>Sludges, which exceed these limits, will be classed as hazardous wastes and will be transported to hazardous waste landfill or incinerated.</i> " in Section 3.2.2 (page C3-19) should be changed to refer to incineration in a licensed facility.	Y	App C3	C3.3.2.2	C3-19	This issue was discussed with the Ministry and instead of licensed incineration system, it was all agreed that incineration will be monitored throughout construction. Therefore, the statement in Section 5.2.2 has been changed as "Sludges, which exceed these limits, will be classed as hazardous wastes and will be transported to hazardous waste landfill or incinerated and the incineration will be monitored (i.e., measurement of ambient air

**BTC PROJECT EIA
TURKEY**

										quality and stack emissions)."
A8	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement " <i>In cases where recycling is not a feasible option, these wastes will be processed at the CWAA and by incineration.</i> " in Section 3.2.6 (page C3-21) should be changed to refer to incineration in a licensed facility.	Y	App C3	C3.3.2.6	C3-21		This issue was discussed with the Ministry and instead of licensed incineration system, it was agreed that incineration will be monitored throughout construction. Therefore, the statement in Section 5.2.6 has been changed to " <i>In cases where recycling is not a feasible option, these wastes will be processed at the CWAA and by incineration and the incineration will be monitored (i.e., measurement of ambient air quality and stack emissions).</i> "
A9	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement " <i>In addition, a number of wastes generated during construction (eg excess bitumen, oil wastes, paint sludge, polystyrene etc) will be incinerated</i> " in Section 9.8.3.1 page 9-32 should be changed to refer to incineration in a licensed facility.	Y	9	9.8.3.1	9-32		<i>Inserted into Section 9.8.3.1</i>
A10	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	On page C1-11 in Section 3.4, Regulation on the Control of Medical Wastes needs to be added under the title of Turkish Standards.	Y	App C1	C1.3.4	C1-11		<i>Reference included in Section C2.3, C2.3.2, C4.3, C5.2.4</i>

**BTC PROJECT EIA
TURKEY**

A11	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	Vehicle tyres are not considered as inert waste, contrary to what has been stated in Section 1.5 (i.e., Definitions) page C3-4.	Y	App C3	C3.1.5	C3-4		<i>Reference to tyres deleted in C1.5 as requested.</i>
A12	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	Definition of non-hazardous waste on page C3-4 (Section 1.5) includes “clothing and materials contaminated with routine quantities of oil etc”. However, these sorts of wastes are considered as hazardous wastes in Turkey.	Y	App C3	C3.1.5	C3-4		<i>Reference deleted in C1.5 as requested.</i>
A13	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	Date of the Solid Waste Control Regulation is incorrect and does not reflect a more recent revision (page C3-9, Section 2.3).	Y	App C3	C3.2.3	C3-9		<i>Correction made in C2.3 as requested.</i>
A14	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	In the last bullet on Page C3-10 (Section 2.3.1), it is stated, “in the case of incineration plant both a construction permit and an operation permit are required.” However, an additional statement is required outlining the need for a licence requirement in addition to the permit.	Y	App C3	C3.2.3.1	C3-10		<i>Correction made to C2.3.1. The related sentence has been changed as “in the case of incineration plant both a construction permit, an operational permit and an operational licence are required”.</i>
A15	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement “Sludges, which exceed these limits, will be classed as hazardous wastes and will be transported to hazardous waste landfill or incinerated.” in Section 3.2.2 (page C3-19) should be changed to refer to incineration in a licensed facility.	Y	App C3	C3.3.2.2	C3-19		<i>Correction made to C5.2.2. The statement has been changed as “Sludges, which exceed these limits, will be classed as hazardous wastes and will be transported to hazardous waste landfill or incinerated in a licensed incineration system.”</i>

**BTC PROJECT EIA
TURKEY**

A16	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement " <i>In cases where recycling is not a feasible option, these wastes will be processed at the CWAA and by incineration.</i> " in Section 3.2.6 (page C3-21) should be changed to refer to incineration in a licensed facility.	Y	App C3	C3.3.2.6	C3-21	<i>Correction made to C5.2.6. The statement has been changed as "In cases where recycling is not a feasible option, these wastes will be processed at the CWAA and by incineration in a licensed system."</i>
A17	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The word " <i>licences</i> " in the statement "... <i>then the CWAA will require licences to be issued by the Ministry of the Environment, licences include:</i> " in Section 4.6 page C3-26 must be changed as " <i>lisans (in Turkish)</i> " instead of " <i>ruhsat (in Turkish)</i> ".	Y	App C3	C3.4.6	C3-26	<i>No change required in English version of EIA report.</i>
A18	Ministry of Environment Department of Waste Management	State Authority Meeting	31/07/2002	The statement " <i>Wastes will be transferred from the place of waste generation / temporary storage to the CWAA by the contractors own vehicles</i> " should address licensed vehicles to be used for waste transportation (page C3-27 Section 4.6).	Y	App C3	C3.4.6	C3-27	<i>Correction made to C6.6. The statement has been changed as "Wastes will be transferred from the place of waste generation / temporary storage to the CWAA by the contractors' vehicles licensed from the MoE regarding the waste transportation".</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
MINISTRY OF CULTURE										
B1	Ministry of Culture	State Authority Meeting	01/08/2002	B.C. 12000-3000 should be changed to B.C. 12000-9000 in the description of Mesolithic period.	Y	Glossary	Glossary	Glossary-13		<i>Correction made to glossary. B.C 12000-3000 has been changed to B.C. 12000 - 9000 in the description of Mesolithic period.</i>
B2	Ministry of Culture	State Authority Meeting	01/08/2002	The sentence started with " <i>The designation process....</i> " should be corrected according to the pronouncement of the Directorate of Protection of Cultural and Natural Assets of Erzurum.	Y	2	2.3.5.2	2-13		<i>Correction made to Section 2.3.5.2. The decree regarding the Sarikamis Forest Crossing involved in the pronouncement of the Directorate of Protection of Cultural and Natural Assets in Erzurum dated May 10, 2002 and numbered 1233 has been inserted in the place of "<i>The designation process is currently being re-assessed by governmental authorities, as it has been challenged by the Directorate of Protection of Cultural and Natural Assets in Erzurum.</i>"</i>
B3	Ministry of Culture	State Authority Meeting	01/08/2002	The definition of the cultural heritage (" <i>Cultural heritage encompasses a wide range of resources, including archaeological deposits and remains, historical monuments, sites and buildings, historical and culturally significant landscapes, places of worship, cemeteries and graveyards, places associated with local folklore, mythology and traditions and the location of historical and cultural festivals, events and rituals</i> ") stated in the third paragraph should be revised in accordance with Articles 3, 6 and 23 included in the law numbered 2863.	Y	3	3.8.10.1	3-51		<i>See comment B93. Kültürel miras; Kültür ve Tabiat Varlıklarını Koruma Kanunu (No: 2863, 21.07.1983 dated) madde 3 ve madde 6'da belirtilen ve kültür varlıkları olarak tanımlanan tarih öncesi ve tarihi devirlere ait kültür, din ve güzel sanatlarla ilgili bulunan yer üstünde, yeraltında veya su altındaki bütün taşınır ve taşınmaz varlıkların yanı sıra, yerel folklor, mitoloji ve gelenekler ile ilgili yerler, tarihi ve kültürel festival, olay ve ritüellerin gerçekleştirildiği lokasyonlar da dahil olmak üzere, büyük bir dağılım</i>

**BTC PROJECT EIA
TURKEY**

										gösteren kaynakları kapsamaktadır.
B4	Ministry of Culture	State Authority Meeting	01/08/2002	The definitions of the first, second and third degree archaeological sites found in the third paragraph should be written in accordance with the principal pronouncements 658 and 659 of the superior council of Protection of Cultural and Natural Assets and the significance criteria should be determined.	Y	3	3.8.10.2	3-52		The definitions of archaeological site designation have been made in parallel with the principal pronouncements 658 and 659 of the superior council of Protection of Cultural and Natural Assets.
B5	Ministry of Culture	State Authority Meeting	01/08/2002	The "minor" phrase included in the table is misleading according to the new definitions stated above. Therefore, an alternative expression should be used instead of "minor" phrase or if it is not required Table should be removed.	Y	3	3.8.10.2	3-52	Table 3.25	<i>Correction made to 3.8.10.2. Table 3.25 removed.</i>
B6	Ministry of Culture	State Authority Meeting	01/08/2002	The decree pertaining to the Sarikamis Forest crossing involved in the pronouncement of the Directorate of Protection of Cultural and Natural Assets in Erzurum dated May 10, 2002 and numbered 1233 should be inserted to the other significant protection areas.	Y	5	5.7.3.3	5-100		<i>Correction made to 5.7.3.3. The expression "According to the decree of Directorate of Protection of Cultural and Natural Assets of Erzurum dated May 10, 2002 and numbered 1233, BTC Pipeline was allowed to traverse Sarikamis Forest" has been added at the end of "Sarikamis Forest" section.</i>
B7	Ministry of Culture	State Authority Meeting	01/08/2002	Article 4 of the law numbered 2863 will be inserted to the Phase 4.	Y	5	5.8.1	5-125		BOTAŞ/BTC Co
B8	Ministry of Culture	State Authority Meeting	01/08/2002	Table should be updated in line with the decrees of the Protection Council. Moreover, in the table, "proposed for registration" phrase should be used instead of "third degree" for the areas, which are not registered yet. In that content, the column name "Degree or Proposed Degree" should be placed with "Baseline".	Y	5	5.8.4	5-131	Table 5.22	<i>Correction incorporated into Table 5.22. The table has been updated according to the decisions of the Protection Councils of Erzurum, Adana and Kayseri. Column name is changed as "Baseline". The sites other than the registered ones are no longer referred to as "third degree", they have been changed to "proposed for registration".</i>

**BTC PROJECT EIA
TURKEY**

B9	Ministry of Culture	State Authority Meeting	01/08/2002	Yumurtalik Lagoons Nature Reserve should be referred as first degree nature reserve.	Y	10	10.7.2	10-27	<i>Correction incorporated into Section 10.7.2. The first sentence of the second bullet has been changed as "Yumurtalik Lagoons Nature Reserve which is a 1st degree Natural Site is approximately 25km south of the proposed BTC Marine Terminal"</i>
B10	Ministry of Culture	State Authority Meeting	01/08/2002	Yumurtalik Lagoons Nature Reserve should be referred as First Degree Nature Reserve.	Y	11	11.4.8.2	11-34	<i>Correction incorporated into Section 11.4.8.2. The first sentence has been changed as "This wetland complex which is designated as 1st degree Natural Site covers an area of 16,430 ha and is situated between the mouth of the Ceyhan River and Yumurtalik Bay"</i>
B11	Ministry of Culture	State Authority Meeting	01/08/2002	The mentioned registered sites will be updated in accordance with the points stated in the letter dated July 30, 2002 and numbered 8983.	Y	15	15.2.2.6	15-17	<i>Correction incorporated into Section 15.2.2.6. The section has been updated according to the letters of Erzurum and Kayseri Protection Councils. "Tasmasor Area is 1st - 3rd degree".</i>
B12	Ministry of Culture	State Authority Meeting	01/08/2002	Directorate of Protection Committees connected with the General Directorate of Protection of Cultural and Natural Assets should be included in the Stakeholders/ Governmental Organizations and Anatolian Art Historian Association (ASTAD) should be inserted in the NGOs.	Y	A2		A2-4 A2-9	<i>Stakeholders added to Appendix A2. General Directorate of Protection of Cultural and Natural Assets is added after "General Directorate of Forestry and Village Relations (ORKOY)" in Governmental Organizations. "Anatolian Art Historian Association (ASTAD)" has been added after Forestation Research Center in National NGO's and Interest Groups.</i>
B13	Ministry of Culture	State Authority Meeting	01/08/2002	The content of the cultural entities should be changed in accordance with Article 6 of the law numbered 2863.	Y	C7	1.1	C7-2	<i>BOTAŞ/BTC Co</i>

**BTC PROJECT EIA
TURKEY**

B14	Ministry of Culture	State Authority Meeting	01/08/2002	In the Phase 3 section at the fourth paragraph, "under the responsibility and authority of the Ministry of Culture" phrase should be inserted instead of the phrase "technically managed".	Y	C7	1.2	C7-3	Required change made to 1.2.
B15	Ministry of Culture	State Authority Meeting	01/08/2002	The sentence "During the topsoil stripping works carried out at the lands excluding the proposed and registered sites, chance finds can be observed and therefore Article 4 will become valid." should be inserted in the phase 4 at the fifth paragraph.	Y	C7	1.2	C7-3	Required change made to 1.2.
B16	Ministry of Culture	State Authority Meeting	01/08/2002	Phase 6 stating "In accordance with the finds discovered in the proposed and registered sites, an assessment will be realized by the protection committees, which are under the liability of the Ministry of Culture. In case of a chance find, the same procedures will become valid." should be inserted.	Y	C7	1.2	C7-3	Phase 6 will not be incorporated due to alignment of approach with BTC in Azerbaijan and Georgia.
B17	Ministry of Culture	State Authority Meeting	01/08/2002	The name of the law in the title should be corrected in the Turkish version. In the content of the Section 2.1, purpose and content of the law should be copied exactly from the law and the definitions used should be the same with the ones stated in the law.	Y	C7	2.1	C7-6	No changes required to the English version of the EIA Report.
B18	Ministry of Culture	State Authority Meeting	01/08/2002	The name of the regulation in the title should be corrected in the Turkish version. The number of the regulation should be changed in both Turkish and English versions.	Y	C7	2.2	C7-6	Required change made to 2.2.
B19	Ministry of Culture	State Authority Meeting	01/08/2002	In the first paragraph, "under the responsibility and authority of the Ministry of Culture" phrase should be inserted instead of the phrase "technically managed by".	Y	C7	5	C7-12	Required change made to 5.
B20	Ministry of Culture	State Authority Meeting	01/08/2002	These sections should be interpreted again in line with the mentioned regulation and law.	Y	C7	6.1 6.2 6.3	C7-14	Required change made to 6.1, 6.2, and 6.3.

**BTC PROJECT EIA
TURKEY**

B21	Ministry of Culture	State Authority Meeting	01/08/2002	In the second paragraph, the statements "The discovery will be reported to the BOTAŞ Representative in the field immediately and they will determine whether further actions (in addition to in situ recording) are warranted. If the finding is archaeologically important the BOTAŞ Representative will inform the relevant Museum Directorate (MoC)." will be replaced with the statements "The construction activities will be ceased at the site where the find is discovered and the discovery will be reported to the expert of the relevant Museum Directorate (MoC)." The example (the third paragraph) will be removed.	Y	C7	6.1	C7-14		Required change made to 6.1.
B22	Ministry of Culture	State Authority Meeting	01/08/2002	The sentence "The preliminary assessment will be realized by the monitoring archaeologist" will be inserted as the first sentence in the second paragraph of the Section 6.2.	Y	C7	6.2	C7-14		Required change made to 6.2.
B23	Ministry of Culture	State Authority Meeting	01/08/2002	It would be useful to take comments of HAGEM (a department of Ministry of Culture)	N					No changes required to the EIA Report.
B24	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		14	Environmental Impact Table 1	Required change made to ESIT. The following has been added: (i) Kiliselik Area - 1st Degree; (ii) Kiliselik Area (to the north of Dogrular settlement) - Proposed for Registration; (iii) Dogrular Pasture - Proposed for Registration; (iv) Keletenler - Proposed for Registration.
B25	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		14	Environmental Impact Table 1	Required change made to ESIT. Meri (Mere) Castle is Proposed for Registration
B26	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		57	Environmental Impact Table 3	Required change made to ESIT. Yusufkoy is Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B27	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	57	Environmental Impact Table 3	<i>Required change made to ESIT.</i> The following has been added: Taslipinar - Proposed for Registration
B28	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	74	Environmental Impact Table 4	<i>Required change made to ESIT.</i> The following has been be added: (i) Karahuseyin Pegler - Proposed for Registration; (ii) Sanguletin Pegler - Proposed for Registration; (iii) Purto Plateau - Proposed for Registration; (iv) Rum Cemetery - Proposed for Registration; (v) Kayabasi - Proposed for Registration; (vi) Ziyaret - Proposed for Registration; (vii) Cuma Village - Proposed for Registration
B29	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	74	Environmental Impact Table 4	<i>Required change made to ESIT.</i> Hanak Road is Proposed for Registration
B30	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	87	Environmental Impact Table 5	<i>Required change made to ESIT.</i> The following has been added: Kilise - Proposed for Registration
B31	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	95	Environmental Impact Table 6	<i>Required change made to ESIT.</i> Area near Cobanlı is Proposed for Registration
B32	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	95	Environmental Impact Table 6	<i>Required change made to ESIT.</i> Kuru hacivan is Proposed for Registration
B33	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	95	Environmental Impact Table 6	<i>Required change made to ESIT.</i> Bahcecik is Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B34	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		95	Environmental Impact Table 6	<i>Required change made to ESIT.</i> The following has been added: Area near Dagci - Proposed for Registration
B35	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		95	Environmental Impact Table 6	<i>Required change made to ESIT.</i> Saricayir area is Proposed for Registration
B36	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		106	Environmental Impact Table 7	<i>Required change made to ESIT.</i> Flat settlement near Buyuk Bogatepe is Proposed for Registration
B37	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		106	Environmental Impact Table 7	<i>Required change made to ESIT.</i> Area near Ortakilise Hill is Proposed for Registration
B38	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		111	Environmental Impact Table 8	<i>Required change made to ESIT.</i> Two areas near Hinzırık Plateau are Proposed for Registration
B39	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		111	Environmental Impact Table 8	<i>Required change made to ESIT.</i> The following has been added: Carkiklar Ridge - Proposed for Registration
B40	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		118	Environmental Impact Table 9	<i>Required change made to ESIT.</i> Area near Kulahtepe is Proposed for Registration
B41	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		118	Environmental Impact Table 9	<i>Required change made to ESIT.</i> Areas near Hasbey 1 and Hasbey 2 are Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B42	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	118	Environmental Impact Table 9	<i>Required change made to ESIT.</i> The following has been added: (i) Kurugol - Proposed for Registration; (ii) area near Hasbey 3 - Proposed for Registration; (iii) Topkaya - Proposed for Registration; (iv) area near Yenice - Proposed for Registration; (v) area near Akcakale - Proposed for Registration; (vi) area near Kale - Proposed for Registration; (vii) area near Sarigun - Proposed for Registration
B43	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	138	Environmental Impact Table 10	<i>Required change made to ESIT.</i> Area near Beykoy 1 is Proposed for Registration
B44	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	138	Environmental Impact Table 10	<i>Required change made to ESIT.</i> The following has been added: (i) Abandoned Ruins - Proposed for Registration; (ii) area near Beykoy 3 - Proposed for Registration; (iii) area near Beykoy 2 - Proposed for Registration; (iv) area near Baskoy - 1st Degree; (v) Zavot Ruins - 1st Degree
B45	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	146	Environmental Impact Table 11	<i>Required change made to ESIT.</i> The following has been added: (i) Nekiryolak Ridge - Proposed for Registration; (ii) area near Yenigun - Proposed for Registration; (iii) area near Yenikoy - Proposed for Registration; (iv) area near Kurbançayiri 1 - Proposed for Registration
B46	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	153	Environmental Impact Table 12	<i>Required change made to ESIT.</i> The following has been added: (i) area near Kurbançayiri 2 - Proposed for Registration; (ii) area near Kurbançayiri 3 - Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B47	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		165	Environmental Impact Table 13	<i>Required change made to ESIT.</i> Kirkdikme 1 and Kirkdikme 2 are Proposed for Registration
B48	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		183	Environmental Impact Table 14	<i>Required change made to ESIT.</i> Celmiktas Hill, Cakmak Ridge and Istiklal Hill 1 are Proposed for Registration
B49	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		183	Environmental Impact Table 14	<i>Required change made to ESIT.</i> The following has been added: (i) Yapagili Mound - Proposed for Registration; (ii) Istiklal Hill 2 - Proposed for Registration
B50	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		206	Environmental Impact Table 15	<i>Required change made to ESIT.</i> (i) Tepecik Mound - Proposed for Registration; (ii) Mahmutdede Tomb - Proposed for Registration; (iii) Seyyidehanım Tomb - Proposed for Registration; (iv) Goller Area Settlement 1 - Proposed for Registration; (v) Goller area settlement 2 - Proposed for Registration
B51	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		206	Environmental Impact Table 15	<i>Required change made to ESIT.</i> Bekleduzu, Eskikoy 1 and Eskikoy 2 settlements are Proposed for Registration
B52	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		224	Environmental Impact Table 16	<i>Required change made to ESIT.</i> The following has been added: (i) Military shelters 1 - Proposed for Registration; (ii) Military shelters 2 - Proposed for Registration; (iii) Tetikom Hill - Proposed for Registration
B53	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		224	Environmental Impact Table 16	<i>Required change made to ESIT.</i> Tetikom mound is Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B54	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	248	Environmental Impact Table 17	<i>Required change made to ESIT.</i> Tasmasor Area is 1-3. Degree
B55	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	248	Environmental Impact Table 17	<i>Required change made to ESIT.</i> Ortaduzu settlement, Cayirca-Beypinari and Beypinari-Kahramanlar are Proposed for Registration
B56	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	266	Environmental Impact Table 18	<i>Required change made to ESIT.</i> Beypinari-Kahramanlar, Alabeyli settlement and Poccik Road are Proposed for Registration
B57	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	266	Environmental Impact Table 18	<i>Required change made to ESIT.</i> The following has been added: (i) Kahramanlar (Karaz) mound - Proposed for Registration; (ii) Karaz mound - Proposed for Registration; (iii) Kahramanlar cemetery - Proposed for Registration
B58	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	281	Environmental Impact Table 19	<i>Required change made to ESIT.</i> The following has been added: (i) Abdalcik mound - Proposed for Registration; (ii) Abdalcik Cemetery - Proposed for Registration
B59	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	332	Environmental Impact Table 22	<i>Required change made to ESIT.</i> The following has been added: (i) Kucuktepe settlement - Proposed for Registration
B60	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	332	Environmental Impact Table 22	<i>Required change made to ESIT.</i> Tasinonu area settlement is Proposed for Registration
B61	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	347	Environmental Impact Table 23	<i>Required change made to ESIT.</i> Balikli 1, Balikli 2, Algiz settlement and Yesilkaya are Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B62	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	347	Environmental Impact Table 23	<i>Required change made to ESIT.</i> The following has been added: (i) Algiz mound - Proposed for Registration; (ii) Yesilkaya mound - Proposed for Registration; (iii) Yaylakent - Proposed for Registration
B63	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	416	Environmental Impact Table 28	<i>Required change made to ESIT.</i> Bakacak and Akcakoy are Proposed for Registration
B64	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	447	Environmental Impact Table 31	<i>Required change made to ESIT.</i> Kemreli is Proposed for Registration
B65	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	447	Environmental Impact Table 31	<i>Required change made to ESIT.</i> The following has been added: (i) Cetelik Tumuli - 1st Degree; (ii) Cetelik Settlement - 1st Degree
B66	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	467	Environmental Impact Table 32	<i>Required change made to ESIT.</i> Area to the SW of Kilickoy village is Proposed for Registration
B67	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	467	Environmental Impact Table 32	<i>Required change made to ESIT.</i> The following has been added: (i) Kalatepe mound (Adamfaki village) - 1st Degree
B68	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	488	Environmental Impact Table 33	<i>Required change made to ESIT.</i> Sucak settlement is Proposed for Registration
B69	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	507	Environmental Impact Table 34	<i>Required change made to ESIT.</i> The following has been added: (i) Topcuyenikoy Mound - 1st Degree; (ii) Karapinar Mounds - 1st Degree; (iii) Kaletepe - 1st Degree

**BTC PROJECT EIA
TURKEY**

B70	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		518	Environmental Impact Table 35	<i>Required change made to ESIT.</i> Akpınartepe Mound is 1st Degree
B71	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		534	Environmental Impact Table 36	<i>Required change made to ESIT.</i> The following has been added: (i) Sivritepe Graveyard - Proposed for Registration; (ii) Bestepeler Village cemetery - Proposed for Registration
B72	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		534	Environmental Impact Table 36	<i>Required change made to ESIT.</i> Sivritepe 2 is Proposed for Registration
B73	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		542	Environmental Impact Table 37	<i>Required change made to ESIT.</i> The following has been added: (i) Ziyaret Hill (Tutmac Village) - 1st Degree; (ii) Yassı Hill (Tutmac Village) - 1st Degree
B74	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		571	Environmental Impact Table 39	<i>Required change made to ESIT.</i> The following has been added: (i) Pasakoy - Proposed for Registration; (ii) Ciftetepe - Proposed for Registration; (iii) Tumulus - Proposed for Registration; (iv) Bescardak - Proposed for Registration; (v) Yeldegirmeni Tumulus - 1st Degree
B75	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		571	Environmental Impact Table 39	<i>Required change made to ESIT.</i> Hoyuktepe (east) is Proposed for Registration
B76	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		593	Environmental Impact Table 41	<i>Required change made to ESIT.</i> Hilmiye Graveyard is Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B77	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	593	Environmental Impact Table 41	<i>Required change made to ESIT.</i> The following has been added: (i) Hacitim Hill - Proposed for Registration; (ii) Roman Bridge and Road - Proposed for Registration
B78	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	600	Environmental Impact Table 42	<i>Required change made to ESIT.</i> The following has been added: (i) Roman Bridge - 1st Degree; (ii) Hacitimpinari ridge - 1st Degree; (iii) Roman bridge - 1st Degree;
B79	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	617	Environmental Impact Table 44	<i>Required change made to ESIT.</i> The following has been added: (i) Kirkgecit mound - Proposed for Registration; (ii) Kirkgecit caravanserai - Proposed for Registration; (iii) Tumulus (Kirkgecit village) - Proposed for Registration; (iv) Alafli Tower - 1st Degree.
B80	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	617	Environmental Impact Table 44	<i>Required change made to ESIT.</i> Salderesi area is Proposed for Registration
B81	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	617	Environmental Impact Table 44	<i>Required change made to ESIT.</i> Settlement on NE slope of Mecit Hill is 1st Degree
B82	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT	626	Environmental Impact Table 45	<i>Required change made to ESIT.</i> The following has been added: (i) Gedik area - Proposed for Registration; (ii) Kocakayanin Boynu - Proposed for Registration; (iii) Kocakaya - Proposed for Registration; (iv) Kizilburun Hill - Proposed for Registration; (v) Yunaktasi Area - Proposed for Registration; (vi) Eskihamam Area - Proposed for Registration; (vii) Mezarliktepe Mound Proposed for

**BTC PROJECT EIA
TURKEY**

										Registration
B83	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		626	Environmental Impact Table 45	<i>Required change made to ESIT.</i> Killiktepe is 1st Degree
B84	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		640	Environmental Impact Table 46	<i>Required change made to ESIT.</i> Karayurt Mound and Cukurpinar area are Proposed for Registration
B85	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		640	Environmental Impact Table 46	<i>Required change made to ESIT.</i> The following has been added: (i) Yayagecidi - 1st Degree; (ii) Kemer Mound - 1st Degree; (iii) Kurudere Mound - Proposed for Registration
B86	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		640	Environmental Impact Table 46	<i>Required change made to ESIT.</i> Golbası Rock is 1st Degree
B87	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		687	Environmental Impact Table 49	<i>Required change made to ESIT.</i> Tasoluk (Koyici) is 3rd Degree
B88	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		711	Environmental Impact Table 51	<i>Required change made to ESIT.</i> Meryemcil Caste is Proposed for Registration
B89	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		732	Environmental Impact Table 53	<i>Required change made to ESIT.</i> Minnetpinari is Proposed for Registration
B90	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		756	Environmental Impact Table 54	<i>Required change made to ESIT.</i> Urлу Graveyard and Ruin 1 (Çatak location) are Proposed for Registration

**BTC PROJECT EIA
TURKEY**

B91	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		765	Environmental Impact Table 55	<i>Required change made to ESIT. Karagedik area is Proposed for Registration</i>
B92	Ministry of Culture	State Authority Meeting	01/08/2002	Decisions of the regional preservations councils should be incorporated to the report and related tables in the report should be corrected	Y	ESIT		810	Environmental Impact Table 59	<i>Required change made to ESIT. Gokdere and Kurtkulagi are Proposed for Registration</i>
B93	Ministry of Culture	State Authority Meeting	01/08/2002	The definition of cultural heritage (" <i>Cultural heritage encompasses a wide range of resources, including archaeological deposits and remains, historical monuments, sites and buildings, historical and culturally significant landscapes, places of worship, cemeteries and graveyards, places associated with local folklore, mythology and traditions and the location of historical and cultural festivals, events and rituals</i> ") stated in the third paragraph should be revised in accordance with Articles 3, 6 and 23 included in the law numbered 2863.	Y	3	3.8.10.1	3-51		<i>Comment incorporated into Seciton 3.8.10.1. Cultural heritage comprises a wide range of resources, including all over-ground, underground or submarine moveable and fixed entities related with culture, religion and fine arts pertaining to prehistoria and historical periods, which are defined as cultural entities and stated in the Article 3 and Article 6 of Protection of Cultural and Natural Entities Law (dated July 21, 1983 and numbered 2863), and places related with local folklore, mythology and traditions, locations of historical and cultural festivals, events and rituals</i>

**BTC PROJECT EIA
TURKEY**

MINISTRY OF FORESTRY - DIRECTORATE OF FORESTRY										
C1	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	In some parts of the EIA Report, the length of the Turkish section of BTC Pipeline is mentioned as 1082km. Is it 1082km or 1076km? Please confirm	N	1	1.8	1-16	-	<i>No change required in the EIA.</i>
C2	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 2-16; Section 2.3.5.3 in the first paragraph, it was mentioned that Tutmaç Village surroundings in Sivas have a high capacity of bio diversity. Will there be further mitigation measures to protect bio diversity in areas where bio diversity is an important factor.	Y	2	2.3.5.3	2-16	-	<i>Amendment made in English EIA.</i>
C3	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 2-23, 5-158, 5-131, it was mentioned that the construction corridor has been changed to 14, 22 and 28 m. In section 2.3.8, the standard RoW has been stated as 28 m. Can we reach the standard RoW where the construction corridor is 14 and 22 m? If so, how is it assessed? In Volume III, the construction corridor is mentioned as 8 m for 300 metres long, 15 m for 75 metres long and 22 m for 540 metres long. An explanation should be given for these values. If the same standard was reached for 8 m corridor, why is construction undertaken in expanded corridor in forest areas?	Y	2	2.3.8	2-23		<i>Amendment made in English EIA.</i>
C4	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Amongst the AGI facilities, there is a metering station, 4 pump stations, 1 pressure reduction station and 52 block valve stations. It was stated that these AGIs are located away from forest areas; but the distance to the forest areas should be given in the Report.	Y					A table has been prepared to show the distances between the AGIs and forest areas. Refer to Appendix B8.

**BTC PROJECT EIA
TURKEY**

C5	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 4-70 section 4.9.5, it was stated that construction areas will be reinstated and re-vegetated regarding bio restoration. Who will do this? Important points shall be added while doing bio restoration.	Y	4	4.9.5	4-70	The first sentence of the first paragraph has been replaced with the sentence "As it is required in the Reinstatement Plan (see Appendix C2), the construction sites will be afforested and reinstated by the contractors following the termination of the works".
C6	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Northeast Anatolian Region - Posof Wild Life Protection Site, Ardahan and Sarikamis areas are important in terms of Scot's Pine. - In Anti-Taurus Section, it mentions Grecian Juniper. According to the Forestry Circular, dated 13.06.1996 and numbered 5010 and Forestry article dated 16.05.2002 and numbered S1.KDM.0/90; if juniper species are found at sites where public benefit activities are held (such as energy transportation lines, natural gas pipeline, sand, stone quarries, mind permits etc.), attention shall be paid to avoid the disturbance of these species, except where cutting is inevitable. This issue shall be examined precisely. - What type of protection measurements will be taken for bio diversity in forest areas. - It shall be added to the report what percent of pipeline facilities are included in forest areas and what percent are not. - Nearest distance to the forest areas shall be included where pipeline activities held out of forest areas	Y	?	?	?	"Although Mediterranean forests are not present along the pipeline route, Grecian Juniper is observed amongst the montane steppe as scattered trees. Except for the discrete cutting realized in order to clear a construction corridor for the project of public interest, there will be no disturbance on species." has been inserted at the end of the paragraph. Refer to Appendix A8 which addresses these comments.
C7	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	At page 5-100, Under the heading of Sarikamis Forest; it was stated that pipeline passes at the border of Sarikamis Forest. The distance of pipeline to the forest shall be included.	N	5	5.7.3.3	5-100	No change required in the EIA.
C8	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	At the same page above, under the heading of forest near Guzyurdu Village, it was mentioned that pipeline goes at the edge of forest, which is of a low quality. Please clarify what low quality forest means? The distance to the forest shall be included in the report.	Y	5	5.7.3.3	5-100	The expression "low quality forest" has been changed to "coppice forest" in the section concerning the Guzyurdu Forest.

**BTC PROJECT EIA
TURKEY**

C9	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	It was implied that Cyclamen species are in high dense along the route in Posof Forest. Between pages 5-105, in section 5.7.4.2; Cyclamen is identified under Nationally Protected species. What type of measurements will be taken to protect Cyclamen species along the route.	Y	5	5.7.4.2	5-105	<i>Changes incorporated into Section 5.7.4.2.</i>
C10	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Turkish version of Latin words shall be given in parenthesis.	Y	?	?	?	<i>Required change made in Turkish EIA</i>
C11	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Grammatical mistakes shall be corrected in the report.	Y				<i>EIA reviewed for grammatical errors.</i>
C12	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Pages 5-158 section 5.13.1. It was mentioned that 8 m pipeline corridor will be acquired permanently. Permanent ownership rights are not possible in forest areas. However, according to the Forest Law, numbered 6831, 17th article, permanent land use may be permitted for 49 years.	Y	5	5.13.1	5-158	<i>Changes incorporated into Section 5.13.1</i>
C13	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Pages 5-159 section 5.13.2, under the heading Landownership and Use; a general definition was mentioned. However, for forest areas, land acquisition is not possible and only a permit can be obtained.	Y	5	5.13.2	5-159	<i>Changes incorporated into Section 5.13.2</i>
C14	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Volume II, Page 10-10 Section 10.3.2.2. Under the heading of Terrain Landscape; housing compounds of BOTAŞ Terminal were mentioned. Where will these housing compounds be located?	N	10	10.3.2.2	10-10	<i>No change required in the EIA.</i>

**BTC PROJECT EIA
TURKEY**

C15	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Section 10.7.4.1, page 10-29, which association possesses the stated marquis and shrubberies.	Y	10	10.7.4.1	10-29	<i>Changes incorporated into Section 10.7.4.1</i>
C16	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 10-39 section 10.8.4, under the heading of existing air quality in the wider terminal area; it says that "The measured concentrations of all pollutants are below the limit values and therefore it is likely that the long term limits will be met. Long term limit value under the EC standard was exceeded during the wet season for PM." Shouldn't it be below the EC standards? Are these values reflect the current conditions or has modelling been done?	Y	10	10.8.4	10-39	<i>Changes incorporated into Section 10.8.4</i>
C17	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 12-6 section 12.3, under the heading of landscape and visual; in the last paragraph it was stated that pine forests would be cut. How many pine trees will be cut?	Y	12	12.3	12-6	<i>Changes incorporated into Section 12.3</i>
C18	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 12-15, section 12.5, under the heading of biological environment; it was mentioned about 32 and 0.6 ha marquis scrubland, 3 ha of woodland and 1.2 ha of gardens and orchards. Which association possesses these sites? In the same section, it was stated that some pine trees would be cut. The amount of pine trees to be cut shall be identified.	Y	12	12.5	12-15	<i>Changes incorporated into Section 12.5. "The construction of the BTC Marine Terminal will bring about nuisance on the following habitat sites, which are in the possession of BOTAŞ."</i>
C19	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 14-10, section 14.2.6, under the heading of environmental receptors for terrestrial spills; it says that "areas of managed woodlands are present near the tank farm". What do you mean by "managed woodland"? What is the distance of tank farm to the mentioned woodland?	Y	14	14.2.6	14-10	<i>Changes incorporated into Section 14.2.6. "The afforestation site of BOTAŞ is located in the vicinity of the tank site."</i>

**BTC PROJECT EIA
TURKEY**

C20	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page 14.11 Table 14.9, about the environmental sensitivities to terrestrial spill, in the last row it says that for the event of rupture overtops bund, land downhill from tank will be highly sensitive. Also in the comments section, it says that surrounding land may be used for agriculture, as well as managed woodlands. It is not possible turning forest areas to agricultural land. These issues shall be clarified.	Y	14	14.9	14-11		<i>Changes incorporated into Section 14.9. "The land, which is exposed to flood, may be used for agriculture or as an afforestation site".</i>
C21	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Volume III, Environmental and Social Impact Table 1; it is mentioned that permanent land take will be required for BVS1 and 2. Part of the BVS1 is in forest area and permanent land use in forest areas is not possible.	Y	ESIT	-	ESIT-7		<i>Changes incorporated into Table 7 of ESIT. "The BVS-001 site is located on the agricultural land and deciduous habitat (not a forest), while BVS-002 is located on the subalpine meadows"</i>
C22	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Environmental and Social Impact Table; in the column of further mitigation measures it has been mentioned that if cutting important parts of forest areas is inevitable, this issue will be talked to the authorities in the surrounding area and the compensation will be given accordingly. Within this statement, is compensation an environmental mitigation measure? What does it mean, cutting important part of forest areas? What is the amount? And who designated this important part?	Y					<i>Clarification provided in text that 'the level of compensation will be determined as part of the Projects grievance procedure'.</i>
C23	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Environmental and Social Impact Table-51. It says that 13.4 ha of permanent land take will be used. This is not possible for forest areas.	Y	ESIT	-	ESIT-51		<i>In the Turkish report the expereession "daimi arazi edinimi" was changed to "daimi müstakil irtifak hakkı tesis edilmesi" for forest areas. In the English report "permenant landtake" does not mean the transfer of the ownership to MEP Participants.</i>

**BTC PROJECT EIA
TURKEY**

C24	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	In Environmental and Social Impact Table, it shall be added that if pipeline goes through forest areas, how much forest land will be passed; if not what is the distance of pipeline to the nearest forest area; Ministry of Forestry shall be mentioned for land ownership where pipeline goes forest areas and negative impacts of pipeline activities to the bio diversity shall be added.	Y					A table showing the length and area size of the forest areas that the pipeline will cross has been inserted into Appendix B8.
C25	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	What does it mean "common use" mentioned in these Impact Tables	?					<i>Common use refers to the type of land ownership, also referred to as communal land or pasture land.</i>
C26	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Impacts of pipeline activities to the forest areas shall be identified clearly.	Y	6	6.6	6-16		<i>A separate section within Section 6.6 has been added regarding the general evaluation of impacts on forest areas due to the project implication.</i>
C27	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Will there be protection measures for forest fires? What are these mitigation measures?	Y					<i>EIA amended to include information on forest fires. Refer to Section 6.6.</i>
C28	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Volume V, Page A2-5, under the authorities list, the definition of "Ormanlık Genel Müdürlüğü" shall be corrected as "Orman Genel Müdürlüğü"	Y	A2	-	A2-5		<i>"General Directorate of Forest" expression has been changed to "General Directorate of Forestry".</i>
C29	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	In the same page above, the definition of "General Directorate of Forestry and Erosion Control" shall be corrected.	Y					<i>"General Directorate of Afforestation and Erosion Contention" expression has been changed to "General Directorate of Afforestation and Erosion Control".</i>

**BTC PROJECT EIA
TURKEY**

C30	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Page A3-34. Under the questions and answers, it says that 8 m corridor of pipeline will be expropriated. Please note that forest areas cannot be expropriated.	N					<i>No change required in the EIA.</i>
C31	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Appendix A7, age A7-1. It is difficult to read the forest land investigation and evaluation forms. More legible forms shall be included in the report.	Y	A7	-	-		We mentioned that the forms sent by the ministry are of low quality. The representative will send a legible set of these forms. Therefore they will be changed with the legible ones.
C32	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	31/07/2002	Pipeline route shall be shown with a coloured pen on the forestry maps.	Y	?	?	?		Forestry maps will be available for review at the Ministry of Environment and Ministry of Forestry and BOTAS offices upon request.
C33	Ministry of Forestry - General Directorate of Forestry	State Authority Meeting	16/08/2002	Will there be protection measures for forest fires? What are these mitigation measures?	Y	6				<i>Section 6.6 updated to reflect additional information on forest fire strategy.</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
GENERAL DIRECTORATE OF STATE RAILWAYS (TCDD)										
D1	General Directorate of State Railways (TCDD)	State Authority Meeting	31/07/2002	Add "Horizontal drilled" after "cased"	Y	4	4.8.5.3	4-59		<i>Comment incorporated into Section 4.8.5.3.</i>
D2	General Directorate of State Railways (TCDD)	State Authority Meeting	31/07/2002	Sentence in page 4-60 shall be corrected by using "expropriation limit"	Y	4	4.8.5.3	4-60		<i>Comment incorporated into Section 4.8.5.3.</i>
D3	General Directorate of State Railways (TCDD)	State Authority Meeting	31/07/2002	Signs shall be placed on the IP's and entrance and exit points of the pipeline. These signs will be made in such a size that they cannot be moved.	Y	4	4.8.5.3	4-60		<i>Comment incorporated into Section 4.8.5.3. "</i>
D4	General Directorate of State Railways (TCDD)	State Authority Meeting	31/07/2002	Sentence in Page 4-60 will be corrected by using "expropriation border".	Y	4	4.8.5.3	4-60		<i>Comment incorporated into Section 4.8.5.3.</i>
D5	General Directorate of Railways (TCDD)	State Authority Meeting	31/07/2002	Will the telecommunication system affect the railway telecommunication system?	Y					<i>Comment incorporated into Section 4.8.5.3.</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
GENERAL DIRECTORATE OF STATE HYDRAULIC WORKS (DSI)										
E1	General Directorate of State Hydraulic Works (DSI)	State Authority Meeting	08/08/2002	Protocols regarding water crossings should be included in the final EIA Report.	Y	Appendix				<i>The DSI Protocol is not yet finalised so no change has been made to the EIA report.</i>
E2	General Directorate of State Hydraulic Works (DSI)	State Authority Meeting	08/08/2002	The statement " <i>there is a decrease in the water level because of the usage in the camps or pipeline drying</i> " is given in EIA Report. How much water will be used for a hydro test?	Y	6	6.4	6-9		<i>Cross referenced to 4.8.4.10 where all current known information is provided.</i>
E3	General Directorate of State Hydraulic Works (DSI)	State Authority Meeting	08/08/2002	In the report, it had been stated that the Posof, Kura and Aras Rivers are transboundary rivers and for this reason, the quality data of these could not be obtained due to confidentiality.	Y	5	5.6.1.1	5-67		<i>Comment incorporated into Section 5.6.1.1.</i>
E4	General Directorate of State Hydraulic Works (DSI)	State Authority Meeting	08/08/2002	There will be a single protocol with DSI, for this reason in section 6.4, the sentence with "protocols are signed" will be changed to "protocol is signed".	Y	6	6.4	6-9		<i>Comment incorporated into Section 6.4.</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
MINISTRY OF AGRICULTURE										
F1	Ministry of Agriculture	State Authority Meeting	07/08/2002	The expression stated "... <i>The most strict values will be considered ...</i> " which was not an accurate expression regarding the laws. This expression needs to be changed stating the names of the related regulations and the laws.	Y	3	3.8.4.1	3-38		<i>Comment fully incorporated into Sections 3.8.4.1 and 3.8.4.2 of the EIA Report</i>
F2	Ministry of Agriculture	State Authority Meeting	07/08/2002	Expression "... <i>At least there is an obligation for the compliance ...</i> " needs to be corrected.	Y	3	3.8.4.1	3-38		<i>Comment fully incorporated into Section 3.8.4.1 of the EIA Report</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
UNDERSECRETARIAT OF MARITIME AFFAIRS										
G1	Undersecretariat of Maritime Affairs	State Authority Meeting	07/08/2002	A statement should be inserted to the report implying that an operation permit will be obtained from the Undersecretariat of Maritime Affairs after the general evaluation of the Ceyhan Marine Terminal.	Y	9	9.6.6	9-25		<i>Comment fully incorporated into Section 9.7.3.2 of the EIA Report</i>
G2	Undersecretariat of Maritime Affairs	State Authority Meeting	07/08/2002	The lighting system of the jetty has great importance for security and this information should also be included in the report.	Y	9	?	?		<i>Comment fully incorporated into Section 9.4.15 of the EIA Report. Outdoor lighting shall be supplied from distribution boards, which are located in the low voltage switchgear rooms respective the low voltage distribution containers located in the Ceyhan Terminal area and in the shore facilities. Along the jetty there will be street lighting fixtures, which are equipped with either high pressure mercury vapour lamps up to 150 W or fluorescent lamps up to 2 x 58 W. To minimise the voltage drop on the street lighting circuits of the Jetty, the use of distribution boards suitable for outdoor installation is mandatory. These boards shall be equipped with two feeders for the lighting circuits and two additional socket outlets (400 V, three-phase, 32 A and 230 V, single-phase, 16 A for</i>

G5			07/08/2002							<p>All circuits with twilight switches shall be provided with a manual override so, that an operation from the respective panel will be possible. The operation of floodlights for flood lights on the Jetty shall be possible also from the central control system. In general, each flood light circuit shall be equipped with an additional switch, integrated in the front door of the respective distribution board. The street lighting fixtures shall be installed on poles with a height of 10 m. The poles and all other steel construction elements provided for outdoor lighting shall be hot dip galvanised. Lighting fixtures, equipped with fluorescent lamps up to 2 x 58 W, for the illumination of selected areas shall be installed on poles with a height according to the requirements or on construction elements. All lighting and socket outlet circuits shall be equipped with moulded-case circuit breakers for switching operations and fault clearance instead of fuses. For circuits with a rated current up to 63 A, the use of miniature circuit breakers is acceptable</p>
----	--	--	------------	--	--	--	--	--	--	---

**BTC PROJECT EIA
TURKEY**

G6	Undersecretariat of Maritime Affairs	State Authority Meeting	07/08/2002	The coordinates of terrain starting points are seen on 1/1000 scaled plans but the coordinates of the end point of the jetty should also be given in the report. These coordinates should be incorporated to the 1/1000 scaled plans and to the related marine maps.	N					No change required to EIA Report
G7	Undersecretariat of Maritime Affairs	State Authority Meeting	07/08/2002	A statement should be inserted to the report implying that an operation permit will be obtained from Undersecretariat of Maritime Affairs after the general evaluation of Ceyhan Marine Terminal.	Y	9	9.7.3.2	9-26		<i>Comment fully incorporated into Section 9.7.3.2 of EIA Report</i> An operation permit will be taken from Undersecretariat of Maritime Affairs after the general evaluation of Ceyhan Marine Terminal
G8	Undersecretariat of Maritime Affairs	State Authority Meeting	07/08/2002	Will barriers be used in case of oil spill? What are the equipments that will be used in an oil spill?	N					<i>No change required to EIA Report</i>
G9	Undersecretariat of Maritime Affairs	State Authority Meeting	07/08/2002	The Port Regulation of the region should be updated according to the project.	N					<i>No change required to EIA Report</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
MINISTRY OF HEALTH										
H1	Ministry of Health	State Authority Meeting	08/08/2002	<p>Considering the minimum required distances stated in the TSE, ANSI / ASME B31.8, NFBA, NFPA 321, NFPA30 and other related national or international standards, the following statements must be taken into account:</p> <ul style="list-style-type: none"> - Along the RoW where pipes will be buried 7 m on each side of the pipeline (except the pipe itself) which is a total of 14 m corridor shall be set as "health protection band"; - A minimum of 20 m around the block valve stations will be set as "health protection band" - A minimum of 80 m around the pig station will be set as "health protection band" - If possible, 150 m around the Pump Stations will be set as "health protection band" - A minimum of 50 m around the measuring stations will be set as "health protection band" - Within the Tank Farm, minimum safety distances between the tanks and around them have to be left in accordance with the terms in NFPA321, NFPA30 and Table 5 of "Charter on the measures to be taken at the works and businesses which utilise flammable, explosive, hazardous and detrimental materials". 	Y	9	9.4.3	9-7		<p><i>Comment fully incorporated into relevant Sections of the EIA Report, viz 4.7.3.3, 4.7.4.3, 4.7.15.2, 9.4.3, 9.4.11</i></p>

**BTC PROJECT EIA
TURKEY**

H2	Ministry of Health	State Authority Meeting	08/08/2002	Protection against fire in the system shall comply with ASME B 31.8.	Y	4 9	4.7.12 9.4.11	4-31 9-15	<i>Comment fully incorporated into relevant Sections of the EIA Report, viz 9.7.12, 9.4.11</i>
H3	Ministry of Health	State Authority Meeting	08/08/2002	If there are liquefied oxygen tanks along the route, the distance between the pipeline and the tanks should comply with the norms in BCGA 19-20.	N	9	9.4.3	9-7	Not applicable to BTC Project - No change required to EIA Report
H4	Ministry of Health	State Authority Meeting	08/08/2002	There will not be any metallurgical plants with melting facilities within the 500 m distance to the pipeline.	N	5	5.5.8	5-65	Not applicable to BTC Project - No change required to EIA Report
H5	Ministry of Health	State Authority Meeting	08/08/2002	In the construction and operational phases of the pipeline, the terms stated in the "Regulation on Production, Packing and Sales of Natural, Mineral and Potable Water and Medical Water" issued in the Official Gazette dated October 18, 1997 and numbered 23144 while using potable and utilization water, and the terms stated in the circular dated April 29, 1999 and numbered 5122 while supplying water by means of tankers will be complied.	Y	4 9	4.7.10 9.4.10	4-30 9-14	<i>Comment fully incorporated into relevant Sections of the EIA Report, viz 4.7.10, 4.8.2.3, 9.4.10</i>

**BTC PROJECT EIA
TURKEY**

H6	Ministry of Health	State Authority Meeting	08/08/2002	With the condition that tanks and depots, which are subjected to the "Charter on the Measures To Be Taken At the Works and Businesses Which Utilize Flammable, Explosive, Hazardous and Detrimental Materials" issued by the Ministry of Labour and Social Security, are present, the minimum safety distances stated in the related charts of the charter of concern will be complied.	Y	4	4.8.4			<i>Comment fully incorporated into relevant Sections of the EIA Report, viz 4.8.2.3, 9.4.3, 9.4.11</i>
H7	Ministry of Health	State Authority Meeting	08/08/2002	In case explosive materials are used and an explosive material depot is present, to obtain a permit from the Ministry of Interior in consistent with the "Charter on the Procedures and Principles of the Production, Importation, Transportation, Preservation, Storage, Sales, Usage, Demolition and Supervision of Explosives Excluded from the Monopoly and Hunting Materials and Equivalentents" issued by the Ministry of Interior and furthermore, to get a license according to the Non-Hygienic Establishments Regulation for the depots of explosive materials.	Y	4	4.8.4			<i>Comment fully incorporated into Section 4.8.2.3 of the EIA Report</i>

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
MINISTRY OF FORESTRY - GENERAL DIRECTORATE OF AFFORESTATION AND EROSION CONTROL										
J1	Ministry of Forestry - General Directorate of Afforestation and Erosion Control	State Authority Meeting	15/08/2002	The preparation and application of the site specific plans will be done in coordination with the General Directorate of Afforestation and Erosion Control and if necessary with the General Directorate of Forestry.	Y	6	6.6	6-16		<i>Comment fully incorporated into Section 6.6. The preparation and application of site specific plans will be accomplished with the cooperation of the General Directorate of Afforestation and Erosion Control and when necessary with the General Directorate of Forestry.</i>
J2	Ministry of Forestry - General Directorate of Afforestation and Erosion Control	State Authority Meeting	15/08/2002	While passing through the rejuvenation areas under possession of Ministry of Forestry, all possible mitigation measures will be taken by construction contractors as stated in the EIA Report	Y	6	6.6	6-16		<i>Comment fully incorporated into Section 6.6. Construction contractor will determine site specific measures for the rejuvenation areas. General framework of such measures has already been given in Appendix C2 Reinstatement Plan. These measures will be reviewed by BOTAŞ and the regional directorates of Forestry. In general the route in the rejuvenation areas will be kept narrow at 22 m which is less than construction corridor (28 m).</i>

**BTC PROJECT EIA
TURKEY**

J3	Ministry of Forestry - General Directorate of Afforestation and Erosion Control	State Authority Meeting	07/08/2002	The representative stated that the areas defined as pasture and meadow near the forest areas might be under the responsibility and possession of General Directorate of Forestry according to the related regulation. The ownership of these areas are still under investigation. This issue should be kept in mind in order not to face any future problems related to these areas.	N					No change required to EIA Report
----	---	-------------------------	------------	--	---	--	--	--	--	----------------------------------

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change	Relevant	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
					Required in EIA	Y/N				
MINISTRY OF FOREIGN AFFAIRS										
K1	Ministry of Foreign Affairs	State Authority Meeting	16/08/2002	Under the topic "National Overview" in the draft report that the population of Turkey was given as 6 million and there are errors in the economy section	Y	5	5.10.1	5-137	Box 5.5	Correct population figure provided in Section 5. Economic statistics verified by stated sources.
K2	Ministry of Foreign Affairs	State Authority Meeting	16/08/2002	The compulsory education in Turkey is of 8 years and has been carried out under the name of "primary school education". In spite of this, a false expression, "primary school level", is used.	Y	5				Reference to education services clarified in Section 5, with note added to Table stating the information includes survey responses of the compulsory education periods of 5 and 8 years.
K3	Ministry of Foreign Affairs	State Authority Meeting	16/08/2002	Expressions, which imply that differentiation in the rates of schools is of question considering the languages spoken, are found in the "Educational Services" section (eg. Half of the Circassian speaking settlements do not have schools)	Y	5		5-223		Reviewed and reference deleted.
K4	Ministry of Foreign Affairs	State Authority Meeting	16/08/2002	The expressions, "regional" and "national" universities, are used in the stakeholder lists in Appendix A2. Instead, it would be more accurate to use the expressions "universities on the pipeline route" and "other universities"	Y	App A2				Appendix A2 revised accordingly.

**BTC PROJECT EIA
TURKEY**

K5	Ministry of Foreign Affairs	State Authority Meeting	16/08/2002	When the report is evaluated in general, it is considered that to enable a healthier comprehension of the results of the questionnaires for the ones, who will review the report, it would be appropriate to provide the numerical equivalents of the values given in percentage therefore to preclude the uncertainties to be occurred (eg. in the expression "24% of the Muhtars participated in the questionnaires stated that some of the individuals, living in the settlement areas of concern, are Kurdish speakers", it is not clear how many Muhtars were spoken to, and some obscure wording such as "some" are used.	Y	5	5.12.7	5-155	References are made to both numerical values and percentages throughout the baseline sections of the report. This aims to provide the reader with an understanding of the actual numbers of responses in certain instances and in others, understand the proportional representations of responses. The percentages provided in Section 5 should be viewed in the context of the explanations of sample size provided in Section 3. Understanding the proportion of responses is regarded as more valuable and representative of the baseline conditions than quoting the numerical values.
----	-----------------------------	-------------------------	------------	---	---	---	--------	-------	---

**BTC PROJECT EIA
TURKEY**

Item	Originator of Comment	Format of Comment	Date	Comment	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
GENERAL DIRECTORATE OF HIGHWAYS (TCK)										
L1	General Directorate of Highways (TCK)	State Authority Meeting	01/08/2002	A sample protocol should be included in the EIA Report.	Y	Appendix B8				<i>Comment fully incorporated into Appendix B8. A sample protocol has been inserted in the appendix in the final EIA Report.</i>

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/Figure No.	Detailed Description of Change Made to EIA
General Directorate of State Hydraulic Works (DSI)	Examination and Evaluation Committee Meeting	04.10.2002	It is requested to append a copy of the protocol signed between BOTAŞ and DSI to the EIA Report.	Relevant protocol will be appended to the appendix.	Y	Appendix B8	B8-3	-	-	The protocol is appended.
Ministry of Agriculture and Rural Affairs	Examination and Evaluation Committee Meeting	04.10.2002	The letter stating the comments of the Ministry on EIA Report is presented to BOTAŞ on October 4,2002. The response of BOTAŞ regarding the issue is awaiting.	BOTAŞ will respond these comments with an official letter.	N	-	-	-	-	-

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
General Directorate of State Railways (TCDD)	Examination and Evaluation Committee Meeting	04.10.2002	An expert from the regional directorate will be present during the railroad crossings.	The article related to the issue will be appended.	Y	4	4.8.5.3	4-63	-	At the railroad crossings, an expert from TCDD will be present during the construction.
Ministry of Culture	Examination and Evaluation Committee Meeting	04.10.2002	Kirteke Mound is not mentioned in the report and shown on maps.	Kirteke Mound was shown on maps. It will be appended to the relevant sections of the report.	Y	5 ESIT	5.8.4 -	5-137 ESIT- 1028	5.22 EIT 58	Kirteke Mound is appended to Table 5.22. The expressions "İslamoğlu Mound" found under the topic "Archaeology and Cultural Heritage" are changed as Kirteke Mound.
Ministry of Culture	Examination and Evaluation Committee Meeting	04.10.2002	A reference to the letters of decree of the Council of Cultural and Natural Heritage of Kayseri and Erzurum should be given in the report.	References to the relevant parts will be given.	Y	5	5.8.4	5-134	-	The third sentence in the second paragraph is changed as "The decree letters of registration given by the Council of Cultural and Natural Heritage of Adana, Kayseri and Erzurum of the Ministry of Culture are presented in Appendix A8".

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	The statement on Page 2-24 in Section 2 uttering that the pipeline corridor of 8 meter will be expropriated should be changed with the statement articulating that "it is stated that a crossing permission will be acquired as permanent expropriation cannot be realized in forest areas".	The required corrections concerning the issue will be realized in the report.	Y	2	2.3.8	2-24	-	The statement "Since no expropriation can be realized at the areas possessed by the Ministry of Forestry in compliance to the Article 17 of Forest Law numbered 6831, concerning the pipeline crossing at the areas of concern, an access permit for 49 years will be obtained" will be added to the end of Section 2.3.8.

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	The statement on page 5-102 in Section 5, which utters that a permission was obtained from the Council of Cultural and Natural Heritage of Erzurum, regarding Sarikamis Forest crossing should be corrected as that a decision was taken since the permission related with the issue can only be acquired from the Ministry of Forestry.	Due to the situation that the forest area of concern is a natural protection site besides being a forest area and since it is under the authority of the Directorate of Cultural and Natural Heritage Council, the comment of the Council of Cultural and Natural Heritage of Erzurum about the natural protection area crossing is presented and given that the acquired letter denotes the permission of the relevant institution, it is stated as permission in EIA report. However, taking the sensitivity of General Directorate of Forestry regarding the issue into consideration, the statement in the report will be dilated in a manner as to include the permission of the Ministry of Forestry.	Y	5	5.7.3.3	5-102	-	The statement "In addition to this permission, due to the fact that the protection area of concern is a forest area, the right of access permission required to be taken for the forest area crossings will be acquired from the Ministry of Forestry" will be added prior to the last sentence.

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	The possessor of the houses provided for the employees mentioned on page 10-10 in Section 10 was not stated.	In the section where the houses, provided for the employees, of concern is included and particularly at the beginning of this statement, present BOTAŞ Terminal is stated. It is obvious that the mentioned terminal is the BOTAŞ Terminal and the houses are BOTAŞ houses. No correction is required.	N				-	
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	It cannot be understood that BOTAŞ is the owner of the scrub and maquis stated at Page 10-30 in Section 10.	In the part, which is the continuation of the section under consideration and is found on page 10-3, the statement "... realized at the areas which are possessed by BOTAŞ" is included in the second sentence of the first paragraph. Therefore, it is clearly uttered that the maquis and scrub of concern belong to BOTAŞ.	N					

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	Depending on the statement about the loss of pine forest area on page 12-6 in Section 12 , the amount of trees to be cut is not stated.	No counting was carried out at the forest area of concern and it will be recorded during the cutting process.	N					
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	It is expressed that BVS-001 is located on an agricultural area and a deciduous habitat and it is required to realized a permanent land take of 350 m ² in the region. If the grove area of concern is a forest area, permanent land take cannot be realized.	During the discussions with BOTAŞ, it is stated that this area is a private property and only individual deciduous trees are found. Therefore, it will not be evaluated like the other forest areas and no permission of Ministry is required.	N					
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	The statement "permanent landtake" on page A8-51 in appendix A8 should be corrected as "permit".	"Permanent landtake" will be corrected as "permit".	Y	A8	-	A8-51	-	"Permanent landtake" is corrected as "permit".
General Directorate of Forestry	Examination and Evaluation Committee Meeting	04.10.2002	The expression "common use" in the statement on Article C24 in appendix A8, should be explained in the report.	Detailed information on common use is given in Section 5.13.2.	Y	ESIT	-	ESIT-150	SET-8	Following the expression "Common Use", "(see Section 5.13.2)" is added.

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
General Directorate of Afforestation and Erosion Control	Examination and Evaluation Committee Meeting	04.10.2002	On page C2-25 in appendix C2, Reinstatement Plan, the statement "In general, the top soil will be stripped up to a depth of 150 mm minimum and 300 mm maximum" is in contradiction to the statement "the top soil will be stripped along its own depth and be stored separately". It should be corrected.	The second sentence causing the contradiction of concern will be corrected.	Y	C2	C2.12.2	C2-25	-	The sentence causing the contradiction of concern will be corrected as "At the places where the depth of top soil is less than 150 mm, complete top soil will be stripped carefully and will be stored separately".
General Directorate of Afforestation and Erosion Control	Examination and Evaluation Committee Meeting	04.10.2002	In addition to two items stated for the issue concerning the areas where wastes cannot be disposed, a third item "Forest Areas" should be added.	The required correction will be realized.	Y	C2	C2.14.5	C2-28		"Forest Areas" is added to the items found in the 4th subsection in Section 14.5.

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
Sivas Provincial Directorate of Environment	Examination and Evaluation Committee Meeting	04.10.2002	It is determined that the location of PT4 stated in the report is distinct from the location stated in the letter of the Ministry of Public Works and Settlement.	It is stated by BOTAŞ that the location in the EIA Report is correct. On account of the fact that there can be mistake at the location stated in the letter of the Ministry of Public Works and Settlement or there can be name difference between the settlements mentioned in the letter and the ones mentioned in the report, it is expected that there is a confusion. Following the survey regarding the issue to be carried out by BOTAŞ, the Provincial Directorate of Environment will be informed.	N					

**BTC PROJECT EIA
TURKEY**

Originator of Comment	Format of Comment	Date	Comment	Response Provided, if Applicable	Change Required in EIA Y/N	Relevant Section in EIA	Sub-section	Page No.	Table/ Figure No.	Detailed Description of Change Made to EIA
Erzurum Provincial Directorate of Environment	Examination and Evaluation Committee Meeting	04.10.2002	It is stated in the EIA Report that Hasankale River is contaminated, but the authority from the Erzurum Provincial Directorate of Environment uttered that Karasu River is more contaminated and has more problems. It is requested to clarify the issue.	It is articulated in the meeting that the contamination condition given in the EIA Report was written in line with the literature surveys and the field studies. Moreover, it is stated the permanent contamination of a river cannot be determined with a single analysis, therefore the information from the literature was taken into consideration.	N					

4 CORRESPONDENCE FROM PHASE 1 CONSULTATION

MINISTRY OF AGRICULTURE AND RURAL AFFAIRS
General Directorate of Agricultural Production and Development

AN

KARA

05,11,2001

Issue : TAD/TAKK/4.a-1226

Subject : BTC Crude Oil Pipeline Project EIA Studies

TO THE GENERAL DIRECTORATE OF BOTAS

CONCERN : a) Your letter dated 10,25,2001 and issued LET-BOT-GEN-002236

In your letter of concern, our Ministry's opinion is inquired to be used in the studies, which will be carried out in the content of EIA in the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Route.

Your request is examined; first of all, this kind of demands have to be met from the lands excluding the agricultural ones, owing to this, alternative lands have to be examined, in case the alternative lands are not found, the measures have to be taken in order not to harm the agricultural activities, in the pipeline excavation and reinstatement studies carried out at the agricultural lands, the soil excavated from the bottom have to be placed at the bottom, similarly the soil excavated from the top, which is covered with vegetation, have to be placed on top and reinstating the existing vegetation should be provided, the soil which is useful for vegetal productivity should be protected during the excavation studies. Taking the mentioned matters into consideration and as a stipulation, providing a Technical Expert (Agricultural Engineer), there is no objection about the utilization of the requested lands in the vicinity of the pipeline of concern for non-agricultural purposes in terms of "The Regulation Concerning the Protection and Utilization of the Agricultural Lands" issued in the Official Gazette dated August 10, 2001 and numbered 24489.

I hereby request your information.

Ahmet BULBUL
General Directorate

MINISTRY OF AGRICULTURE AND RURAL AFFAIRS
General Directorate of Protection and Control

ANKARA

29,11,2001

Issue : ÇAHD-93-930-1501

Subject : BTC Crude Oil Pipeline Project EIA Activities

TO THE GENERAL DIRECTORATE OF
PETROLEUM PIPELINE CORPORATION
Sogutozu Mah. Sogutozu Cd. No:31Ankara

CONCERN : a) Your letter dated 25,10,2001 and issued LET-BOT-GEN-002237

It is stated that regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, site investigation is not required by Ministry of Environment, General Directorate of Environmental Impact Assessment and Planning, in accordance with Host Government Agreement (HGA) and in that stage, in order for the Environmental Impact Assessment Report to be presented to the Ministry of Environment, our Ministry's opinion is inquired to be used in the studies, which will be carried out in the content of EIA.

As a result of the scrutiny and evaluation concerning the topic;

- 1-) In the studies, which will be carried out by BOTAŞ Petroleum Pipeline Corporation in the content of EIA, regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, the pasture, mountain pasture and winter shelter places, public meadow and grasslands will not be used except for the determined purposes, unless the allotment purpose is changed, according to the passed decisive sentence in accordance with the Pasture Law numbered 4342 and the manner of allotment purpose change is determined in the 14th article of the same law and 8th article of the Pasture Regulations. However, in accordance with the adjudication "*The attributes of the public properties like pasture, meadow, mountain pasture and winter shelter places, which are excluded from the places specified in the sub-paragraph (I) of paragraph (e) of this article and are located in the route of transit petroleum pipeline, are avoided ex-officio without the commitment of the Pasture Law numbered 4342 by the Ministry of Energy and Natural Resources and registered on behalf of Treasury and after these, established as autonomous and permanent rights in favour of public cooperations which are commissioned for expropriation.*" which is involved in (f) paragraph of the 8th article of the law concerning the Transit Transition of Petroleum Through Pipelines, there is no need for the allotment change in pasture, mountain pasture and winter shelter places.
- 2-) this kind of demands have to be met from the lands excluding the agricultural ones, owing to this, alternative lands have to be examined, in case the alternative lands are not found, the measures have to be taken in order not to harm the agricultural activities, in the pipeline excavation and re-covering studies carried out at the agricultural lands, the soil excavated from the bottom have to be placed at the bottom, similarly the soil excavated from the top, which is covered with vegetation, have to be placed on top and reinstating of the natural vegetation

should be provided, the soil which is useful for vegetal productivity should be protected during the excavation studies. Taking the mentioned matters into consideration and as a stipulation, providing a technical expert (Agricultural Engineer), there is no objection about the utilization of the requested lands in the vicinity of the pipeline of concern for non-agricultural purposes in terms of “The Regulation Concerning the Protection and Utilization of the Agricultural Lands” issued in the Official Gazette dated August 10, 2001 and numbered 24489.

- 3-) During the river crossings, in accordance with the article 7 of Aquatic Products Law numbered 1380, it is stated that *“it is obligatory to get permissions from the related authorities based upon opinion of the Ministry of Agriculture and Rural Affairs before undertaking any attempts, which could adversely affect the growth and production of aquatic products, such as filling up, drying, partially or completely changing the shape of the water products growth and production places, which are under the adjudication and possession of ministrations with general, annexed and special budgets, state and state economic enterprises, or excavating sand, gravel and rock from these places or scattering rock, soil, debris and similar materials to these places”* In this respect, according to this article of the law, the concerned matters, getting permissions from the authorities of the Ministry of Agriculture and Rural Affairs and carrying out the transitions under the supervision of an employee of Agricultural Provincial Directorates, and for the waste water, which will occur during the studies carried out on the pipeline route, obeying the adjudications, regarding water pollution, involved in the Water Products Law numbered 1380 and providing the Recipient Environment Values found in the Appendix-5 and Waste Water Discharge Values found in the Appendix-6 of the Water Products Regulation, should be appropriately deliberated.

I hereby request your information.

Dr. Huseyin SUNGUR
On Behalf of the Minister
General Directorate

T.R.
ERZINCAN GOVERNORSHIP
PROVINCIAL DIRECTORATE OF PLANNING AND COORDINATION

20/08/2001

ISSUE : B054VLK4240200-6.1/159
SUBJECT : BTC EIA Studies

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Presidency of Transit Crude-oil Pipeline Department)

CONCERN : a) Our paper addressed to ENVY Inc. dated January,22,2001 and issued B054VLK4240200-6.1/11
b) Your paper dated August,03,2001 and issued B.15.0.TBH.0.00.00.01(400) 12/11660

For the purpose of utilizing in the content of routing studies of Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project, the information regarding the infrastructure facilities on the corridor, which the route will be traversed, were plotted on the 1/100,000 scaled map and ENVY Inc. was informed with our concern (a) paper.

In your concern (b) paper, the phases of the project was summarized and it is determined that the corridor width of 10km will be narrowed down to 500 m. It is asked to be informed on supplementary opinions to be used in the studies, which will be carried out in the content of the EIA.

The Erzincan file, involved in the paper of concern (b) and its appendix, was examined by the technical personnel of relevant foundations. In addition to the previously given information, the village roads, by Provincial Directorate of Rural Services; and Catalcam highway placed on the separation point of Erzincan and Sivas, by 164th Department Directorate of Highways; were plotted on the maps and presented in the appendix. Besides, the Museum Directorate's paper related with the subject, dated August,15,2001 and issued 124, is placed in the appendix.

I hereby submit your information.

H. Ibrahim ALTINOK
Governor

APPENDICES :

EK – 1 ; Map (6)

EK – 2 ; Museum Directorate's paper (1)

**GENERAL DIRECTORATE OF
ELECTRICITY GENERATION CORPORATION**
Department of Environment-New and Renewable Energy Resources

21/11/2001

Issue : B.15.2

Subject : Baku-Tbilisi-Ceyhan Pipeline

TO ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emec Bulvari 8th Main Street No: 7
Asagi Ovecler 06450/ ANKARA

CONCERN : a) Your letter dated 11,06,2001 and issued 1207

In your letter of concern, in the content of the details given in the appendix of your letter of concern on behalf of the General Directorate of BOTAS, it is notified that the Environmental Impact Assessment Report (EIA) of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project is carried out by your company.

Considering the EIA Report studies, it is inquired whether there is a difficulty in terms of our corporation regarding the corridor of 500 m, which is planned to be realized and is determined in the 1/25000 scaled map sheet given in the appendix of your letter of concern, in the content of the EIA Report.

Since the documents and residential information about the hydroelectric power plants (HPP) and reservoirs are available at the General Directorate of State Hydraulic Works (DSI), it is thought that it is appropriate to learn whether there are HPP sites within the pipeline route from the mentioned state authority.

The maps sent to our corporation are examined merely in terms of the energy generation facilities found along the determined route pertaining to our corporation (Appendix 1), there is no objection about the activity route regarding our corporation. It will be reasonable to get information from the related companies and/or Ministry of Energy and Natural Resources on other energy generation facilities.

I hereby request your information.

Metin YILDIRAN

Ali OZKAN

Department President

Member of Board
Deputy General
Director

APPENDICES

Appendix 1 :1/25000 Scaled Map Sheets (102 Pieces)

T.R.
MINISTRY OF PUBLIC WORKS AND SETTLEMENT
General Directorate Of Highways
ANKARA

15/01/2002

Issue : B091TCK01104-60-678-Genel/0051
Subject : Baku-Tbilisi-Ceyhan Crude-Oil Pipeline

ENVY INC.
Cetin Emec Bulvari 8. Cad.
No : 7 Asagi Ovecler 06450/ ANKARA

CONCERN : Your paper dated 05,11,2001 and issued EN-01/1193

In your paper of concern, it is notified that the Environmental Assessment Report (EIA) studies relevant to the General Directorate of BOTAS Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project is carried out by your firm and our Directorate's opinion is inquired.

With the stipulation of getting permission from our associated Regional Directorates for the crossings of highways, state and provincial roads, located in our network on the pipeline route, by preparing a detailed project, there is no inconvenience for the construction of so-called pipeline in terms of our Directorate.

I hereby request information.

İsmail TUMAY
On Behalf of the General Director
Head of the Research and Project Department

MINISTRY OF ENERGY AND NATURAL RESOURCES
General Directorate of Mineral Works

23,11,2001

Issue : B.15.0.MGM.0.02.01.04/72

Subject : Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project
Detailed Engineering Phase

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emec Bulvari 8th Main Street
No: 7 Asagi Ovecler 06450/ ANKARA

CONCERN : a) Your letter dated 01,11,2001 and issued EN-01/1181
b) Our letter dated 06,02,2001 and issued B.15.0.MGM.0.02.01.02/276
c) Your application dated 22,12,2000 and issued 67117

In your letter of concern (a), it is notified that the Environmental Impact Assessment Report (EIA) of the Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project is carried out by your company on behalf of the General Directorate of BOTAS and it is inquired whether the proposed corridor and route for the pipeline in the content of the EIA Report studies is inconvenient in terms of our directorate.

The EIA Report studies can be realized in terms of the information and documents, which are asked for in your petition issued as concern (c) and sent by our General Directorate in the appendix of our letter of concern (b), and the matters determined in your letter of concern (a) regarding the chosen corridor and route, where the 1050 km long pipeline will traverse, were examined from our records. Accordingly, since it is determined that the ore horizon of the mine opened for the purpose of coal production with open-pit mining method at IR 1523 (Register 5660) issued site, which is under the liability of Guryapi Industry and Trade Co. and is within the boundaries of Cayirli Sub-district of Erzincan Province, the permission should be taken from the related company or the pipeline route should be modified at the mentioned site. In this regard, there is no inconvenience for the EIA studies in terms of our directorate.

I hereby request your information.

Fahrettin CEVHER
On Behalf of the Minister
General Director

T.R.
MINISTRY OF FORESTRY
General Directorate of National Parks and Game-Wildlife

20/11/2001

Issue : MPG.PK.3.32.55/682-4888

Subject : Baku-Tbilisi-Ceyhan Pipeline

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.

Cetin Emec Bulvari 8th Main Street

No: 7 Asagi Ovecler 06450/ ANKARA

CONCERN : Your letter dated 10,31,2001 and issued EN-01/1179

Your application and appended maps concerning the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, which is prepared by your company, the Environmental Assessment Report (EIA), which is carried out by the General Directorate of BOTAS, had been examined.

As a result of the review, the project of concern will traverse Ardahan-Posof Wildlife Protection Area, which is one of the protection sites of our General Directorate. The proposed pipeline will be considered convenient by our General Directorate on these stipulations;

- 1- avoid disturbing the areas found within the site, where the wild animals drink water, during the excavation works, and if disturbed, provide new areas for drinking water close to the site,
- 2- transporting the soil excavated during construction along the route, which will not harm wild animals,
- 3- ensuring that the noise and pollution effect on the wild animals will be minimum during the activities.

I hereby request your information.

Rasih KUBAOGLU
On Behalf of the Minister
General Directorate Deputy

MINISTRY OF AGRICULTURE AND RURAL AFFAIRS
General Directorate of Protection and Control

ANKARA

29,11,2001

Issue : ÇAHD-93-930-1501

Subject : BTC Crude Oil Pipeline Project EIA Activities

TO THE GENERAL DIRECTORATE OF
PETROLEUM PIPELINE CORPORATION

Sogutozu Mah. Sogutozu Cd. No:31

Ankara

CONCERN : a) Your letter dated 25,10,2001 and issued LET-BOT-GEN-002237

It is stated that regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, site investigation is not required by Ministry of Environment, General Directorate of Environmental Impact Assessment and Planning, in accordance with Host Government Agreement (HGA) and in that stage, in order for the Environmental Impact Assessment Report to be presented to the Ministry of Environment, our Ministry's opinion is inquired to be used in the studies, which will be carried out in the content of EIA.

As a result of the scrutiny and evaluation concerning the topic;

- 1-) In the studies, which will be carried out by BOTAŞ Petroleum Pipeline Corporation in the content of EIA, regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, the pasture, mountain pasture and winter shelter places, public meadow and grasslands will not be used except for the determined purposes, unless the allotment purpose is changed, according to the passed decisive sentence in accordance with the Pasture Law numbered 4342 and the manner of allotment purpose change is determined in the 14th article of the same law and 8th article of the Pasture Regulations. However, in accordance with the adjudication "*The attributes of the public properties like pasture, meadow, mountain pasture and winter shelter places, which are excluded from the places specified in the sub-paragraph (I) of paragraph (e) of this article and are located in the route of transit petroleum pipeline, are avoided ex-officio without the commitment of the Pasture Law numbered 4342 by the Ministry of Energy and Natural Resources and registered on behalf of Treasury and after these, established as autonomous and permanent rights in favour of public cooperations which are commissioned for expropriation.*" which is involved in (f) paragraph of the 8th article of the law concerning the Transit Transition of Petroleum Through Pipelines, there is no need for the allotment change in pasture, mountain pasture and winter shelter places.
- 2-) this kind of demands have to be met from the lands excluding the agricultural ones, owing to this, alternative lands have to be examined, in case the alternative lands are not found, the measures have to be taken in order not to harm the agricultural activities, in the pipeline excavation and re-covering studies carried out at the agricultural lands, the soil excavated from the bottom have to be placed at the bottom, similarly the soil excavated from the top, which is covered with vegetation, have to be placed on top and reinstating of the natural vegetation

should be provided, the soil which is useful for vegetal productivity should be protected during the excavation studies. Taking the mentioned matters into consideration and as a stipulation, providing a technical expert (Agricultural Engineer), there is no objection about the utilization of the requested lands in the vicinity of the pipeline of concern for non-agricultural purposes in terms of “The Regulation Concerning the Protection and Utilization of the Agricultural Lands” issued in the Official Gazette dated August 10, 2001 and numbered 24489.

- 3-) During the river crossings, in accordance with the article 7 of Aquatic Products Law numbered 1380, it is stated that *“it is obligatory to get permissions from the related authorities based upon opinion of the Ministry of Agriculture and Rural Affairs before undertaking any attempts, which could adversely affect the growth and production of aquatic products, such as filling up, drying, partially or completely changing the shape of the water products growth and production places, which are under the adjudication and possession of ministrations with general, annexed and special budgets, state and state economic enterprises, or excavating sand, gravel and rock from these places or scattering rock, soil, debris and similar materials to these places”* In this respect, according to this article of the law, the concerned matters, getting permissions from the authorities of the Ministry of Agriculture and Rural Affairs and carrying out the transitions under the supervision of an employee of Agricultural Provincial Directorates, and for the waste water, which will occur during the studies carried out on the pipeline route, obeying the adjudications, regarding water pollution, involved in the Water Products Law numbered 1380 and providing the Recipient Environment Values found in the Appendix-5 and Waste Water Discharge Values found in the Appendix-6 of the Water Products Regulation, should be appropriately deliberated.

I hereby request your information.

Dr. Huseyin SUNGUR
On Behalf of the Minister
General Directorate

T.R.
GENERAL DIRECTORATE OF STATE RAILWAYS
Department of Road

November 14, 2001

Issue : B.11.2.DDY.0.10.00.05/261-20/10854

Subject :

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emeç Bulvarı 8. Cadde No : 7
Asagi Ovecler 06450 ANKARA

CONCERN : a) Our letter dated 01,08,2001 and issued B.11.2.DDY.0.10.00.05/261-20/71
b) Your letter dated 11,06,2001 and issued EN-01/1202

The project summary and the maps sent in the appendix of your letter of concern (b), concerning the determination of the appropriateness of the content of the EIA report studies carried out at 500 m wide corridor along the route, where the pipeline will traverse, in the content of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, which is carried out by the General Directorate of BOTAS, had been examined.

As it is stated in our letter of concern (a), the Incirlik-Toprakkale-Iskenderun Double Line Project, which is planned to be realized by our directorate, is found within the corridor where the crude oil pipeline will traverse. However, as the new railway constructions are carried out by the General Directorate of Railways, Harbours and Airports Construction (DLH), it is required to inform this state authority as well.

The pipeline route is found within the districts of 4th Regional Directorate centered in Sivas, 5th Regional Directorate centered in Malatya and 6th Regional Directorate centered in Adana.

After the cross-section, plan and project, which are prepared as to be performed with the horizontal drilling method within the pilot pipe resistant to pressure and corrosion and at least 1,50 m deep from the railway platform level, are approved by our authority for the crude oil pipeline railway crossings, it is necessary to get a transition fee for once and to arrange a protocol between our authority and the General Directorate of BOTAS.

After the preparation of the practice project, plan and cross-sections concerning the pipeline-railway crossings, appropriate with the plan and cross-sections found in the appendix, it is required to make an application to the mentioned Regional Directorates and if it is approved, the Regional Directorates will be authorized to make a protocol with the General Directorate of BOTAS.

We hereby request your information.

Nurullah TATARAGASİGİL

President of The Road Department
Deputy

Cevat OKTAY

General Director

T.R.
MINISTRY OF PUBLIC WORKS AND SETTLEMENT
General Directorate Of Technical Research And Application
ANKARA

04/12/2001

File : BPC-1/376
Issue : B.09.0.TAU.0.17.00.00 (2812-27605)
Subject : BTC Project EIA

TO THE GENERAL DIRECTORATE OF PETROLEUM PIPELINE CORPORATION
(BOTAS)

CONCERN : Your letter dated 11,14,2001 and issued LET-BOT-GEN-002385

The appendices of your letter of concern and the information and documents regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project were sent and our Ministry's opinion related to the topics, which should be taken into consideration during EIA Report studies, is inquired concerning Ceyhan terminal and new port within the route traversed by the pipeline and the corridor of 500 m.

The so-called route traversed by the pipeline was examined by our ministry from the sketch found in the project summary and the following matters are determined;

- It is obligatory to perform the required duties and operations based on the opinions and proposals of the related administrative offices about both the governorship authorized areas and the areas included in the municipality borders, where the pipeline route traverses, and on the topics involved in the duty, authority and responsibility of the governorship and municipalities. For example, in the development plan studies, in the road and social technical infrastructure application studies, it is required to provide coordination.
- Regarding the Environmental Master Plan, which is one of the study topics of our ministry, 1/25,000 scaled Adana Karatas Yumurtalik Coastal Region Environmental Master Plan, which is approved on 12,20,1996 by our Ministry and 1/25,000 scaled Iskenderun Gulf and Its Vicinity Environmental Master Plan, which is approved on 9,14,1994, are present in the BOTAS Ceyhan Terminal Region, where the pipeline is ended. Although, the 500m route plotted on the 1/25,000 scaled maps and which is clarified that it is sent in the appendix of your paper, but forgotten inadvertently, is not well understood by our ministry, firstly the route traversing the pipeline in the content of the plan and if present, other infrastructural facilities involved in the proposal should be prepared as Environmental Master Plan modification proposal which is for the route and other infrastructures, should be prepared and submitted to our ministry. The plan models, which had conveyed previously to our ministry, are sent in the appendix of our letter and by taking the present plan into consideration, it is required to get opinions of the Associations and Cooperations (Agriculture, Forestry, SHW, Ministry of Culture, etc.) concerning the other utilization decisions encountering the route by taking the present plan into consideration.

Besides, the proposal application plan and the other information, regarding the new port planned to be constructed, should be prepared by means of the governorship in the content of the law numbered 3621/3830 and should be sent to our ministry.

I hereby request your information.

Feridun DUYGULUER
On Behalf of the Minister
General Director

APPENDIX : 2 1/25,000 scaled plan models.

**GENERAL DIRECTORATE OF
TURKISH ELECTRICITY DISTRIBUTION CORPORATION
Project and Facility Department**

30/11/2001

Issue : B.15.2.TEDAS.0.11.00.06.2001/Project - General
Subject : Baku-Tbilisi-Ceyhan Crude Oil Pipeline Route

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emec Bulvari 8th Main Street
No : 7 Asagi Ovecler 06450/ ANKARA

CONCERN : a) Your letter dated 01,04,2001 and issued EN-01/0012
b) Our letter dated 01,25,2001 and issued 2001/Project General/0816
c) Your letter dated 11,08,2001 and issued EN-01/1229

In your letter of concern (c), it is informed that the corridor route (500 m), of the Baku-Tbilisi-Ceyhan Crude-Oil Pipeline, chosen in the content of the EIA studies carried out by your company on behalf of the General Directorate of BOTAS is determined and it is inquired to determine the appropriateness of the route in the content of the information provided by our general directorate and our provincial organizations and the EIA Report studies.

According to the Strong Current Regulation, after the determination of the final construction corridor of 22 m in length and being marked on field, it is conceived that it would be appropriate to carry out the displacement and modifications, which will be realized in the facilities pertaining to our directorate, according to the protocols done between establishments of concern and related cooperations and also the technical considerations stated in our letter of concern (b).

We hereby request to obtain information.

Niyazi KILIVCIM

Head of the Department

Bahri MANCAR

Deputy General
Director

**GENERAL DIRECTORATE OF
TURKISH ELECTRICITY TRANSMISSION CORPORATION
Department Of Transmission Lines And Transformer Centres Project Facility
“Survey Directorate”**

04,January,2002

Issue : B.15.2.TEŞ.0.13.00.01./ET-H.801/86-00461

Subject : Baku-Tbilisi-Ceyhan Pipeline

ENVY
ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emec Bulvari 8. Cadde, No: 7
Asagi Ovecler 06450/ ANKARA

CONCERN : Your letter dated November 06, 2001 and numbered 01/1206

The Project Summary of Baku-Tbilisi-Ceyhan Crude Oil Pipeline and in its appendix, 1/25,000 scaled map sheets including the pipeline route, sent to our General Directorate in the appendix of your concern letter, had been examined;

- As to be taken into consideration in the newly established Energy Transmission Lines Projects, the 1/25,000 scaled map sheets are protected in our archive.
- For the facilities in operation found on the pipeline route in order not to be affected, coordination should be provided with Erzurum, Keban and Kayseri Operation Group Directorates of General Directorate of Turkish Electricity Transmission Inc.

Emin BAT

Survey Director

Veli BAYRAM

Head of Department

T.R.
ERZİNCAN GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

17/August/2001

ISSUE : B.19.4.İÇM.2.24.00.01/0031-404
SUBJECT : Baku-Tbilisi-Ceyhan Crude Oil Pipeline

ERZİNCAN GOVERNORSHIP
(Provincial Directorate of Planning and Coordination)
ERZİNCAN

Concern : Your paper dated August, 13, 2001 and issued 154

In your letter registered in the concern, it is inquired whether there is supplementary comment regarding the Baku-Tbilisi-Ceyhan crude oil pipeline.

Most part of the pipeline of concern is placed in the 1st and 2nd degree earthquake area. It is required to research the petroleum pipeline project, which traverses one of the active fault, namely North Anatolian Fault Zone (NAF), at approximately 13km of south of Erzincan Province, more detailed by taking the fault movements in the region into consideration and to determine the required measures. Considering an accident that can occur in this section, it will have adverse affect on both human health, due to the close proximity to the resettlement areas, and the wetland known as "Eksisu" and also the ecosystem in this region.

It is thought to be beneficial by our Directorate to investigate thoroughly in detail in Environmental Impact Assesment (EIA) report that whether a rehabilitation will be carried out for the afforestation in the vicinity after covering of the area where the petroleum pipeline is to be laid down.

I hereby request your information.

Faruk ISIK
On Behalf of the Governor
Governor Deputy

APPENDIX : Fault Map (1 Page)

T.R.
GUMUSHANE GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

17/August/2001

ISSUE : B.19.4.İÇM.2.29.00.00/77
SUBJECT : Baku-Tbilisi-Ceyhan Pipeline

TO THE OFFICE OF GOVERNORSHIP
(Provincial Directorate Of Planning And Coordination)

Concern : Your papers from the Provincial Directorate Of Planning And Coordination of Gumushane governorship dated August,10,2001 and issued 83

In the information package prepared relevant to the section of Baku-Tbilisi-Ceyhan pipeline found in our provincial boundaries, as the headlines pertaining to EIA are very detailed, no supplementary opinion is under consideration.

Yours sincerely.

Muhammet MAZLUM
On Behalf of the Provincial
Director of Environment

T.R.
MINISTRY OF LABOR AND SOCIAL SECURITY
Group Of Erzurum Labour Exploration

15/02/2002

ISSUE : B.13.0.ITK.0.00.00.05/770-136
SUBJECT :

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
ANKARA

CONCERN : Your letter dated February 05, 2002 and issued EN-02/0138

Your letter and its appendices registered in the concern were examined; for the office which is in project phase within the route found under our supervision and which is not working yet, according to the Labour Law numbered 1475 and a series of Charters related with Labour Force Health and Labour Security issued based on the so-called law, it is concluded that there is no process to be carried out.

At this stage, it does not seem likely to notify an issue, which is requested and which constitute a basis for the EIA Report.

As it is comprehended from the project summary, together with the Pipeline Construction, there will be other constructions and they will be designated in the future. Prior to the commencement of both the Pipeline Construction and the mentioned constructions, it will be realized after the examination of the 518 – 520th current articles of the Labour Force Health and Labour Security Charter presented in the appendix that there is no obligation for acquiring an Establishment Permit and Operation Certificate.

After the commencement of the actual construction works and the registration of the office, inspections, foreseen by our legislation on the basis of 88th article of the Labour Law numbered 1475, regarding the topics, realization of the work and labour force health and labour security, will be carried out on the route found within the duty area of our Group. As a result of these inspections, Operation Certificate for fixed and permanent facilities will be able to be given.

I hereby request to acquire information.

Selahattin AVINC
Head of the Group

APPENDIX : 1-Related Articles of the Charter (1)

MINISTRY OF CULTURE
General Directorate of Preservation of Cultural and Natural Assets

21/12/2001

Issue : B.16.0.KTV.0.10.00.01/720-15

Subject : Baku-Ceyhan Pipeline

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emec Bulvari 8. Cad. No : 7
Asagi Ovecler 06450/ ANKARA

CONCERN : a) The letter of Envy Energy and Environmental Investments Inc. dated 04,12,2001 and issued EN-01/1351
b) The letter of BOTAŞ Petroleum Pipeline Corporation dated 07,12,2001 and issued LET-BOT-GEN-2565

The letter of concern (a) pertaining to the studies carried out in the content of the Environmental Impact Assessment (EIA) Report regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, is examined.

With the letter of concern (a), our General Directorate's opinions related with the Petroleum Pipeline route are inquired in terms of the information gained by the field studies undertaken by ENVY Inc. who worked in coordination with the personnel of our General Directorate in the content of the Basic Engineering studies of the Project.

However, in the letter of concern (b), in addition to the field studies undertaken in coordination with ENVY Inc., it is informed that there will be another field study, which will be carried out by ODTU TACDAM in order to outline the profile of the archaeological inheritance found on the project route and to present the most appropriate solutions required during the assessment period. In that context, it is required to ensure the participation of our General Directorate's specialists to the additional field studies, which will be carried out by ODTU TACDAM.

Due to the mentioned reason, our opinion on the EIA Report will be informed after the completion of the additional field studies that will be realized between 19 and 28, 12, 2001.

I hereby request your information.

İsmail SALMAN
On Behalf of the Minister
General Director Deputy

DISTRIBUTION

- to BOTAŞ Petroleum Pipeline Corporation
Sogutozu Mah. Sogutozu Cad. No:31 ANKARA
- to ENVY Energy And Environmental Investments Inc.
Cetin Emec Bulvari 8. Cad. No : 7 Asagi Ovecler 06450/ ANKARA

MINISTRY OF CULTURE
General Directorate of
Preservation of Cultural and Natural Assets Of Adana

ADANA

Issue : B.16.0.KTV.4.01/01.02/28-

Subject : About the registration of the cultural assets determined on the section of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline crossing through the boundaries of Adana, Osmaniye and Kahramanmaras provinces and pipeline route

The committee decision, dated January 31, 2002 and numbered 4591, adopted by the General Directorate of Preservation of Cultural and Natural Assets Of Adana regarding the issue which its extract is clarified above.

In accordance with the "Regulation on the Determination and Registration of the Cultural and Natural Assets Required to be Protected" which its amendments, about the revision of the Preservation of the Cultural and Natural Assets Law numbered 2863 and some articles of this law, and addition of some articles to this law, were issued in the Official Gazette numbered 3386 and dated December 10, 1987 and the Official Gazette numbered 20257 and dated August 19, 1989:

It is required to proclaim the registered fixed cultural-natural assets required to be protected, by hanging them up to notice board, announcing with the municipality speakers and notifying to the Village Mukhtarship by your Governorship/District within 3 days at most, to sent the notice record to our Directorate and to place registration concerning the presence of the fixed cultural-natural assets required to be protected to the declaration section of the register of the title deeds.

I hereby request and submit your information.

Hasan BATUN
On Behalf of the Director

MINISTRY OF CULTURE
General Directorate of
Preservation of Cultural and Natural Assets Of Adana

07/February/2002, ADANA

Issue : B.16.0.KTV.4.01/01.02/28-32.8

Subject : About the registration of the cultural assets determined on the section of the Baku-Ceyhan-Ceyhan Crude Oil Pipeline crossing through the boundaries of Adana, Osmaniye and Kahramanmaras provinces and pipeline route

BOTAS PETROLEUM PIPELINE CORPORATION
Sogutozu Mah. Sogutozu Cad. No:31 ANKARA

The committee decision, dated January 31, 2002 and numbered 4591, adopted by the General Directorate of Preservation of Cultural and Natural Assets Of Adana regarding the issue which its extract is clarified above.

In accordance with the "Regulation on the Determination and Registration of the Cultural and Natural Assets Required To Be Protected" which its amendments, about the revision of the Preservation of the Cultural and Natural Assets Law numbered 2863 and some articles of this law, and addition of some articles to this law, were issued in the Official Gazette numbered 3386 and dated December 10, 1987, the Official Gazette numbered 19660 and the Official Gazette numbered 20257 and dated August 19, 1989:

It is required to proclaim the registered fixed cultural-natural assets required to be protected, by hanging them up to notice board, announcing with the municipality speakers and notifying to the Village Mukhtarship by your Governorship/District within 3 days at most, to sent the notice record to our Directorate and to place registration concerning the presence of the fixed cultural-natural assets required to be protected to the declaration section of the register of the title deeds.

I hereby request and submit your information.

Hasan BATUN
On Behalf of the Director

01.02.28

T.R.
MINISTRY OF CULTURE
General Directorate of
Preservation of Cultural and Natural Assets Of Adana

DECISION

MEETING DATE AND NO : 31/January/2002-298

PLACE OF THE MEETING

DECISION DATE AND NO : 31/January/2002-4591

ADANA

The letter dated August 08, 2001 and numbered 6144 of the General Directorate of Preservation of Cultural and Natural Assets regarding the examination of the section of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline crossing through the boundaries of Adana, Osmaniye and Kahramanmaras provinces and pipeline route in the content of the regulation on environmental impact assessment; the letter and its appendix dated January 25, 2002 and reference numbered 2904 of BOTAS Petroleum Pipeline Corporation; the final report of Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project Archaeological Research and Assessment Study prepared by the Centre for Research and Assessment of the Historic Environment of Middle East Technical University; the appendices, stating that the report is read, dated January 29, 2002 of the Committee Directorate regarding the registration of fixed cultural assets determined on the crude oil pipeline route by the experts of Committee Directorate and the pipeline route; and the procedure file were examined as required by decision dated December 12, 2001 and numbered 4520 of our committee and as a result of these consultation carried out;

Regarding the fixed cultural assets present on the section of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline crossing through the boundaries of Adana, Osmaniye and Kahramanmaras provinces, it is decided that;

- a) Water arch and megalithic graves, found within the boundaries of Adana Province, Ceyhan District, Kurtpinar Area, which is the beginning of the crude oil pipeline route and at the west of BOTAŞ facilities, and located at Kurtkulagi Pasture and Babilik location will be registered in accordance with the law numbered 3386 and with different law numbered 2863; the borders of the 1st Degree-Archaeological Protected Area proposed by the experts of the Committee Directorate is appropriate (VERIFIED); re-routing will be required for the pipeline route as the crude oil pipeline route is crossing the 1st Degree-Archaeological Protected Area;
- b) Re-routing will be required for the crude oil pipeline route as the route is crossing over the Kirteke Tumulus registered by our committee's decision dated December 12, 2001 and numbered 4520 and found in the Adana Province, Ceyhan District, Degirmenli Village, Islamoglu Quarter, Kirteke Area;

01.02.28

T.R.
MINISTRY OF CULTURE
General Directorate of
Preservation of Cultural and Natural Assets Of Adana

DECISION

MEETING DATE AND NO : 31/January/2002-298

PLACE OF THE MEETING

DECISION DATE AND NO : 31/January/2002-4591

ADANA

- 2 -

- c) Meryem Cil Castle, located in a close proximity to the crude oil pipeline route and found within the boundaries of Kahramanmaraş Province, Goksun District, Geben Area, at the right of Geben-Goksun Highway will be registered in accordance with the law numbered 3386 and with different law numbered 2863; the protected site proposed by the experts of the Committee Directorate and which its borders are shown on the map found in our decision's appendix is appropriate (VERIFIED); as the pipeline route is crossing through the protected area of Meryem Cil Castle, re-routing will be requested or in case if re-routing is unlikely, it will be requested to carry out the excavation without utilizing vehicles and blasting, under the supervision of relevant Museum;
- d) The Archaeological Site, located on the crude oil pipeline route and found within the boundaries of Kahramanmaraş Province, Goksun District, Caglayan Village, Camkopru Area and on Gumgum Hill will be registered in accordance with the law numbered 3386 and with different law numbered 2863; 3rd Degree Archaeological Protected Site proposed by the experts of the Committee Directorate and which its borders are shown on the map found in our decision's appendix is appropriate (VERIFIED); as the pipeline route is crossing through the 3rd Degree Archaeological Protected Site, re-routing will be requested or in case if re-routing is unlikely, it will be requested to carry out the excavations at the protected site under the supervision of relevant Museum;
- e) Oren Dosu Archaeological Site, located on the crude oil pipeline route and found within the boundaries of Kahramanmaraş Province, Andirin District, Yesilova Area and at the 1 km east of Araplara Quarter will be registered in accordance with the law numbered 3386 and with different law numbered 2863; 3rd Degree Archaeological Protected Site proposed by the experts of the Committee Directorate and which its borders are shown on the map found in our decision's appendix is appropriate (VERIFIED); as the pipeline route is crossing through the 3rd Degree Archaeological Protected Site, re-routing will be requested or in case if re-routing is unlikely, it will be requested to carry out the excavations at the protected site under the supervision of relevant Museum;
- f) The Ruins, located on the crude oil pipeline route and found within the boundaries of Kahramanmaraş Province, Goksun District, Tasoluk Area will be registered in accordance with the law numbered 3386 and with different law numbered 2863; 3rd Degree Archaeological Protected Site proposed by the experts of the Committee Directorate and which its borders are shown on the map found in our decision's appendix is appropriate (VERIFIED); as the pipeline route is crossing through the 3rd Degree Archaeological Protected Site, re-routing will be requested or in case if re-routing is unlikely, it will be requested to carry out the excavations at the protected site under the supervision of relevant Museum;
- g) It will be proposed to carry out detailed research works at Kahramanmaraş Province, Goksun District, Tasoluk Area and to commence scientific excavation works that will expose the archaeological characteristic of the area;

- h) The pipeline route is appropriate fundamentally, with the stipulation to re-arrange the route at the areas mentioned above and found on the route of Baku-Tbilisi-Ceyhan pipeline, traversing the boundaries of Adana, Osmaniye and Kahramanmaras Provinces; and by considering the importance of it with regard to the benefits to the country;
- i) As it is understood that solely a work along the route was realized because of the unsuitability of the weather conditions, detailed research studies on the route and at the areas in the vicinity of the route will be carried out at the periods when the weather conditions are suitable in order to determine the Archaeological and Cultural Heritage of the crude oil pipeline route and to minimize the adverse impacts of the pipeline route on this heritage; and obtained data will be brought to our committee to be assessed.

HEAD
Prof. Dr. Tamer GOK
TANYELI

DEPUTY HEAD
Asst. Prof. Dr. Gulsun

MEMBER
Ass. Prof. Dr. ONUR (A. Zeynep)
(Asuman)

MEMBER
Asst. Prof. Dr. BALDIRAN

MEMBER
Asst. Prof. Dr. AYDIN (Ayse)

MEMBER
AKCA (Aytekin)
Representative of Kurtpinari Municipality
Municipality

MEMBER
KAHVECI (Vahit)
Representative of Geben

MEMBER
Representative of Yesilova Municipality
Municipality

MEMBER
Representative of Tasoluk

MEMBER
Representative of Kahramanmaras Governorship

MEMBER
Representative of Adana Governorship

MEMBER
Representative of Osmaniye Governorship

T.R.
MINISTRY OF TOURISM
General Directorate Of Investments

ANKARA

November 21,2001

Issue : Altyapi Dai.Bşk. /Çev.Sr.Ön.Şb.Md./ÇS-025/1255-6022-37605
Subject : Site Research

THE GENERAL DIRECTORATE OF
PETROLEUM PIPELINE CORPORATION
Sogutozu Mah. Sogutozu Cd. No:31
ANKARA

CONCERN : Your letter and appendices dated 10,25,2001 and issued LET-BOT-
GEN-002235

In your letter of concern, it is notified that the studies on the Environmental Impact Assessment Report (EIA) of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project involved in the signed Host Government Agreement between Azerbaijan, Georgia and Republic of Turkey, are carried out by BOTAŞ BTC Crude Oil Pipeline Project Directorate, Energy and Environmental Investments Inc. (ENVY) and English Environmental Resources Management Ltd. (ERM) based on the agreement made between the mentioned companies and it is requested to examine the 1/25000 scaled plans, which are sent in the appendix 2 of your letter and on which the petroleum pipeline routes are plotted, in the content of the our ministry legislation.

The plans under consideration were examined in the content of our ministry legislation and the routes on these plans do not traverse any Tourism Region, Area and Centre proclaimed by the Tourism Incentive Law numbered 2634.

For the mentioned activity, with the stipulation of conforming the related legislation and regulations, there is no inconvenience in terms of the function, authority and responsibility of our ministry.

I hereby request your information.

İsmail KOKBULUT
On Behalf of the Minister
General Director

T.R.
ERZURUM METROPOLITAN MUNICIPALITY
PUBLIC WORKS DEPARTMENT
Branch Directorate of Public Works

30/January/2002

Issue : E.B.Ş.B.H.01/24

Subject : Statement

ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
Cetin Emec Bulvari 8. Cadde No:7
Asagi Ovecler 06450
ANKARA

Concern : Your letter dated January 09, 2002 and issued EN-02/0036.

The section of approximately 6 km of the Preferred corridor, on which the studies of the Environmental Impact Assessment (EIA) Report, carried out by your company related with the Baku–Tbilisi–Ceyhan (BTC) Crude Oil Pipeline Project, will be realized and which is plotted on the sheets sent in your letter’s appendix, is located within our Municipality Contiguous Land Boundaries. However, as the so-called area is outside the boundaries of the approved Development Plan, there is no inconvenience in terms of our Municipality regarding the BTC Pipeline Route and as it is stated in your letter of concern, on the areas where the pipeline route is traversing, opinion of the other state authorities has to be obtained.

I hereby request your information.

Mahmut UYKUSUZ
Metropolitan Mayor

**T.R.
SIVAS PROVINCE
ULAS DISTRICT
MAYORALTY**

06/February/2002

Issue : 80

Subject : BTC Crude-Oil Pipeline Project

**ENERGY AND ENVIRONMENTAL INVESTMENTS INC.
ANKARA**

Concern : Your letter dated January 09, 2002 and issued EN-02/0038.

During the studies of Environmental Impact Assessment Report of Baku–Tbilisi–Ceyhan Crude Oil Pipeline, carried out on behalf of the General Directorate of BOTAŞ, in case if the provisions, stated in the appendix (Appendix 1) of your letter of concern, are complied with and if two potable water lines, coinciding with the pipeline within the boundaries of our Contiguous Area, are taken into consideration; regarding the studies, there is no inconvenience in terms of our Municipality.

Yours sincerely.

İsmail KOCAK
Mayor

T.R.
MINISTRY OF ENVIRONMENT
Special Environmental Protection Institution

17/01/2001

Issue : 8.19.1.ÖÇK.0.07.00.02A1000/290/0247

Subject :

TO THE MINISTRY OF ENVIRONMENT
(General Directorate of Environmental Impact Assessment and Planning)

CONCERN : Your letter dated January 08, 2001 and issued 92-222.

In your letter of concern, regarding the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, it is required to be informed about the infrastructure projects carried out or being carried out by our Institution along the corridor specified on the 1/100.000 scaled map.

The 1/100.000 scaled map, which was delivered by hand later, was examined by our Institution and since the line of concern is located outside the Special Environmental Protection Areas, which are determined and registered with the decision of the Cabinet, there is no project carried out or being carried out by our Institution in the area.

I hereby request your information.

Koksal KILICLI
Head of Institution

Expert :N. SONMEZ
Office Director :S. GOKTAN
Head of Department :E.ERGANI
Head Deputy of Institution:L.OZDES

T.R.
PRIME MINISTRY
UNDERSECRETARIAT OF MARITIME AFFAIRS
General Directorate Of Marine Transportation

ANKARA

30/11/2001

ISSUE : B.02.1.DNM/0.06.02.01/L.1.60.3 - 07290
SUBJECT : Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project

PETROLEUM PIPELINE CORPORATION
Sogutozu Mah. Sogutozu Cd. No:31

ANKARA

CONCERN : a) Your letter dated 11,14,2001 and issued LET-BOT-GEN-002387
b) The letter of the Ministry of Energy and Natural Resources dated 01,11,2001 and issued 64/16416
c) Our letter addressed to the Ministry of Energy and Natural Resources dated 20,11,2001 and issued 07075

In your letter of concern (a), regarding Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, it is clarified that as Host Government Agreement signed between Azerbaijan, Georgia and Republic of Turkey came into force, a series of agreements related with the project also came into force, these agreements were found acceptable and approved by TBMM, your company was commissioned as the turn-key contractor for the construction of Turkish part of the pipeline, our country undertook some commitments by means of the completion of the project on time according to the statements of the project agreement, accordingly, in order to assure that the project activities would be carried out as determined in the agreements and within the designated period, we are under the obligation of taking the required permission, licence and documents within 30 days beginning from the presentation date of the project stipulations, in that content the EIA Report studies was started, the EIA Procedure was carried out different than the EIA Regulations, it is requested to be informed about the topics, which are desired to be taken into consideration by our undersecretariat, regarding the EIA Report studies.

In the letter of concern (b), within the content of Baku-Tbilisi-Ceyhan (BTC) Crude Oil Pipeline Project studies, it is clarified that it is planned to construct a new marine terminal besides the present marine terminal in BOTAŞ – Ceyhan/Yumurtalik facilities and to transport the crude oil to the world market via this terminal, a specific area found in the vicinity of the terminal should be closed to the marine traffic for the purpose of providing the security and safety of terminal of concern; in order to prevent any delay in the project activities and to make preparations beforehand, it is requested to be informed about the full list of necessary “Application Stipulations” concerning the required permissions, operations and/or standarts, according to the table found in the appendix of concern letter.

The table presenting the application stipulations revelant to marine structures, which will be constructed in the content of BTC Project, was sent to the Ministry of Energy and Natural Resources together with our letter of concern (c) and pertaining to the coastal structures, which will be constructed within the content of the project in the preparation of EIA Report stage of BTC project, the information and documents like,

- sample of the marine terminal being plotted to the related marine map together with its coordinates,
- proposal state plan being plotted 1/1000 scaled application reconstruction plan,
- 1/25000 scaled key plan,
- summary of Feasibility Report

should be sent and it is evaluated that it would be appropriate to include the view of our undersecretariat in the EIA Report.

I hereby request information.

Dr. Mustafa KORCAK
Undersecretary

T.R.
ARDAHAN GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

09/August/2001

ISSUE : B.19.4.İÇM.2.75.00.00/12
SUBJECT : BTC EIA Studies

TO THE MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)

ANKARA

Concern :

- a) Your letter dated August 03, 2001 and issued 11658
- b) The letter of Energy and Environmental Investments Inc. dated December 13, 2001 and issued 1118
- c) The letter of BOTAŞ dated January 11, 2001 and issued B.15.2.BOT.0.25.00.00/124
- d) The letter of Provincial Directorate of Editing Works dated January 16, 2001 and issued 78 and sent to Energy and Environmental Investments Inc.

The Ardahan Dossier, the letter of the Ministry of Environment and the information note of Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project given by ENVY Inc., are examined.

The required information relying on the letter of concern (b) and (c) were asked for from the related institutions of our province and sent to ENVY Inc. authorized in the name of BOTAŞ with our letter of concern (d).

Once all these letters and related files were examined, the views were acquired from the Central agencies of the Ministries and related institutions of our province. However, the maps given in the Ardahan dossier were examined by our institution and the officials of the Commandership of 25th Mechanized Infantry Brigade with bilateral consultation and the distance between the arsenal, located within the barrack boundaries of 25th Mechanized Infantry Brigade in Ardahan Region, and the proposed route was determined to be 1.5-2 km. Before, in the command sent to the Brigade Commandership by Superior Commandership, it is commanded that the distances less than 5 km should be reported; the Brigade Commandership is informed the Superior Commandership that the distance of the crude oil pipeline traversing the area was inappropriate, so they would be evaluating the alternative routes (Hanak – Camlicatak – Haskoy orientation) sent before. The subject is still under discussion at the Superior Commandership and the Brigade Commandership has not received any commands yet.

As soon as there is a progress regarding the issue, the situation will be informed to the authorities by a bilateral consultation. It is advised by us to take the information, which can be obtained from the related Commanderships regarding the topic, into consideration as well.

It is stated in the information package given to our governorship by ENVY Inc. authorized in the name of BOTAŞ that the project is of four phases, all non-governmental organizations, citizens, all people, institutions and officials related with the issue would be informed during these phases.

At this point, regarding the information stated above, we do not have any supplementary opinions. During the EIA process, once new information and requests regarding the topic will be acknowledged from both the public and public institutions, you will be informed.

I hereby request your information.

Bekir ATMACA
On Behalf of the Governor

T.R.
KARS GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

11/October/2001

ISSUE : B.19.4.İÇM.2.36.00.00-164
SUBJECT : Baku-Tbilisi-Ceyhan Crude-Oil
Pipeline Project

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)

ANKARA

Concern : Your letter dated August 3, 2001 and issued B.15.0.TBH.0.00.00.(400)19

An introductory meeting was held in the presidency of Governor Nevzat TURHAN with the committee comprising representatives of the General Directorate of BOTAŞ and state authorities relevant to the Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project in our Governorship meeting room on September 18, 2001 at 14.00.

With the stipulation to take the required measures regarding the issues stated in the Table 5-1 "The Table of Main Issues and Probable Impacts Arised in the context of Environmental and Social Impact Assessment" found in the Environmental and Social Impact Assessment (ESIA) Information Package of the Turkish section of Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project, and to obey the regulations present in the content of Environmental Law numbered 2872, there will be no supplementary opinion.

I hereby submit your information.

Tayfur ELBASAN
On Behalf of the Governor
Governor Deputy

T.R.
ERZURUM GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

28/August/2001

ISSUE : B.19.4.İÇM.2.25.10.00/553
SUBJECT : Baku-Tbilisi-Ceyhan Crude-Oil
Pipeline Project

TO THE MINISTRY OF ENERGY
(Transit Petroleum Pipeline Department)
ANKARA

Concern : Your letter dated August 3, 2001 and issued B.15.0.TBH.0.00.00.01(1400)
14/11662

Your letter of concern and its appendices are examined and with the stipulation of obeying the issues, clarified in the Environmental Law numbered 2872 and in the regulations issued regarding this law, during the pre-construction, construction, operation and after operation phases related with the the part of the Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project found in our provincial boundaries, there is no inconvenience in terms of our Directorate.

Yours sincerely,

Murteza BALCI
On Behalf of the Governor
Governor Deputy

T.R.
ERZINCAN GOVERNORSHIP
DIRECTORATE OF PROVINCE PLANNING and COORDINATION

21/08/2001

ISSUE : B054VLK4240200-6.1/160
SUBJECT : BTC EIA Studies

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)

CONCERN :

- a) Our letter addressed to ENVY Inc. dated January 22, 2001 and issued B054VLK4240200-6.1/11
- b) Your letter dated August 03, 2001 and issued B.15.0.TBH.0.00.00.01(400) 12/11660
- c) Our letter dated August 20, 2001 and issued B054VLK4240200-6.1/159

In your concern (b) letter, the phases of the project was summarized and it is determined that the corridor width of 10 km will be narrowed down to 500 m. It is asked to be informed on supplementary opinions to be used in the studies, which will be carried out in the content of the EIA.

The Erzincan dossier submitted to our governorship, involved in the letter of concern (b) and its appendix, was examined by the technical personnel of relevant state authorities. It is clarified that most part of the pipeline is placed in the 1st and 2nd degree earthquake zone, it is required to research the crude oil pipeline project, which traverses North Anatolian Fault Zone (NAF), at approximately 13 km south of Erzincan Province, in more details by taking the fault movements in the region into consideration and considering an accident that can occur in this section, as it will have adverse affect on both human health, due to the close proximity to the settlement areas, and the wetland known as "Eksisu" and also the ecosystem in this region, the required measures have to be taken.

By the applications of citizens to our Governorship and Sub-governorships, it is expressed that during the construction of Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, the agricultural lands, village roads present on the route, will be destroyed. It is appeared to be appropriate by our Governorship, to add a stipulation, stating "the reinstatement of agricultural lands, village roads and natural structure as much as possible", to the contracts, that will be made with the contractor companies in tender and construction phases of the project and to consider the subject during EIA process.

I hereby submit your information.

H. Ibrahim ALTINOK
Governor

T.R.
GUMUSHANE GOVERNORSHIP
DIRECTORATE OF PROVINCE PLANNING and COORDINATION

17/August/2001

ISSUE : BO54VLK4290200-02/87
SUBJECT : Baku-Tbilisi-Ceyhan Crude-Oil
Pipeline EIA Studies

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)
ANKARA

Concern : Your letter dated August 3, 2001 and issued 11663

The letter dated August 17, 2001 and numbered 77, which was received from the Provincial Directorate of Environment regarding the section of Baku-Tbilisi-Ceyhan Crude Oil Pipeline found in our provincial boundaries, which is the subject of your paper, is presented in the appendix.

I hereby submit your information.

Salih ISIK
On behalf of the Governor
Governor Deputy

Appendix: letter dated Aug. 17, 2001 from the Provincial Directorate of Environment

T.R.
GUMUSHANE GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

17/August/2001

ISSUE : B.19.4.İÇM.2.29.00.00/77
SUBJECT : Baku-Tbilisi-Ceyhan Pipeline

TO THE OFFICE OF GOVERNORSHIP
(Provincial Directorate Of Planning And Coordination)

Concern : Your letters from the Provincial Directorate Of Planning And Coordination of Gumushane Governorship dated August 10, 2001 and issued 83

In the information package prepared relevant to the section of Baku-Tbilisi-Ceyhan pipeline found in our provincial boundaries, as the headlines pertaining to EIA are very detailed, no supplementary opinion is under consideration.

Yours sincerely.

Muhammet MAZLUM
On Behalf of the Provincial
Director of Environment

T.R.
SIVAS GOVERNORSHIP
PROVINCIAL DIRECTORATE OF WRITING WORKS

29/08/2001

ISSUE : B054VLK4580300-22(İşl.18)-2376

SUBJECT : Supplementary opinion

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)

ANKARA

CONCERN : a) The letter of Transit Petroleum Pipeline Department of the Ministry Of Energy And Natural Resources dated 03,08,2001 and issued B.15.0.TBH.0.00.00.01 (400)13-11661

The supplementary opinions of our Governorship are requested since the EIA studies are to be started in the vicinity of 500 m corridor of Baku-Tbilisi-Ceyhan Crude Oil Pipeline route, which traverses our provincial boundaries.

As a result of the evaluation prepared with related association and institutions;

1. Since the groundwater level is high at part of the BTC Crude Oil Pipeline route found within Hafik District boundaries, this issue should be taken into consideration in the studies,
2. The necessity of restoration of the water canals and roads, which have been destroyed during the studies by the responsible construction company has been stated by all our related district sub-governors, sensitivity should be indicated to the topic,
3. Required measures should be taken in order not to damage the electricity transmission lines and posts found in the route that is shown on the map and the issues, clarified in the article 46 of "Regulation on Over-head Powerline Installations" published in 24246 numbered Official Gazette on 30,11,2000, should be obeyed.
4. At highway crossings;
 - a. minimum 100 m of distance should be left by considering the case of broadening the highways in parallel transitions in the future,
 - b. The measures, that provide traffic safety in upright transitions, should be taken and a protocol should be made with General Directorate of Highways (TCK) regarding these issues,
5. At railway crossings, an approval of the General Directorate Of Railways (TCDD) for explorations, plans and projects, which are prepared as to be done with the horizontal drilling method within the pilot pipe resistant to pressure and corrosion and at least 1,5 m deep from the road platform level, should be provided,
6. "Sivas Province Geology and Natural Sources Map" which is sent in the appendix of our paper and prepared by 1st Provincial Directorate of Mineral Research and Exploration (MTA) of our province should be considered,
7. It is stated in the letter of General Directorate of Natural Parks and Game-Wildlife, dated 29,01,2001 and numbered 293, that BTC Crude-Oil Pipeline traverses very close to Tecer and Alacorak Lakes of Ulas Province; in case there will be no leakage at the end of the construction phase, there will be no

objection for wild life; however as the animals in the vicinity can be stressed during their breeding period due to the construction works, it is more appropriate to carry out the works except for the period between March and July.

I hereby request your information.

M. Lütfullah BILGİN
Governor

APPENDICES :

Ek – 1 Sivas Province Geology and
Natural Sources Map (1)

T.R.
KAYSERI GOVERNORSHIP
DIRECTORATE OF PROVINCE PLANNING and COORDINATION

03/09/2001

ISSUE : B.05.4.VLK.4.38.02.00-8.1-1/125
SUBJECT : Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)

CONCERN : Your letter dated August 03, 2001 and issued B.15.0.TBH.0.00.00.01(400)
12/11660

As a result of the studies performed with the related state authorities, the information regarding the state of the infrastructure facilities on the route of the "Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project", carried out by the General Directorate of BOTAŞ, within the boundaries of our province, were plotted on the map and transmitted to the related company with our letter dated February 13, 2001 and issued 8.1-1/40.

It was informed in your concern letter that the supplementary opinions regarding the EIA studies, which will be carried out in the content of the project are needed.

In this context, the opinions of the related state authorities concerning this subject were inquired again and our governorship was found the project as affirmative. However, it is seen as useful to take the following items into consideration during your works.

1. It was determined that the pipeline crosses Zamanti River and Sariz Creek and the other surface water resources flowing into these streams. Giving detailed information in EIA Report regarding the leaks that may cause the contamination of the stream as a result of the failures on the crude oil pipeline at the watercourse crossings and the prevention methods,
2. Contacting Kayseri Provincial Directorate of Rural Services when the construction of the structures (road, irrigation channel, bridge, etc.) concerning Rural Services Organization were started on the route of the crude oil pipeline,
3. Getting the opinion of the 5th Regional Directorate (Mersin) of Highways, since the crude oil pipeline project crosses the highway at two points vertically and the related points are out of the responsibility of our Regional Directorate,
4. Registering the crude oil pipeline according to Strong Current Directive,
5. Requiring the change of the purpose of assignment of the places, which are stated as pasture in the corridor mentioned in Pasture Law numbered 4342, according to Article 14,
6. There is no Protected Area on the route of crude oil pipeline; however, it is considered that it will be appropriate to inform the Directorate of Museum of our province in case a fixed or movable cultural asset is found during the works in the region.

I hereby submit your information.

Nihat CANPOLAT, Governor

T.R.
KAHRAMANMARAS GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

03/September/2001

ISSUE : B.19.4.İÇM.2.46.00.00/6471/140
SUBJECT : BTC EIA Studies

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)

ANKARA

CONCERN : Your letter dated August 3,2001 and numbered 11666

It is notified to the General Directorate of BOTAS by our Ministry's letter dated August 2, 2001 and numbered 3582-9515 that there is no need to carry out the "Site Selection" studies, which is clarified in the article 10 of the EIA Regulation based on the Environmental Law numbered 2872, for the Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project, that will traverse the boundaries of our Province, to be finished in time.

In the content of the Basic Engineering studies carried out by ENVY between November 15, 2000 and May 15, 2001, the information related with the present and planned investments, military restricted zones, environmentally, culturally important areas, etc., for the section of the pipeline route included in our provincial boundaries, were sent in the appendix of our Governorship letter dated January 19, 2000 and numbered 01.

I hereby submit the issues; determination of the present and planned investments on the petroleum pipeline route, notified within the appendices, by excluding the settlement areas, obeying the international contracts regarding the preservation of endangered animals and paying careful attention in determination of the route that is not the shortest, but less harmful for the environment, to your information.

Yakup VATAN
On Behalf of the Governor
Governor Deputy

T.R.
OSMANIYE GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

28/August/2001

ISSUE : B.19.4.İÇM.2.80.00.00/6000-461
SUBJECT : BTC EIA Studies

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)
İnönü Bulvarı No : 27 06490
Bahçelievler-ANKARA

Concern : Your letter dated August 3, 2001 and issued B.15.0.TBH.0.00.00.(400)17

An introductory meeting was held in the presidency of Governor Deputy Abdullah ASLAN with the committee comprising representatives, namely Dr. Recep BOZTEMUR, Bahadır ERGENEKON, Hande HEKIMOGLU, of the General Directorate of BOTAS and state authorities relevant to the Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project in the Kadirli Sub-District Meeting Room on August 28, 2001, Tuesday at 10.00 a.m.

Except for taking the required measures regarding the issues stated in the Table 5-1 "The Table of Main Issues and Probable Impacts Arised in the context of Environmental and Social Impact Assessment" found in the Environmental and Social Impact Assessment (ESIA) Information Package of the Turkish section of Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project, there will be no supplementary opinion.

I hereby submit your information.

İsmail FIRAT
Governor

T.R.
ADANA GOVERNORSHIP
PROVINCIAL DIRECTORATE OF ENVIRONMENT

22/August/2001

ISSUE : B.19.4İÇM.4.01.00.02/1280
SUBJECT : BTC EIA Studies

TO MINISTRY OF ENERGY AND NATURAL RESOURCES
(Transit Petroleum Pipeline Department)
İnönü Bulvarı No : 27
06490 Bahçelievler/ANKARA

Concern : Your letter dated August 3,2001 and issued B150THB0000001(400)16/11664

In the letter of concern, it is notified that Intergovernmental Aggrement, signed between Azerbaijan, Georgia and Turkish Republics, pertaining to Baku-Tbilisi-Ceyhan Crude Oil Pipeline Project, has gone into effect and for the three phased project of interest, it is stated that in accordance to the letter of Ministry of Environment dated August 2, 2001 and numbered B190ÇED0130003/3582-9515 and Host Government Agreement, there is no need to carry out the "Site Selection" studies, which is clarified in the article 10 of the EIA Regulation.

In that content, as for the studies, which will be carried out related to Baku-Tbilisi-Ceyhan Crude-Oil Pipeline Project, it is required to obey the sentences of the Environmental Law numbered 2872 and the regulations relevant to this law, which are listed below:

- Environmental Impact Assessment Regulation
- Water Pollution Control Regulation
- Regulation on Preservation of Air Quality
- Noise Control Regulation
- Solid Waste Control Regulation
- Regulation on Hazardous Materials/Products Control
- Hazardous Waste Control Regulation

and for the so-called project, I hereby submit the issue to provide coordination with Adana Governorship in both construction and operation phases.

Oguz Kagan KOKSAL
Governor

REPUBLIC OF TURKEY
MINISTRY OF CULTURE
General Directorate of
Conservation of Cultural and Natural Properties of Kayseri

KAYSERİ

April 03, 2002

Issue: B.16.0.0.KTV.4.38.00.00/720(720/23) 92

Subject : About the registration of the cultural properties determined
in the section of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline
crossing through the boundaries of Kayseri and Sivas provinces

Botaş Oil Transportation Inc.
Söğütözü Mah. Söğütözü Cad.
No: 31 ANKARA

The committee decision No: 2995 of March 29, 2002 adopted by the Board of Conservation of Cultural and Natural Properties of Kayseri about the matter, scope of is specified above, is attached herewith.

In accordance with the “Regulation on the Determination and Registration of the Cultural and Natural Properties Required to be Protected” which its amendments, about the revision of the Preservation of the Cultural and Natural Assets Law numbered 2863 and some articles of this law, and addition of some articles to this law, were issued in the Official Gazette numbered 3386 and dated December 10, 1987 and the Official Gazette numbered 20257 and dated August 19, 1989:

It is required to proclaim the immovable cultural-natural assets required to be protected, by hanging them up to notice board, announcing with the municipality speakers and notifying to the Village Mukhtarship by your Governorship/ District Governorship within at the latest 3 days, to sent the notice record to our Directorate and to place registration concerning the presence of the immovable cultural-natural assets required to be protected to the declaration section of the register of the title deeds.

You are kindly requested to be informed of and take necessary actions for the above.

Gazi Şahin
On Behalf of the Director
(signature)

Enclosure:

1. Copy of the Decision (1)
2. Copy of the Monument Slip (1)
3. Copy of the Site Form (14)
4. Copy of Map (15)

**Republic of Turkey
The Office of the Governor of Erzincan
Provincial Directorate of Culture
Museum Directorate**

August 15, 2001

Issue: B.16.0.AMG.4.24.00.00.720/124
Subject: Baku-Tbilisi-Ceyhan Oil Pipeline Project

To the attention of
Provincial Directorate of Culture
ERZİNCAN

Ref: a) Letter No: 134 of August 13, 2001 issued by the Office of the Governor of Erzincan,
Provincial Directorate of Planning and Coordination,
b) Your letter No: 720/1034 of August 13, 2002

In the letter referred to in section (a) above, it was stated that a request was made with the letter No: 20547IZ4240200-6.1/5 of January 08, 2001 for carrying out examinations with regard to the work field of our Institution within the scope of the Baku-Tbilisi-Ceyhan Oil Pipeline Project and that the EIA process of the project in question was still underway and it was requested to declare an opinion and make an evaluation for the second time since there had been a change in the "corridor width" along the route of the pipeline concerned. Our institution has not received the letter, which was claimed to be previously sent for the matters explained in the reference part (a) above. In line with the letter specified in the reference part (a) above, an examination has been carried out in relation with the mentioned project, which is currently in the EIA process.

The route to be followed for the Baku-Tbilisi-Ceyhan Oil Pipeline Project within the boundaries of our province has been examined on the basis of the project file and it was deemed a requirement to examine lands due to the presence of registered cultural properties on the route identified on the map attached to our letter under the scope of the Law No: 2863 on the conservation of cultural and natural properties.

All of the cultural and natural properties specified in articles 3, 4 and 6 (those identified, registered and recorded in the inventory of our Ministry in accordance with the law no: 2863 or those not known yet and therefore not identified and registered) are included within the scope of our legislation. Pursuant to the decree No: 354, land surveys and researches are required to be realized on the route by the experts working for the central and provincial organizations affiliated to our Ministry. All kinds of permissions, opinions and land surveys regarding the project crossing through the work site of the General Directorate of Conservation of Cultural and Natural Properties affiliated to our Ministry shall be notified after the finalization thereof through a committee to be formed by the experts of our Ministry.

The opinion of the General Directorate of Conservation of Cultural and Natural Properties affiliated to our Ministry with regard to the formation of a committee has been stated in the relevant file of the project at the EIA stage. The opinion, permission and approval shall be notified following the land survey to be carried out in coordination.

I hereby request the notification of the Provincial Directorate of Planning and Coordination in this regard within work hours on August 15, 2001.

Sevda Hazer
Director of Museum

REPUBLIC OF TURKEY

MINISTRY OF CULTURE

GENERAL DIRECTORATE OF MONUMENTS AND MUSEUMS

Issue: B.16.0.AMG.0.10.00.02.12-7

ANKARA

Subject: Baku – Tbilisi – Ceyhan Crude Oil Pipeline
Commencing of archaeological studies

12/6/2002 – 9102

To: BOTAŞ Oil Transportation Corp.
Söğütözü Mah. Söğütözü Cad. No: 31
ANKARA

The protocol, issued in relation to the studies to be conducted as part of the Impact Assessment Project of the Archaeological and Culture Heritage within the Impact Field of Baku – Tbilisi – Ceyhan Crude Oil Pipeline, had been executed on 12/3/2002.

As mentioned in the said protocol, the studies to be conducted on the area that BTC Pipeline shall extend should be commenced as soon as possible since such studies shall be running against a schedule and the excavation season has begun.

I would like your action and information towards the commencing of such studies a.s.a.p. upon the submittal of the project documents, to be used in the archaeological study of BTC pipeline, to our Ministry.

(Signature)

Dr. Alpay PASINLI

Archaeologist

In the name of the Minister

General Manager

For Action.

REPUBLIC OF TURKEY

PRIME MINISTRY

**UNDERSECRETARIAT OF MARITIME
General Directorate of Maritime Transportation**

Issue: ANKARA
Subject:

The table showing the application prerequisites related to the offshore structures of BTC Pipeline project have been submitted to the Ministry of Energy and Natural Resources annexed to our Ref. (c) letter.

- A copy of the naval map showing the marine terminal and its coordinates,
- The proposed layout plan drawn on the final development plan on a 1/1000 scale,
- Key plan on a 1/25000 scale,
- Summary of Feasibility Report

of the offshore structures of BTC pipeline project should be submitted during the EIA Report Preparation Stage and the EIA Report should include the opinion of our Undersecretariat.

This letter has been submitted for your action and information.

(Signature)
Dr. Mustafa KORÇAK
Undersecretary

**REPUBLIC OF TURKEY
MINISTRY OF CULTURE
KAYSERI COUNCIL FOR THE PROTECTION OF
CULTURAL AND NATURAL PROPERTY**

DECISION

Meeting No and Date: 269 – 26/4/2002

Meeting convened in:

Decision No and Date: 3015 – 26/4/2002

KAYSERI

We have read, analysed and discussed the letter of the General Directorate for the Protection of Cultural and Natural Property of 7/12/2001 and No: 10339 and the letter of BOTAŞ Pipeline Transportation Corp of 15/4/2002 and No: LET-BOT-GEN 3489 whereby they have demanded an assessment by our Council of the maps, scaled to 1/25000, showing according to the Decision of our Council of 29/3/2002 and No: 2995 the cultural property located on the crude oil pipeline route within the boundaries of Kayseri and Sivas cities as found out during the studies conducted by the experts of our General Directorate and ENVY Corp. in cooperation and the studies conducted by ODTÜ (METU) – TAÇDAM as part of the Baku – Tbilisi – Ceyhan Crude Oil Pipeline (BTC – HMBH) Project. We have reached the decision that:

The route, which is on the point where there are 15 items of cultural property as registered through the decision of our Council of 29/3/2002 and No: 2995 upon the studies conducted on the crude oil pipeline route within the boundaries of Kayseri and Sivas cities by the experts of our General Directorate and ENVY Corp. in cooperation and the studies conducted by ODTÜ (METU) – TAÇDAM as part of the Baku – Tbilisi – Ceyhan Crude Oil Pipeline (BTC – HMBH) Project, is appropriate as shown in the 1/25000 scale maps annexed to our decision; however, the case may be re-discussed at another meeting of our Council upon the preparation of the maps showing the registered and proposed conservation areas together with the pipeline route on standard original-size maps on a scale of 1/25000.

A COPY OF THE ORIGINAL

(Stamp and Signature)

Dilek YALDIZ
Archaeologist

Gazi ŞAHİN
Director

PRESIDENT
Assistant Prof. Dr. Y. Bahri ERGEN
(Temporary President)
(Signature)

VICE-PRESIDENT
Assistant Prof. Dr. S. Sarp TUNÇOKU
(Temporary Vice-President)
(Signature)

MEMBER
Prof. Dr. Kerim TÜRKMEN
(Signature)

MEMBER
Assistant Prof. Dr. Yegan KAHYA
(Signature)

MEMBER
Mehmet IKILER
Architect
Development and Resettlement Representative of Governorate of Kayseri
Directorate
Representative of Governorate
of Kayseri
(Signature)

MEMBER
Ahmet BOZDOĞAN
Development and Resettlement Directorate
(Signature)

**REPUBLIC OF TURKEY
MINISTRY OF CULTURE
KAYSERI COUNCIL FOR THE PROTECTION OF
CULTURAL AND NATURAL PROPERTY**

DECISION

Meeting No and Date: 268 – 29/3/2002

Meeting convened in:

Decision No and Date: 2995 – 29/3/2002

NIKSAR

We have read, analysed and discussed the letter of the General Directorate for the Protection of Cultural and Natural Property of 21/3/2002 and No: 2459 and heard the reporter's note whereby they have demanded an assessment by our Council of the report and the attachments thereof on the studies conducted by the experts of our General Directorate and ENVY Corp. in cooperation and the studies conducted by ODTÜ (METU) – TAÇDAM with a view to defining the cultural and natural property located on the route of BTC Crude Oil Pipeline Project as included within the contents of the relevant EIA Report. We have reached the decision that:

15 items of cultural property, which the reports of the experts of the General Directorate of the Council for the Protection of Cultural and Natural Property propose to register and which are located on the route of BTC Crude Oil Pipeline within the boundaries of Kayseri and Sivas, should be registered; the other items of cultural property on the route that could not be defined due to the weather conditions should continue to be studied; the pipeline route is appropriate in principal as prepared by BOTAŞ in line with the changes on the route as caused on 1/25000 scale maps submitted to our Council; however, the 1/25000 scale maps showing the relation of the pipeline and the cultural property located around the route and its environs as found by the experts of the General Directorate for the Protection of Cultural and Natural Property, ODTÜ (METU) – TAÇDAM and ENVY CORP. should be discussed at the Council following its submittal thereto.

A COPY OF THE ORIGINAL

(Stamp and Signature)

Dilek YALDIZ
Archaeologist

Gazi ŞAHİN
Director

PRESIDENT
Assistant Prof. Dr. Y. Bahri ERGEN
(Temporary President)
(Signature)

VICE-PRESIDENT
Assistant Prof. Dr. S. Sarp TUNÇOKU
(Temporary Vice-President)
(Signature)

MEMBER
Prof. Dr. Kerim TÜRKMEN
(Signature)

MEMBER
Assistant Prof. Dr. Yegan KAHYA
(NOT AVAILABLE)

MEMBER
Mehmet IKİLER
Architect
Development and Resettlement Representative of Governorate of Kayseri
Directorate
Representative of Governorate
of Kayseri
(Signature)

MEMBER
Ahmet BOZDOĞAN
Development and Resettlement Directorate
(Signature)

REPUBLIC OF TURKEY

MINISTRY OF CULTURE

GENERAL DIRECTORATE OF MONUMENTS AND MUSEUMS

Issue: B.16.0.AMG.0.10.00.02/712-7

ANKARA

Subject: Baku – Tbilisi – Ceyhan Crude Oil Pipeline, Archaeological Surface Surveys

19/6/2002 – 9731

To: BOTAŞ Oil Transportation Corp.
Söğütözü Mah. Söğütözü Cad. No: 31
ANKARA

Ref: a) Letter of BOTAŞ Pipeline Transportation Corp. of 12/6/2002 and No: 3900
b) Our letter of 20/3/2002 and No: 3568

We have studied the above referenced letter (a) of BOTAŞ and the annexes thereto in relation to the archaeological surface surveys to be conducted under the “Protocol issued in relation to the studies to be conducted on the Cultural Property on the Route of Baku – Tbilisi – Ceyhan Crude Oil Pipeline”, executed on 12/3/2002 between BOTAŞ and our General Directorate.

It is the opinion of our Ministry that these studies should be conducted as per the said Protocol under the auspices of the relevant Museum Directorate or the closest Museum Directory in line with our above referenced letter (b).

The date of commencement for such studies should be notified to the relevant Museum Directorate.

We request that the photos, colored slides, plans, cross-sections, drawings, floppy discs, if any, and work reports to be prepared in the end of such surveys as related to any and all findings of the surface surveys be submitted to our Ministry within the given period of time following the completion of the surveys and I would like to wish you success in your studies.

(Signature)

Dr. Alpay PASINLI

Archaeologist

In the name of the Minister

General Manager

ATT:

- 1: General Content Plan (7 pages)
- 2: Team list (1 page)
- 3: Copy of work schedule (1 page)
- 4: Copy of working plan (1 page)
- 5: Copy of surface survey area list (1 page)
- 6: Copy of map (5 pages)
- 7: Copy of contact list (6 pages)

**REPUBLIC OF TURKEY
MINISTRY OF CULTURE
KAYSERI COUNCIL FOR THE PROTECTION OF
CULTURAL AND NATURAL PROPERTY**

DECISION

Meeting No and Date: 271 – 31/5/2002

Meeting convened in:

Decision No and Date: 3041 – 31/5/2002

KAYSERI

We have read, analysed and discussed the letter of BOTAŞ of 8/5/2002 whereby they have demanded an assessment by our Council of the original-size, 1/25000 scale, standard maps showing, pursuant to the Decision of our Council of 26/4/2002 and No: 3015, the registered and proposed archaeological protection areas on BTC Pipeline route. We have reached the decision that:

The registered and proposed archaeological protection areas on BTC Pipeline route as shown pursuant to the Decision of our Council of 26/4/2002 and No: 3015 on the original-size, 1/25000 scale, standard maps are appropriate as they have been shown.

A COPY OF THE ORIGINAL

(Signature)

Dilek YALDIZ
Archaeologist

Gazi ŞAHİN
Director

PRESIDENT

Assistant Prof. Dr. Y. Bahri ERGEN
(Temporary President)
(Signature)

VICE-PRESIDENT

Assistant Prof. Dr. S. Sarp TUNÇOKU
(Temporary Vice-President)
(Signature)

MEMBER

Prof. Dr. Kerim TÜRKMEN
(Signature)

MEMBER

Assistant Prof. Dr. Yegan KAHYA
(Signature)

MEMBER

Mehmet IKILER
Architect
Development and Resettlement Representative of Governorate of Kayseri
Directorate
Representative of Governorate
of Kayseri
(Signature)

MEMBER

Ahmet BOZDOĞAN
Development and Resettlement Directorate
Representative of Governorate of Kayseri
(Signature)

**REPUBLIC OF TURKEY
MINISTRY OF CULTURE
ERZURUM COUNCIL FOR THE PROTECTION OF
CULTURAL AND NATURAL PROPERTY**

DECISION

Meeting No and Date: 10/5/2002 - 144

Meeting convened in:

Decision No and Date: 10/5/2002 - 1233

ERZURUM

We have read, analysed and discussed the letters of the General Directorate for the Protection of Cultural and Natural Property of 21/3/2002 and No: 2459, of 1/4/2002 and No: 2801, of 6/5/2002 and No: 4286, the letter and annexes thereto of BOTAŞ of 18/4/2002 and No: 3503, the report of the experts of the General Directorate for the Protection of Cultural and Natural Property as well as the reports and the annexes thereto of ENVY Corp and ODTÜ TAÇDAM all of which are related to the assessment of the cultural and natural property on the route of the BTC Pipeline as covered by the project's EIA Report. We have reached the decision that:

Pertaining to the route of BTC Pipeline, 4 items of cultural property, located in Ardahan – Kars – Erzurum – Erzincan sections of the Route, as proposed to be registered in the experts' reports of the General Directorate for the Protection of Cultural and Natural Property, should be registered as Archaeological Protection Area Zones 1 and 3 in Erzurum, Center, Çayırtepe Village, Taşmasor Residential Area; Ruins in Başköy and Zavot in Kars, Selim town should be registered as Archaeological Protection Area Zone 1; Mere (Meri) Fortress in Ardahan, Posof, Çakırkoç Village should be registered as Archaeological Protection Area Zone 1 and, the church ruins in Ardahan, Posof, Kumluköz Village should be registered as Archaeological Protection Area Zone 1 and the boundaries of such protection areas should be registered on the 1/25000 scale map; the pipeline should be allowed, pursuant to Paragraph (a) of Article 1 of the Principal Decree of the Supreme Council for the Protection of Cultural and Natural Property of 5/11/1999 an No: 659, to pass through the Sarıkamış Forests, which had been defined as Natural Protection Areas through the Decision of our Council of 25/12/1991 and No: 403; the other items of cultural and natural property that could not be defined due to weather conditions should continue to be studied as foreseen in the list of Att – II; the route prepared by BOTAŞ in line with the changes on the route as caused on 1/25000 scale maps is appropriate in principle; however, any proposed studies such as supervision, excavation, rescue works as proposed in Lists I and II should be conducted according to the rules and there should not be any form of construction works or physical intervention (excavation, transporting and dumping of stones, soil, sand, pebble stones, rubbish, or dross, construction, etc.) on the same areas mentioned in Lists I and II, except for the proposed construction of the pipeline, which will be approved by the council, supervised excavation works and archaeological rescue works; any works towards finding such sites should be completed prior to the beginning of the pipeline construction and should be re-assessed by the Council, if need may be, in the light of future archaeological findings.

A COPY OF THE ORIGINAL

(Stamp and Signature))
Mustafa KAYMAK
Director

PRESIDENT

VICE PRESIDENT

Prof. Dr. Cevat BAŞARAN
Archaeologist
(Signature)

Ilhami BİLGİN
Historian of Art
(Signature)

Member
Nilgün SAVAŞ
Architect
(Signature)

Member
Assist. Prof. Lale GÜREMAN
Architect
(Not available)

Member
Sabatay ATALAY
Repres. Kars Gov.
(Signature)

Representative Member
Tahir KARAHAN
Representing Erzincan Gov.
(Signature)

Representative Member
Hüseyin ELMA
Representing Ardahan Gov.
(Signature)

Representative Member
Handan ÜNLÜ
Representing Erzurum Gov.
(Signature)

Republic of Turkey
MINISTRY OF CULTURE

Directorate of Conservation of Cultural and Natural Property of Erzurum

NUMBER:E.K.T.V.K.K.-732-253

ERZURUM

SUBJECT: BTC Crude Oil Pipe Line

TO THE GENERAL DIRECTORATE FOR CONSERVATION OF CULTURAL AND
NATURAL PROPERTY

ANKARA

The Board decision of May 10, 2002 and No. 1233 taken by the Board of Conservation of Cultural and Natural Property of Erzurum the subject of which is stated above is enclosed herewith.

You are kindly requested to be informed of the above.

MUSTAFA KAYMAK

On behalf of the Director

Annex: 1- Decision (1)

2- Site forms (4)

3- Map of 1/25.000 (34)

Republic of Turkey
MINISTRY OF CULTURE
Directorate of Conservation of Cultural and Natural Property of Kayseri

NUMBER: B.16.0.0.KTV.4.38.00.00/720(720/23) 377

KAYSERİ

SUBJECT: BTC Crude Oil Pipe Line

BOTAŞ Petroleum Pipeline Corporation
Sögütözü Mah. Sögütözü Cad. No:31 ANKARA

ANKARA

The Board decision of May 31, 2002 and No. 3041 taken by the Board of Conservation of Cultural and Natural Property of Kayseri the subject of which is stated above is enclosed herewith.

You are kindly requested to be informed of the above.

GAZİ ŞAHİN

Director

Annex: 1- Copy of the Decision (1)

2- Copy of the Map of 1/25.000 (1 set)

Republic of Turkey
MINISTRY OF CULTURE
Directorate of Conservation of Cultural and Natural Property of Kayseri

NUMBER:B.16.0.0.KTV.4.38.00.00/720(720/23) 271
SUBJECT: BTC Crude Oil Pipe Line

KAYSERİ

TO THE MINISTRY OF ENERGY AND NATURAL RESOURCES

ANKARA

The Board decision of April 26, 2002 and No. 3015 taken by the Board of Conservation of Cultural and Natural Property of Kayseri the subject of which is stated above is enclosed herewith.

You are kindly requested to be informed of the above.

GAZİ ŞAHİN
Director

Annex: 1- Copy of the Decision (1)
2- Copy of the Map of 1/25.000 (12)

Republic of Turkey
MINISTRY OF PUBLIC WORKS AND SETTLEMENT
General Directorate of Technical Research and Application
ANKARA

FILE: BPC-1/376

-2-

- Furthermore the application plans as per the Law No 3621/3830 and the other information related to the new pier to be constructed shall be prepared by the Governorship and sent to our Ministry.

You are kindly requested to be informed of the above.

(signature)

Feridun Duyguluer

General Director

Annex: Copy of the sketch in the scale of 1/25.000 (2)

Republic of Turkey

MINISTRY OF CULTURE

General Directorate of Conservation of Cultural and Natural Property

NUMBER: B.16.0.KTV.0.10.00.01.720/

SUBJECT: BTC Crude Oil Pipeline Project

5092 – June 10, 2002

To BOTAŞ
Petroleum Pipeline Corporation
Söğütözü Mah. Söğütözü Cad. No:31 ANKARA

ANKARA

Ref: The letter of the Directorate of Conservation of Cultural and Natural Property of Erzurum of May 17, 2002 and No. 253.

Find enclosed herewith the samples of the letter stated in the Ref concerning the route of the BTC Crude Oil Pipeline passing from Ardahan- Kars-Erzurum-Erzincan and the decision of the Directorate of Conservation of Cultural and Natural Property of Erzurum of May 10, 2002 and No. 1233.

You are kindly requested to be informed of the above

(signature)

İsmail Salman

On behalf of the Minister

Deputy General Director

Annex: Copy of the letter and the decision (2 pages)

Appendix B1 – Mammal Species Dossier

BAKU - TBILISI - CEYHAN CRUDE OIL PIPELINE PROJECT

B	15-03-2002	For information					
A	20-11-2001	For Information	ZAL	PED	OYH		
Rev. No.	Date	Description	Prepared	Checked	Approved	BOTAŞ	
			ORIGINATOR				
MEP Participants			Mammal Species Dossier				
 BOTAŞ Petroleum Pipeline Corporation		Project Document No.				Rev.	
		ENV TNO ENM GEN 008				B	
		Org. Code	Doc. Type	Disc. Code	Geog. Area	Seq. No.	
 ENERGY AND ENVIRONMENTAL INVESTMENTS INC.		01-56-01 01 TN 30 B					
		Project No.	Activity No.	Doc. Type	Seq. No.	Rev. No.	



TABLE CONTENTS

1	EXECUTIVE SUMMARY	0
2	DEFINITIONS AND ABBREVIATIONS	0
3	INTRODUCTION	0
4	MAMMALS ON THE BTC P/L ROUTE	0
4.1	BECHSTEIN'S BAT	0
4.2	BEECH MARTEN	0
4.3	BI-COLOURED WHITE-TOOTHED SHREW	0
4.4	BLASIUS' HORSESHOE BAT	0
4.5	BOTTLENOSE DOLPHIN	0
4.6	CARACAL (LYNX)	0
4.7	CAUCASIAN SQUIRREL	0
4.8	COMMON DOLPHIN	0
4.9	COMMON PIPISTRELLE	0
4.10	EASTERN HEDGEHOG	0
4.11	EGYPTIAN FRUIT BAT	0
4.12	EGYPTIAN MONGOOSE	0
4.13	EURASIAN BADGER	0
4.14	EURASIAN BROWN BEAR	0
4.15	EURASIAN OTTER	0
4.16	EURASIAN LYNX	0
4.17	EUROPEAN PINE MARTEN	0
4.18	FAT DORMOUSE	0
4.19	FOREST DORMOUSE	0



4.20 EUROPEAN FREE-TAILED BAT	0
4.21 GEOFFROY'S BAT	0
4.22 GOITERED GAZELLE	0
4.23 GOLDEN JACKAL	0
4.24 GREATER HORSESHOE BAT	0
4.25 GREATER MOUSE-EARED BAT	0
4.26 GREY HAMSTER	0
4.27 GREY WOLF	0
4.28 HARBOUR PORPOISE	0
4.29 INDIAN CRESTED PORCUPINE	0
4.30 JUNGLE CAT	0
4.31 LESSER MOLE RAT	0
4.32 LESSER HORSESHOE BAT	0
4.33 BROWN LONG-EARED BAT	0
4.34 EUROPEAN MARBLED POLECAT	0
4.35 MEDITERRANEAN HORSESHOE BAT	0
4.36 MEHELY'S HORSESHOE BAT	0
4.37 MEDITERRANEAN MONK SEAL	0
4.38 NOCTULE BAT	0
4.39 RED SQUIRREL	0
4.40 RISSO'S DOLPHIN	0
4.41 ROE DEER	0
4.42 SCHREIBER'S LONG-FINGERED BAT	0
4.43 SEROTINE BAT	0
4.44 SPERM WHALE	0



BOTAŞ
Petroleum Pipeline
Corporation



Page 4 of 75

4.45	STOAT	0
4.46	STRIPED HYAENA	0
4.47	TURKISH CHAMOIS	0
4.48	WEASEL	0
4.49	WHISKERED BAT	0
4.50	WHITE-BEAKED DOLPHIN	0
4.51	WILD GOAT	0
5	REFERENCES	0



1 EXECUTIVE SUMMARY

The purpose of this report is to document the details of all species of mammals likely to be found along the pipeline route which are regarded as being globally at risk, or which fall under the protection by international conventions and/or by the national legislation of the Republic of Turkey.

A total of 170 extant species of mammal are known from Turkish sovereign territory. Of these, 101 (59.4%) may occur along the pipeline route or in marine waters near the terminal. Out of these, a total 51 (30.0%), which are considered of importance according to the criteria detailed in section 1 are included in this dossier..



2 DEFINITIONS AND ABBREVIATIONS

App.	: Appendix
BOTAŞ	: Petroleum Pipeline Corporation
CITES	: Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	: Convention on the Conservation of Migratory Species of Wild Animals
DHKD	: Society for the Protection of Nature
EU	: European Union
IUCN	: The World Conservation Union
km	: kilometre
cm	: centimetre
m	: metre
g	: gram



3 INTRODUCTION

This dossier provides details of all species of mammals likely to be found along the pipeline route which are regarded as being globally at risk, or which fall under the protection conferred by the main international conventions on flora and fauna whether or not acceded to by the Republic of Turkey, or which fall under the protection conferred by the legislation of the European Union (which does not apply directly to the Republic of Turkey), or which are protected directly by the domestic legislation of the Republic of Turkey.

A full description of the importance criteria is given below in Table 2. A species needs to be included on only one annex of one convention or similar instrument to be included in the dossier.

Species likely to be found along the route (or those marine mammals likely to be affected by it) are those whose ranges as shown in *Turkiye Omurgalilari – Memeliler*¹ by Ali Demirsoy² intersect the route corridor at some point or which have otherwise been recorded by survey teams on or in the vicinity of the route during field survey work.

A total of 170 extant species of mammal are known from Turkish sovereign territory. Of these, 101 (59.4%) may occur along the pipeline route or in marine waters near the terminal, including 51 (30%) which are considered of importance according to the criteria detailed below, and which are included in this dossier.

A full list of important species is given in Table 1, and details of each can be found on the appropriate pages of the dossier; species being listed in alphabetical order of common English name.

Table 1 : Species included in the Dossier of Important Mammal Species

Common Name	Species	IUCN 2000	CITES	BERN	BONN	EU	Turkey	Other
Bechstein's Bat	<i>Myotis bechsteini</i>	VU	-	App. II	-	Annex II & IV	√	EUROBATS
Beech Marten	<i>Martes foina</i>	-	-	App. III	-	-	-	
Bicoloured White-toothed Shrew	<i>Crocidura leucodon</i>	-	-	App. III	-	-	-	
Blasius' Horseshoe Bat	<i>Rhinolophus blasii</i>	LR/nt	-	-	-	Annex II	√	EUROBATS
Bottlenose Dolphin	<i>Tursiops truncatus</i>	DD	App. II	App. II	App. II	Annex II & IV	√	

¹ [Turkish Vertebrates – Mammals].

² Demirsoy, A..1996.. *Turkiye Omurgalilari – Memeliler*. Cevre Bakanligi, Cevre Koruma Mudurlugu, Proje no: 90-K-1000-90, Ankara (Turkey). xi+292 pp.



Common Name	Species	IUCN 2000	CITES	BERN	BONN	EU	Turkey	Other
Brown Long-eared Bat	<i>Plecotus auritus</i>	-	-	App. II	App. II	Annex IV	√	EUROBATS
Caracal	<i>Caracal caracal</i>	-	App. II	App. II	-	-	√	
Caucasian Squirrel	<i>Sciurus anomalus</i>	LR/nt	-	App. II	-	Annex IV	√	
Common Dolphin	<i>Delphinus delphis</i>	-	App. II	App. II	App. II	Annex IV	√	
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	-	-	App. III	-	Annex IV	√	EUROBATS
Eastern Hedgehog	<i>Erinaceus concolor</i>	-	-	-	-	-	√	
Egyptian Fruit Bat	<i>Rousettus aegyptiacus</i>	-	-	App. II	-	-	√	EUROBATS
Egyptian Mongoose	<i>Herpestes ichneumon</i>	-	-	App. III	-	Annex V	-	
Eurasian Badger	<i>Meles meles</i>	-	-	App. III	-	-	√	
Eurasian Brown Bear	<i>Ursus arctos</i>	-	Apps. I & II	App. II	-	Annexes II & IV	√	
Eurasian Lynx	<i>Felis lynx (Lynx lynx)</i>	-	App. II	App. III	-	Annexes II & IV	√	
Eurasian Otter	<i>Lutra lutra</i>	VU	-	App. II	-	Annex IV	√	
European Free-tailed Bat	<i>Tadarita teniotis</i>	-	-	App. II	App. II	Annex IV	√	EUROBATS
European Marbled Polecat	<i>Vormela peregusna</i>	VU	-	App. II	-	-	√	
European Pine Marten	<i>Martes martes</i>	-	-	App. III	-	Annex V	-	
Fat Dormouse	<i>Glis glis</i>	LR/nt	-	App. III	-	-	-	
Forest Dormouse	<i>Dryomys nitedula</i>	LR/nt	-	App. III	-	Annex IV	-	
Geoffroy's Bat	<i>Myotis emarginatus</i>	VU	-	App. II	-	Annexes II & IV	√	EUROBATS
Goitred Gazelle	<i>Gazella subgutturosa</i>	LR/nt	-	App. II	-	-	√	
Golden Jackal	<i>Canis aureus</i>	-	-	-	-	Annex V	-	
Greater Horseshoe Bat	<i>Rhinolophus ferrumequinum</i>	LR/nt	-	App. II	-	Annexes II & IV	√	EUROBATS
Grey Hamster	<i>Cricetellus migratorius</i>	LR/nt	-	-	-	-	-	
Grey Wolf	<i>Canis lupus</i>	-	Apps. I & II	App. II	-	Annex IV	-	



Common Name	Species	IUCN 2000	CITES	BERN	BONN	EU	Turkey	Other
Harbour Porpoise	<i>Phocoena phocoena</i>	VU	App. II	App. II	App. II	Annexes II & IV	√	
Indian Crested Porcupine	<i>Hystrix indica</i>	-	-	-	-	-	√	
Jungle Cat	<i>Felis chaus</i>	-	-	-	-	-	√	
Lesser Horseshoe Bat	<i>Rhinolophus hipposideros</i>	VU	-	App. II	-	Annex II and IV	√	EUROBATS
Lesser Mole-rat	<i>Nannospalax leucodon</i>	VU	-	-	-	-	-	
Mediterranean Horseshoe Bat	<i>Rhinolophus euryale</i>	VU	-	App. II	-	Annex II and IV	√	EUROBATS
Mediterranean Monk Seal	<i>Monachus monachus</i>	CR	App. II	App. II	App. I	Annex II	√	
Mehely's Horseshoe Bat	<i>Rhinolophus mehelyi</i>	VU	-	App. II	-	Annex II & IV	√	EUROBATS
Noctule Bat	<i>Nyctalus noctula</i>	-	-	App. II	-	Annex IV	√	EUROBATS
Red Squirrel	<i>Sciurus vulgaris</i>	LR/nt	-	App. III	-	-	√	
Risso's Dolphin	<i>Grampus griseus</i>	DD	-	App. II	App. II	Annex IV	√	
Roe Deer	<i>Capreolus capreolus</i>	-	-	App. III	-	-	√	
Schreiber's Long-fingered Bat	<i>Miniopterus schreibersi</i>	LR/nt	-	App. II	-	Annex II & IV	√	EUROBATS
Serotine Bat	<i>Eptesicus serotinus</i>	-	-	App. II	App. II	Annex IV	√	EUROBATS
Sperm Whale	<i>Physeter macrocephalus</i>	VU	App. II	App. II	-	Annex IV	√	
Striped Hyaena	<i>Hyaena hyaena</i>	LR/nt	-	-	-	-	-	
Turkish Chamois	<i>Rupicapra rupicapra asiatica</i>	DD	-	App. III	-	Annex V	√	
Weasel	<i>Mustela nivalis</i>	-	-	App. III	-	-	√	
Whiskered Bat	<i>Myotis mystacinus</i>	-	-	App. II	-	Annex IV	√	EUROBATS
White-beaked Dolphin	<i>Lagenorhynchus albirostris</i>	-	App. II	App. II	App. II	Annex IV	√	
Wild Goat	<i>Capra aegagrus</i>	VU	-	App. II	-	Annexes II and IV	√	
Wild Weasel	<i>Mustela erminea</i>	-	-	App. III	-	-	√	



Table 2 : Importance Criteria for the Inclusion of species in the dossier of important mammals

IUCN 2000	: IUCN (International Union for the Conservation of Nature and Natural Resources) 2000 Red List of Threatened Species
	EX : <i>Extinct</i> . A taxon is Extinct when there is no reasonable doubt that the last individual has died.
	EW : <i>Extinct in the wild</i> . A taxon is Extinct in the wild when it is known only to survive in cultivation, in captivity or as a naturalised population (or populations) well outside the past range. A taxon is presumed extinct in the wild when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.
	CR : <i>Critically Endangered</i> . A taxon is Critically Endangered when it is facing an extremely high risk of extinction in the wild in the immediate future
	EN : <i>Endangered</i> . A taxon is Endangered when it is not Critically Endangered but is facing a very high risk of extinction in the wild in the near future.
	VU : <i>Vulnerable</i> . A taxon is vulnerable when it is not critically endangered.
	LR : <i>Lower Risk</i> . A taxon is Lower Risk when it has been evaluated, does not satisfy the criteria for any of the categories Critically Endangered, Endangered or Vulnerable. Taxa included in the Lower Risk category can be separated into two subcategories: <ol style="list-style-type: none">1. <u>Conservation Dependent (cd)</u>: Taxa which are the focus of a continuing taxon- or habitat-specific conservation program targeted towards the taxon in question, the cessation of which would result in the taxon qualifying for one of the threatened categories above within a period of five years.2. <u>Near Threatened (nt)</u>: Taxa which do not qualify for Conservation Dependent, but which are close to qualifying for Vulnerable.
	DD : <i>Data Deficient</i> . A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution is lacking. Data Deficient is therefore not a category of threat or Lower Risk.
CITES	: Convention on International Trade in Endangered Species of Wild Fauna and Flora . The Republic of Turkey is a party to this convention (date of accession: 23.09.1996, date of entry into force: 22.12.1996).
	Appendix I : Species that are listed in Appendix I of CITES Convention. Appendix I lists species that are the most endangered among CITES-listed animals and plants. These are threatened with extinction and CITES generally prohibits commercial international trade in specimens of these species. However trade may be allowed under exceptional circumstances, e.g. for



scientific research. In these cases, trade may be authorized by the granting of both an export permit (or re-export certificate) and an import permit.

Appendix II : Species that are listed in Appendix II of CITES Convention. Appendix II lists species that are not necessarily now threatened with extinction but that may become so unless trade is closely controlled. It also includes so-called "look-alike species", i.e. species of which the specimens in trade look like those of species listed for conservation reasons. International trade in specimens of Appendix-II species may be authorized by the granting an export permit or re-export certificate; no import permit is necessary. Permits or certificates should only be granted if the relevant authorities are satisfied that certain conditions are met, above all that trade will not be detrimental to the survival of the species in the wild.

BERN : **Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)**. The Republic of Turkey is a party to this Convention (date of signature: 19.09.1979, date of ratification: 02.05.1984, date of entry into force: 01.09.1984).

Appendix II : Species that are listed in Appendix II of the Bern Convention, which presents the list of strictly protected fauna species. *"Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the special protection of the wild fauna species specified in Appendix II The following will in particular be prohibited for these species:*

- (a) all forms of deliberate capture and keeping and deliberate killing;*
- (b) the deliberate damage to or destruction of breeding or resting sites;*
- (c) the deliberate disturbance of wild fauna, particularly during the period of breeding, rearing and hibernation, insofar as disturbance would be significant in relation to the objectives of this Convention;*
- (d) the deliberate destruction or taking of eggs from the wild or keeping these eggs even if empty;*
- (e) the possession of and internal trade in these animals, alive or dead, including stuffed animals and any readily recognisable part or derivative thereof, where this would contribute to the effectiveness of the provisions of this article."*

Appendix III : Species that are listed in Appendix III of Bern Convention, which presents the protected fauna species.

"Each Contracting Party shall take appropriate and necessary legislative and administrative measures to ensure the protection of the wild fauna species specified in Appendix III.

Any exploitation of wild fauna specified in Appendix III shall be regulated in order to keep the populations out of danger, taking into account the requirements of Article 2. Measures to be taken shall include:

- (a) closed seasons and/or other procedures regulating the exploitation;*
- (b) the temporary or local prohibition of exploitation, as appropriate, in order to restore satisfactory population levels;*
- (c) the regulation as appropriate of sale, keeping for sale, transport for sale or*



	<p><i>offering for sale of live and dead wild animals.”</i></p>
BONN	<p>: Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention or CMS). The Republic of Turkey is not a party to this Convention.</p> <p>Appendix II : Migratory species to be subject of agreements. <i>“Appendix II shall list migratory species which have an unfavourable conservation status and which require international agreements for their conservation and management, as well as those which have a conservation status which would significantly benefit from the international cooperation that could be achieved by an international agreement.”</i></p>
EU	<p>: EU Nature Legislation, Directive on the Conservation of Natural and Semi-Natural Habitats and of Wild Flora and Fauna (Document No. 392L0043, date: May 21, 1992)</p> <p>Annex II : Animal and plant species of community interest whose conservation requires the designation of special areas of conservation.</p> <p>Annex IV : Animal and plant species of community interest in need of strict protection.</p> <p>Annex V : Animal and plant species of community interest whose taking in the wild and exploitation may be subject to management measures.</p>
EUROBATS	<p>: The Agreement on the Conservation of Bats in Europe (date of signature: 04.12.1991, date of entry into force: 16.01.1994) The Republic of Turkey is among the range states but is not a party to this Agreement.</p>
TURKEY	<p>: Appendices of CITES and BERN Conventions that Turkey has signed have the force of law and the species listed in them are under protection in Turkey.</p> <p>The protection status of species is also defined by Article 2 of the Terrestrial Hunting Law (dated 05.05.1937, number: 3167) and the pertaining decisions of the Central Hunting Commission are updated each year. The species ticked in this column indicate those species listed by the Central Hunting Commission Decisions as protected for the 2000-2001 Hunting Season.</p> <p>The Aquatic Products Law (dated 10 March 1995, number 1380) regulates the commercial hunting of aquatic species in marine and inland water bodies and pertaining decisions made under the Law are updated and conveyed via annual circular.</p>



4 MAMMALS ON THE BTC P/L ROUTE

4.1 BECHSTEIN'S BAT

Myotis bechsteini

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
EUROBATS	: Protected
Turkish National Legislation	: Protected

4.1.1 Introduction

Bechstein's Bat is a small bat with a head and body length of 45-55 mm and weighing 7-14 g. It is associated closely with mature woodland and probably breeds in tree holes. It hibernates in caves. Mating occurs during autumn, but ovulation and fertilization are delayed until spring. Gestation takes about 7 weeks and a single young is produced in late spring.

4.1.2 Distribution and status

Bechstein's Bat is distributed through western and central Europe and Asia Minor to the Caucasus and northernmost Iran. Fossil records indicate that Bechstein's Bat was once abundant, but today it is considered rare nearly everywhere.

In Turkey there are records from just three regions, namely Artvin, Istanbul, and Antalya. It is considered rare.

Along the pipeline route, it may occur in forests in the north between the Georgian Border and Sarikamis.

4.1.3 Threats

Destruction of forests, where it feeds, is believed to be a significant cause of its decline.

4.1.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting of Bechstein's Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.1.5 Project action required

No specific action is required. Minimisation of damage to forests during construction will reduce potential impacts.



4.2 BEECH MARTEN

Martes foina

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not Listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.2.1 Introduction

The Beech Marten is a medium to large carnivore with a body length of between 45-50 cm plus a tail of 25-30 cm. The male weighs 1.2 to 2 kg, while the female is smaller at 1.0-1.5 kg. The body colour is brown on the upper parts and white on the throat and chest. The Beech Marten is a nocturnal hunter. Its lifespan is 8-10 years. The breeding season is in July and August, gestation occurs in January - February. Females give birth to 2-4 young in March–April.

The Beech Marten is omnivorous with a very catholic diet of small mammals (rodents), birds, reptiles, frogs, eggs, insects, fruits and human waste.

4.2.2 Distribution and status

The Beech Marten is distributed widely across Europe and central Asia, living in rocky ground with sparse vegetation and in forests up to elevations of 2,500-3,000 m.

In Turkey, they can be found in all regions except broad and flat plains. There are records from Thrace, Northeast Anatolia and Siirt provinces. There is no data on population trends in Turkey.

Along the pipeline, it has been recorded at 4 sites along the pipeline:

- Posof, Ardahan, Sarikamis Forests; and
- northwest of Guzyurdu Village near Kp 465.

4.2.3 Threats

The major threats to this species are habitat destruction, persecution and hunting.

4.2.4 Legal Protection

The Beech Marten is listed by only the Bern Convention. In Turkey, it is permitted to hunt it seasonally by the Central Hunting Commission.

4.2.5 Project action required

No special action required. Limitation of speed while driving at night will reduce the chances of collisions with beech martens.



4.3 BI-COLOURED WHITE-TOOTHED SHREW

Crocidura leucudon

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.3.1 Introduction

The Bi-coloured White-toothed Shrew is an aggressive and voracious small mammal. It is 40-180 mm in length plus a tail of 40-110 mm and weighs 7-15 gm.

It is a carnivore, the diet consisting of invertebrates and freshly-killed small mammals, amphibians and reptiles.

4.3.2 Distribution and status

The species is distributed in Europe and western Asia from northwest France to the Caspian Sea, inhabiting damp and dry forests, grassland, cultivated areas, and occasionally human settlements and buildings. Populations appear to be decreasing especially at the northern and southern edges of its range in Europe.

In Turkey, it is distributed widely, but is absent from the eastern Black Sea region. It appears to be abundant in Central Anatolia and the Mediterranean regions, but it is rare in East Anatolia.

Along the pipeline route, this species has been recorded in all regions except North-eastern Anatolia.

4.3.3 Threats

The major threat is mainly from the intensification of agriculture through pesticides, loss of covered habitats, and food scarcity.

4.3.4 Legal Protection

Species is under protection by Bern Convention.

4.3.5 Project action required

No specific action is required



4.4 **BLASIUS' HORSESHOE BAT**

Rhinolophus blasii

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.4.1 **Introduction**

Blasius' Horseshoe Bat is a small bat with a mean body length of 4 cm, tail is 2.5 cm, and weight of 3-10 grams. Hibernation colonies are small (maximum 300 individuals), placed in places protected from the air currents and where the temperature stays between 9°C-14°C. They breed in autumn and give birth in springtime to 1 or 2 young.

4.4.2 **Distribution and status**

The species is distributed from southeastern Europe to the Caucasus and Pakistan, the Near East and Africa. In Europe, it is restricted to southwestern Romania and the Balkans. It inhabits Mediterranean and sub-Mediterranean woodlands. It is the rarest European horseshoe bat.

In Turkey there are records from West (Aegean) and Southeast Anatolia, and Thrace.

Along the pipeline route, the species has been recorded at just one site, near to Cokak Village (Kp 946).

4.4.3 **Threats**

The major threats are human disturbance, habitat destruction, and loss of caves for roosting and hibernating.

4.4.4 **Legal Protection**

The species is currently under protection by the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting of Blasius' Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.4.5 **Project action required**

No specific action is required. At camp and work sites near to caves and/or ruins, workers should avoid disturbing them.



4.5 BOTTLENOSE DOLPHIN

Tursiops truncatus

IUCN 2000 Red List	: DD
CITES	: Appendix II
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.5.1 Introduction

The Bottlenose Dolphin is the largest of the beaked dolphins measuring 175-400 cm nose to tail and weighing 150-200 kg. It is a social mammal living in groups of 10-100 individuals with the hierarchy in the groups based upon size. This dolphin species displays a wide variety of vocalizations for communication. Females give birth in mid-summer after 12 months gestation period.

They feed on squid, shrimp, eels, and a wide variety of fish.

4.5.2 Distribution and status

The species lives primarily in temperate and tropical waters – the Mediterranean Sea, Black Sea, Baltic Sea, Indian Ocean and Atlantic Ocean, inhabiting warm, shallow inshore waters. The population trend of this species around the world is unknown.

It is widespread in the seas around Turkey and it is believed to be abundant.

4.5.3 Threats

The major threats are human-induced benthic-habitat destruction, pollution, deliberate killings by fishermen, decreased food availability, and incidental captures in fishing gear.

4.5.4 Legal Protection

The species is listed as Data Deficient by the IUCN and is protected by all international conventions. It is protected directly by Turkish legislation.

4.5.5 Project action required

No action during the construction phase is required. Comments made under Mediterranean Monk Seal are pertinent.



4.6 CARACAL (LYNX)

Felis caracal

IUCN 2000 Red List	: Not globally threatened
CITES	: Appendix II
Bonn Convention	: Not Listed
Bern Convention	: Appendix II
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.6.1 Introduction

The Caracal differs from the Eurasian Lynx in having a longer, more slender body and distinctive ears, which are tipped with long tufts of black fur. The head and body length is 60-105 cm plus a 20-35 cm tail and it weighs 11-20kg. The fur is a uniform reddish-brown in colour. It is nocturnal, but can be active occasionally during the day. Mating time is in February and March. Gestation takes 61-79 days and females give birth to 2 or 3 (max. 6) young in April to June.

The Caracal is a carnivore preying mainly on birds, hares, small rodents and voles. It will attack domestic goats and sheep. It is an extremely fast runner.

4.6.2 Distribution and status

The Caracal is distributed widely from the Arabian and Sinai Peninsulas, Israel, Jordan, Lebanon, Syria, Kuwait, Iraq, Iran and Turkey through Turkmenistan, Afghanistan and south to the Punjab and central India. It is present throughout Africa except in sand deserts and the equatorial rain forests. It inhabits woodlands, hilly steppe, and acacia savanna.

In Turkey, it is recorded from the Aegean (Izmir and Canakkale), Mediterranean (Mugla, Antalya, Hatay), southeast and east regions (Adana, Hatay, Kahramanmaraş, Adiyaman, Malatya, Siirt, Bingöl, Diyarbakir) and Black Sea region (Tokat). However, it is very rare and may now even be extinct in some of these regions.

Along the pipeline route this species has not been recorded during field surveys.

4.6.3 Threats

The major threat to this species is hunting/persecution and habitat destruction.

4.6.4 Legal Protection

The Caracal is under protection by the Bern Convention and CITES. The species is protected by the decision of Central Hunting Commission.

4.6.5 Project action required

Hunting should be prohibited and enforced. Drivers driving in remote areas at night should be instructed to keep their speed low to reduce the possibility of collision with these mammals.



4.7 CAUCASIAN SQUIRREL

Sciurus anomalus

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.7.1 Introduction

The Caucasian Squirrel is a little-known tree squirrel with a body length of 20-30 cm, plus an equally long tail and weighs 200-1,000 g. It is mostly diurnal with peaks of activity in the early morning and late afternoon. Caucasian squirrels are largely arboreal and they make their dens in trees.

They feed on usually nuts, other seeds, fruits buds and young tree shoots.

4.7.2 Distribution and status

This species is distributed from Greece through Turkey, Armenia, Georgia, Azerbaijan, Iran, Iraq, Israel, Jordan, Lebanon, and Syria in coniferous and temperate mixed forests.

In Turkey, it is abundant in the Mediterranean region, but the population density is very low in the Black Sea, East and Southeast Anatolia regions.

Along the pipeline route, this squirrel has been seen as follows:

Sarikamis Forest;
in Black Pine Forest near to Kp 938 in 1405 m altitude; and
between Geben-Kadirli in Beech Forest near to Kp 946.

4.7.3 Threats

The major threat to the Caucasian Squirrel is hunting.

4.7.4 Legal Protection

The species is under protection by international agreements (Bern Convention and EU Habitats Directive), it is listed as globally threatened species in LR/nt category by IUCN, and its hunting is banned by the decision of the Central Hunting Commission.

4.7.5 Project action required

Tree clearance and disturbance in forests may cause localised impacts. Carrying of firearms and hunting of any animals by workers must be prohibited and enforced since correct identification of protected species cannot be guaranteed.



4.8 COMMON DOLPHIN

Delphinus delphis

IUCN 2000 Red List	: Not globally threatened
CITES	: Appendix II
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.8.1 Introduction

The Common Dolphin is a small dolphin with body length of 1.5-2.5 m and weighs 75-120 kg. Dorsal parts are dark brown or black and ventral parts are white in colour. They give birth to 1-2 young with 2-3 years intervals. Breeding occurs in February-April and in August-November. Gestation period is 11 months.

Their diet consists of fish, cuttlefish, squid, crabs and crustaceans.

4.8.2 Distribution and status

The Common Dolphin is distributed worldwide in warm temperate and tropical waters. Its current population status is unknown.

In Turkish waters, it is present in the Mediterranean and Black Seas. It is believed that their population is decreasing sharply.

4.8.3 Threats

Major threats to this species are pollution, benthic-habitat destruction and deliberate killings by fishermen.

4.8.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, and Bern Convention. It is directly protected by Turkey Legislation

4.8.5 Project action required

No action during the construction phase is required. Comments made under Mediterranean Monk Seal are pertinent.



4.9 COMMON PIPISTRELLE

Pipistrellus pipistrellus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.9.1 Introduction

The Common Pipistrelle is a small bat with a wingspan of 18-24 cm, head and body length of 3.5-5.5 cm and a weight of 3.2-8.5 g. Its colour varies from medium- to dark brown. Mating occurs during autumn at well-established mating roosts, and occasionally in spring. Maternity colonies consisting almost exclusively of female bats, are occupied between May and August and sometimes into September. Females give birth to their single young from early June to mid-July, though births as late as August have been recorded. The Common Pipistrelle has an average lifespan of four years, though it can live for up to 16 years.

It feeds on mosquitoes, midges, small moths and lacewings, hunting mainly over water, marshes, open woodland, woodland edge, farmland, along hedgerows, suburban gardens and urban areas.

4.9.2 Distribution and status

It is distributed through most of Europe, some parts of southwestern Asia, and northern Africa. Although it is widespread and abundant in its range, in some European countries there is a decline in numbers.

In Turkey, it is common in all regions, and numbers are high.

Along the pipeline route, it is common throughout.

4.9.3 Threats

The current factors causing loss or decline of Common Pipistrelle are:

- Reduction in insect prey abundance, due to intensive farming practices and inappropriate riparian management.
- Loss of insect-rich feeding habitats and flyways, due to loss of wetlands, hedgerows and other suitable prey habitats.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.



4.9.4 Legal Protection

The species is currently under protection by the Bonn Convention, Bern Convention, EU Habitats Directive and EUROBATS. Hunting of Common Pipistrelles is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.9.5 Project action required

No specific action required. Removal of large trees, particularly at river crossings, should be avoided wherever possible. If they have to be removed, they should be checked for bat colonies first. Ecologists working with the construction crews should supervise departure of the colony prior to tree-felling. Ruined buildings should not be disturbed.



4.10 EASTERN HEDGEHOG

Erinaceus concolor

IUCN 2000 Red List	: Not listed
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.10.1 Introduction

The Eastern Hedgehog is a squat, rounded mammal with five toes, a mobile pointy snout, and short rounded ears (body length: 35 cm). The dorsal and lateral areas with face and legs are densely covered with spines. It is an omnivore, feeding on invertebrates (earthworms, slugs and snails), frogs, small reptiles, young birds, mice, carrion, bird eggs, acorns and berries.

4.10.2 Distribution and status

The Eastern Hedgehog is distributed through Eastern Europe and Turkey, Israel, north Iran and northwest Iraq, east to the west coast of the Caspian Sea and to the River Ob although preferring lowlands and hills up to 300-800 m, it can be found in the mountain slopes up to 1,400 m in the Eastern Alps and Taurus Mountains. It inhabits scrub vegetation at the border of large forests.

In Turkey, it is widespread except in the hottest and coldest regions.

Along the pipeline route it is common along forest edge and in scrub.

4.10.3 Threats

None.

4.10.4 Legal Protection

Hunting of the species is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.10.5 Project action required

No specific action is required.



4.11 EGYPTIAN FRUIT BAT

Rousettus aegyptiacus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.11.1 Introduction

The Egyptian Fruit Bat is a large bat with a wingspan of 0.6 m and weighing about 150 gm. It is a drab brown colour. The Egyptian Fruit Bat is one of the few Old world fruit bats to live in caves and as a result it exhibits a very primitive form of echolocation. They also roost in rock crevices, garden trees, and date plantations. They can be found roosting in mixed colonies of males and females, which may number up to 9,000 bats. It may make limited seasonal migrations. It mates between June and September and females give birth in October to December, after a gestation period of c.4 months. Egyptian fruit bats have a recorded lifespan of 22 years in captivity

The diet consists of fruits, pollen, nectar, and other plant parts.

4.11.2 Distribution and status

The Egyptian Fruit Bat is distributed from the eastern Mediterranean (Cyprus and Turkey) to Pakistan, the Arabian Peninsula, Egypt and most of Africa south of the Sahara. Data is unavailable about the population status of the species.

In Turkey, it is recorded from Hatay, Mersin, Alanya and Adana, but it is a rare species because of the extensive use of agrochemicals.

Along the pipeline route it has been recorded between Kadirli and Ceyhan

4.11.3 Threats

Agrochemicals are the main threats to this species as to other bat species.

4.11.4 Legal Protection

The species is currently under protection by EUROBATS. Hunting of Egyptian Fruit Bats is prohibited by the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.11.5 Project action required

Roosting sites, e.g. caves, and feeding sites, e.g. orchards, of these mammals, should not be disturbed by workers.



4.12 EGYPTIAN MONGOOSE

Herpestes ichneumon

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Annex V
Turkish National Legislation	: Not protected

4.12.1 Introduction

The Egyptian Mongoose is a small carnivore with tapered head, long tail and short legs (body length: 23-65 cm). It is brownish in colour. It has one-four young in each litter.

It feeds on rodents and snakes. It has been introduced to many areas of the world to control rodents and snakes.

4.12.2 Distribution and status

The Egyptian Mongoose is distributed in Africa from the Mediterranean Sea to the Cape region in South Africa and in the Near East, from Sinai to southern Turkey, and the Iberian Peninsula. The species inhabits mainly Mediterranean maquis with a clear preference for humid and riparian habitats from sea level up to elevations of 1,000 meters. The population status of the species is unknown. However, there appears to be an increase in Europe concomitant with a reduction of its predators in the wild, such as the Eurasia Lynx and some raptors.

In Turkey, the species is distributed from Ceyhan and Seyhan districts to Urfa in the east and from Fethiye to Menemen districts in the west Mediterranean. It is rare throughout its range.

Along the pipeline route, it has been recorded near Kp 1,056 in the Cukurova Region.

4.12.3 Threats

The major threat to this species is habitat loss.

4.12.4 Legal Protection

The species is under protection by Bern Convention and EU habitats Directive.

4.12.5 Project action required

No specific action is required.



4.13 EURASIAN BADGER

Meles meles

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendices III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.13.1 Introduction

The Eurasian Badger is a stocky mammal (body length 90 cm, weight 10-11 kg) with grey body, black fur on legs, and a white face with black stripes. They live mostly in social groups of 4 to 12 adults. The number of animals living in a group may change depending on the food supplies. They are largely nocturnal but in isolated areas they may be active occasionally during the day. Badgers do not hibernate in winter, but in cold weather they may spend several days in the sett – an extensive system of underground tunnels and nesting chambers. Setts are located in forest or other areas with woody cover, but the animals forage mainly in open areas nearby. Badgers mate between late winter and mid summer, but development of the zygote is delayed for up to 10 months and females give birth usually to 3 or 4 cubs in a litter in February to March.

Badgers eat a wide variety of foods, mainly earthworms and insects, but also small mammals, reptiles, fruits, nuts, cereals, roots, bulbs and tubers.

4.13.2 Distribution and status

The Eurasian Badger is distributed widely across Europe and Asia ranging from Britain and Ireland in the west to China and Japan in east, and from Scandinavia in the north to the Middle East and southern parts of China.

The Eurasian Badger is not a rare species, with a population of at least 1.5 million in Europe alone (and an unknown but probably very large number over the rest of its large geographical range). However, it is assumed that there is a decline in number of badgers because of over-hunting and habitat destruction in some parts of Europe and Asia.

It is distributed widely in Turkey up to elevations of 2,000 m. It is rare in the Eastern Black Sea, Mediterranean, and Central Anatolia regions.

The species has been observed on 6 points along the pipeline route:

- Posof Forest;
- Ardahan forest;
- northwest of Guzyurdu Village near Kp 465;
- Zamanti River Crossing near to Kp 786;



- in Red Pine forest near to Kp 923;
- in Black Pine Forest near to Kp 938; and
- between Geben-Kadirli in Beech Forest near to Kp 946.

4.13.3 Threats

The major threats to Eurasian Badgers in Turkey are hunting and habitat destruction (deforestation).

4.13.4 Legal Protection

The species is protected by Bern Convention and hunting is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.13.5 Project action required

Negligible impacts expected. However, habitat destruction is one of the main threats to the species, thus limiting destruction of forests during construction, and reinstating such habitat as far as possible, are important. Given that it is nocturnal, drivers should exercise care during night driving to avoid accidental collisions.



4.14 EURASIAN BROWN BEAR

Ursus arctos

IUCN 2000 Red List	: Not globally threatened
CITES	: Appendix II
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annexes II and IV
Turkish National Legislation	: Protected

4.14.1 Introduction

The Eurasian Brown Bear is a large, heavy-set mammal (body length 180-220 cm, weight 150-200 kg) with thick shaggy brown fur. It is generally solitary and primarily nocturnal although bears may be encountered during the day (especially in areas remote from human activity) and females may be accompanied by young cubs. The breeding season is between June and July and females give birth generally every other year to one or two cubs (rarely three) in January to February. In winter, if food is scarce and/or weather is severe, they will hibernate in underground dens.

Brown bears have a very catholic omnivorous diet and, contrary to popular belief, 75% of this is vegetable matter. Over 200 types of plants are known to be eaten including berries, nuts, flowers, grasses, sedges, herbs, tubers, corms, and roots. Fish and carrion are also consumed.

4.14.2 Distribution and status

The Brown Bear is distributed widely across Europe, Asia and North America in habitats ranging from the Arctic tundra to dry deserts, and at elevations between 0-2,800 m. In Europe, it is confined mainly to montane forests of all kinds, but its range in Europe has been reduced dramatically since 1850 and it occurs as six 'small' fragmented populations in Western Europe. In Scandinavia and eastern Europe they are more numerous and widespread. The total population in Europe has been estimated at 46,000 animals.

The population in Turkey was estimated in 1999 as more than 500 individuals, although DHKD³ consider this to be low, and estimate the current population may be as high as 2,500 animals. The species is widespread in Turkey, but outside of the core population areas of Artvin, Hakkari, Tunceli, and Erzincan, it continues to decline and may be facing extinction.

The pipeline route crosses the core area of Erzincan. The baseline ecological surveys observed bears directly or there signs in the region of Guzyurdu Village-Kelkit (villagers estimate eight bears in the mixed forest west of the village). A hunter in Sarikamis Forest suggested that there may be around 250 Brown Bears in the area and, although this is probably an exaggeration, they are believed to be common in the area. Brown Bears were also reported to be present in low numbers in the Ardahan/Posof Forest area by local people.

³ Dogal Hayati Koruma Dernegi (Society for the Protection of Nature)



4.14.3 Threats

The major threats to Brown Bears in Turkey are hunting and deforestation. Although hunting is illegal it continues in remote areas – skins displayed by a local shepherd and a sports hunter were observed by the ecological survey teams near Guzyurdu Village and Sarikamis.

4.14.4 Legal Protection

Hunting of Brown Bears was banned throughout the country in the late 1970s, but complaints increased about the damage done to livestock by bears. In 1982, hunting was again allowed in Artvin and Yusufeli but only by foreign hunters accompanied by local guides on a quota system implemented by the General Directorate of Forestry, thus providing an economic incentive to local people to maintain bears in their areas. However, with the decision of T.R. Ministry of Forestry, Central Hunting Commission, hunting of the species is prohibited now.

4.14.5 Project action required

Negligible impacts expected. There may be some small temporary or permanent loss of fragmentation of bear habitat due to RoW clearance. Bears roam huge distances over large territories in search of food. Long lengths of open trench should not be left for any length of time to avoid disrupting the passage of animals or channelling them towards workers camps. Gaps in the right of way fencing (if used) at regular intervals to permit bear passage should be allowed. This reduces the potential for a bear to become 'trapped' within the fencing.

There is potential for human-bear interactions during pipeline construction in areas of known bear occupation. Bears are unlikely to approach humans, although some may through curiosity; habituation to humans; defence of cubs, an animal kill, their home range, or if surprised by a human; and if asserting dominance. However, most interactions are likely to be connected with bears foraging for food around camps and vehicles. It is imperative that proper education is given to all workers working in area where bears may occur. The over-riding aims are the protection of bear habitat, the safety of the bear and the safety of workers. Key points include:

- Workers need to be aware of 'blind spots'. Workers will need to have a 'safe location' such as a vehicle or facility in close proximity.
- Workers should not wander alone in areas where bears may be present, especially at night.
- Construction staff in bear areas will need to work in pairs, use radios and carry a deterrent (not firearms) where possible (after consulting the appropriate authorities to establish what is allowed in the area). If a bear is sighted, security staff will need to be contacted and warning signals given.
- Workers need to be educated in the appropriate responses in the event of a bear interaction, e.g. do not run.



- Humans should not approach bears under any circumstances, and especially not females with cubs.
- Good house-keeping and refuse management is essential. Site needs to be kept clean and food stores managed properly. Bear-proof waste containers (haul-all-bins) should be used. Food and rubbish should not be stored or left in or near vehicles.
- The hunting of bears or any other wildlife by BTC project personnel or contractors should be strictly forbidden. Firearms should be prohibited – not only is it illegal to shoot bears but wounded animals are the most dangerous.
- Limitation of speed while driving at night will reduce the chances of collisions with bears.



4.15 EURASIAN OTTER

Lutra lutra

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Not protected

4.15.1 Introduction

The Eurasian Otter is a medium-sized otter (body length 57-70 cm: weight 5-8 kg) inhabiting water habitats of all kinds – small streams, rivers, ponds and lakes, and in some countries the sea. They are solitary animals, largely nocturnal, and may undertake sizeable migrations even across land. Eurasian Otters have no fixed breeding season so young are born at any time throughout the year. Pregnancy lasts for 9 weeks. A litter consists of 1 - 3 pups. Otters are primarily piscivorous although they may eat other vertebrates and crustaceans. The species has been well-studied in Europe but very little is known of its ecology or behaviour in Asia.

4.15.2 Distribution and status

The Eurasian Otter is the most widely distributed of all otter species. Its range covers parts of three continents: Europe, Africa and Asia (most Asian records of this species are from mountainous regions). Originally the species was widespread throughout Europe. However, numbers have declined because of habitat destruction, pollution, and over-hunting. Little is known about the original distribution in Africa and Asia.

In Turkey, they are distributed widely in all rivers and lakes but are rare.

Along the pipeline route, otter footprints were observed at the Acisu River (near to Kp 650) but it probably occurs in most large rivers along the route.

4.15.3 Threats

The major threats to this species are drainage and pollution of wetlands, and hunting.

4.15.4 Legal Protection

Eurasian Otter is under protection by international agreements (Bern Convention and EU Habitats Directive) and its hunting is banned with decision of T.R. Ministry of Forestry Central Hunting Commission. The species is listed in IUCN as VU (under high risk of extinction in the wild in the medium-term future).

4.15.5 Project action required

No specific action is required. However, because riparian habitats are the most important for this species, minimising habitat loss and damage at river crossings during construction works will be of prime importance.



4.16 EURASIAN LYNX

Lynx lynx

IUCN 2000 Red List	: Not globally threatened
CITES	: Appendix II
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Annexes II and IV
Turkish National Legislation	: Not protected

4.16.1 Introduction

The Eurasian Lynx is the largest cat living in Europe. It has a body length of 80-130cm, a short tail, a large head and large paws, and weighs an average of 20 kg (range 8-38 kg). Lynxes are usually solitary and nocturnal hunters. The mating season is in February and in early March, and females give birth to 2-4 young per litter in late April or late May.

The Eurasian Lynx is a carnivore feeding mainly on hares, rodents, chamois, roe deer, wildcats, badgers, foxes, dogs and even young wild boar.

4.16.2 Distribution and status

The range of the Eurasian Lynx extends from Scandinavia to the Pacific coast of Asia. It inhabits tall coniferous forests with dense undergrowth at elevations up to 3,000 m. Small, isolated populations have survived in a few areas of mainly Eastern Europe as far south as Turkey. Population densities vary over their range, but in some areas they have become extremely rare.

In Turkey, the species is distributed widely from the Aegean to Southeast Anatolia including the Black Sea, Central Anatolia, and Mediterranean regions but excluding Thrace region. However, it is rare in all regions in its range.

Along the pipeline route this species has been observed in the Posof Forest and the Black Pine forests near Geben in the Taurus Mountains. In the latter region, the species has not been recorded for two years and, if not extinct there, it is certainly very rare, probably because of forest destruction.

4.16.3 Threats

The major threats to this species are hunting, and habitat destruction and encroachment.

4.16.4 Legal Protection

Species is under protection by CITES, Bern Convention, EU Habitats Directive and its hunting is prohibited by T.R. Ministry of Forestry, Central Hunting Commission.

4.16.5 Project action required

Although the probability of encountering this species is very low, during construction works, precautions to ensure the safety of workers as well as this mammal, should be taken. See Eurasian Brown Bear for more details.



4.17 EUROPEAN PINE MARTEN

Martes martes

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not Listed
Bern Convention	: Appendix III
EU Habitats Directive	: Annex V
Turkish National Legislation	: Not protected

4.17.1 Introduction

The European Pine Marten is a large and heavy-bodied arboreal mammal with a body length of 51-64 cm plus an 18-20 cm tail and weighs 1.5-2.2 kg. It has thick, dark brown fur with a pale patch on the throat. Pine Martens have territories that vary in size based on habitat and food availability but measure 10-25 km² for males and 5-15 km² for females. Females give birth to a litter of 1-5 young in early spring, in a den located mainly in hollow trees or the fallen root masses of Scot's pines.

The Pine Marten is mostly carnivorous, its diet consisting mainly of small rodents, birds, beetles, carrion, eggs, and fungi.

4.17.2 Distribution and status

The Pine Marten is distributed widely in North America, Europe, the Caucasus, Turkey and central Asia inhabiting well-wooded areas. The population remains widespread and abundant especially in the remoter northern and southern parts of its range in Europe.

In Turkey, there are records from East Anatolia, West and East Black Sea, Aegean and Marmara Regions, in forests from sea level up to elevations of 2,500 m. Data on population trends is unavailable.

There are no records from along the pipeline, however, it is likely to occur in North-eastern Anatolia in Posof, Sarikamis and Ardahan Forests.

4.17.3 Threats

The major threats to this species are habitat destruction, persecution and hunting.

4.17.4 Legal Protection

The Pine Marten is under protection by the Bern Convention and EU Habitats Directive. The species can be hunted seasonally by the decision of Central Hunting Commission.

4.17.5 Project action required

Habitat destruction during forest crossings should be minimised. Hunting should be prohibited and enforced. Drivers driving at night in forest should be instructed to keep their speed low to reduce the possibility of collision with these nocturnal mammals.



4.18 FAT DORMOUSE

Glis glis

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.18.1 Introduction

The Fat Dormouse is a squirrel-like dormouse with large-rounded ears, small eyes, and a relatively long, bushy tail. Its body length is about 14-20 cm and it weighs 80-180 gm. The fur is greyish. The breeding season is usually in July and females give birth mostly in August to 1-11 young in a litter. It is primarily nocturnal and crepuscular (active in twilight) but rarely active during the day. Fat Dormice can hibernate from early autumn to late spring.

It is omnivorous, the diet consisting of seeds, leaves, nuts, buds, berries, acorns and soft fruits, insects and small birds.

4.18.2 Distribution and status

The species is distributed widely in Europe from France and northern Spain to the Volga River and northern Iran, inhabiting deciduous and mixed forests. Densities are estimated at 1-30 individuals per hectare. However, numbers are declining in Europe due to habitat destruction.

In Turkey, there are some records from the Black Sea and Thrace regions but nowhere else. Population densities here are very low.

Along the pipeline route, the species has not been observed but it may exist in forests in the northeast since this is nominally within its distribution range.

4.18.3 Threats

The major threat to this species is habitat loss.

4.18.4 Legal Protection

This species is under protection by the Bern Convention and is listed as globally threatened species in LR/nt category by IUCN.

4.18.5 Project action required

No specific action is required except minimising habitat destruction at forest crossings.



4.19 FOREST DORMOUSE

Dryomys nitedula

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Not protected

4.19.1 Introduction

The Forest Dormouse is a small rodent with a body length of 8-11 cm, plus a 6-10 cm long tail and weighs 20-30 gm. The body colour is generally greyish-brown on the upper parts and buffy-white below. It is nocturnal and arboreal. Nests tend to be clustered in small groups in the same tree or adjacent trees. It does hibernate but can be active all year, depending on the weather conditions and food supplies. The breeding season in Europe is between May and August and females give birth to one young per year after about four weeks.

Forest Dormice are omnivorous. The diet consists of seeds, acorns, buds, fruits, arthropods, eggs, and young birds. They prefer animals during summer.

4.19.2 Distribution and status

The species is distributed widely from central Europe to Mongolia and Iran, inhabiting dense coniferous, deciduous and mixed forests at elevations up to 3,500 m. It is rare in European countries because of the destruction of forests.

In Turkey, it is present in all regions but population densities are very low throughout.

Along the pipeline route, it is likely to exist in all regions. It has been recorded from two sites:

- at Guzyurdu Village near to Kp 465; and
- between Geben-Kadirli in Black Pine forest near Kp 938.

4.19.3 Threats

The major threat to this species is habitat loss.

4.19.4 Legal Protection

The species is under protection by the Bern Convention and EU Habitats Directive and it is listed as globally threatened species by IUCN.

4.19.5 Project action required

No specific action is required.



4.20 EUROPEAN FREE-TAILED BAT

Tadarida teniotis

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
EUROBATS	: Protected
Turkish National Legislation	: Protected

4.20.1 Introduction

The Free-tailed Bat is a little-known, medium-sized bat with a head and body length of 8-9 cm weighing 20-50 g. The fur is light brown. It hibernates in winter inside cavity walls, quarries, and disused chimneys. Mating occurs in autumn and females give birth to 1-2 young in spring. The lifespan is up to 10 years.

There is no information on diet, but it is likely to be mainly insects.

4.20.2 Distribution and status

The Free-tailed Bat is distributed from the Canary Islands through northern Africa, southern Europe, and Asia to Japan, southern China and Taiwan. Population densities are little known but are believed to be low in Europe.

In Turkey, there are records from Artvin, Erzurum, Samsun, Antalya, Ankara, Sivas and Giresun, and the species appears to be abundant.

Along the pipeline route, it has not been recorded but may occur.

4.20.3 Threats

The major threat to this species is mainly habitat destruction.

4.20.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting of Serotine Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.20.5 Project action required

No specific action is required.



4.21 GEOFFROY'S BAT

Myotis emarginatus

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.21.1 Introduction

Geoffroy's Bat is largely unknown. It has a head-and-body length of c. 5 cm, a wingspan of c.23 cm, and a weight of 7-15 g. It hibernates in suitable cavities underground, especially caves.

4.21.2 Distribution and status

Geoffroy's bat is distributed through central and southern Europe, the Mediterranean basin, and southwest and central Asia. In southern Europe, colonies of this species may hold up to 500 or even 1,000 individuals. In some parts of Central Europe, local increases in numbers have been recorded.

In Turkey, this species distribution range is unknown but there are records from Thrace (Kirkklareli), Aegean (Izmir, Manisa), Black Sea (Samsun), Mediterranean (Antalya, Hatay) and Southeast Anatolia (Adiyaman).

Along the pipeline route, the species has not been recorded. However, it is believed that it may exist in caves and ruins along the southern part from Pinarbasi to Ceyhan.

4.21.3 Threats

It maybe threatened locally through damage to the roost sites both in summer and winter.

4.21.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting of Geoffroy's Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.21.5 Project action required

No specific action is required because the species has not been definitely recorded along the route. However, general precautions about not disturbing potential roost sites (caves and ruins) are appropriate.



4.22 GOITERED GAZELLE

Gazella subgutturosa

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.22.1 Introduction

The Goitered Gazelle is a medium-sized species of antelope. Its body length measures 90-115 cm and it weighs between 18-33 kg. Its name comes from the enlargement of the males' throats during the breeding season. The body is light brown in colour. The Goitered Gazelle is diurnal. Its breeding season is November to January, and females give birth to 1-2 young in April and May. In summer, they live in small groups of 2-5 animals and in winter dozens or even hundreds of individuals form large herds.

The diet comprises mainly grasses, leaves and shoots.

4.22.2 Distribution and status

The Goitered Gazelle inhabits deserts, semi-deserts, hilly plains and plateaus in southern and central Asia.

In Turkey, the species is extinct in the wild. It has been introduced to the BOTAŞ Compound from the Ceylanpinari (Urfa) State Production Farm, (see Phase 2 Habitat Survey Report (ENV-GEP-ENS-GEN-002)).

4.22.3 Threats

The major threats defined by the IUCN are human-induced habitat loss, exploitation, hunting- collecting and trade of the species.

4.22.4 Legal Protection

Goitered Gazelle is under protection by Bern Convention and listed by IUCN as a lower risk, near threatened species. Hunting of the species is prohibited with the decision of T.R. Ministry of Forestry , Central Hunting Commission.

4.22.5 Project action required

No specific action is required since the species is already extinct in the wild.



4.23 GOLDEN JACKAL

Canis aureus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Annex V
Turkish National Legislation	: Protected

4.23.1 Introduction

The Golden Jackal is a dog-like mammal (body length 60-106 cm and weight 7-15 kg) with long fur and a fluffy tail. Males are much larger than females. The fur colour varies from yellow to red to golden with white ticking, depending on the age, season, geographical region, and the individual concerned. It is both nocturnal and diurnal. The Golden Jackal breeds in January and February and females give births to 1-9 pups/litter, after a gestation period of about 63 days.

Golden Jackals are omnivores. Their diet consists mainly of rabbits, rodents, ground birds, insects, fish, fruit, vegetation and young ungulates.

4.23.2 Distribution and status

The Golden Jackal is the most widely distributed jackal. It ranges from Europe and the Middle East into northern Africa, inhabiting forests, maquis, and grasslands. It is abundant in Mediterranean chaparrals. It is currently not on the endangered species list.

In Turkey, the Golden Jackal is present in the Black Sea, Mediterranean, Aegean, Thrace, Marmara and South-east Regions up to elevations of 600 m, but is absent at the high plateau of Central and East Anatolia. It is abundant in the west and east Black Sea Region, but rare in the Mediterranean Region and Southeast Anatolia.

This species has been recorded on rocky hillside between Ceyhan and Kadirli and Red Pine forest north of Kadirli (near Kp 934)

4.23.3 Threats

No major threat to the species has been identified.

4.23.4 Legal Protection

The Golden Jackal is under protection of the EU Habitats Directive. In Turkey, it may still be hunted according to the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.23.5 Project action required

Although unlikely to be encountered, workers should take care not to disturb females when giving birth in holes and cavities in forests and scrub.



4.24 GREATER HORSESHOE BAT

Rhinolophus ferrumequinum

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annexes II and IV
Turkish National Legislation	: Protected

4.24.1 Introduction

The Greater Horseshoe Bat is a small bat with a head and body length of 35-110 mm, a tail of 15-56 mm, and weighs 16-28 grams. The fur colour varies widely from reddish-brown to deep black above and paler below. Horseshoe bats get their name from the leaflike structure of skin around the nose, which forms a horseshoe around the mouth and which is used in ultrasonic navigation. When flying, they keep their mouths closed while emitting ultrasonic sound through the nostrils. The Greater Horseshoe Bat hibernates in winter during which its body temperature has been recorded at 8°C, in contrast to body temperatures 40°C during normal activity. Mating occurs during autumn, but ovulation and fertilization are delayed until spring. Gestation takes about 7 weeks and a single young is produced in late spring.

Insects and spiders are the main food source. Large insects may be tucked into the wing membrane under the arm while the bat manipulates it with its mouth.

4.24.2 Distribution and status

The Greater Horseshoe Bat is distributed across the entire Palaearctic region from Great Britain and Morocco to Afghanistan and Japan inhabiting warm caves, mines or attic roosts below 800 m in altitude.

In Turkey, it is abundant in the Mediterranean, Kars and Thrace provinces, but is rare in Central Anatolia and the Aegean.

This bat species is common along the pipeline route and has been observed in all regions from Posof to Ceyhan.

4.24.3 Threats

The Greater Horseshoe Bat is declining rapidly due to pressure on its habitats including disturbance and vandalism at its roost sites and agricultural practices resulting in a loss of its large insect prey.

4.24.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting of Greater Horseshoe Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.24.5 Project action required

No specific action is required. However, at camps and work sites near to caves and/or ruined buildings, workers should avoid disturbing them.



4.25 GREATER MOUSE-EARED BAT

Myotis myotis

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annexes II and IV
Turkish National Legislation	: Protected

4.25.1 Introduction

The Greater Mouse-eared Bat is the largest of the *Myotis* species with a body length measuring 7-8.2 cm. Its fur is brown above and white on the abdomen. The breeding season is in autumn and females give birth in springtime after a gestation period of 50-60 days.

Its diet consists of beetles and other insects.

4.25.2 Distribution and status

The Greater Mouse-eared Bat is distributed through western Eurasia from the Iberian Peninsula to the Ukraine, Turkey, Israel, Lebanon and Syria from sea level up to an altitude of 600 m. It inhabits human dwellings in central Europe and caves in the Mediterranean region. It is widespread and locally abundant in Europe.

In Turkey, the Greater Horseshoe Bat is apparently rare with records from just eight sites, namely Thrace, Hatay, Trabzon, Birecik, Finike, Afyon, Kirsehir and Ispir. Its population status in Turkey is unknown.

Along the pipeline route it has not been recorded.

4.25.3 Threats

The main threats to this species are probably remedial timber treatment in buildings and disturbance at nursery and hibernation sites.

4.25.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting of Greater Mouse-eared Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.25.5 Project action required

No specific action is required. However, at camps and work sites near to caves and/or ruins, workers should avoid disturbing them.



4.26 GREY HAMSTER

Cricetulus migratorius

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.26.1 Introduction

The Grey Hamster is a rodent, which lives in burrows in the ground. It is both nocturnal and diurnal.

They breed throughout the year, giving birth to 2-11 young per litter. Despite its size, Grey Hamsters are extremely savage rodents and defend themselves vigorously. In captivity they are intolerant of conspecifics and the females are dominant over males.

Grey Hamsters feed mainly on herbs but they can eat some insects, frogs, and jerboas.

4.26.2 Distribution and status

The Grey Hamster is distributed widely from eastern Europe to western China and Mongolia. The southern border of their range runs from the Aegean Sea through Turkey, Israel, Syria, Iraq, Iran, Pakistan and Kashmir. It inhabits open dry habitats such as steppe and rocky slopes, up to an altitude of 4,300 m.

In Turkey, they can be found from Thrace to East Anatolia. They are abundant in Central Anatolia but rare in Mediterranean and Southeast Anatolia.

Along the pipeline route, the species has been recorded from four sites between Sarikamis and Goksun where it is common in steppe, grassy vegetation and agricultural areas:

- near Pasinler (near to Kp268);
- at Yaylakent (near to Kp 407);
- at Ulas (near to Kp 712); and
- at southwest of Sariz (near to Kp 803).

4.26.3 Threats

The main threats to this species are unknown.

4.26.4 Legal Protection

Species is listed by IUCN as globally threatened in LR/nt category.

4.26.5 Project action required

No specific action is required.



4.27 GREY WOLF

Canis lupus

IUCN 2000 Red List	: Not globally threatened
CITES	: Appendices I and II
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Not protected

4.27.1 Introduction

The Grey Wolf is a large mammal with a body length of 60-90 cm and weight of 20-75 kg. The fur colour and body size varies based on geographic distribution but ranges from pure white to grey, brown and black. The breeding season varies between January and March depending on geographical location, and 5 - 14 pups are born after two months in underground dens. The Grey Wolf is a social animal, living in packs of 2-36 individuals. They have a stationary phase during the autumn and winter seasons and nomadic phase during spring and summer seasons.

Grey wolves are carnivorous mammals, preying generally on weak, old or immature animals that are mainly deers, rodents, rabbits and other small mammals. They can also eat fish, birds and berries.

4.27.2 Distribution and status

The Grey Wolf has a wide distribution from western Europe through central Asia to the Pacific coast and through most of North America where it inhabits temperate forests and grasslands. Populations have been much reduced and the range contracted through persecution.

In Turkey, it can be found in almost all regions between elevations of 400-800 m, although the population density is decreasing sharply throughout. Highest densities occur in East Anatolia and Central Anatolia, while in the Mediterranean and Black Sea regions it is rare.

Along the pipeline route, Grey Wolf has been recorded at 11 sites:

- Posof, Ardahan and Sarikamis Forests;
- Tercan near Kp 383;
- Guzyurdu Village near Kp 465;
- southwest of Zamanti river crossing near Kp 786;
- southeast of Kirkgecit Village near Kp 821;
- northwest of Geben near Kp 933;
- Cokak near Kp 940 and 945; and
- south of Andirin near Kp 966.



4.27.3 Threats

The major threats to this species are habitat destruction, change in prey base, and overhunting.

4.27.4 Legal Protection

The species is protected by CITES, Bern Convention and EU Habitats Directive. However it's hunting is permitted by T.R. Ministry of Forestry, Central Hunting Commission.

4.27.5 Project action required

No specific action is required for protection of the Grey Wolf, although the prohibition on hunting should be enforced rigorously. Since the wolf is a dangerous carnivore, those precautions to be implemented for Brown Bears (see Eurasian Brown Bear) should be implemented in areas where wolves are known to occur. Key points amongst these are that:

- workers should not wander alone in areas where wolves may be present, especially at night;
- good house-keeping and refuse management is essential;
- site needs to be kept clean and food stores managed properly; and
- food and rubbish should not be stored or left in or near vehicles.



4.28 HARBOUR PORPOISE

Phocoena phocoena

IUCN 2000 Red List	: VU
CITES	: Appendix II
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.28.1 Introduction

The Harbour Porpoise is a small stocky cetacean with a body length of 1.5 m and weighs 45-65 kg. The dorsal side is brown or dark grey, converging to a lighter grey on the flanks. It is a social animal forming small groups of up to 10 individuals although it can be solitary. The breeding season is between June and September, and females give birth to one young after 11-12 months.

The diet of this species differs geographically and seasonally. It feeds mainly on herring, hake, lantern fish, capelin, and some cephalopods.

4.28.2 Distribution and status

The species is a coastal species, limited to the cold temperate and sub-arctic waters of the Northern Hemisphere. In the Eastern North Atlantic it ranges from the Black Sea south to Senegal, Africa, including the North Sea, the Baltic Sea and Western Mediterranean.

In Turkish waters the species is under risk of extinction. It is distributed in the Aegean, Black and Mediterranean Seas.

4.28.3 Threats

The major threats are human-induced benthic-habitat destruction, pollution, deliberate killings by fishermen, decreased food availability, and incidental captures in fishing gear.

4.28.4 Legal Protection

The species is listed as Vulnerable by the IUCN and is protected by all international conventions. It is protected directly by Turkish legislation.

4.28.5 Project action required

No action during the construction phase is required. Comments made under Mediterranean Monk Seal are pertinent.



4.29 INDIAN CRESTED PORCUPINE

Hystrix indica

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.29.1 Introduction

The Indian Crested Porcupine is a large, spiny rodent (body length 70-90 cm; tail length 8-10 cm and weight 11-18 kg). It is nocturnal and sleeps in caves or in a burrow during day. The breeding season is mostly July and after eight-month the female gives birth to 2-4 young. The lifespan is quite long at about 20 years. When irritated or alarmed, it erects its spines and quills, rattles the hollow spines on its tail, and will charge backwards.

It is an herbivore eating vegetables, fruits, grains and roots. It chews on bones for minerals that help its spines to grow.

4.29.2 Distribution and status

The Indian Crested Porcupine is found throughout southeast and central Asia and in parts of the Middle East, including such countries as India, Nepal, Bhutan, Bangladesh, Sri Lanka, Pakistan, Israel, Iran and Saudi Arabia. It mostly inhabits rocky hillsides but it can be found in temperate scrublands, forests and grasslands up to elevations of 2,400 meters.

In Turkey, records are mostly from the Southeast and Mediterranean Regions. Their population is decreasing sharply because of hunting, habitat destruction, and pesticide.

This species has been recorded from the southern part of the pipeline route, in maquis north of Kadirli near Kp 997, and near the entrance to the BOTAS Marine Terminal at Ceyhan near Kp 1,056.

4.29.3 Threats

Major threats to this species are hunting, habitat destruction, and pesticides.

4.29.4 Legal Protection

Hunting of the species is prohibited by Ministry of Forestry, Central Hunting Commission.

4.29.5 Project action required

No specific action is required except limitation on disturbance of the maquis habitats crossed by pipeline during construction works. Workers should be informed that the porcupine can be dangerous since if it is unduly disturbed, it can charge backwards with surprising speed and inflict painful wounds with its barbed spines. It is best not approached.



4.30 JUNGLE CAT

Felis chaus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not Listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.30.1 Introduction

The Jungle Cat is larger than a domestic cat with a body length of 50-75 cm plus 25-29 cm tail and weighs 4-16 kg. It is generally sandy grey to tawny brown in colour and lacks distinct markings on the body. Like other members of its genus, it is a solitary cat. It can be active during both day and night. The breeding season is in February and March and after 63-76 days the female gives birth to 3-5 young. Its lifespan is up to 15 years.

The Jungle Cat is a carnivore and preys mainly on small mammals, birds, reptiles and amphibians.

4.30.2 Distribution and status

The Jungle Cat is distributed widely from Lower Egypt, Israel, Jordan, Syria, Iraq and Turkey to Transcaucasia and north along the west coast of the Caspian Sea to the lower reaches of the Volga and east through Turkmenistan, Tadjikistan, and Kazakhstan to western China, Afghanistan, Nepal, and south through the Indian subcontinent to Sri Lanka, Thailand and Yunnan. It inhabits wet grasslands, riparian scrub, and reeds from sea level to 2,400 m.

In Turkey, there are records from the Aegean (Izmir and Balıkesir), Central Anatolia (Ankara, Eskisehir, Konya and Afyon), south and south-east regions (Adana, Hatay, Kahramanmaraş, Adıyaman) and the Black Sea region (Samsun and Bolu). It is very rare.

Along the pipeline route this species has not been observed during field surveys.

4.30.3 Threats

The major threat to this species is hunting/persecution and habitat destruction.

4.30.4 Legal Protection

The Jungle Cat is protected by the decision of Central Hunting Commission.

4.30.5 Project action required

Hunting should be prohibited and enforced. Drivers driving at night in remote areas of wetland and near rivers should be instructed to keep their speed low to reduce the possibility of collision with these mammals.



4.31 LESSER MOLE RAT

Nannospalax leucodon

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.31.1 Introduction

The Lesser Mole Rat is a small rodent with a body length of 15-27 cm and weighing 100-220 g. The body colour is reddish to pale brown above and greyish below. This rodent is an aggressive and solitary species, active both during day and night, living largely underground. The breeding season is between November and March. Birth occurs after a one-month gestation period usually with two to four young in a litter.

Lesser Mole Rats feed mainly on roots, tubers, acorns, plant stems and other vegetation found at or below ground level. They can store some food in their burrow.

4.31.2 Distribution and status

Lesser Mole Rats occur in Bosnia and Herzegovina, Bulgaria, Greece, Hungary, FYR Macedonia, Romania, Turkey, Ukraine, and Yugoslavia. They can live in a variety of habitats such as fields, woodlands and grasslands. Population densities range from 1-13 animals/ha in southeast Europe.

In Turkey, they can be found at all regions except Southeast Anatolia, between sea-level and 2,600 meters in mountain clearings. These rodents are very abundant in Central Anatolia and East Anatolia but are rare in the Black Sea region.

The species is common all along the pipeline route and it has been recorded in all throughout.

4.31.3 Threats

Because the species is considered a pest to agriculture, the major threat to this species is persecution.

4.31.4 Legal Protection

There is no international agreement for this species but it is listed as vulnerable (under high risk of extinction in the wild in the medium-term future) by the IUCN.

4.31.5 Project action required

No specific action is required.



4.32 LESSER HORSESHOE BAT

Rhinolophus hipposideros

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.32.1 Introduction

The Lesser Horseshoe Bat is a small bat with a head and body length of about 35-110 mm plus a tail of 15-56 mm, and weighing between 4 and 10 grams. The fur colour varies widely from reddish-brown to deep black above, and paler below. Horseshoe bats get their name from the leaflike structure of skin around the nose, which forms a horseshoe around the mouth and which is used in ultrasonic navigation. When flying, they keep their mouths closed while emitting ultrasonic sound through the nostrils. The Lesser Horseshoe Bat is found at high and low altitudes and will roost in caves, buildings, foliage and hollow trees. Mating occurs during the fall, but ovulation and fertilization are delayed until spring. Gestation takes about 7 weeks and a single young is produced in late spring.

Lesser Horseshoe Bats forage in small groups for insects and spiders are the main food source.

4.32.2 Distribution and status

The distribution of Lesser Horseshoe Bat ranges from the British Isles to the Arabian Peninsula and Central Asia, and Morocco to Sudan. They occur in both forested and unforested habitats throughout the temperate and tropical zones of their range.

It is widely distributed and very abundant in Turkey.

Along the pipeline route, this species has been recorded commonly, but the roost sites are believed to be far from the route itself.

4.32.3 Threats

The Lesser Horseshoe Bat is declining rapidly due to habitat pressures including disturbance, vandalism, and agricultural practices resulting in a loss of large prey insects.

4.32.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting of Lesser Horseshoe Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.



BOTAŞ
Petroleum Pipeline
Corporation



4.32.5 Project action required

No specific action is required because the roost sites of this species are distant from the pipeline route.



4.33 BROWN LONG-EARED BAT

Tadarida teniotis

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
EUROBATS	: Protected
Turkish National Legislation	: Protected

4.33.1 Introduction

The Brown Long-eared Bat has a head and body length of 4-5 cm and weighs 5-10 g. The fur colour ranges from light brown to grey-brown on the upperparts. The species can be identified from its long, twisted ears. It hibernates in winter inside cellars and caves. In summer, roosts are in hollow trees and lofts. Mating occurs in autumn, and females give birth to 1-2 young in spring. Its lifespan is up to 10 years.

They feed on insects.

4.33.2 Distribution and status

The Brown Long-eared Bat is distributed from the British Isles through Europe, with a disjunct distribution across Asia, with populations occurring in Mongolia, south-east Siberia, north-east China and Japan. It inhabits gardens, woods and farmlands, and is generally abundant in northern Europe but rare in southern countries.

In Turkey, it is recorded from Cildir, and there are unsubstantiated records from Erzincan, Erzurum.

Along the pipeline route, it may occur in Erzincan and Erzurum provinces.

4.33.3 Threats

Major threat to this species is mainly habitat destruction.

4.33.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting of Serotine Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.33.5 Project action required

No specific action is required.



4.34 EUROPEAN MARBLED POLECAT

Vormela peregusna

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.34.1 Introduction

The European Marbled Polecat is a small carnivorous mammal (head and body length is 29-38 cm and weight is 370-715 grams) with black-brown fur and a pale face with a dark mask. It is mainly nocturnal and crepuscular but is sometimes active by day. It lives mostly in open and dry terrain. The Marbled Polecats is a good climber but feeds mainly on the ground. It is solitary except during the breeding season. Births occur from February to March after a gestation period of about 9 weeks, with a litter size of four to eight young.

The diet is composed of rodents, birds, reptiles, and other small animals.

4.34.2 Distribution and status

The species is distributed in Bulgaria, Greece, Romania, Turkey, Ukraine and Yugoslavia inhabiting steppe vegetation. There is a major decline in population of this species in Balkans.

In Turkey, there are records from Thrace, Marmara, Black Sea and East Anatolia districts. The species is rare in all these districts.

Along the pipeline route it has been recorded on the Pasinler plain near to Kp 257.

4.34.3 Threats

The major threat to this species is the conversion of natural grasslands and steppe to agriculture and elimination of prey species.

4.34.4 Legal Protection

The species is under protection by Bern Convention, listed in IUCN as Vulnerable (under high risk of extinction in the wild in the medium-term future) and its hunting is banned with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.34.5 Project action required

No specific action required. Careful re-instatement of steppe and natural grasslands will mitigate long-term impacts.



4.35 MEDITERRANEAN HORSESHOE BAT

Rhinolophus euryale

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.35.1 Introduction

The Mediterranean Horseshoe Bat is a small bat with a head-and-body-length of c.5 cm. It hibernates and reproduces in underground cavities. It hunts over hillsides, in woody areas and bushes. Mating occurs during the fall, but ovulation and fertilization are delayed until spring. Gestation takes about 7 weeks and a single young is produced in late spring.

4.35.2 Distribution and status

This bat species is distributed in northwestern Africa, southern Europe, and the Near East to Turkmenistan and Iran from sea level up to altitude of 1,000 m. It roosts throughout the year in caves and artificial shelters but rarely in buildings.

In Turkey, it is abundant in Thrace, Southwest, Northwest, Northeast and South Anatolia.

Along the pipeline route, the Mediterranean Horseshoe Bat species has been recorded at four localities distant from the route corridor – in north-eastern Anatolia in Posof, Ardahan and Sarikamis Forests; and in the south in rocky hillsides near to Kp 970.

4.35.3 Threats

Habitat destruction is the main threat to Mediterranean Horseshoe Bat.

4.35.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting of Mediterranean Horseshoe Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.35.5 Project action required

No specific action is required for this species.



4.36 MEHELY'S HORSESHOE BAT

Rhinolophus mehelyi

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annexes II and IV
Turkish National Legislation	: Protected

4.36.1 Introduction

Mehely's Horseshoe Bat has a head-and-body-length of 5.5-6.5 cm, a wingspan of c.33 cm and weighs 10-18 g. Its habitats are caves, tunnels, garrets and steeples, and even tree hollows. It can migrate over long distances (300-500 km) from the hibernation place to the shelters of the summer colonies. Mating occurs during the fall, but ovulation and fertilization are delayed until spring. Gestation takes about 7 weeks and a single young is produced in late spring.

4.36.2 Distribution and status

The species is distributed in North Africa and southern Europe through Asia Minor to Transcaucasia and western Iran. The population is in decline in various parts of its range.

In Turkey, there are records from East, Central and West Anatolia, Thrace and East Mediterranean regions, and the species appears abundant in its range.

Along the pipeline route, it has been observed in three sites in the south between Goksun and Ceyhan:
near to Cokak village (Kp 938);
south of Kadirli near to Kp 1000; and
at the entrance of the BOTAS compound.

4.36.3 Threats

The major threats to this species are disturbance and damage to roost.

4.36.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting of Mehely's Horseshoe Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.36.5 Project Action Required

No specific action is required. Removal of large trees, particularly at river crossings, should be avoided wherever possible. If they have to be removed, they should be checked for bat colonies first. Ecologists working with the construction crews should supervise departure of the colony prior to tree-felling. Ruined buildings should not be disturbed.



4.37 **MEDITERRANEAN MONK SEAL**

Monachus monachus

IUCN 2000 Red List	: CR
CITES	: Appendix I
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
Turkish National Legislation	: Protected

4.37.1 **Introduction**

The Mediterranean Monk Seal is a sea mammal with an average body length of 2.4 m that weighs about 315 kg. The colour varies from dark brown to black-light grey. Monk Seals are diurnal mammals that may live in groups of up to 20 individuals. They occupy a limited home range and do not migrate. They communicate with each other by very high-pitched sounds. They mate usually in water, between September to November and females give births after 11 months on very secluded beaches or caves. Monk seals feed in shallow coastal waters on a large variety of fish such as eels, sardines, tuna, lobsters, flatfish and mullets.

4.37.2 **Distribution and status**

The Mediterranean Monk Seal was once distributed widely in the Black Sea, Mediterranean Sea and some islands in the Atlantic Ocean. However, its world population now numbers under 500 individuals in two populations – one in the eastern Mediterranean and one on the coast of Morocco. The Aegean Sea and the area between Turkey and Cyprus are the most important for this species.

In Turkey, a colony of the monk seals lives on the islands in the mouth of Akkuyu Bay. In total, there are over 100 individuals living in Turkish coast of Mediterranean and Aegean Sea.

4.37.3 **Threats**

The major threats are habitat destruction and disturbance, pollution, deliberate killing by fishermen, decreased food availability, and incidental captures in fishing gear.

4.37.4 **Legal Protection**

The species is one of the rarest and most threatened mammals in the world so it is under protection by all international agreements (listed above). The IUCN list the species as Critically Endangered, i.e. as having a high risk of extinction in the wild in the near future. The Central Hunting Commission of T.R. Ministry of forestry prohibits the hunting of the Mediterranean Monk Seals.



4.37.5 Project action required

Marine construction crews should be advised of appropriate behaviour in the event of a Monk Seal or other marine mammal, being observed in the vicinity of the marine construction area. Marine mammals should not be approached or chased and boat speeds should be kept to a minimum in the vicinity of marine mammals.

The Oil Spill Response Plan should address measures to protect marine mammals in the event of a marine oil spill.



4.38 NOCTULE BAT

Nyctalus noctula

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.38.1 Introduction

The Noctule Bat has a head-and-body length of 6-8 cm and weighs 20-40 gm. It has golden-brown fur and narrow pointed wings of 35-38 cm wingspan. It is capable of reaching 50 kilometres per hour (30 mph) in level flight. The preferred summer roost sites are mature trees, particularly woodpecker holes or the rotten middles of ageing pollarded willows. Most colonies comprise just a few dozen bats, but occasionally there may be more than 100 in a colony. Females give birth in late June or early July mostly to a single young, but twins are quite common. The young can fend for themselves by the age of six weeks. Noctule Bats may live for up to 12 years. In winter, they usually roost in trees or in rock fissures, but they are also known to use bat boxes and occasionally spend the winter roosting in buildings.

Its main foods are midges, beetles, moths and other quite large insects.

4.38.2 Distribution and status

The Noctule Bat is distributed in most of Europe and Asia to southwestern Siberia, China, North Vietnam and Taiwan. In Europe, it ranges from the Iberian Peninsula to the Urals and Caucasus. They are found from sea level to 1,925 m in the Alps and in optimal habitats population densities are between 30-80 individuals/km².

In Turkey, there are records from Thrace, Marmara, Aegean, Mediterranean, and Southeast, Regions. It is abundant except in Thrace and Southeast Anatolia Region.

Along the pipeline route, the species has been recorded just once between Kadirli and Ceyhan.

4.38.3 Threats

Noctule Bats are now scarce in areas of intensive agriculture; almost certainly as a result of hedgerow removal and increased use of insecticides.

4.38.4 Legal Protection

The species is currently under protection by the Bonn Convention, Bern Conventioneer Habitats Directive and EUROBATS. Hunting of Noctule Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.



BOTAŞ
Petroleum Pipeline
Corporation



4.38.5 Project action required

Removal of large trees, particularly at river crossings, should be avoided wherever possible. If they have to be removed, they should be checked for bat colonies first. Ecologists working with the construction crews should supervise departure of the colony prior to tree-felling. Ruined buildings should not be disturbed.



4.39 RED SQUIRREL

Sciurus vulgaris

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.39.1 Introduction

The Red Squirrel is a small mammal with a head and body length of 18-25 cm plus a tail of 14-20 cm and weighs 280-480 g. The coat colour varies from light red to black on the head and back with a white patch on the stomach. Breeding occurs between December and February. Gestation is 30-40 days. Females give birth to 3-7 young.

The Red Squirrel feeds mainly on coniferous seeds, beechnuts, acorns and nuts. The mushroom and other fungi are also found in their diet.

4.39.2 Distribution and status

The Red Squirrel is distributed from the British Isles in the west, south to the Mediterranean, and east to the Caucasus, southern Urals and Altai mountains in central Mongolia, and to north-east China. It inhabits forests, parks and gardens from sea level to 2,200 m. Population densities of the species vary geographically and also exhibit large annual fluctuations in response to tree seed crop availability.

In Turkey it is rare, but there are records from Thrace and North-east Anatolia regions.

Along the pipeline route, it may occur in forests in the north-east between the Georgian Border and Sarikamis.

4.39.3 Threats

Major threats to this species are forest fragmentation and hunting.

4.39.4 Legal Protection

The species is currently under protection by the Bern Convention. Hunting of Red Squirrel is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.39.5 Project action required

Tree clearance and disturbance in forests may cause localised impacts. Carrying of firearms and hunting of any animals by workers must be prohibited and enforced.



4.40 RISSO'S DOLPHIN

Grampus griseus

IUCN 2000 Red List	: DD
CITES	: Not listed
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.40.1 Introduction

Risso's Dolphin is a medium-sized dolphin with body length of 3 m and weighs 300 kg. From the dorsal fin forward, the body form is stocky but the tailstock is long and slender. The body colour is dark grey with lighter grey patches ventrally. It is a social mammal, seen usually in groups of 3-50 animals. Its reproductive habits are poorly known, but females probably give birth to one young in winter.

Risso's Dolphin feeds on squid and fishes.

4.40.2 Distribution and status

Risso's Dolphin is distributed worldwide in warm temperate and tropical waters. Its current population status is unknown.

In Turkey, it is found in the Mediterranean Sea. It is believed that their population is decreasing sharply.

4.40.3 Threats

Major threats to this species are pollution, benthic-habitat destruction, and deliberate killings by fishermen.

4.40.4 Legal Protection

The species is listed as Data Deficient by the IUCN and is protected by all international conventions. It is protected directly by Turkish legislation.

4.40.5 Project action required

No action during the construction phase is required. Comments made under Mediterranean Monk Seal are pertinent.



4.41 ROE DEER

Capreolus capreolus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.41.1 Introduction

The Roe Deer is a small deer, which can grow up to 125 cm in length and weigh up to 30 kg. The fur colour is tawny-brown in summer and grey-brown in winter. The males has short antlers up to 23 cm long. The Roe deer is crepuscular (active in twilight) and usually solitary, but in winter it can form small groups. The mating season is July and August, and females give birth, usually to 2 young, in May-June.

The Roe Deer is herbivorous, the diet consisting of herbs, grasses, leaves and buds.

4.41.2 Distribution and status

The Roe Deer is distributed widely across Europe and Asia, in mixed forests with dense understorey. Numbers are high and populations appear stable.

In Turkey, it is present in all regions but within these it occurs only locally. It is very rare in all regions.

Along the pipeline route, two roe deer were recorded together in Sarikamis Forest.

4.41.3 Threats

The major threats to the species in Turkey are hunting and deforestation.

4.41.4 Legal Protection

The Roe Deer is under protection by the Bern Convention. Its hunting is prohibited by the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.41.5 Project action required

No special action required. Hunting should be prohibited and enforced.



4.42 SCHREIBER'S LONG-FINGERED BAT

Miniopterus schreibersi

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex II and IV
EUROBATS	: Protected
Turkish National Legislation	: Protected

4.42.1 Introduction

Schreiber's Long-fingered Bat is a small bat with reddish or blackish fur. It has a length of 5-6 cm and a weight of c.20 g. It feeds on insects.

Migration can cover c.100-200 miles between summer and winter retreats. It hibernates in cold climates, or otherwise curtails activity during cold weather.

These bats mate in early autumn, fertilization is immediate, but growth of embryo varies according to climate. In Turkey they give birth in October-November, but in Europe, births are in April. The young can fly at 7 weeks old.

4.42.2 Distribution and status

Schreiber's Long-fingered Bat occurs throughout southern Europe from Iberia to the Caucasus, southern Asia, Australia, Japan and throughout Africa. It occurs in all habitats except deserts. Despite its wide range, it has declined markedly in the northern part of its European range, from Romania to France.

In Turkey, it is distributed widely from Thrace to East Anatolia. While they are abundant in the Black Sea, Mediterranean, and Marmara regions, they are rare in Central, East and Southeast Anatolia.

Along the pipeline route, it has been observed in Koprucukoy (Kp 251), south of Andirin (Kp 970) and south of Kadirli in rocky hillsides (near Kp 1,000).

4.42.3 Threats

The reasons for the population decline are human disturbance, closure of roosts, and the widespread use of insecticides.

4.42.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting of Schreiber's Long-fingered Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.42.5 Project Action Required

No specific action is required. However, at camp and work sites near to caves and/or ruins, workers should avoid disturbing them. Killing them is illegal.



4.43 SEROTINE BAT

Eptesicus serotinus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
EUROBATS	: Protected
Turkish National Legislation	: Protected

4.43.1 Introduction

The Serotine Bat is a medium-sized bat with a head and body length of 5.8-8.0 cm, a wingspan of 32-38 cm and weighs 15-35 g. The fur is dark brown above and pale underneath, and the face and ears are black in colour. It hibernates in winter inside cavity walls and disused chimneys. Males are solitary or occur in small groups, but are occasionally found with females in spring and autumn. Mating occurs between September and October. Females give birth to a single young in early July. The lifespan is up to 19 years.

The Serotine Bat feeds mainly on flies and moths in spring and chafers and dung beetles in summer.

4.43.2 Distribution and status

The Serotine Bat is distributed in Europe, North Africa, the Near East, central Asia, east to China, Taiwan and the Indo-Malayan region inhabiting open forests, buildings and caves. The population is probably stable in Europe, but some local declines are recorded and there is a perceived threat to the population owing to the loss of pasture and increase in the use of antihelminthic drugs in cattle, which reduce the number of dung beetles.

In Turkey, it is abundant and found in all regions.

Along the pipeline route, it may occur in forests in the north between the Georgian Border and Sarikamis.

4.43.3 Threats

Major threats to this species are decrease in prey base and habitat destruction.

4.43.4 Legal Protection

The species is currently under protection by the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting of Serotine Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.43.5 Project action required

No specific action is required. Minimisation of damage to forests during construction will reduce potential impacts.



4.44 SPERM WHALE

Physeter macrocephalus

IUCN 2000 Red List	: VU
CITES	: Appendix II
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.44.1 Introduction

The Sperm Whale is the largest of the toothed whales. The male has a body length of 20.5 m and weighs 45-57 tonnes and the female measures 11-13 m and weighs 20 tonnes. It has a huge head and truncate snout, and is blackish-brown in colour. It is a social mammal living in family groups of around 10-20 individuals comprising mainly mature females with their calves. As they get older, the males become more anti-social and may eventually become solitary individuals. A single dominant male accompanies a group of females and defends the group against competing males. Females breed once every 5-7 years. The breeding season is in spring, and gestation takes 15 months. Lifespan is up to 60 years.

The Sperm Whale preys mostly on squid, octopus, crabs, jellyfish, sponges and various fish species.

4.44.2 Distribution and status

The species has a worldwide distribution occurring in all oceans, including the Arctic and Antarctic, but is found primarily in temperate and tropical waters of the Atlantic and Pacific Oceans. Its estimated current population is 2,000,000 animals.

In Turkey, the species is rare and is distributed in the Mediterranean Sea.

4.44.3 Threats

Population levels decreased dramatically during the period when whales were hunted for their oil, wax and meat. Today, the major threats are pollution, depletion of food resource by fisheries.

4.44.4 Legal Protection

The species is listed as Vulnerable by the IUCN and is protected by all international conventions. It is protected directly by Turkish legislation.

4.44.5 Project action required

No action during the construction phase is required. Comments made under Mediterranean Monk Seal are pertinent.



4.45 **STOAT**

Mustella erminea

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.45.1 **Introduction**

The Stoat is the smallest carnivore living in Europe with a body length of 17-25 cm and weight of 32-63 gm. The tail is short and brown in colour. The fur is brown all year in southern populations but turns white in northern populations and those living in high mountains. The Stoat is active during both day and night. Mating can occur between April and August. Young are born between May and September. Litters range from 4-8 kits.

Stoats feed on small rodents birds, insects, molluscs and lizards.

4.45.2 **Distribution and status**

Stoats range from Europe, North Africa, and Asia to North America, inhabiting a wide variety of habitats such as open forests, farmland, meadows, steppe and semi-deserts.

In Turkey, the Stoat is present in all regions except the Aegean and Mediterranean coasts. Elsewhere they are common, especially in the East Anatolia and Black Sea Regions, but numbers are declining because of hunting and agrochemicals.

Along the pipeline route, the stoat has been recorded from six sites:
Posof, Ardahan and Sarikamis Forests,
Erzurum Marshes (near Kp 304),
Bulgur Meadow (near Kp 512), and
near to the Zamanti River (near Kp 780)

4.45.3 **Threats**

Major threats to the species are hunting and agrochemicals.

4.45.4 **Legal Protection**

The Stoat is under protection by Bern Convention and its hunting is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.45.5 **Project action required**

No specific action required.



4.46 STRIPED HYAENA

Hyaena hyaena

IUCN 2000 Red List	: LR/nt
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Not listed
EU Habitats Directive	: Not listed
Turkish National Legislation	: Not protected

4.46.1 Introduction

The Striped Hyaena is a medium-sized carnivorous mammal (body length 65-80 cm, weight 25-45 kg.) with long fur and large pointed ears. It is nocturnal and solitary. Breeding is no fixed season and begins at 2-3 years of age. Females give births to 2-4 young per litter after 88-92 days gestation.

It is omnivorous, though mostly carnivorous, the diet consisting of large mammal carrion, rodents, lizards, hares, shrews, tortoises, beetles, termites, fruits, dung and human refuse.

4.46.2 Distribution and status

The Striped Hyaena's range includes North Africa, the Arabian Peninsula, Turkey, the Middle East, and western India, inhabiting arid, mountainous areas, grasslands, rocky slopes and steppe. Numbers are declining rapidly throughout its range.

In Turkey, it is distributed in the regions of Marmara, Aegean, Mediterranean and Southeast Anatolia. It is rare in all.

Along the pipeline route the species has been recorded in rocky maquis near Andirin (Kp 967) and on a rocky hillside south of Kadirli (near to Kp 1,000).

4.46.3 Threats

Major threats to this species are defined as persecution, use in traditional medicine, and the loss of its prey base through improved animal husbandry.

4.46.4 Legal Protection

The species is listed by IUCN as globally threatened in LR/nt category.

4.46.5 Project action required

No specific action is required for this species. Hunting should be prohibited and enforced.



4.47 TURKISH CHAMOIS

Rupicapra rupicapra asiatica

IUCN 2000 Red List	: DD
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Annex V
Turkish National Legislation	: Protected

4.47.1 Introduction

The Turkish Chamois is a medium-sized antelope with almost 120 cm body length and 25-40 kg weight. They have short, chestnut coloured fur and a pair of horns curved backwards through 180°. Females live in groups with young. Males are generally solitary but join the groups at breeding time, at the end of autumn. Females give birth in spring.

The Chamois is an herbivore, feeding chiefly on grass, herbs, and flowers during summer, but on lichens, mosses, and young pine shoots in winter.

4.47.2 Distribution and status

The Turkish Chamois is a sub-species of Chamois, which occurs in mountainous regions of central and southern Europe. This subspecies is restricted to Turkey. It inhabits northeastern parts of Turkey, and can be found up to 3,200 m above sea level, in mountain grasslands, temperate broad-leaved and mixed forests. Population densities are thought to be decreasing.

The species has been reported by villagers as being along the route near Guzyurdu Village (Kp 465), north of Erzincan.

4.47.3 Threats

The major threats to Turkish Chamois are hunting.

4.47.4 Legal Protection

The species is under protection by Bern and EU Habitat Directive. IUCN is listing this species as globally threatened species in DD category (data deficient) and its hunting is banned by T.R. Ministry of Forestry, Central Hunting Commission.

4.47.5 Project action required

Hunting by construction workers must be absolutely prohibited and enforced.



4.48 WEASEL

Mustella nivalis

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix III
EU Habitats Directive	: Not listed
Turkish National Legislation	: Protected

4.48.1 Introduction

The weasel is the smallest carnivore living in Europe (body length 17-25 cm plus a short tail, weight 32-63 g). The fur is reddish-brown all year in southern populations while in the most northerly populations and on individuals living in high mountains, it turns to white in winter. It is active during both day and night. Mating can occur between April and August. Young are born between May and September. Litters range from 4-8.

Weasels are carnivores. They feed mainly on small rodents and also birds, insects, molluscs and lizards.

4.48.2 Distribution and status

The weasel ranges from Europe, North Africa, and Asia to North America, inhabiting a wide variety of habitats such as open forests, farmlands, meadows, steppe and semi-deserts.

In Turkey, there are records from all regions but they are rare.

Along the pipeline route, it has been observed in all throughout.

4.48.3 Threats

None.

4.48.4 Legal Protection

The weasel is under protection by Bern Convention and its hunting is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.48.5 Project action required

No specific action is required.



4.49 WHISKERED BAT

Myotis mystacinus

IUCN 2000 Red List	: Not globally threatened
CITES	: Not listed
Bonn Convention	: Not listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.49.1 Introduction

The Whiskered Bat is a small bat with a length of 35-50 mm and a wingspan of 200-250 mm. It weighs c.5-9 g. Its fur is dark or grey brown, has golden tips on the back and is greyish underneath. Its face and ears are dark brown or black. It roosts in colonies of 30-200 individuals, in buildings and trees in summer and in caves and tunnels for its winter hibernation.

It feeds on moths, other small insects, and spiders in wooded areas, often near water. Whiskered Bats have a fast and fluttering flight, to a height of 20 metres, generally level with occasional stoops.

4.49.2 Distribution and status

This species is very common throughout all of Europe and Asia inhabiting mainly gardens, parks and riparian habitats from sea level up to elevations of 1,920 m. It is rare in southern Europe and Ireland. Population densities decrease from north to south through its range.

In Turkey, it is believed to be distributed widely but population densities are low (Demirsoy 1996).

Along the pipeline route it has been recorded only in the north-east between Sarikamis and Tercan.

4.49.3 Threats

Major threat to this species in Europe is chemical remedial timber treatments.

4.49.4 Legal Protection

The species is currently under protection by the Bonn Convention, Bern Convention, EU Habitats Directive and EUROBATS. Hunting of Whiskered Bats is prohibited with the decision of T.R. Ministry of Forestry, Central Hunting Commission.

4.49.5 Project action required

No specific action is required. Removal of large trees, particularly at river crossings, should be avoided wherever possible. If they have to be removed, they should be checked for bat colonies first. Ecologists working with the construction crews should supervise departure of the colony prior to tree-felling. Ruined buildings should not be disturbed.



4.50 WHITE-BEAKED DOLPHIN

Lagenorhynchus albirostris

IUCN 2000 Red List	: Not globally threatened
CITES	: Appendix II
Bonn Convention	: Appendix II
Bern Convention	: Appendix II
EU Habitats Directive	: Annex IV
Turkish National Legislation	: Protected

4.50.1 Introduction

The White-beaked Dolphin is a large dolphin with body length of 3 m and weighs 300 kg. It is dark grey to black dorsally with a lighter saddle patch just behind the dorsal fin. It is a very fast swimmer. It is a social animal living in groups of generally 1-35 individuals with occasional herds of several hundreds. Females give birth to one young between July and September, after 10-12 months gestation period.

The White-beaked Dolphin feeds mainly on fishes such as clupeids, gadids, and hake, and also squid, octopus, and some benthic crustaceans

4.50.2 Distribution and status

The species is distributed in the temperate and sub-polar waters of the North Atlantic and adjacent waters, Baltic Sea, and Mediterranean Sea.

In Turkey the species is rare, occurring in the Mediterranean Sea.

4.50.3 Threats

The major threats are human-induced benthic-habitat destruction, pollution, deliberate killings by fishermen, decreased food availability, and incidental captures in fishing gear.

4.50.4 Legal Protection

The species is protected by all international conventions. It is protected directly by Turkish legislation.

4.50.5 Project action required

No action during the construction phase is required. Comments made under Mediterranean Monk Seal are pertinent.



4.51 WILD GOAT

Capra aegagrus

IUCN 2000 Red List	: VU
CITES	: Not listed
Bonn Convention	: Not Listed
Bern Convention	: Appendix II
EU Habitats Directive	: Annexes II and IV
Turkish National Legislation	: Protected

4.51.1 Introduction

The Wild Goat is a cloven-hoofed, horned, mammal with a heavy body covered by wool. Their body length averages 120 cm and their weight is between 50-130 kg. They have a pair of scimitar-shaped horns with a sharp inside edge, which are specific to goats. They are nomadic and social, living in groups. The breeding season is generally between October and December, and females give birth in March to April, usually to two young.

Wild goats are herbivorous and their diet is mainly grass, twigs, leaves, berries and bark.

4.51.2 Distribution and status

Wild Goats are found in Italy, Crete and other Greek Islands, Cyprus, Turkey, Georgia, Armenia, Syria, Lebanon, Iraq, Iran, Turkmenistan, Pakistan, and the Russian Federation in mountainous habitats and temperate forests. On a global scale, the Wild Goat is considered vulnerable to extinction.

They are distributed throughout Turkey but locally, in rocky and mountainous areas. There are records from the Taurus Mountains eastwards from Antalya, in the eastern parts of Sivas District; in the mountains around Gumushane, Erzincan, and Erzurum. The Wild Goats is rare in the Black Sea Region and in Central Anatolia but is common in the Mediterranean region (Demirsoy 1996).

Along the pipeline route, the Wild Goat has been observed in Posof, Ardahan, and Sarikamis Forests, and in Scots pine forest to the northwest of Guzyurdu Village in Erzincan Plateau (near to Kp 465).

4.51.3 Threats

The major threats to Wild Goat are habitat destruction, over-grazing of stock, and hunting.

4.51.4 Legal Protection

Hunting of Wild Goats is banned by the decision of T.R. Ministry of Forestry, Central Hunting Commission and the species is under protection by international agreements (Bern convention and EU Habitat Directive).

4.51.5 Project action required

The Wild Goat uses habitats crossed by pipeline mainly for feeding. Careful reinstatement of damaged habitat will be important for them.



5 REFERENCES

Demirsoy, A.1996. *Turkiye Omurgalilari –Memeliler*. Cevre Bakanligi, Cevre Koruma Mudurlugu, Proje no: 90-K-1000-90, Ankara (Turkey). xi+292 pp.

Hilton-Taylor, C. (compiler) (2000). *2000 IUCN Red List of Threatened Species*. IUCN/SSC, Gland, Switzerland and Cambridge, UK.

Mitchell-Jones, A.J., Amori, G., Bogdanowicz, W., Krystufek, B., Reijnders, P.J.H., Spitzenberger, F., Stubbe, M., Thissen, J.B.M., Vohralik, V. and Zima, J. 1999. *The Atlas of European Mammals*. Academic Press, London. pp. 36-37, 64-65, 90-91, 92-93, 94-95, 96-97, 98-99, 112-113, 114-115, 116-117, 126-127, 136-137, 142-143, 148-149, 154-155, 156-157, 180-181, 204-205, 262-263, 294-295, 300-301, 312-313, 314-315, 328-329, 334-335, 342-343, 344-345, 348-349, 350-351, 356-357, 360-361, 376-377, 400-401.

Mursaloglu B. 1988, Regional Report on the Status and Protection of Bears in Turkey. Workshop on the situation and protection of the brown bear (*Ursus arctos*) in Europe, 18-20 May 1988.

Skirrow, M.H. and M. Ryson. 1976. Observations on the social behaviour of the Chinese hamster *Cricetulus griseus*. *Con. J. Zool.* 54: 361-68.

Amblonyx Otter Site,

http://www.amblonyx.com/otter/lutra/otter_char.htm

Bottlenosed Dolphin, *Tursiops truncatus*

[http://animaldiversity.ummz.umich.edu/accounts/tursiops/t_truncatus\\$narrative.html](http://animaldiversity.ummz.umich.edu/accounts/tursiops/t_truncatus$narrative.html)

Eastern European Hedgehog (*Erinaceus concolor*)

<http://www.geocities.com/pelionature/Erinaceus1.htm>

Endangered Species, Nuclear Threat to the Mediterranean Monk Seal (March 4, 1999),

http://www.diaspora-net.org/nuclear/endangered_species.htm

Erinaceus concolor (Martin)

<http://www.nis.gov.jo/biodiversity/mammalsdesc.html>

Joint Nature Conservation Committee, UK, 2001

www.eurobats.org

Kurt Schlimme, University of Michigan student. (December 1999)

[http://animaldiversity.ummz.umich.edu/accounts/hystrix/h_indica\\$narrative.html](http://animaldiversity.ummz.umich.edu/accounts/hystrix/h_indica$narrative.html)

Marine Mammal Fact Sheet Series: Mediterranean Monk Seal, 1999

<http://www.monachus.org/profiles/mediseal.htm>



Monachus Guardian (May, 2000),
<http://www.monachus.org/mguard05/05scien1.htm>

Otter Facts, The Eurasian Otter (*Lutra lutra*)
<http://www.ottersite.btinternet.co.uk/otterfacts.htm>

She- Indian Crested Porcupine- *Hystrix indica indica*
<http://www.haryana-online.com/Fauna/seh.htm>

Species Corner, Bottlenose Dolphins (*Tursiops truncatus*)
<http://www.tmmsn.org/mmgulf/tursiops.html>

The British or European Otter *Lutra lutra*
<http://www.ottersandbutterflies.co.uk/otters/otter-lutra-lutra.htm>

The Lubee Foundation, 2001
www.zooregon.org

Tursiops truncatus: Bottlenose Dolphin, <http://www.cetacea.org/bottle.htm>
http://www.blueplanetbiomes.org/wild_goat.htm

2000 IUCN Red List of Threatened Species,
<http://www.redlist.org/search/details.php?species=13653>

Appendix B2 – Air Quality Modelling Figures

1 OPERATIONAL IMPACTS – BTC MARINE TERMINAL

1.1 AIR QUALITY IMPACTS

1.1.1 Pollutant sources

1.1.1.1 Storage emissions

Crude oil received from the BTC Pipeline will be stored in seven external floating roof tanks (EFRT). There will be Volatile Organic Compound (VOC) emissions from the tanks due to withdrawal and standing storage losses. Withdrawal losses occur as the crude oil level, and thus the floating roof, is lowered during transfer of the crude oil into tankers. Some crude oil remains on the inner tank wall surfaces and evaporates. Evaporative loss occurs until the tank is filled and the exposed surfaces are covered again. Standing storage losses (due to changes in ambient temperature and pressure) from the tanks include fugitive emissions from the roof rim seal and deck fittings. The storage tanks will have welded double-deck roof with double rim seal system to reduce fugitive VOC emissions. The design specifications of the BTC Marine Terminal tanks are given in

Table 1.1, together with those of the existing tank farms (as discussed in Section 1.1.1.5).

The crude oil typically comprises low volatility liquids, which have relatively low fugitive emissions, and therefore, the potential to cause odour nuisance is not considered significant. It is anticipated that VOC emissions from the BTC tank farm, will be in the order of 25te per annum, of which approximately 25kg will be in the form of benzene.

1.1.1.2 Tanker loading emissions

During tanker loading at the marine jetty, crude oil will displace an equal volume of waste gas from tanker cargo compartments. The waste gas will mainly comprise VOCs, carbon dioxide (CO₂) and sulphur dioxide (SO₂). Residues from tankers' previous cargo contents will be the main source of VOC emissions. The CO₂ and SO₂ will be generated by the inert gas system located on-board the tankers. The VOCs generated at a rate of 59,000te per annum, will be collected and sent to an Enclosed Ground Flare (EGF), which will have 99.5% VOC destruction efficiency. It is estimated that approximately 295te VOC¹ will be released from the EGF per annum, of which approximately 295kg will be in the form of benzene. NO_x generated during combustion of the VOCs, and SO₂ in the waste gas stream will also be released from the flare operation. It is estimated that 36te of NO_x and 387te of SO₂ will be emitted from the flare annually. The design specifications of the EGF, together with those of other planned/existing point (ie stack) sources (see Section 1.1.1.5) are given in Table 1.2.

1.1.1.3 Minor emissions

Other minor sources of pollutant emissions include the marine (ie tanker) traffic, facility vehicle fleet, and occasional space heating. These sources will not produce local emissions that will significantly impact the local air quality. The estimated emission rate for the tanker traffic is presented in Table 1.3 together with a summary of the major emissions described above.

¹ The air quality modelling study was carried out simultaneously with the tanker waste gas emission options assessment. The study uses the initial estimate of 295 tons/year VOC/ This was later revised to 215 tons/year VOC.

1.1.1.4 Emissions from existing industry

Pollutant emissions from the existing industries are important in determining the total and incremental (ie due to BTC) impacts on the project airshed. The existing BOTAŞ Marine Terminal located immediately east of the proposed BTC Marine Terminal area is the major existing source of VOCs in the project airshed. The existing BOTAŞ Marine Terminal serves two independent crude oil pipelines: Iraq and Kirikkale pipelines. The existing BOTAŞ Marine Terminal consists of a marine jetty and two tank farms (for each pipeline). The VOC emissions from the crude oil loading operations at the BOTAŞ jetty are released to the atmosphere without any control (eg flare). It is estimated that the BOTAŞ loading operations emit approximately 3,000te VOC and 3te benzene per annum. The estimated VOC emissions from the Iraq and Kirikkale storage tanks are 64te and 10te, respectively. The benzene fractions for these storage emissions are 100kg and 15kg, respectively. The design specifications of the BOTAŞ tank farms are given in Table 1.1.

Other major existing sources of pollutants in the project area are the Toros Fertilizer factory located some 5km northeast and the Sugoza Power Plant (SPP) (currently under construction) located 5km southwest of the BTC Marine Terminal site. The Toros Fertilizer factory is estimated to emit 643te of NO_x annually. The SPP, when operational, will approximately emit 10,600te of NO_x and 6,500te of SO₂ per annum. The design specifications of the existing point (ie stack) sources are given in Table 1.2.

Table 1.1 Design Specifications for BTC and Existing BOTAŞ Crude Oil Storage Tank Farm

PARAMETER	BTC	IRAQ	KIRIKKALE
Tank Quantity	7	12	3
Tank Type ¹	EFRT	EFRT	EFRT
Roof Type	Double Deck	Double Deck	Double Deck
Construction	Welded	Welded	Welded
Seal System	Double Seal	Double Seal	Double Seal
Primary Seal	Liquid-mounted	Mechanical	Mechanical
Secondary Seal	Rim-mounted	Shoe-mounted	Shoe-mounted
Paint Colour/Shade	Light Grey	Red/Primer	White
Internal Shell Condition	Light Rust	Light Rust	Light Rust
Diameter (m)	100	100	64.8
Height (m)	19.2	17.0	16.5
Crude oil throughput (Mm ³ /a)	58.93 ²	36.70 ³	5.49 ⁴

- Notes:
- 1- EFRT: External Floating Roof Tank
 - 2- Maximum design throughput reachable after 5 years of operation.
 - 3- Actual throughput based on 2001 data.
 - 4- Maximum design throughput.

Table 1.2 Point Source Design Parameters

PARAMETER	BTC EGF	SPP STACK	TOROS STACK
Stack Height (m)	25	150	26
Stack Inner Diameter (m)	10	7.3	2
Gas Exit Temperature (°C)	700	52	170
Gas Exit Velocity (m/s)	0.24	13.6	19.5

Table 1.3 Operational Emissions for BTC Marine Terminal

SOURCE	POLLUTANT	POLLUTION CONTROL	EMISSION (TE/YR)
Tanker loading & tank farm	CO ₂	EGF	152,450
Tanker loading & tank farm	VOC	EGF	320
Tanker loading & tank farm	NO _x	EGF	36
Tanker loading & tank farm	SO ₂	EGF	387
Tanker traffic	NO _x	Untreated to atmosphere	22
Tanker traffic	CO	Untreated to atmosphere	3
Tanker traffic	CO ₂	Untreated to atmosphere	1,200
Tanker traffic	SO ₂	Untreated to atmosphere	7
Tanker traffic	Hydrocarbons	Untreated to atmosphere	1

1.1.2 Impact assessment methodology

1.1.2.1 Pollutant emission estimation

The fugitive VOC emissions from the crude oil storage tanks were estimated using Tanks-4 emission estimation software developed by the US Environmental Protection Agency (USEPA) (USEPA, 1999). The Tanks-4 software is based on the equations and factors developed by the American Petroleum Institute (API) (API, 1989; USEPA, 1997). Tanks-4 requires monthly meteorological summaries (eg temperature, wind speed, insolation etc), tank design specifications (eg seal types, paint type, deck fittings etc), and crude oil throughput to estimate the monthly total VOC emissions from the storage tanks. Furthermore, Tanks-4 is capable of estimating emission rates of individual VOC species if crude oil chemical composition is available. Chemical composition for the Baku crude oil was used to determine the benzene emissions from the BTC and existing BOTAS storage tanks. The long-term monthly meteorological averages for the nearby Yumurtalik meteorological station were used in the estimation.

The emissions from the BTC flare were estimated using mass balance and engineering calculations. The emissions from the existing BOTAŞ jetty, Toros Fertilizer factory, and SPP were estimated using USEPA emission factors (USEPA, 2001).

1.1.2.2 Dispersion modelling

The impacts of the BTC Marine Terminal on the air quality were estimated using USEPA's ISCST3 air quality dispersion model (USEPA, 1995). ISCST3 is a Gaussian diffusion model that is widely used in impact assessment studies and accepted by the World Bank. ISCST3 model requires hourly meteorological data (for at least one-year period), topographical data, and pollutant source data. Hourly meteorological data was obtained from the nearby Yumurtalik meteorological station. The meteorological data was processed using Ontario Ministry of Environment's Reg-308 meteorological pre-processor.

The Reg-308 software utilizes boundary layer parameterisation to estimate hourly mixing heights, and Turner's classification scheme to determine atmospheric stability classes required by the air quality dispersion model. The topographical data was digitised from 1:25,000-scale topographical maps for an area of 302km² (15.5km x 19.5km). Some 1,200 receptors were established with a grid spacing of 500m in the Cartesian grid system.

The proposed and existing crude oil tanks were modeled as elevated area sources. The emission rates obtained from the Tanks-4 software were varied monthly to account for seasonal fluctuations observed in the fugitive emissions. The existing BOTAŞ jetty was modeled as a volume source with initial vertical mixing of 20-meters. The BTC flare, the SPP stack, and the Toros Fertilizer factory stack were modeled as continuous point sources. The air quality modelling study was carried out simultaneously with the tanker waste gas emission options assessment. The study uses the initial estimate of 295 tons/year VOC. This was later revised to 215 tons/year VOC.

VOC, benzene, SO₂, and NO_x emissions were modeled as conservative pollutants (ie no decay). The pollutant decay rates are not likely to be significant within the relatively small modelling area (hence the short pollutant travel times) considered in this study.

1.1.2.3 Applicable air quality standards and guidelines

The national and international ambient air quality standards and guidelines that are applicable to the BTC Marine Terminal are given in Table 1.4. The strictest standards and guidelines (among the same pollutants and averaging times) were used in evaluating the impacts of the proposed BTC terminal.

Table 1.4 Applicable Ambient Air Quality Standards and Guidelines

STANDARD/GUIDELINE	POLLUTANT	VALUE (µG/M ³)	FORM
Turkish RPAQ ¹	VOC	280	Hourly maximum
Turkish RPAQ ¹	VOC	140	95 th percentile
EU ²	Benzene	5	Annual average
WHO-Europe ³	Benzene	0.17 ⁴	Annual average
Turkish RPAQ	NO ₂	300	95 th percentile
Turkish RPAQ	NO ₂	100	Annual average
WHO-Europe	NO ₂	200	Hourly maximum
WHO-Europe	NO ₂	40	Annual average
EU ⁵	NO ₂	200 ⁶	Hourly average

**BTC PROJECT EIA
TURKEY**

EU ⁵	NO ₂	40	Annual average
Turkish RPAQ	SO ₂	900	Hourly maximum
Turkish RPAQ	SO ₂	400	95 th percentile
Turkish RPAQ	SO ₂	150	Annual average
WHO-Europe	SO ₂	125	Daily maximum
WHO-Europe	SO ₂	50	Annual average
EU ⁵	SO ₂	350 ⁷	Hourly average
EU ⁵	SO ₂	125 ⁸	Daily average
EU ⁵	SO ₂	20	Annual average

Notes:

1. Turkish Regulation for Preservation of Air Quality (RPAQ) stipulates ambient air quality standards for total hydrocarbons (THC), which is used interchangeably with the term VOC in this study.
2. European Community 2000/69/EC standard.
3. World Health Organization – Regional Office for Europe.
4. For 1×10^{-6} lifetime excess risk of cancer.
5. European Union 1999/30/EC standard.
6. Allowed maximum number of exceedance 18 times/year.
7. Allowed maximum number of exceedance 24 times/year.
8. Allowed maximum number of exceedance 3 times/year.

1.1.3 Modelling results

1.1.3.1 Volatile Organic Compounds (VOC)

Predicted annual concentrations:

Annual average concentrations are good indicators of air quality since unlike hourly concentrations they are not affected by single meteorological events and are indicative of long-term trends. However, there are no established annual ambient air quality standards/guidelines for the total VOCs for comparison with the modelling results.

The annual average VOC concentration isopleths resulting from the existing BOTAŞ and proposed BTC emissions alone are presented in Figure 1.1 and Figure 1.2, respectively. The maximum concentration ($128.7 \mu\text{g}/\text{m}^3$) due to existing emission sources occurs offshore between the existing BOTAŞ and the proposed BTC jetties (Figure 1.1). This rather high concentration is due to uncontrolled crude oil loading emissions at the BOTAŞ jetty. The effect of this emission source is restricted to a small region around the jetty and the BOTAŞ facility coastline due to its low emission release height. The annual average concentrations observed over the land are below $30 \mu\text{g}/\text{m}^3$. The maximum annual concentration due to the proposed BTC sources is $6.2 \mu\text{g}/\text{m}^3$ and occurs within the BOTAŞ tank farm area near the west entrance of the BOTAŞ facility (Figure 1.2).

The annual average VOC concentration isopleths due to combined (ie BOTAŞ and BTC) emissions are presented in Figure 1.3. The combined annual concentrations are very similar to the existing concentrations (Figure 1.1), indicating minimal contribution by the proposed BTC terminal to the overall impacts. The percent contribution of the BTC emissions to the overall annual concentrations is presented in Figure 1.4. The maximum contribution of the BTC is 36%, observed approximately 3km northeast of the Kurtpinar Village. The BTC emissions contribute to the combined concentrations by less than 20% for the rest of the modelling study domain. The annual average concentrations and relative contribution of the sources at nearby receptors are presented in Table 1.5.

Table 1.5 Annual Average VOC Concentration and Percent Contribution by Sources at Nearby Receptors

Receptor	Concentration ($\mu\text{g}/\text{m}^3$)	Contribution by Sources	
		Existing	BTC
Incirli Village	12.8	87%	13%
Karatepe Village	9.1	83%	17%
Kurtpinar Village	3.8	92%	8%
Karayilan District	5.4	94%	6%
Kurtkulagi Village	4.2	93%	7%
Golovasi Village	11.4	69%	31%
Hamzali Village	3.4	94%	6%
Narlik Village	2.6	95%	5%
BOTAS School	14.2	89%	11%

Predicted short-term concentrations

The 95th percentile¹ hourly VOC concentrations resulting from the existing BOTAŞ and proposed BTC emissions are presented in Figure 1.5 and Figure 1.6, respectively. The 95th percentile VOC concentrations are compared with the Turkish KVS standard of $140\mu\text{g}/\text{m}^3$. The maximum 95th percentile concentration due to the existing emissions is $822.9\mu\text{g}/\text{m}^3$ and located offshore, southwest of the BOTAŞ jetty (Figure 1.5). The 95th percentile concentrations observed over land are below $140\mu\text{g}/\text{m}^3$ (below $60\mu\text{g}/\text{m}^3$ for most of the study domain). The maximum 95th percentile concentration resulting from the BTC emissions is $34.0\mu\text{g}/\text{m}^3$ located within the BOTAŞ facility near the west entrance (Figure 1.6).

The maximum 95th percentile VOC concentration due to combined emissions is $823.5\mu\text{g}/\text{m}^3$ and located offshore (see Figure 1.7). The contribution of the proposed BTC sources to the 95th percentile concentrations is minimal since the existing BOTAŞ emissions are overwhelmingly higher than the BTC emissions. All the 95th percentile concentrations comply with the Turkish KVS standard, with the exception of the offshore region southwest of the BOTAŞ jetty.

The 99th percentile² VOC concentrations for the existing BOTAŞ and proposed BTC emissions are presented in Figure 1.8 and Figure 1.9, respectively. The 99th percentile concentrations are compared with the Turkish maximum hourly standard of $280\mu\text{g}/\text{m}^3$. The maximum 99th percentile concentration due to existing emissions is $2,396.2\mu\text{g}/\text{m}^3$ and located offshore southwest of the BOTAŞ jetty (Figure 1.8). With some exceptions, most of the study domain has 99th percentile concentration below the $280\mu\text{g}/\text{m}^3$ standard. A small corridor between the Golovasi Village and the BOTAŞ school, and a strip of shoreline lying northeast to southwest have 99th percentile concentrations above the Turkish hourly standard. The maximum 99th percentile concentration due to BTC emissions is $82.0\mu\text{g}/\text{m}^3$, located within the BOTAŞ tank farm area (Figure 1.9).

¹ Concentration value below which 95 percent of the predicted hourly concentrations are observed when ordered from the highest to the lowest.

² Concentration value below which 99 percent

The maximum 99th percentile concentration resulting from the combined emissions is 2,396.2 $\mu\text{g}/\text{m}^3$, located offshore southwest of the BOTAŞ jetty (Figure 1.10). The contribution of the BTC emissions to the hourly concentrations exceeding the standard is minimal, if not zero. The contribution of the BTC sources to the 99th percentile hourly concentrations is shown in Figure 1.11. The maximum contribution (to the 99th percentile concentrations) by the BTC sources is 63.0 $\mu\text{g}/\text{m}^3$ located within the BOTAŞ Kirikkale tank farm area. The impact of the BTC sources on the areas exceeding the Turkish hourly standard is less than 1 $\mu\text{g}/\text{m}^3$. The rather low contributions are mainly due to the meteorological conditions affecting the BTC sources differently than the existing sources. Hourly exceedances occur under wind directions which place the BTC sources downwind of the exceedance areas.

1.1.3.2 Benzene

Predicted annual concentrations

The annual average benzene concentrations are compared with the EU standard of 5 $\mu\text{g}/\text{m}^3$ and the WHO guideline of 0.17 $\mu\text{g}/\text{m}^3$ (for an excess lifetime cancer risk¹ of 1×10^{-6}). There are no short-term ambient air quality standards for benzene.

The annual average benzene concentrations resulting from the existing BOTAŞ and proposed BTC emissions are presented in Figure 1.12 and Figure 1.13, respectively. The maximum over-land annual benzene concentration resulting from the existing emissions is 34.0 ng/m^3 (or 0.034 $\mu\text{g}/\text{m}^3$) and is located within the BOTAŞ facility limits (Figure 1.12). The maximum annual average benzene concentration due to the BTC marine terminal emissions is 6.4 ng/m^3 located within the BOTAŞ tank farm (Figure 1.13). The combined maximum annual average benzene concentration (over-land) is 34.9 ng/m^3 located within the BOTAŞ facility (Figure 1.14). The estimated annual average benzene concentrations at nearby receptors and the relative contribution of each source to the annual average are presented in Table 1.6. The annual average benzene concentrations within the study domain are significantly lower than the EU standard and the WHO guideline.

¹ Excess lifetime cancer risk of 1×10^{-6} is defined as the circumstance in which one person in an exposed population of one million for seventy years is estimated to develop cancer because of the exposure. This concept is widely used by regulatory agencies and scientific community to determine acceptable ambient concentrations for carcinogenic substances. Following actions/events have an excess lifetime cancer risk of 1×10^{-6} for exposure over a lifetime: smoking 2 cigarettes, one transcontinental round-trip by air (cosmic radiation), drinking 40 diet sodas, 20 days at sea-level Ref: Patrick D.R., 1994).

Table 1.6 Annual Average Benzene Concentrations and Percent Contribution by Sources at Nearby Receptors

RECEPTOR	CONCENTRATION (NG/M ³)	CONTRIBUTION BY SOURCES	
		EXISTING	BTC
Incirli Village	14.1	88%	12%
Karatepe Village	11.3	86%	14%
Kurtpinar Village	4.0	93%	7%
Karayilan District	5.7	94%	6%
Kurtkulagi Village	4.5	94%	6%
Golovasi Village	11.8	70%	30%
Hamzali Village	3.5	94%	6%
Narlik Village	2.7	95%	5%
BOTAS School	15.7	90%	10%

1.1.3.3 Nitrogen Oxides (NO_x)

Predicted annual concentrations

The annual average NO_x concentrations are compared with the EU annual standard of 40µg/m³. The annual average NO_x concentrations resulting from the existing and proposed BTC emissions are presented in Figure 1.15 and Figure 1.16, respectively. The maximum annual concentration due to the existing emissions is 18.3µg/m³ located on the hills immediately north of the BOTAŞ facility (Figure 1.15). The maximum annual average concentration due to the proposed BTC emissions is 0.8µg/m³ located within the BOTAŞ facility limits (Figure 1.16). The maximum annual average concentration due to the combined sources is 18.3µg/m³ located on the hills immediately north of the BOTAŞ facility (Figure 1.17). The annual average NO_x concentrations and percent contributions of sources for some nearby receptors are given in Table 1.7. The annual average NO_x concentrations within the study domain are lower than the EU standard.

Table 1.7 Annual Average NO_x Concentrations and Percent Contribution by Sources at Nearby Receptors

RECEPTOR	CONCENTRATION ($\mu\text{G}/\text{M}^3$)	CONTRIBUTION BY SOURCES	
		EXISTING	BTC
Incirli Village	2.1	91%	9%
Karatepe Village	3.2	92%	8%
Kurtpinar Village	5.2	99%	1%
Karayilan District	6.9	99%	1%
Kurtkulagi Village	1.9	98%	2%
Golovasi Village	4.3	86%	14%
Hamzali Village	1.5	99%	1%
Narlik Village	0.9	99%	1%
BOTAS School	1.8	85%	15%

Predicted short-term concentrations

The 95th percentile hourly concentrations are compared with the Turkish KVS standard of $300\mu\text{g}/\text{m}^3$. The 95th percentile hourly concentrations resulting from the existing and proposed BTC emissions are presented in Figure 1.18 and Figure 1.19, respectively. The maximum 95th percentile concentration due to the existing emission sources is $130.6\mu\text{g}/\text{m}^3$ located on the hills immediately north of the BOTAS facility (Figure 1.18). The maximum 95th percentile concentration due to the proposed BTC is $5.6\mu\text{g}/\text{m}^3$ located within the BOTAS facility (Figure 1.19). The maximum 95th percentile concentration due to the combined emissions is $130.6\mu\text{g}/\text{m}^3$ located north of the BOTAS facility (Figure 1.20). The annual average NO_x concentrations comply with the Turkish standard within the study domain.

The 99th percentile and maximum hourly concentrations are compared with the EU hourly standard of $200\mu\text{g}/\text{m}^3$. The 99th percentile hourly concentrations due to the existing and proposed BTC emissions are given in Figure 1.21 and Figure 1.22, respectively. The maximum hourly concentration due to the existing sources is $803.5\mu\text{g}/\text{m}^3$ located on the hills north of the BOTAS facility (Figure 1.21). The maximum hourly concentration due to BTC is $51.4\mu\text{g}/\text{m}^3$ located within the BOTAS facility (Figure 1.22). The combined maximum hourly concentration is $803.5\mu\text{g}/\text{m}^3$ located on the north border of the BOTAS facility (Figure 1.23). The maximum hourly concentration due to the existing sources is exceeding the EU standard. The contribution of the BTC emissions to the hourly maximum concentrations is minimal as shown in Figure 1.24. The contribution of the BTC emissions to the maximum and 99th percentile hourly concentration is less than $0.5\mu\text{g}/\text{m}^3$.

1.1.3.4 Sulphur Dioxide (SO₂)

Predicted annual concentrations

The annual concentrations are compared with the EU annual standard of 20µg/m³. The annual average SO₂ concentrations resulting from the existing emissions and the proposed BTC emissions are given in Figure 1.25 and Figure 1.26, respectively. The maximum annual concentration due to the existing sources is 11.0µg/m³ located on the hills immediately north of the BOTAS facility (Figure 1.25). The maximum annual average concentration due to the proposed BTC source is 9.5µg/m³ located within the BOTAS facility limits (Figure 1.26). The maximum annual average concentration due to the combined sources is 11.9µg/m³ located on the hills immediately north of the BOTAS facility (Figure 1.27). The annual average SO₂ concentrations and percent contributions of sources for some nearby receptors are given in Table 1.8. The annual average SO₂ concentrations within the study domain are lower than the EU standard.

Table 1.8 Annual Average SO₂ Concentration and Percent Contribution by Sources at Nearby Receptors

RECEPTOR	CONCENTRATION (µG/M ³)	CONTRIBUTION BY SOURCES	
		EXISTING	BTC
Incirli Village	3.0	70%	30%
Karatepe Village	4.2	66%	34%
Kurtpinar Village	3.3	13%	87%
Karayilan District	4.4	12%	88%
Kurtkulagi Village	1.5	34%	66%
Golovasi Village	8.9	77%	23%
Hamzali Village	1.1	19%	81%
Narlik Village	0.6	18%	82%
BOTAS School	3.8	81%	19%

Predicted short-term concentrations

The 95th percentile hourly concentrations are compared with the EU daily standard of 125µg/m³. The 95th percentile hourly concentrations resulting from the existing emissions and the proposed BTC emissions are given in Figure 1.28 and Figure 1.29, respectively. The maximum 95th percentile concentration due to the existing emission sources is 80.4µg/m³ located on the hills immediately north of the BOTAS facility (Figure 1.28). The maximum 95th percentile concentration due to the BTC emissions is 65.3µg/m³ located within the BOTAS facility limits (Figure 1.29). The combined maximum 95th percentile concentration is 80.4 µg/m³ located north of the BOTAS facility (Figure 1.30). The 95th percentile concentrations for the study domain are lower than the EU standard.

The 99th percentile and maximum hourly concentrations are compared with the EU hourly standard of 350µg/m³. The 99th percentile hourly concentrations resulting from the existing emissions and proposed BTC emissions are given in Figure 1.31 and Figure 1.32, respectively. The maximum hourly concentration due to the existing emissions is 494.5µg/m³ located north of the BOTAŞ facility (Figure 1.31). The maximum hourly concentration due to the BTC emissions is 597.5µg/m³ and is located within the BOTAŞ facility (Figure 1.32). The combined maximum hourly concentration is 597.5µg/m³ located within the BOTAŞ tank farm area (Figure 1.33). Although, the maximum hourly concentrations (for the existing, BTC, and combined emissions) exceed the EU limit value of 350µg/m³, the frequency of exceedance is below the EU standard of 25 times/year. Furthermore, these exceedances are within the BOTAŞ facility limits, which are considered industrial areas (ie not considered ambient).

1.1.4 Overall assessment

The findings of the air quality modelling study can be summarised as follows:

- The proposed BTC emissions will constitute approximately 9% of the total VOC emissions in the project area. The existing BOTAŞ crude oil loading facility is the largest VOC emitter comprising 88% of the total emissions.
- There are occasional existing short-term (hourly) VOC-related air pollution episodes due to the existing BOTAŞ facilities. Turkish hourly and 95th percentile VOC standards are exceeded during certain meteorological events (eg low wind speed and stable atmospheric conditions) in a strip of area west of the BOTAŞ facilities and on the BOTAŞ facility shoreline. The main cause of these exceedances is the existing BOTAŞ crude oil loading (jetty) operations which have uncontrolled emissions released under poor dispersion conditions (ie low release elevation).
- The contribution of the BTC emissions to the short-term VOC air pollution episodes will be minimal, if not zero. The contribution of the BTC to hourly maximum concentrations will be less than 1µg/m³. During the predicted episodes, most of the BTC sources will be located downwind from the areas experiencing the air pollution, and therefore, will not have influence over these areas.
- The predicted annual average benzene concentrations are at safe levels, which are approximately three orders of magnitude lower than the EU standard and the WHO guideline.
- The proposed BTC emissions will constitute 0.5% of the total NO_x emissions in the project area. The Sugozi Power Plant, which is currently under construction, will be the largest NO_x emitter (93.8%) in the project area.
- The predicted annual and 95th percentile NO_x concentrations are in compliance with the ambient air quality standards. However, EU hourly standards are exceeded occasionally on the hills immediately north of the existing BOTAŞ facility due to the existing industries. The contribution of the BTC emission to these hourly pollution episodes will be less than 0.5µg/m³.
- The proposed BTC emissions will constitute 10% of the total SO₂ emissions in the project area. The predicted annual and short-term SO₂ concentrations are in compliance with the ambient air quality standards.

Based on the findings of the air quality modelling study, it can be stated that the impacts of the proposed BTC complex on the local air quality will be within established national and international standards/guidelines.

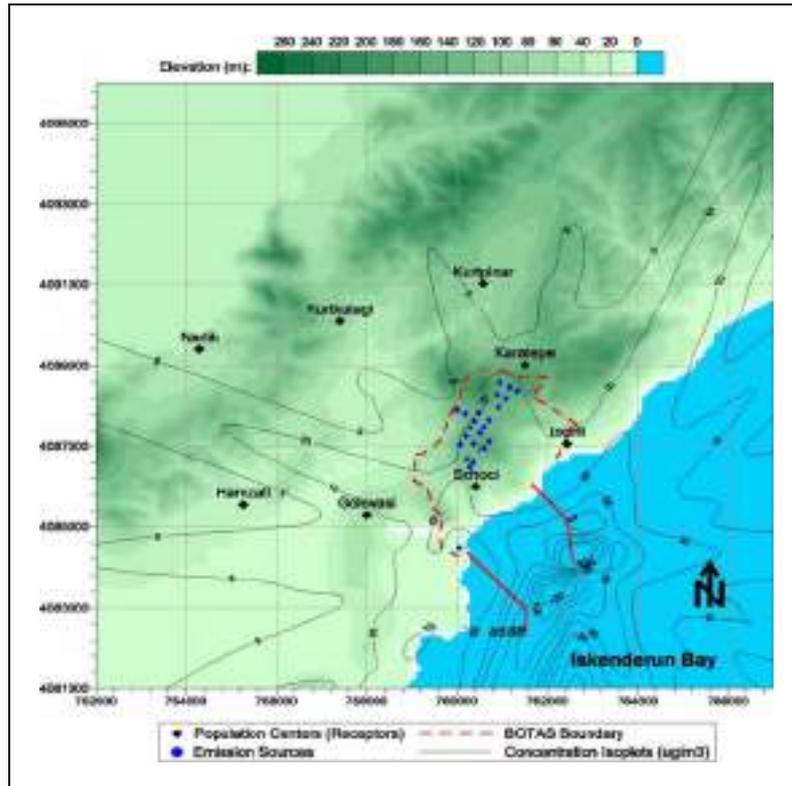


Figure 1.1 Annual Average VOC Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the Existing Sources

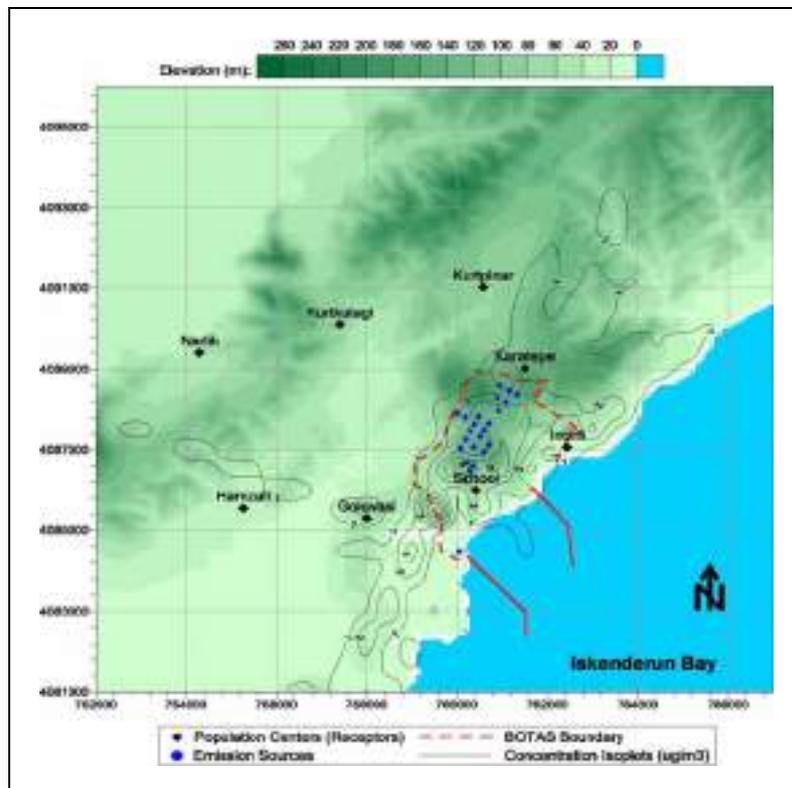


Figure 1.2 Annual Average VOC Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the CMT Sources

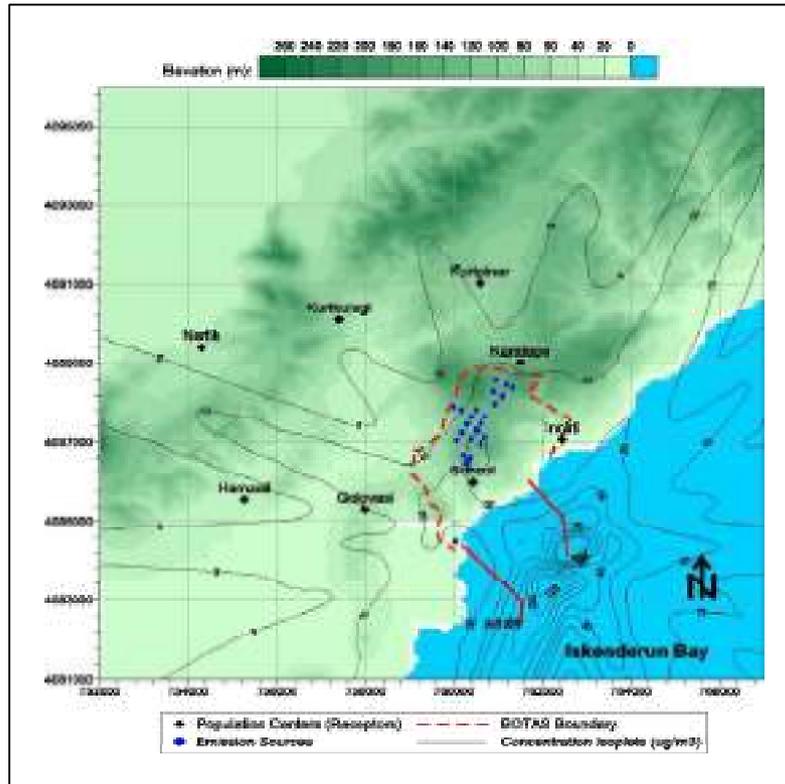


Figure 1.3 Predicted Annual Average VOC Concentrations Due to Combined Emissions

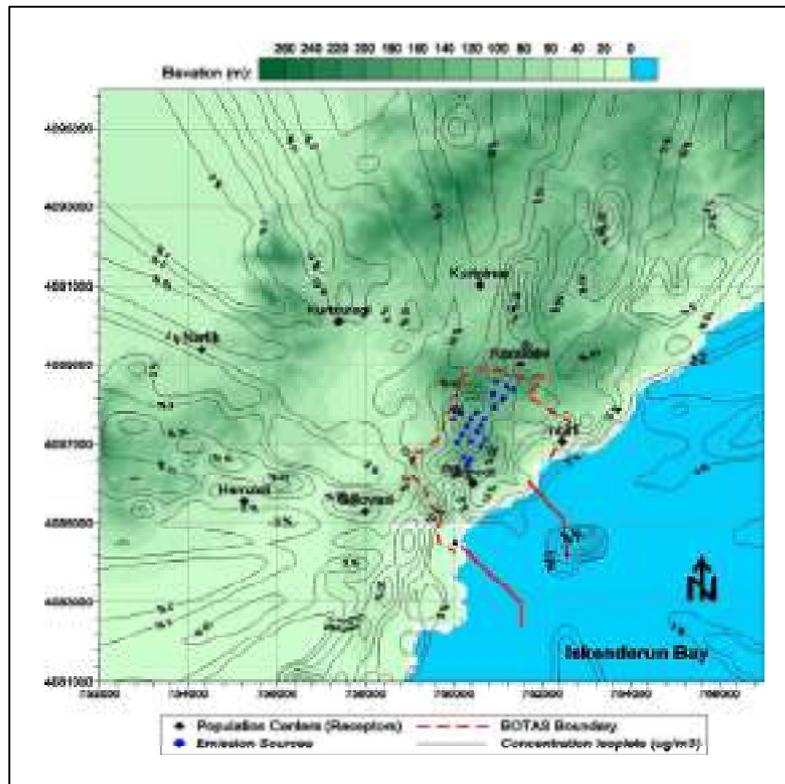


Figure 1.4 Percent Contribution of BTC Emissions to Annual Average VOC Concentrations

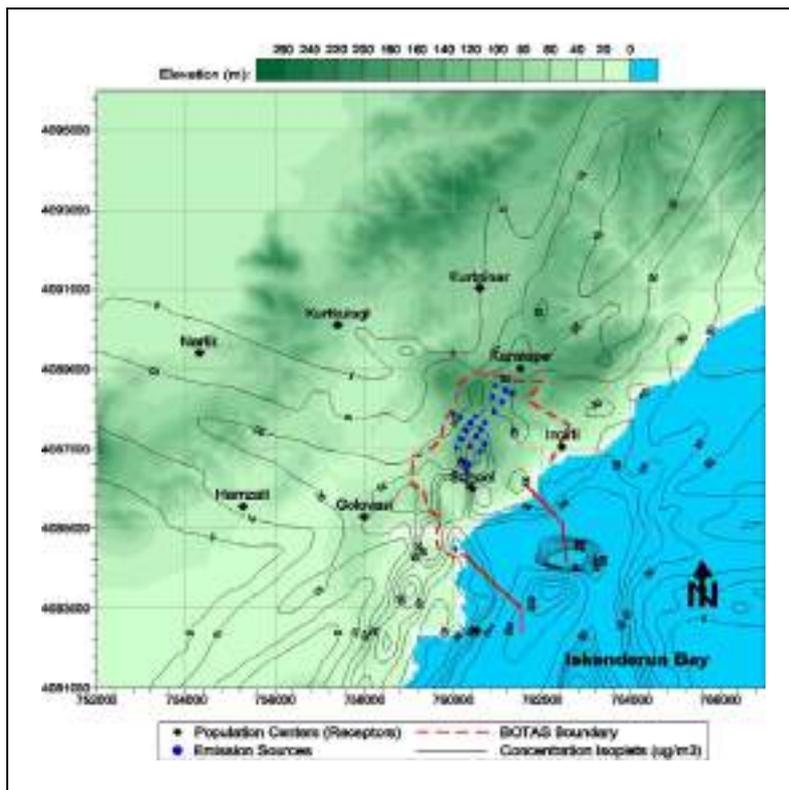


Figure 1.5 95th Percentile Hourly VOC Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the Existing Sources

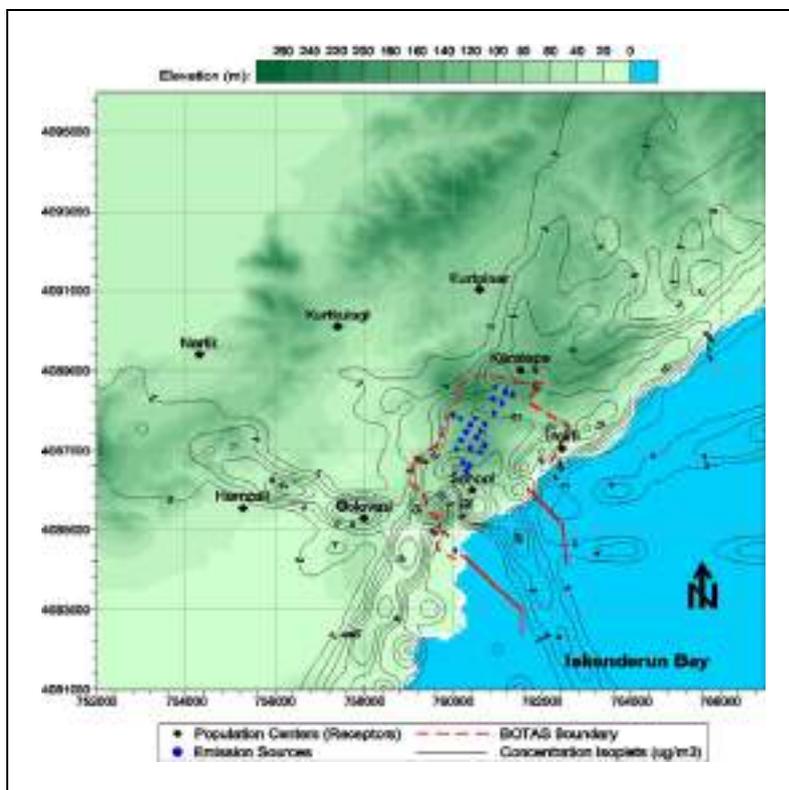


Figure 1.6 95th Percentile Hourly VOC Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the BTC Sources

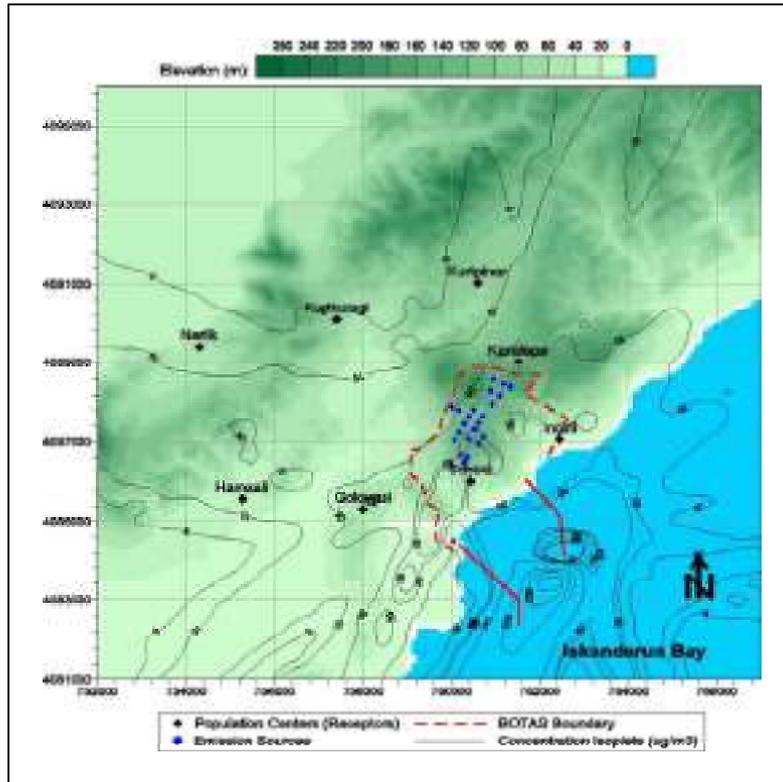


Figure 1.7 Predicted 95th Percentile VOC Concentrations Due to Combined Emissions

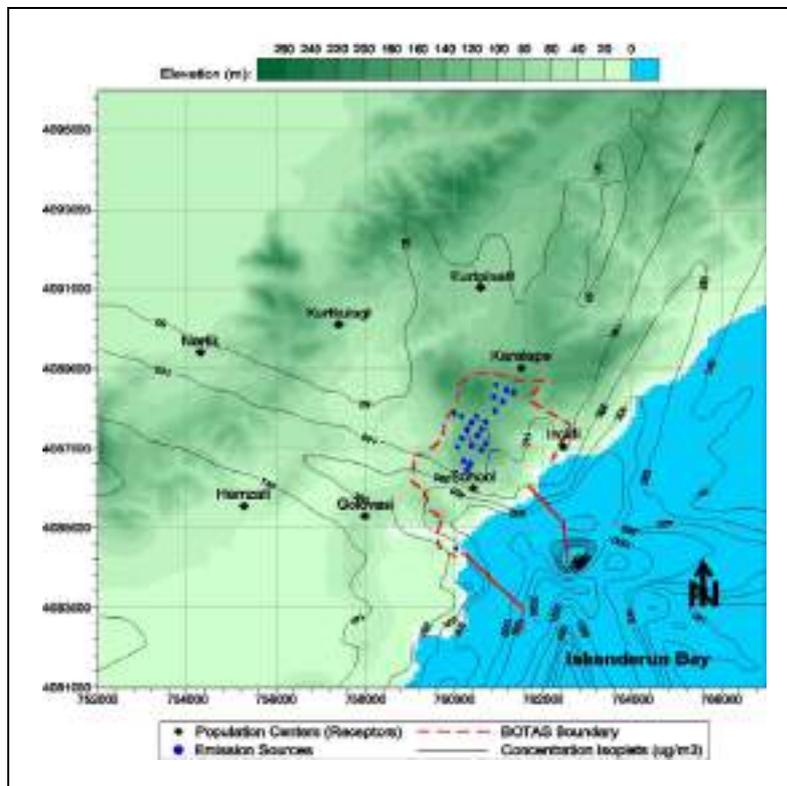


Figure 1.8 99th Percentile Hourly VOC Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the Existing Sources

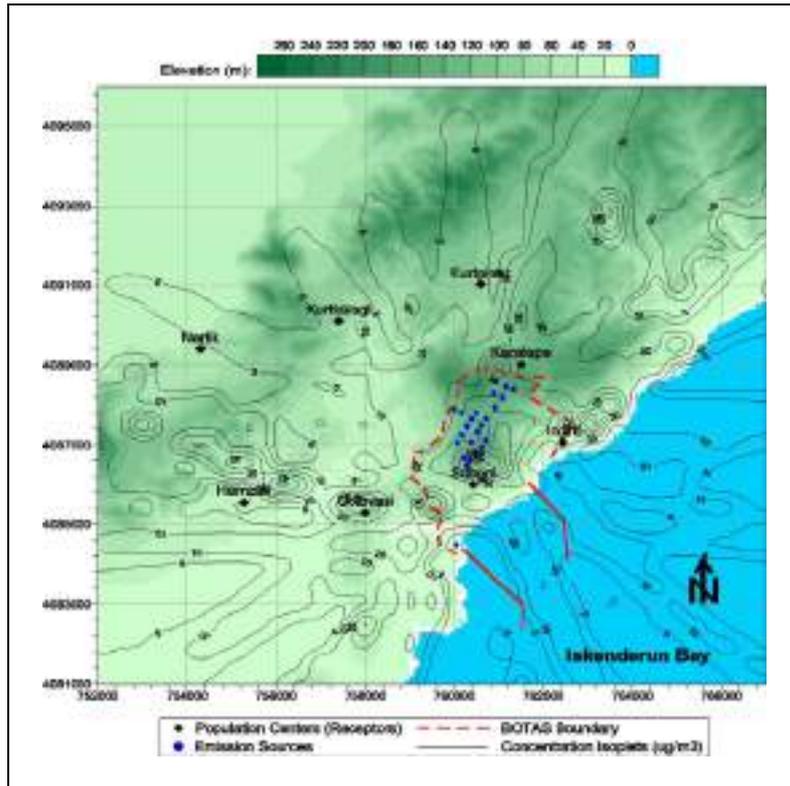


Figure 1.9 99th Percentile Hourly VOC Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the BTC Sources

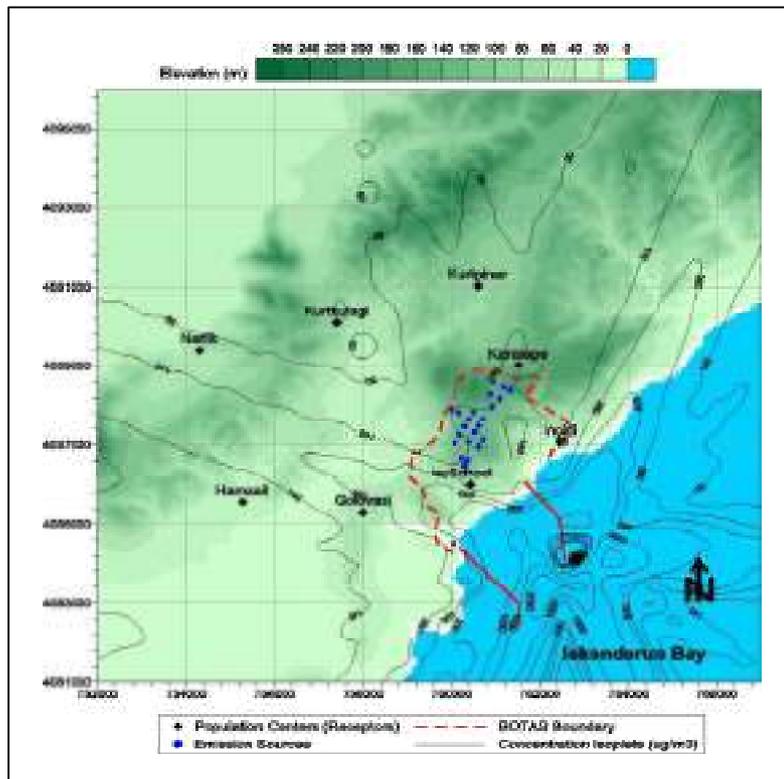


Figure 1.10 Predicted 99th Percentile VOC Concentrations Due to Combined Emissions

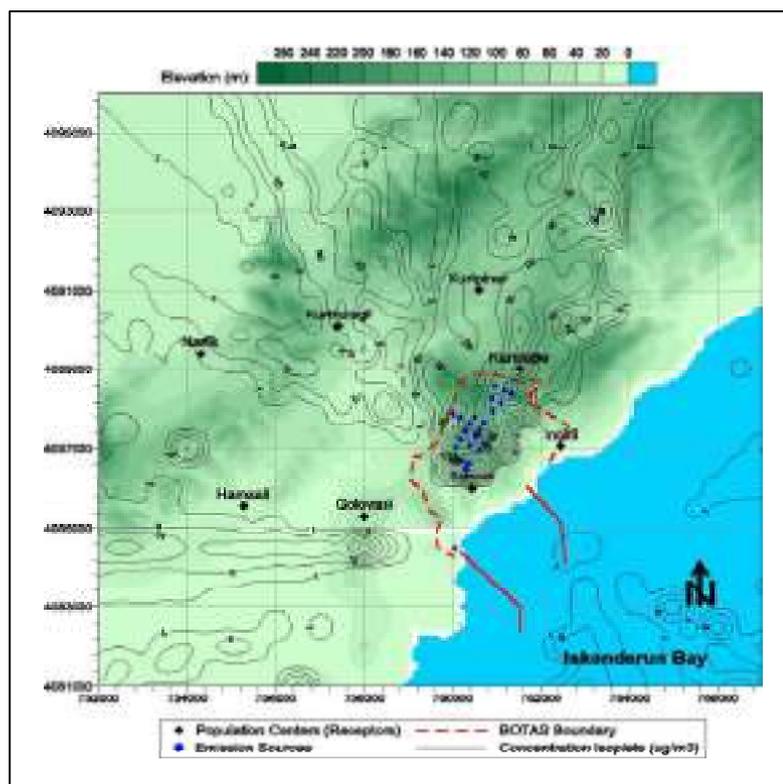


Figure 1.11 Contribution of BTC Emissions to 99th Percentile VOC Concentrations

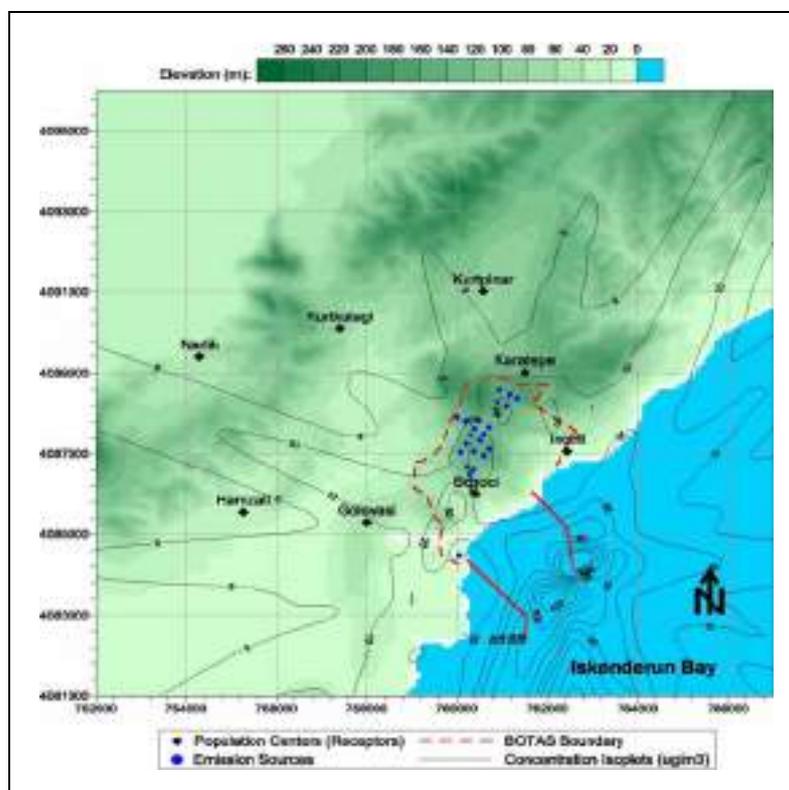


Figure 1.12 Annual Average Benzene Concentrations (ng/m³) Resulting from the Existing Sources

BTC PROJECT EIA
TURKEY

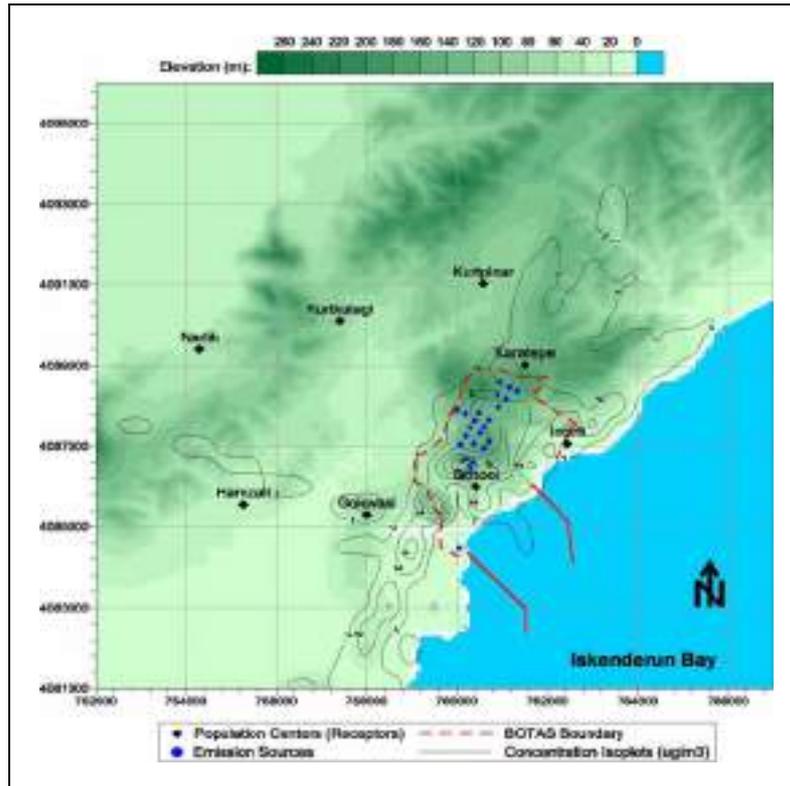


Figure 1.13 Annual Average Benzene Concentrations (ng/m³) Resulting from the BTC Sources

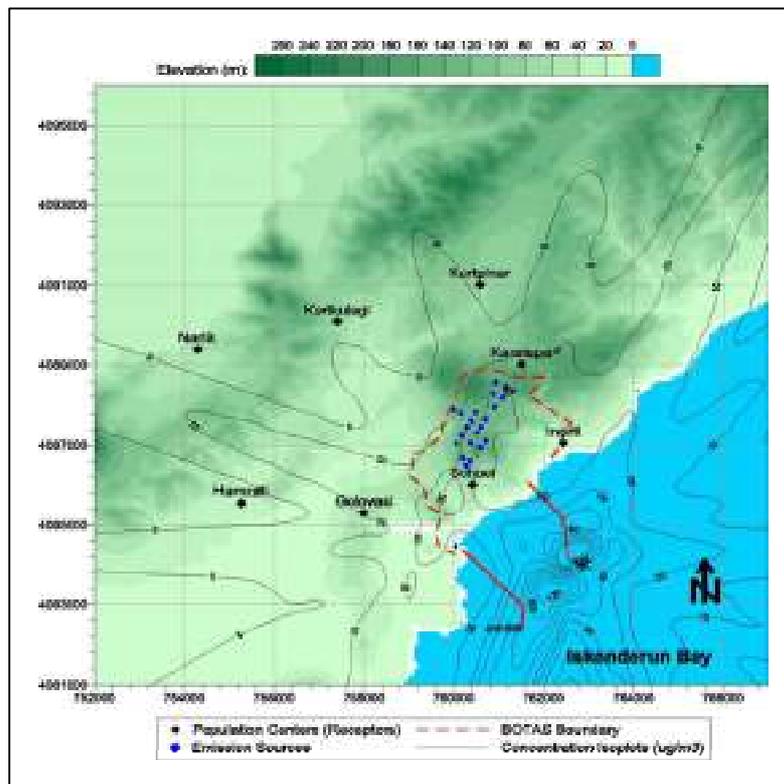


Figure 1.14 Predicted Annual Average Benzene Concentrations (ng/m³) Due to Combined Emissions

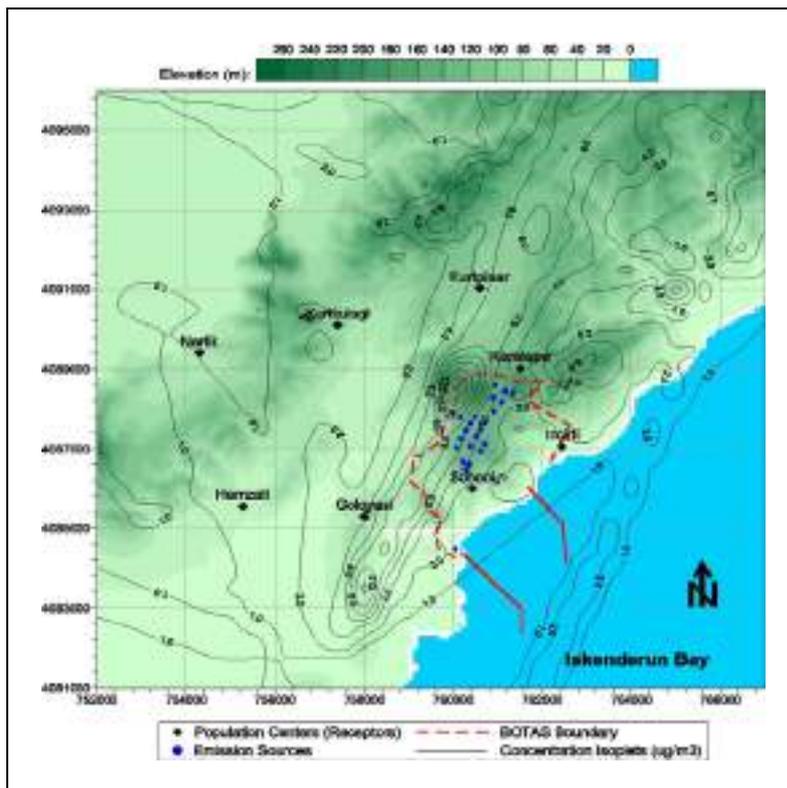


Figure 1.15 Annual Average NO_x Concentrations (µg/m³) Resulting from the Existing Sources

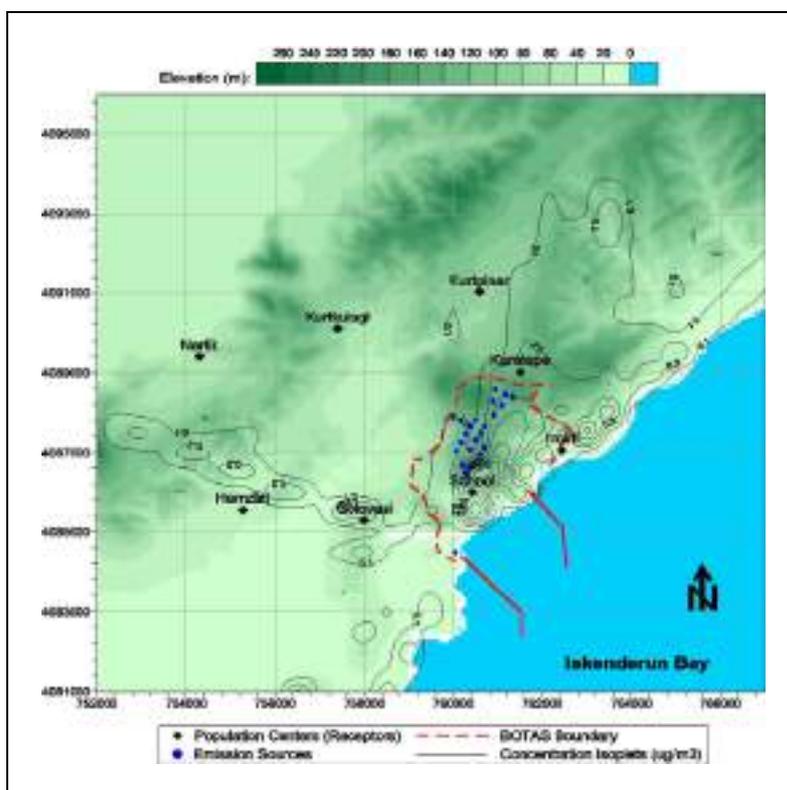


Figure 1.16 Annual Average NO_x Concentrations (µg/m³) Resulting from the BTC Sources

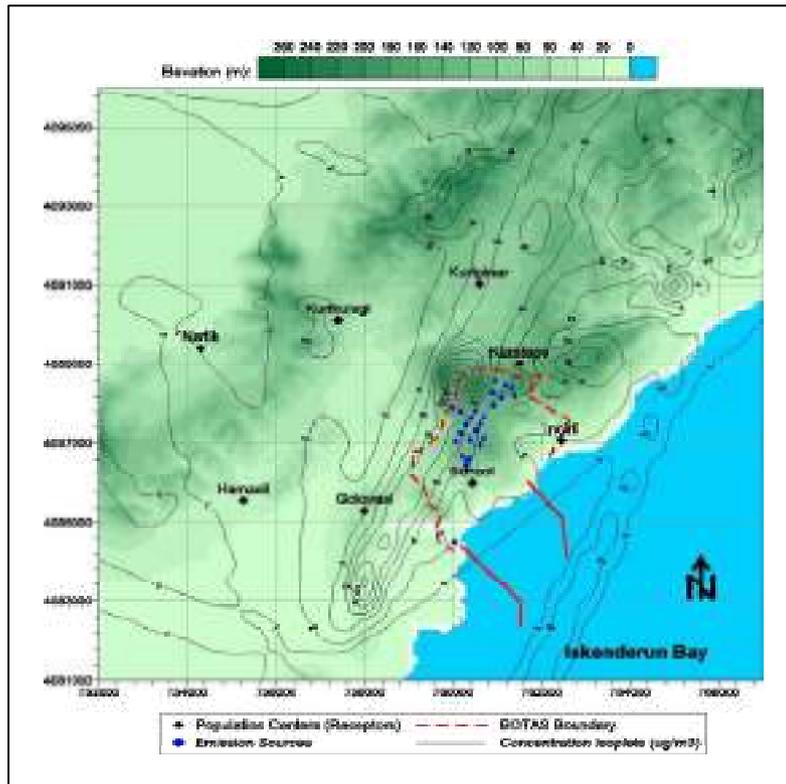


Figure 1.17 Predicted Annual Average NO_x Concentrations Due to Combined Emissions

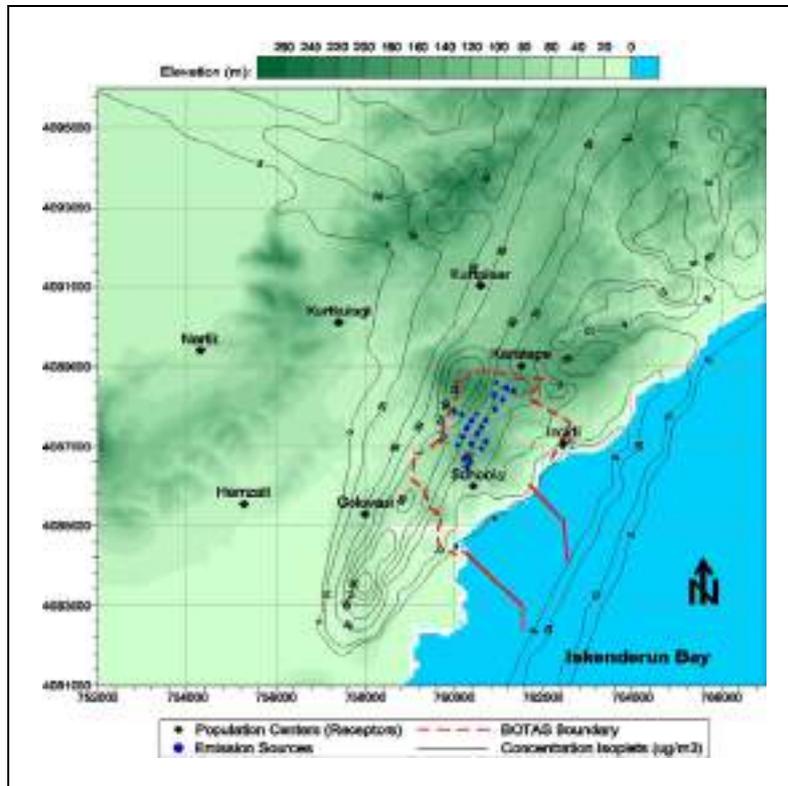


Figure 1.18 95th Percentile NO_x Concentrations ($\mu\text{g}/\text{m}^3$) Resulting from the Existing Sources

BTC PROJECT EIA
TURKEY

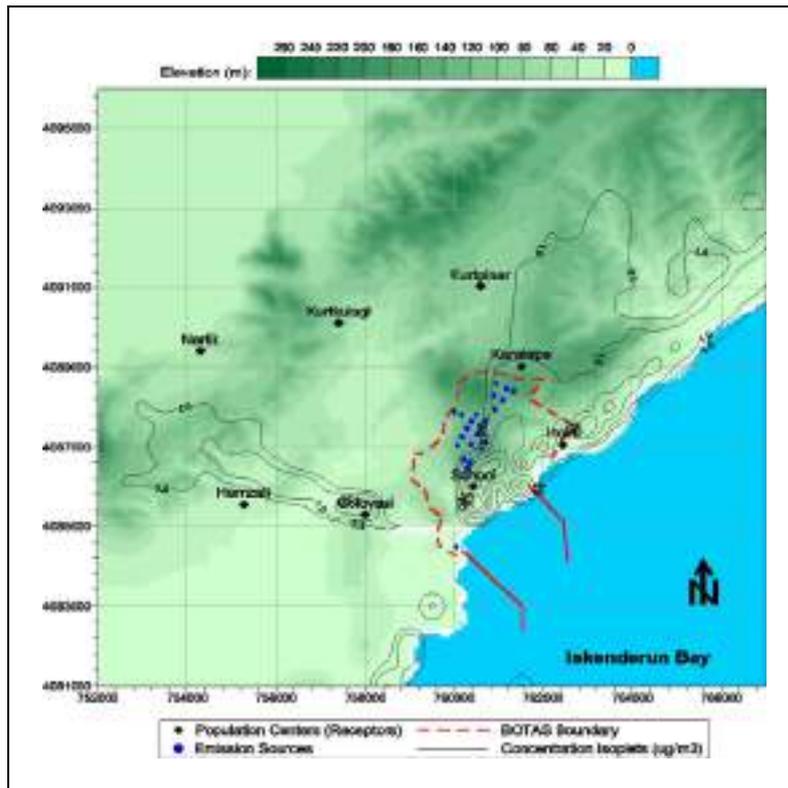


Figure 1.19 95th Percentile NO_x Concentrations (µg/m³) Resulting from the BTC Sources

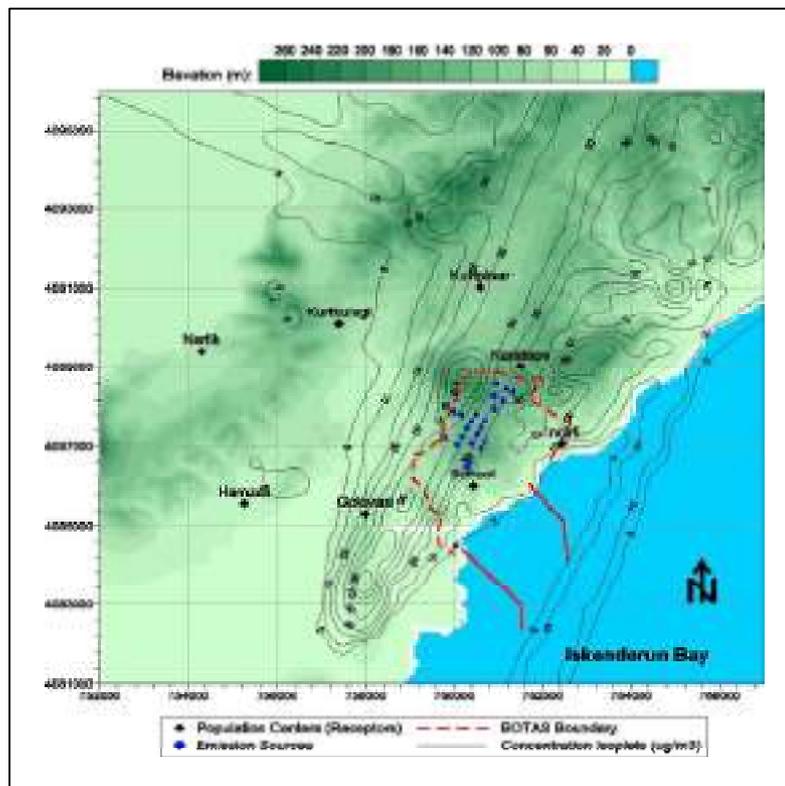


Figure 1.20 Predicted 95th Percentile NO_x Concentrations Due to Combined Emissions

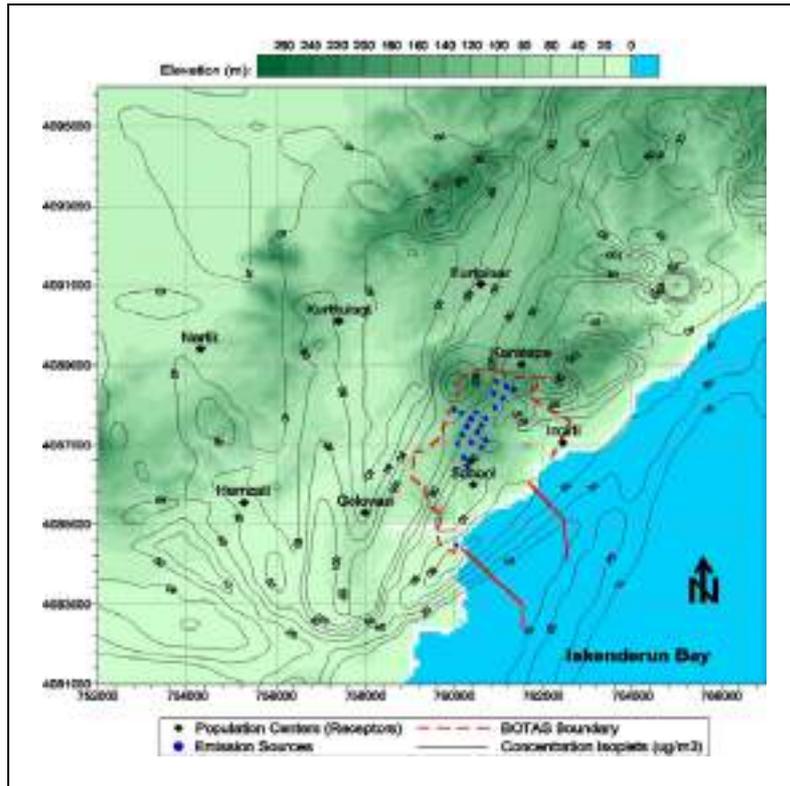


Figure 1.21 99th Percentile NO_x Concentrations (µg/m³) Resulting from the Existing Sources

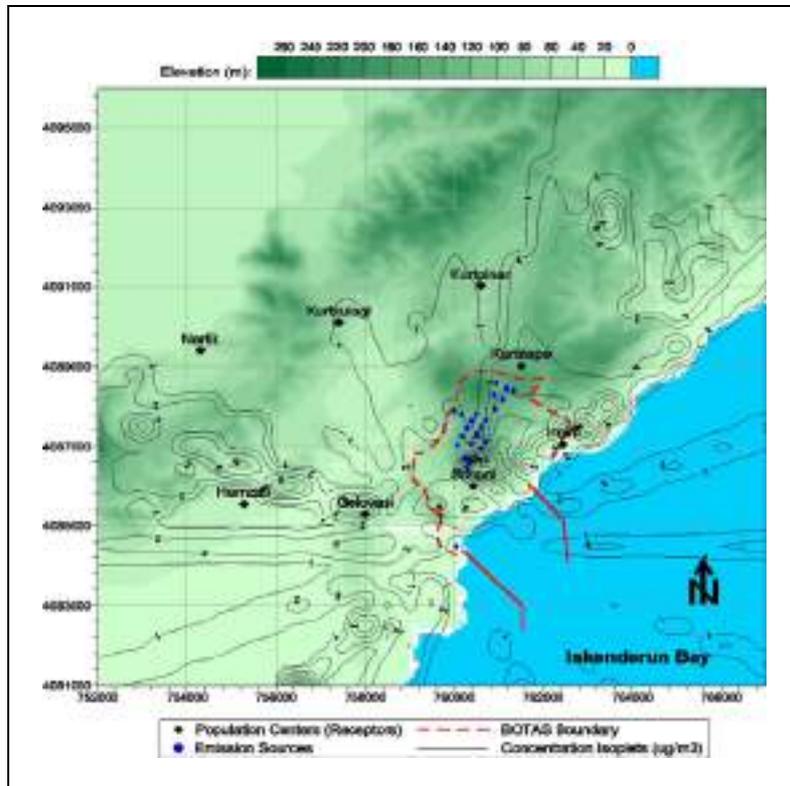


Figure 1.22 99th Percentile NO_x Concentrations (µg/m³) Resulting from the BTC Sources

BTC PROJECT EIA
TURKEY

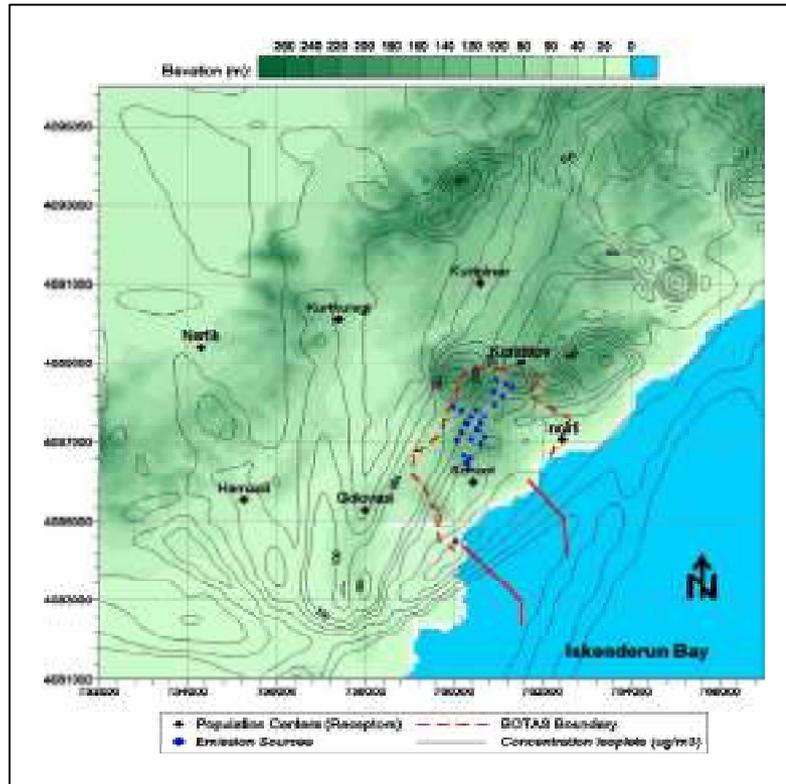


Figure 1.23 Predicted 99th Percentile NO_x Concentrations Due to Combined Emissions

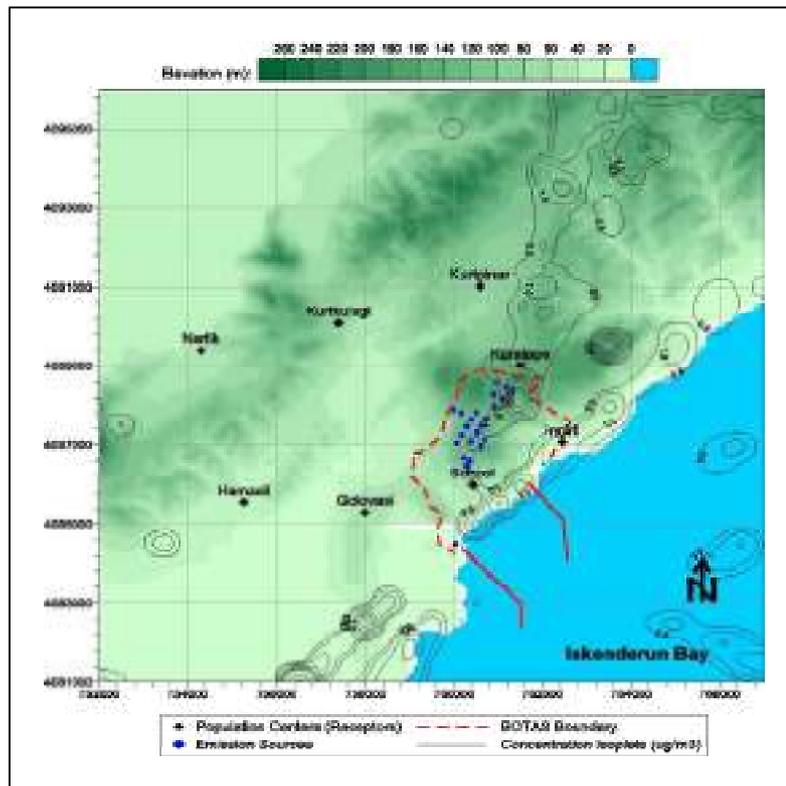


Figure 1.24 Contribution of BTC Emissions to 99th Percentile NO_x Concentrations

BTC PROJECT EIA
TURKEY

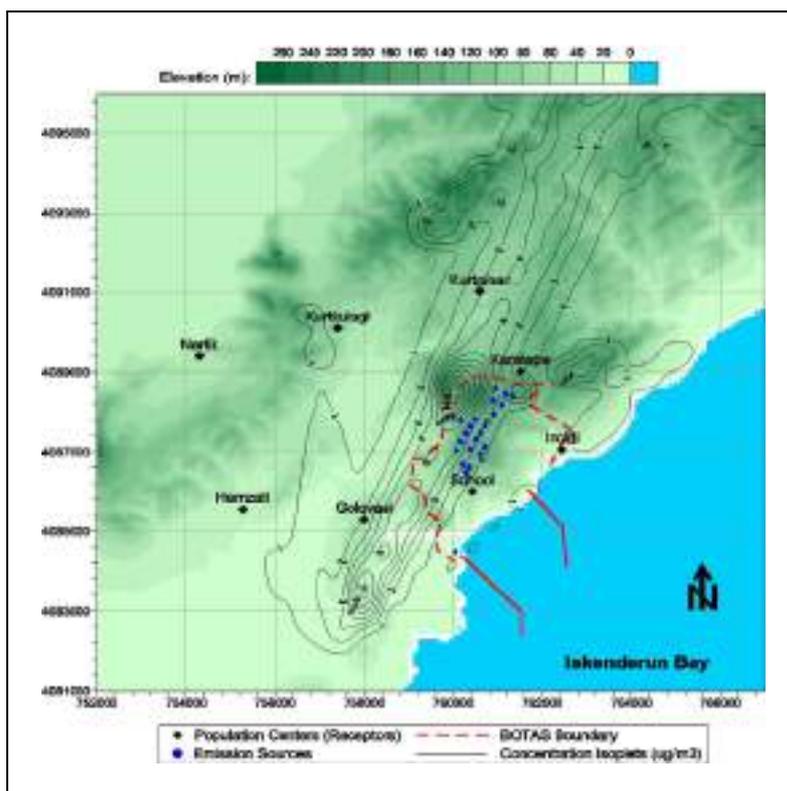


Figure 1.25 Annual Average SO₂ Concentrations (µg/m³) Resulting from the Existing Sources

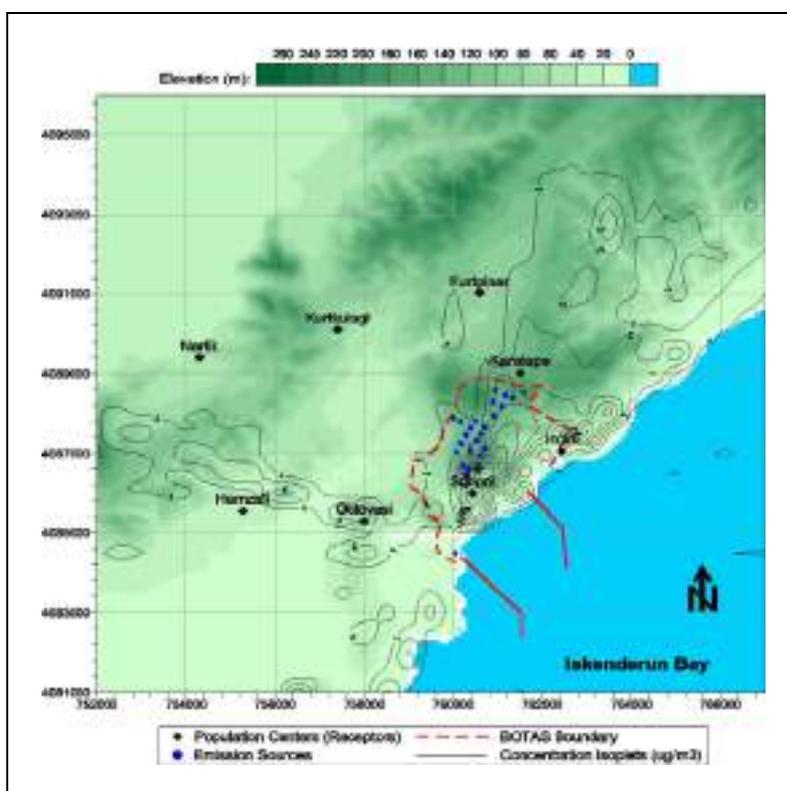


Figure 1.26 Annual Average SO₂ Concentrations (µg/m³) Resulting from the BTC Sources

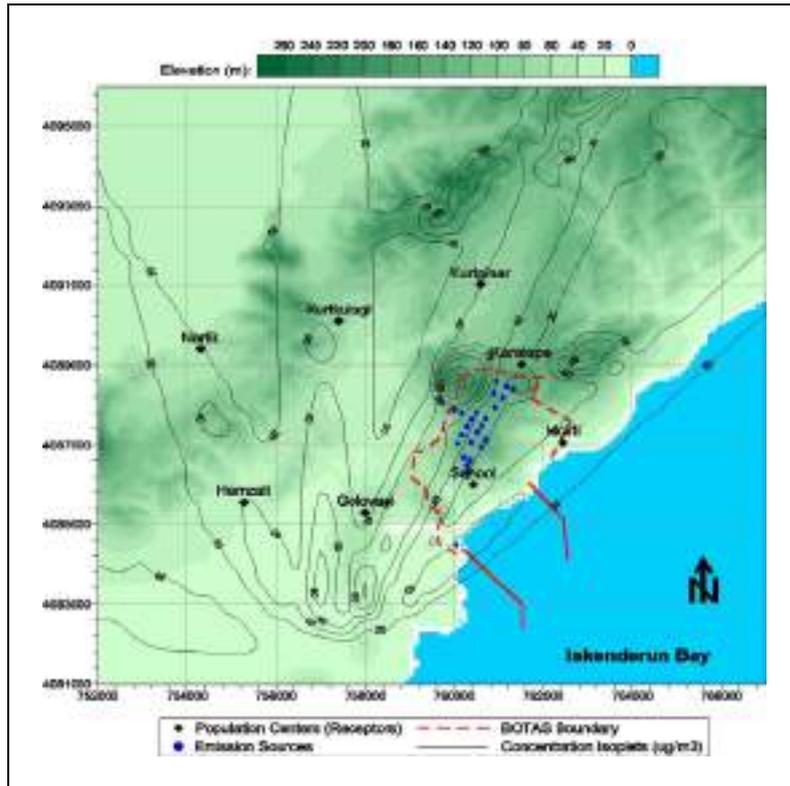


Figure 1.31 99th Percentile SO₂ Concentrations (µg/m³) Resulting from the Existing Sources

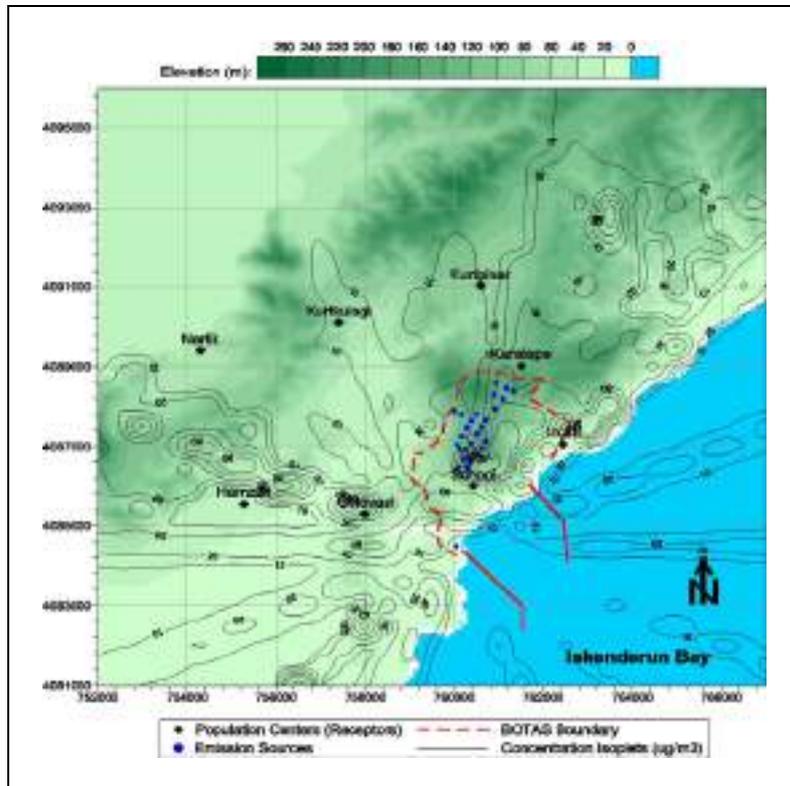


Figure 1.32 99th Percentile SO₂ Concentrations (µg/m³) Resulting from the CMT Sources

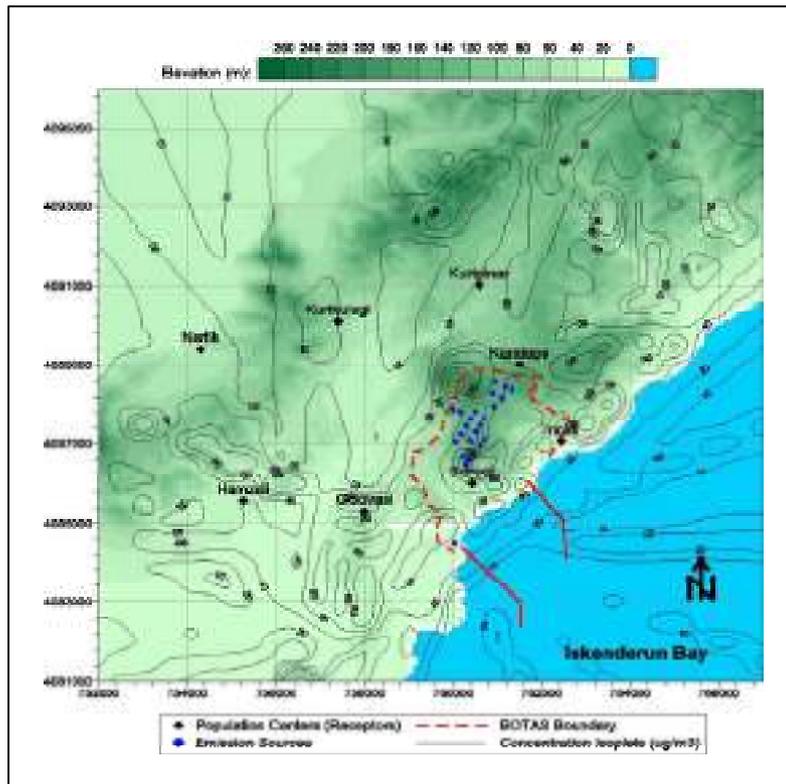


Figure 1.33 Predicted 99th Percentile SO₂ Concentrations Due to Combined Emissions

2 EMISSIONS OF GREENHOUSE GASES

2.1 SOURCES OF EMISSIONS

The Turkish section of the BTC pipeline will be approximately 1,076 km in length. There will be four pumping stations along the length of the pipeline. The pipeline will terminate at the BTC Marine Terminal, which comprises a tank farm for oil storage, in addition to a berthing and loading facility to transfer oil to ocean tankers.

When fully operational, the BTC Pipeline will convey 50 million tonnes per annum from the Caspian Region to the BTC Marine Terminal at Ceyhan.

The four pumping stations in Turkey will be manned. The minimum pump suction pressure will be 5 barg and the maximum discharge pressure will be 100 barg.

Pump stations 1 and 3 (PT1 and PT3) will each be equipped with four pumps and one backup in parallel configuration. Pump stations 2 and 4 (PT2 and PT4) will be equipped with three pumps and one backup in serial configuration.

Clean burning gas reciprocating engines have been selected as pump drivers. The engines will be highly efficient to reduce fuel consumption and minimise the release of emissions to the atmosphere. Emissions will comply with World Bank standards and Turkish regulations. Exhaust gases will be safely discharged to atmosphere via dedicated 16 metre high stacks.

2.2 GREENHOUSE GASES

Of the six direct greenhouse gases nominated by the Intergovernmental Panel on Climate Change (IPCC), carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O), are considered relevant to this study.

The concept of a global warming potential (GWP) has been used to enable different greenhouse gases to be compared to each other and expressed in CO₂-e (Carbon dioxide equivalents). The GWP factors reflect the different extent to which gases absorb infra-red radiation and the differences in the time scales on which the gases are removed from the atmosphere. The GWP is used in the National Communications required by the UN Framework Convention on Climate Change.

The Kyoto Protocol has adopted GWPs (with 100-year time horizon) as the basis for defining equivalence between emissions of different greenhouse gases during the 2008-2012 commitment period. These GWPs are given in Table 2.1 below.

Table 1.9 100 Year Greenhouse Gas Global Warming Potential

Greenhouse Gas	GWP
Carbon dioxide	1
Methane	21
Nitrous oxide	310

Emissions of greenhouse gases (CO₂-e) are thus given by using the GWP as weighting factors for the emissions of carbon dioxide, methane and nitrous oxide:

$$\text{CO}_2\text{-e} = \text{carbon dioxide} + 21 (\text{methane}) + 310 (\text{nitrous oxide})$$

2.3 ESTIMATES OF GREENHOUSE GAS EMISSIONS

2.3.1 Greenhouse gas emissions from the pumping stations

The primary source of emissions of these greenhouse gases from the BTC pipeline is through the combustion of natural gas to power the pumping stations.

Greenhouse gas emissions for natural gas usage at the four pump stations has been estimated using *inter alia* the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories. Calculation results are summarised in Table 1.10.

Total greenhouse gas emissions are estimated at 449,194 tonnes per annum of CO₂-e.

2.3.2 Greenhouse gas emissions from the BTC Marine Terminal

The operational BTC Marine Terminal has the potential for emissions of greenhouse gases. The principal source of these will be the Enclosed Ground Flare. A lesser source, also considered, are emissions from tankers berthed at the jetty and tanker movement within the port area.

Greenhouse gas emissions have been estimated using *inter alia* the Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories. Calculation results are summarised in Tables 1.11 and 1.12.

Total greenhouse gas emissions for the BTC Marine Terminal are estimated at 153,740 tonnes per annum of CO₂-e.

2.4 TOTAL OPERATIONAL GREENHOUSE GAS EMISSIONS

Total CO ₂ -e for Pump Stations	449 194 tpa
Total CO ₂ -e for BTC Marine Terminal	153 740 tpa
Total Operational CO ₂ -e for Project	602 934 tpa

Table 1.10 Greenhouse Gas Emissions from Pump Station

CO2 emissions (from Table 4.7)	Quantity (te per year)	CH4 (t CO2-eq)	N2O (t CO2-eq)	Total Direct GHG Emissions (t CO2-eq)
PT1	134,633	50.65	74.77	134,758
PT2	89,755	33.77	49.85	89,839
PT3	134,633	50.65	74.77	134,758
PT4	89,755	33.77	49.85	89,839
Pump stations (combined)	448,776	169	249	449,194

Calculation of CH4 & N2O emissions Using IPCC revised methodology (1996)

CO2 Emissions	134,633	tonnes of CO2 emitted per year	448,776
<i>Conversion to tonnes of carbon</i>	3.667	Division by molecular weight 44/12	89,755
Carbon emissions	36,718	tonnes of Oxidised Carbon emitted per year	3.667
<i>Fraction of Carbon oxidised</i>	0.995	efficiency	24,479
Total Carbon	36,903	tonnes of Carbon emitted per year	0.995
<i>Natural Gas Carbon emission factor</i>	15.3	tonnes of carbon per TJ	24,602
Fuel Usage	2,412	TJ	15.3
			1,608
<i>Default Nat Gas CH4 emission factor</i>	1	kg/TJ	1
Estimated CH4 emissions	2411.9	kg	8039.8
CH4 Global Warming Potential	21		21
Estimated CH4 emissions	50.65	Tonnes of CO2-eq	33.77
<i>Default Nat Gas N2O emission factor</i>	0.1	kg/TJ	0.1
Estimated N2O emissions	241.2	kg	160.8
N2O Global Warming Potential	310		310
Estimated N2O emissions	74.77	Tonnes of CO2-eq	49.85
			249.23

Table 1.11 Greenhouse Gas Emissions from BTC Terminal Enclosed Ground Flare

N₂O Flaring Emissions		
Fuel Usage	2,731	TJ
<i>Default Nat Gas N2O emission factor</i>	0.1	kg/TJ
Estimated N2O emissions	273.1	kg
N2O Global Warming Potential	310	
Estimated N2O emissions	84.66	Tonnes of CO2-eq
CH₄ Flaring Emissions		
Methane content of vapour space in empty vessel has been estimated, then emissions of unburnt methane following the vapour being flared.		
	1.0 tonnes of crude will emit	0.00000659 tonnes of methane during loading
	50,000,000 <i>tpa (crude)</i>	
	0.00000659 <i>CH4 / tonne of crude</i>	
	329.25876	tonnes of CH4 expelled from void space in tanker during loading, which is flared.
IPCC Natural gas default	48.15TJ/1000 tonnes	
	0.329258756	1000 tonnes of CH4 (Natural gas)
	48.15	TJ/1000 tonnes
	15.85381	TJ per annum
After combustion	1 kg/TJ	
Therefore	15.85 kg (0.01585tonnes)	of methane emitted from the flare.
	21	Global warming potential
	0.33285	Tonnes of CH4 emitted to the atmosphere expressed as CO2-equivalents.
Summary:		
	0.33285	tonnes of CH4 expressed as CO2-e from Flaring
	84.66	tonnes of N2O expressed as CO2-e from Flaring
	152,450	tonnes of CO2
	152,534.99	

Table 1.12 Greenhouse Gas Emissions from Tanker Movements

Tanker Traffic 1,200te of CO₂ per year from bunker fuel burnt for tanker traffic.

<i>Calculation of CH₄ & N₂O emissions Using IPCC revised methodology (1996)</i>		
CO₂ Emissions	1,200	tonnes of CO ₂ emitted per year
<i>Conversion to tonnes of carbon</i>	3.667	Division by molecular weight 44/12
Carbon emissions	327	tonnes of Oxidised Carbon emitted per year
<i>Fraction of Carbon oxidised</i>	0.99	efficiency
Total Carbon	331	tonnes of Carbon emitted per year
<i>Natural Gas Carbon emission factor</i>	21.1	tonnes of carbon per TJ
Fuel Usage	16	TJ
<i>Default Nat Gas CH₄ emission factor</i>	5	kg/TJ
Estimated CH₄ emissions	78.3	kg
CH ₄ Global Warming Potential	21	
Estimated CH ₄ emissions	1.65	Tonnes of CO ₂ -eq
<i>Default Nat Gas N₂O emission factor</i>	0.6	kg/TJ
Estimated N₂O emissions	9.4	kg
N ₂ O Global Warming Potential	310	
Estimated N ₂ O emissions	2.91	Tonnes of CO ₂ -eq

Bunker Fuel	1,200 tonnes CO ₂
	1.65 tonnes of CH ₄ expressed as CO ₂ -e
	2.91 tonnes of N ₂ O expressed as CO ₂ -e
Total	1,205
Flare	152,450 tonnes CO ₂
	84.66 tonnes of CH ₄ expressed as CO ₂ -e
	0.3328 tonnes of N ₂ O expressed as CO ₂ -e
	152,535
Pumping Stations	448776 tonnes CO ₂
	168.84 tonnes of CH ₄ expressed as CO ₂ -e
	249.23 tonnes of N ₂ O expressed as CO ₂ -e
	449194.1
Total Bunker Fuel	1,205
Total Flare	152,535
	153,740

Bibliography

API, 1989. *Evaporative Loss from External Floating Roof Tanks*. Bulletin No. 2517. Third Edition. American Petroleum Institute. Washington, D.C.

ENVY, 2000. *Sugoza Power Plant Environmental Impact Assessment Report*.

ILF, 2002. *VOC Incineration System at Ceyhan Export Terminal*. ILF-REP-EMT-TRG-001.

Patrick, D.R., 1984. *Risk Assessment and Risk Management*. Toxic Air Pollution Handbook. Editor D.R. Patrick. Van Nostrand Reinhold, New York, 1994.

US EPA, 1995. *User's Guide for the Industrial Source Complex (ISC3) Dispersion Models*. EPA-454/B-95-003b.

US EPA, 2001. *Compilation of Air Pollutant Emission Factors*. Volume I: Stationary, Point, and Area Sources. Chapter 7: Liquid Storage Tanks. AP-42, Fifth Edition. U.S. Environmental Protection Agency.

US EPA, 1999. *User's Guide to Tanks – Storage Tank Emissions Calculation Software Version 4.0*. Emission Factor and Inventory Group. Emissions, Monitoring, and Analysis Division. Office of Air Quality Planning and Standards. U.S. Environmental Protection Agency, September 30, 1999.

Appendix B3 – Citation for Yumurtalik Lagoons

IBA Factsheet – Turkey

Yumurtalik lagoons code - TR079

Administrative Region(s) : Adana
Criteria : A4i, A4iii, B1i, B2
Coordinates : 36.7333, 35.6833
Altitude : 0-0 m
Area : 16,430 ha

Site Description

A complex of lagoons, salt and freshwater marshes, tidal mudflats, pastures, reedbeds (*Phragmites*), dunes and *Pinus* forest, situated between the River Ceyhan mouth and Yumurtalik bay. The area is connected to the sea via several large inlets. Saltmarshes have been converted to arable land in places, and cattle graze extensive meadows in the west. Fish traps operate at several locations.

Habitats and Percentage Cover

Artificial landscapes	10%	Arable land
Forest	5 %	Native coniferous woodland
Wetland	85 %	Coastal lagoons
		Mud flats and sand flats
		Salt marshes
		Sand dunes and beaches
		Water fringe vegetation

Land-use and percentage cover

Agriculture	20%
fisheries/aquaculture	50%
hunting	25%
not utilised	25%
tourism/recreation	10%

Birds

The area is important for breeding waders and terns *Sterna* and for large numbers of wintering waterbirds. A 1987 WIWO study revealed that large numbers of waders stop over during spring passage, but remain for relatively short periods due to the poor feeding conditions.

Species	Season	Year	Min	Max	Data Quality	Criteria
Greylag Goose (<i>Anser anser</i>)	Winter	1990	301	301	Unset	B1i
Eurasian Wigeon (<i>Ansa Penelope</i>)	Winter	1999	7,189	27,190	Unset	A4i, B1i
Black Francolin (<i>Francolinus francolinus</i>)	Breeding		5	5	Unset	B2
Kentish Plover (<i>Charadrius alexandrinus</i>)	Winter	1992	356	805	Unset	B1i
Kentish Plover (<i>Charadrius alexandrinus</i>)	Breeding		1	0	Unset	B2
Little Stint (<i>Calidris minuta</i>)	Winter	1996	2,200	2,200	Unset	A4i, B1i
Pied Avocet (<i>Recurvirostra avosetta</i>)	Winter	1989	440	440	Unset	B1i, B2
Little Tern (<i>Sterna albifrons</i>)	Breeding		1	0	Unset	B2

Protection Status

National High International None 16,430 ha of IBA covered by Nature Reserve (Yumurtalik Lagünleri, 16,430 ha). 16,430 ha of IBA covered by SIT (Yumurtalik Lagünleri, 16,430 ha).

Conservation Issues

Two major irrigation projects include provisions to prevent drainage water entering the lagoons, although no studies have been undertaken into the effects of reduced surface water inflow to the wetland. Large industrial areas are situated east of the area, and pollution is a threat. A new port is planned in the vicinity to accommodate oil tankers. Unsustainable fishing practices have caused a drastic decline in fish stocks. A 1996 management plan regulates all land-use in the delta, and places restrictions on the construction of holiday homes.

Threats

industrialization/urbanization	High
aquaculture/fisheries	Medium
agricultural intensification/expansion	Medium

General Background Information

Yumurtalik Nature Reserve is a combination of different ecological systems with its shore sand dune system, lagoon lakes, Aleppo Pine (*P. halepensis* Miller) forest area and saline-barren lands.

The area is under the dominance of Mediterranean climate. According to the measurements carried out in the last 50 years, the minimum temperature is -8.4°C (January), maximum temperature is 45.6°C (August) and mean temperature is 18.8°C. The annual daily average insolation period is 7.24 hours with an average humidity of 66% during the same period. As a

result of these climatologic characteristics, the biological activities continue throughout 12 months.

Mediterranean, due to its hydrographic structure, is a lukewarm sea. The temperature of the waters of the Iskenderun Gulf reaches up to 27°C in spring and 28°C in summer, and rapidly decreases below 19°C in winter. The salinity does not vary much and is generally around 0.39%. The influence of Ceyhan and Seyhan rivers on the coast is seasonal and has a local characteristic. The dominant current direction is from east to west.

As the region with the aforementioned climatologic characteristics is evaluated upon its ecosystem diversity, it is seen that the region is a combination of the following ecosystems, which continuously interact with each other and even has sub-ecosystems such as riparian, calm water, continental and marine ecosystem.

The ecosystem diversity of the protection area enables different organisms preferring different habitats to coexist and thus, increases the diversity of the species and enriches the wildlife. All the organisms within the region have importance as they have a trophic level in the food chain.

Riverine Ecosystem

It is the ecosystem formed by the current riverbed of Ceyhan River. Dense reeds are developed at the riverbed and along the shore due to the rich organic material that is carried from the soils that the river had traversed. There is a fragile relation between the species of the aquatic marshland and reeds. As the river is freshwater, it is possible to encounter freshwater fauna. Freshwater fishes and several marine fishes that enter the lagoons for food inhabit Ceyhan River.

Eclipta prostrata, which is classified as vulnerable (VU) in Turkey is present at the Ceyhan River banks. The banks of the river require protection because of the presence of this species.

Stagnant Water Ecosystem

The lagoons and freshwater marshlands between the Ceyhan River mouth and Yumurtalık Gulf form the stagnant water ecosystem together with the former riverbed.

The main lagoons are Camlık (Yumurtalık) Lagoon, Yelkoma Fish Trap (1150ha), Omer Lake (350ha), Yapi Lake (300ha) and Darbogaz Lake (380ha). In opposition to the other wetlands in the region, the area having an irregular coastline joins with the sea at several locations. The former Ceyhan riverbed traverses through the Nature Reserve Area.

Yelkoma Fish Trap formed by Avciali and Esemen lakes is a shallow fish trap surrounded by wide saline marshes. Wide mud plains are formed, especially at the north, when some part of the lake dries during spring and summer. Reeds are present where the freshwater seeps from the sand dunes into the lake. Camlik Lagoon, Omer Lake, Yapi Lake, Darbogaz Lake and the smaller Kaldirim Lake, which are surrounded with saline marshlands and mud plains, forms a single lake during winter when the water level increases.

Reeds are locally encountered at the coasts of most of the lakes. The environs of the lakes are saline marshlands during winter. Halophytic (salt-lover) species are present in the area.

Terrestrial Ecosystem

Terrestrial ecosystem is formed of saline soils, sand dunes and forest areas:

a. Saline soil communities cover most of the area. There exist wide wet meadows between the saline soils and Ceyhan riverbed.

Depending upon the salt quantity and groundwater, five different plant communities attract attention among the vegetation of the saline soil covering most of the area:

- Community with the dominance of *Arthrocnemum perenne* and *Halimione portulacoides*
- Community with the dominance of *Arthrocnemum glaucum* and *Halocnemum strobilaceum*
- Community with the dominance of *Arthrocnemum fruticosum*
- Community with the dominance of *Salicornia europaea*
- Community with the dominance of *Limonium virgatum*

This area is of importance as it allows many rare and endangered species that can live in saline environment to develop. These species are *Arthrocnemum glaucum*, *Arthrocnemum fruticosum*, *Puccinella festuciformis*, *Frankenia pulverulenta* and *Halopeplis amplexicaulis*. The best population of these species in our country is in this area.

b. Shore sand dune communities are among the important ecological units of the continental ecosystem. The area is rather long with a wide shore sand dune. Here, there exists an important relation with the geomorphology and the vegetation. The coastal zone of the shore sand dunes, active sand dunes, sand dune bushes over the stable sand dunes, wet sand dunes at the depression area and the forest area behind the sand dune has different vegetation. Hence, the sand dune flora is very rich.

This area is floristically the richest sand dune of Turkey and contains many rare and endangered species (e.g., *Pancratium maritimum*, *Helianthemum stipulatum*, *Polygonum praelongum*, *Zygophyllum album*, *Salsola kali*, *Convolvulus lanatus*, *Thymelaea hirsuta* and *Eclipta prostrata*). Moreover, the sand dune erosion is avoided due to the presence of many rhizomatous and bush-like plants.

c. Forest communities: Aleppo pine forest within the Nature Reserve cover an area of c.59 ha over a peninsula between Omer Lake and Camlik Lagoon. Aleppo pine forests are mixed with Red pine (*Pinus brutia* Ten) at the east of the area, whereas it forms pure and beautiful communities to the west. These communities completely develop over shore sand dunes and have an interesting floristic composition. Aleppo pine is generally pure at higher levels but is sometimes accompanied with Red pine. As a result of the observations, it was determined that there exist hybrid types among *Pinus* species. A detailed genetic research is required on this subject. The lower flora is also very interesting. *Ruscus aculeatus* L. var. *angustifolius* species is Vulnerable in Turkey.

Marine Ecosystem

Yumurtalik Lagoon is integrated with marine ecosystem, as it is an important shelter, feeding and reproduction area for marine organisms. Logger-head Turtle (*Caretta caretta*) and Green Sea Turtle (*Chelonia mydas*), which habit in the Mediterranean, are frequently observed away from the shore. Yumurtalik Gulf is the only known winter shelter of Green Sea Turtle (*Chelonia mydas*) in the Mediterranean.

Ecological Importance of the Protection Area Floristically

As a result of the field surveys carried out within the area, 242 taxa belonging to 65 families were determined. When the plants collected from the area were evaluated according to their phytogeographic regions, it was understood that the Mediterranean element is represented with 49 species, East Mediterranean with 17, Irano-Turanien with 3, Euro-Siberia with 6 and Hyrcano-Euxine with 1.

Among the 242 taxa determined in the area, 3 of them are regionally endemic (*Centaurea calcitrapa* L. ssp. *cilicica* (Boiss. et. Bal.) Wagenitz, *Polygonum praelongum* Coode & Cullen and *Tripleurospermum conoclinicum* (Boiss & Bael.) Hayek). *Centaurea calcitrapa* L. ssp. *cilicica* (Boiss. et. Bal.) Wagenitz species is a ruderal plant only found in Adana and Icel, and is classified as LR(cd). *Polygonum praelongum* Coode & Cullen is classified as EN and is known from its typical example from Antalya Serik. It is determined in Goksu Plain and study area recently. *Tripleurospermum conoclinicum* (Boiss & Bael.) Hayek, on the other hand, is known from Istanbul, Bolu, Izmir and Icel. The 228 taxa in the flora list are classified as near threatened.

The area is an important genetic resource floristically and some definite locations within the area are even more sensitive because of the presence of some species.

Aleppo pine, which is rarely encountered in Turkey, is present within the study area with natural and healthy populations. These forests that are developed over stable sand hills are an important genetic resource.

Floristically, the richest sand dune of Turkey is the sand beach within the study area. Many rare and endangered species exist within this area. Among these, the most important ones are *Pancratium maritimum*, *Helianthemum stipulatum*, *Polygonum praelongum*, *Zygophyllum album*, *Salsola kali*, *Convolvulus lanatus*, *Thymelaea hirsuta* and *Eclipta prostrata*. Moreover, the sand dune erosion is avoided due to the presence of many rhizomatous and bush-like plants.

Due to the surrounding rare and endangered species that can grow in saline environment (i.e., *Arthrocnemum glaucum*, *Arthrocnemum fruticosum*, *Puccinella festuciformis*, *Frankenia pulverulenta* and *Halopeplis amplexicaulis*), Esemen Lake is of importance. The best populations of these species in Turkey are at this area.

This area of 16,430 ha is of utmost importance floristically due to the presence of many endangered, rare and data deficient species.

Ecological Importance of the Protection Area for Fauna

The lagoons system made by erosion material transported by Ceyhan River within plain and fishpond has been provided with suitable habitats for freshwater organisms and marine organism using freshwaters for feeding and reproducing. Due to presence of combination of different terrestrial ecosystems and low temperature levels during winter season, terrestrial vertebrates are also in high number.

The pesticides and herbicides utilized at the agricultural areas within and around the protection area also have a negative effect on the natural fauna of the area. Intensive utilization of the pesticides will result in the death of other insects, invertebrates and vertebrates habiting in the area. Not applying the necessary measures in the protection area and clearing more lands for agricultural utilization will disturb the natural balance more, and it can be expected that the protection area and its vicinity will become a wasteland in the

future. The extreme increase in mosquito population is an indication of the disturbed natural balance.

Yumurtalik Lagoon is formed of the sea remained within jagged shoreline and various small lakes interconnected with each other. As its connection with the sea is through wide gulleys, its waters are salty. Most of the lakes are partly surrounded with reeds.

Fishes

Lagoons are important as spawning and feeding habitats for Gilthead, European Sea Bass and Bluefish species. While Chub found dominantly on the lagoons move to freshwaters for feeding, return to sea for spawning between March and June.

It was determined that Gilthead and European Sea Bass enter the Camlik Fish Trap and Yelkoma Fish Trap for feeding as these lakes are connected to the sea. As a result, it was found out that juveniles are hunted at the mouth of Yelkoma fish traps, former Ceyhan River mouth, mouth of Camlik Lagoon and at the fish traps close to the Ceyhan River mouth.

There has been a dramatic decline in fish stocks as a result of unsustainable fishing practices.

Sea Turtles

It is revealed that two globally-threatened species – Green Turtle (*Chelonia mydas*) (Critically Endangered) and Loggerhead Turtle (*Caretta caretta*) (Endangered) that inhabit Mediterranean Sea use this area to lay their eggs. During the summer months when these animals come shore to breed, tourism in the form of camping and amateur sea-fishing activities are widespread along the beaches, and professional inshore fishing takes place. Since the turtles tear the nets or get caught in them, turtles are not much liked by the fishermen who have been known to kill them illegally.

Another sea turtle species, Nile Soft-shelled turtle also reproduce on the region by breeding at river mouth and laying their eggs on shore sand dunes. However, it is estimated that their population number declined in recent years.

Birds

When the area has been considered in terms of avifauna, Reserve is important due to reasons listed below;

- High temperature levels during winter due to climatic features
- Plain topography and wide angle of view
- Being on migration route

Especially the former Ceyhan riverbed is a suitable area for birds because of the reeds present. Thus, it is an area preferred by the passerines for feeding and resting. The environs of the lakes are saline marshlands during winter. This makes the area important for waterfowls such as goose, duck and plover as shelter and feeding area.

As this area is of importance for birds also, it is determined as an Important Bird Area. The bird species that had gained this degree to the area are Black Francolin, Kentish Plover and Little Tern. Many waterfowl inhabit the site during winter. Among these, the most important are European Wigeon, Avocet, Kentish Plover and Little Stint.

The area is a winter shelter for flamingos. It was observed that the winter population of the area is more than that of Akyatan Lake (between 60.000-10.000) that is among the important bird areas of the Mediterranean Region.

Many wader species can be observed during migration time but only for a short time because of the insufficient bottom fauna, and thus food. The decrease of abiotic material in the lagoons due to the spreading of silt to the plain as a result of variations of water regime of Ceyhan River also effect the stop over period of the birds.

When the food preferences of the bird species within the Reserve is evaluated, it is seen that different bird species feed on grass, seed, fruit, plant; invertebrates like worm, all kinds of adult and young insects, snail and crab and all other living things present in the area like fish, mouse and snake. Any decrease in the population of living things within the food chain would inevitably affect the other organisms, and thus the ecosystem.

Mammals

The tall and dense reeds form a suitable habitat for Wild Boar (*Sus scrofa scrofa*). It was determined that the population of Wild Boar is at equilibrium due to the presence of its predator, Common Jackal (*Canis aureus*).

Egyptian Mongoose (*Herpestes ichneumon*), which require legal protection is present in Aleppo Pine forest ecosystem. Due to habitat destruction, it is thought that their population shows a decline and it is threatened.

According to the information obtained, Mediterranean Monk Seal (*Monachus monachus*) had once been encountered at high numbers at the mouth of the river (Mediterranean Monk Seal feeds on freshwater fishes, especially on European Eel (*Anguilla anguilla*)); but now, no visual evidence exist on their presence as a result of polluted river waters.

Major Threats and Conservation Issues on Yumurtalik Nature Reserve

In order to guarantee the continuity of the natural and ecological values found on the region, the area has been designated as Nature Reserve in 1994. Even though this has slowed down destruction rate on the area, due to many problems regarding human influence, hunting, agriculture intensification, utilization of pesticides and herbicides, heavy industrialisation and habitat destruction within the site and in wider environment, the site is threatened.

Pollution is present along the shore as all the settlements along the river discharge their wastes to the river. Solid waste accumulation is encountered regionally due to current.

Moreover, some parts of the saline marshlands surrounding the Nature Reserve were converted to agricultural areas with cotton as the crop. Soil canals were dug near the fields for draining the groundwater to allow agriculture. Despite drainage and washing, agricultural yield of these areas is low due to the influence of saline water. Moreover, agricultural pollution and human activities have a negative effect on the wildlife. There is an intensive grazing over the wet meadows. As a result of the utilization of pesticides and herbicides, soil and thus, water pollution exist.

In marine ecosystem, on the other hand, Iskenderun Gulf has a high BOD due to industrialization and high population. The increasing Hg concentration in the same gulf indicates metal pollution. Despite the low levels of PCB in animal tissues, DDT levels are the same with those measured in North Adriatic. Thus, the pollution caused by the industries affect the area negatively.

Therefore, besides conservation of the sites and species, implementation of mitigation measures regarding land use of the areas around Yumurtalik Lagoons is also crucial for protection of sensitivities on the region.

References

General Directorate of National Parks and Game-Wildlife (Ministry of Forestry). Long Term Master Plan of Adana-Yumurtalik Lagoons Nature Reserve (Draft)

Appendix B4 – Marine Oil Spill Modelling Method

Oil Spill Modelling for Tanker Accidents in Iskenderun Bay, Turkey

Report prepared for Environmental Resources
Management

January 2002

Oil Spill Modelling for Tanker Accidents in Iskenderun Bay, Turkey

Report prepared for Environmental Resources
Management Ltd

J M Corps

January 2002

Title	Oil Spill Modelling for Tanker Accidents in Iskenderun Bay, Turkey
Customer	Environmental Resources Management Ltd
Customer reference	
Confidentiality, copyright and reproduction	Restricted - Commercial This document has been prepared by AEA Technology plc in connection with a contract to supply goods and/or services and is submitted only on the basis of strict confidentiality. The contents must not be disclosed to third parties other than in accordance with the terms of the contract.
File reference	ED28601001
Report number	AEAT/ENV/R/0939
Report status	Issue 1

Jenny Corps
AEA Technology Environment
E5, Culham
Abingdon
Oxon
OX14 3ED
UK

Telephone +44 (0)1235 463183
Facsimile +44 (0)1235 463030

AEA Technology is the trading name of AEA Technology plc
AEA Technology is certificated to BS EN ISO9001:(1994)

	Name	Signature	Date
Author	J M Corps		
Reviewed by	L Davies		
Approved by	J M Corps		

Executive Summary

The OSIS oil spill model has been used to assess the expected fate of oil spilt during tanker operations in Iskenderun Bay, south eastern Turkey. The assessment has examined the fate of oil released during two scenarios:

- an tanker accident releasing 500 tonnes of Azeri crude oil, and
- a major tanker collision involving the release of 10,000 tonnes of Azeri crude oil.

The way in which individual crude oils weather on the sea surface can vary significantly. The weathering behaviour of Azeri crude oil has previously been characterised and has been added to the OSIS oil database. The weathering study showed that Azeri crude oil forms stable emulsions with water content up to 82%. This indicates that at winds speeds in excess of 5 m/s (the threshold for emulsification to occur), the volume of emulsion present on the sea surface can be significantly greater than the volume of oil released. At winter temperatures, the viscosity of these emulsions will exceed 30,000 mPas and they are predicted to persist for many days at sea.

The OSIS model has been used to evaluate the overall fate of the spills, based on a probabilistic assessment using windrose data for winter and summer periods.

The currents used in the OSIS model are based on a 20 km grid scale circulation model developed by the University of Liege. Whilst this underlying model does reproduce observed patterns of large scale current movements, it should be noted that it may not fully reflect finer grid scale transport patterns within Iskenderun Bay.

During the winter, the prevailing winds are from the north east and south west. The most likely fate of the oil is for it to be beached close to the release point in Iskenderun Bay. The most frequent wind speeds lie in the range of Force 1-3. Under these conditions, the oil is predicted to beach between 8 and 30 hours after the spill and the volume of emulsion beached is similar to the volume of oil spilt.

At higher wind speeds, beaching may occur in a much shorter time, for example in 1-2 hours during Force 4 onshore winds, although the likelihood of these wind speeds is low (<2%). Westerly and north westerly winds will result in the slick beaching on the east or south coast of Iskenderun Bay. The slick will take between 10 and 30 hours to reach these shorelines, but due to emulsification at these higher wind speeds, the volume of emulsion beached may be 2-4 times greater than the volume of oil spilt.

The simulations indicate that, during the winter, there is a probability of approximately 5% that spilt oil could beach on the shoreline of either Cyprus or Syria, after a period of 3-5 days. In these cases, the volume of emulsion beached would range from 1-2 times the volume of oil spilt.

During the summer, the prevailing wind direction is from the south west and the model predicts that under almost all conditions, the oil would remain within Iskenderun Bay. The oil is expected to beach to the north and north east of the release point.

The likelihood that oil will beach on the coastline less than 5 hours after the release occurs is >50%. Since the most frequent wind speeds are Force 1-3, the volume of emulsion beached will be similar to that volume of oil released.

The time taken for oil to reach the east and south coast of the bay is typically 40 hours during Force 4 wind conditions and 10 hours during Force 7 wind conditions. During these higher wind speeds, stable emulsions are formed and the volume of emulsified oil beaching on the shoreline ranges from 2-4 times the volume of oil initially spilt. The likelihood of these events is < 2%.

The simulations again indicate that oil could be transported along the coast of Syria, but the probability is < 2%.

Contents

1	Introduction	2
2	Fate and Behaviour of Oil Spilt at Sea	3
2.1	THE WEATHERING BEHAVIOUR OF SPILLED OIL	3
2.1.1	Spreading	4
2.1.2	Evaporation	4
2.1.3	Dissolution	4
2.1.4	Water-in-oil emulsification	4
2.1.5	Natural Dispersion	5
2.1.6	Photo-oxidation	5
2.1.7	Sedimentation	5
2.1.8	Biodegradation	5
2.2	CONSEQUENCES OF CRUDE OIL WEATHERING	5
2.3	WEATHERING BEHAVIOUR OF AZERI CRUDE OIL	6
3	Oil Spill Modelling	7
3.1	THE OIL SPILL INFORMATION SYSTEM (OSIS)	7
3.2	MODEL INPUT DATA	8
3.2.1	Release Information	8
3.2.2	Current Data	8
3.2.3	Oil Type	8
3.2.4	Meteorological Data	8
3.3	RESULTS	11
3.3.1	Scenario 1 Tanker collision 500 tonne release	11
3.3.2	Scenario 2 Major tanker accident 10,000 tonne release	15
4	Summary	19
5	References	21

Appendices

APPENDIX 1	OSIS
------------	------

1 Introduction

This report contains details of a series of modelling calculations undertaken by AEA Technology - Environment for releases of oil in Iskenderun Bay in south eastern Turkey. The purpose of the calculations is to examine the expected fate of Azeri crude oil released during possible accidents due to tanker operations in the bay.

Oil spill modelling plays an important role in quantifying the probable fate of spilt oil and hence in quantifying environmental risk. This study uses the Oil Spill Information System (OSIS), developed jointly by AEA Technology and BMT Marine Information Systems (BMT-MIS). OSIS is a well-proven model, developed after extensive at-sea research to determine the fate and behaviour of oil slicks. OSIS is in use by the oil industry world-wide and has been adopted as the primary spill response modelling tool by several national governments.

This report has been commissioned by Environmental Resources Management Ltd.

2 Fate and Behaviour of Oil Spilt at Sea

2.1 THE WEATHERING BEHAVIOUR OF SPILLED OIL

The 'weathering' processes i.e. the changes in the chemical and physical properties of a crude oil when it is spilled onto the sea surface, are illustrated in Figure 2.1. The rate at which these processes occur and the extent to which they proceed depends on:

- the chemical and physical properties of the original crude oil.
- the prevailing environmental conditions.
- the oil release conditions.

These factors are interrelated and it is their combination that causes different crude oils to behave in different ways at different oil spills.

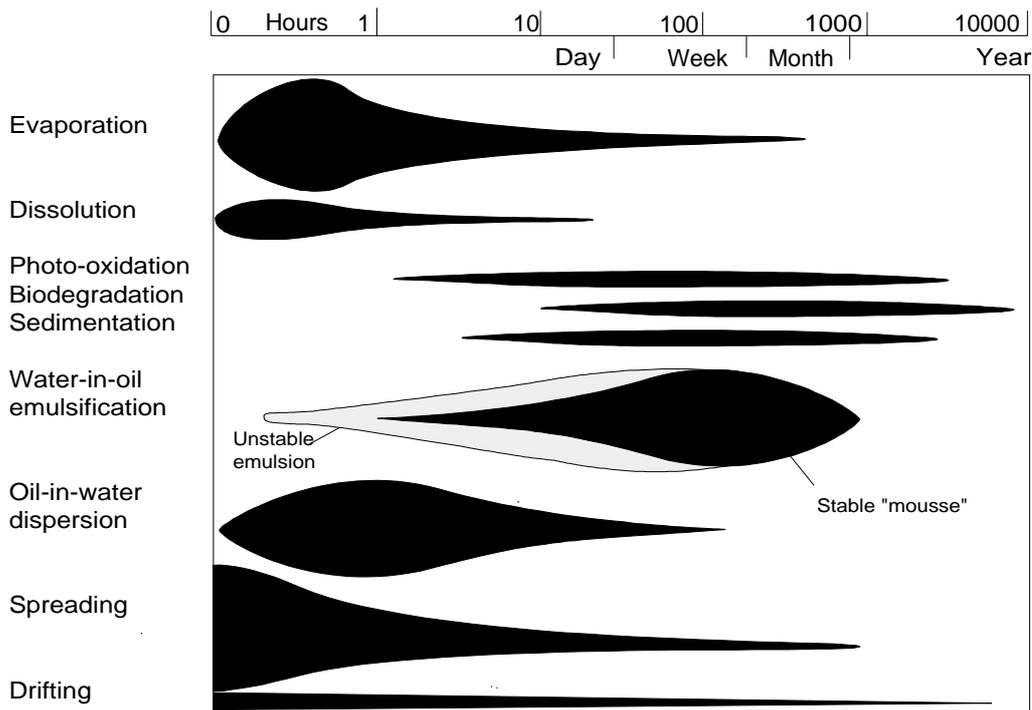


Figure 2.1 The relative importance of weathering processes over time

The broadness of the lines indicates the relative importance of the processes.

2.1.1 Spreading

As soon as crude oil is spilled onto the surface of the sea it will normally spread out rapidly to form a thin layer, or slick, of oil and this will drift under the influence of wind and currents.

The general appearance of a surface slick of oil is of two distinct areas;

- a relatively small area of thick oil, containing the majority of the oil volume (especially if the oil has formed a stable water-in-oil emulsion,
- a much larger area of very thin oil, or sheen, trailing behind the thick area.

The area of thicker oil is always downwind of the sheen as the thick oil is more influenced by the wind than the sheen. Sheen is created by temporary natural dispersion of oil and is formed as the larger droplets of oil re-surface some distance away from the main body of the slick. The temporarily dispersed oil droplets are transported by the current while they are submerged.

The oil slick will drift at a rate equal to the vector addition of the surface currents and approximately 3% of wind speed.

2.1.2 Evaporation

Evaporation is the primary cause of rapid volume reduction of spilled oil. The loss of 'light ends' by evaporation causes an increase in the viscosity and density of the oil residue that remains. Evaporative loss can also cause more subtle changes in the oil properties such as the precipitation of wax and asphaltenes that will alter the flow properties of the residue and help to stabilise water-in-oil emulsions.

2.1.3 Dissolution

The vast majority of crude oil components are not soluble in water to any appreciable degree. However, some of the lower molecular weight aromatic components (the so-called "BTEX" compounds - benzene, toluene, ethylbenzene and xylenes, plus some of the lower molecular weight alkanes) are water-soluble to a limited extent and will dissolve out of the oil into the water column. The volume loss of spilled oil by dissolution is negligible for any practical purposes, but the environmental consequences of dissolution can be significant. Although the concentration of these compounds in water will rapidly be diluted to very low levels, they can exert a toxic effect on marine organisms.

2.1.4 Water-in-oil emulsification

Water-in-oil emulsification is the incorporation of small water droplets into the spilled oil. Emulsification is the major process that causes spilled oil to be persistent on the sea surface. Emulsification causes an increase in the volume of the oil, typically by a factor of three or four compared to that of the original oil and this more than offsets the volume reduction caused by the evaporative loss of the 'light ends'. The viscosity of emulsified crude oil is much greater,

up to several orders of magnitude than that of the original oil and of the residue left after evaporative loss of 'light ends'. Emulsions formed rapidly after the oil is spilled can be unstable and amenable to treatment by dispersants, but eventually, extremely high viscosity 'chocolate mousse' may be formed by some oils.

2.1.5 Natural Dispersion

Natural dispersion is the conversion by wave action of some small proportion of the spilled oil into droplets that are small enough to be retained in the water column by the turbulence of the sea. The rate of natural dispersion is determined by sea state - breaking waves are needed for a significant rate of natural dispersion - and is resisted by the viscosity of the oil. In the initial stages of weathering the rate of natural dispersion can be relatively high, but the viscosity increase caused by evaporation and emulsification rapidly reduces the rate of natural dispersion to almost zero under typical conditions.

2.1.6 Photo-oxidation

Crude oils are generally dark-coloured and can absorb UV (ultra-violet) radiation from the sun. In some oils, in very sunny conditions, this can cause significant changes in the chemical composition and this can affect emulsification properties.

2.1.7 Sedimentation

If there is a sufficient amount of suspended sediment in the water column, typically in shallow water with a silt sea bed or in deeper water in very rough conditions (such as occurred at the *Braer* incident), the oil droplets that have been created by natural dispersion may adhere to the sediment and eventually sink to the sea bed. This process is not expected to be of significance to the present assessment.

2.1.8 Biodegradation

The ultimate fate of the majority of crude oil components in dispersed oil is to be biodegraded by naturally occurring micro-organisms. These micro-organisms exist in low concentrations and biodegrade naturally occurring oils in the sea that are liberated when marine flora and fauna die and decompose.

2.2 CONSEQUENCES OF CRUDE OIL WEATHERING

The consequences of crude oil weathering are that the physical and chemical properties of the crude oil alter very rapidly once it has been spilled on the sea.

Different crude oils weather in different ways - under some conditions the spilled crude oil will be naturally dispersed at a rapid rate, while in other cases the oil will be transformed into a high viscosity emulsion that may drift on the sea surface for a prolonged period and may contaminate the coastline at locations far from the spill site.

The weathering behaviour of a crude oil also has a large influence on the effectiveness of any oil spill response countermeasures that could be undertaken:

- A crude oil that naturally disperses rapidly is unlikely to be amenable to any active countermeasure; it will disperse before it can be contained and recovered by booms and skimmers, burnt or dispersed by oil spill dispersants. The potential environmental impacts of a rapidly dispersing crude oil will not be mitigated by any response measure, although there is unlikely to be any significant lasting effect if the oil disperses in deep water.
- A crude oil that forms high viscosity emulsion that persists on the sea surface for a long time has the potential to be recovered, although this is very difficult in practice and many mechanical recovery devices (e.g. skimmers) become less effective at high viscosities. Whilst emulsified oil may be amenable to treatment with oil spill dispersants in the early stages of the spill, these are less likely to be effective after long periods at sea.

Knowledge of the weathering characteristics of each oil is, therefore, an essential component of the oil spill contingency planning process.

2.3 WEATHERING BEHAVIOUR OF AZERI CRUDE OIL

The weathering behaviour of Azeri crude oil has previously been examined through a series of laboratory-based tests designed to replicate the at-sea behaviour [Davies, 2001]. That study identified the following key characteristics for the oil:

- Fresh Azeri crude oil is a light oil, with a viscosity of 30 mPas at 27°C and 310 mPas at 6°C.
- The oil readily takes up water to form stable emulsions, with a final water content of 82%. The volume of emulsion on the sea surface can, therefore, be 4-5 times greater than the volume of crude oil spilt.
- After a few hours at sea, the oil will lose 20% by volume through evaporation and the viscosity of emulsified oil ranges from 2,900 mPas at 27°C to 10,500 mPas at 6°C.
- Over periods of 1-2 days, approximately 32% of the oil will be lost by evaporation and the viscosity of emulsified oil increases to 5,800 mPas at 27°C and 31,200 mPas at 6°C.
- Due to the high viscosity of the emulsified oil, spills of Azeri crude oil can be expected to persist for periods of many days on the sea surface.

The data from that weathering study has been used to add the Azeri oil to the database of the OSIS oil spill model.

3 Oil Spill Modelling

3.1 THE OIL SPILL INFORMATION SYSTEM (OSIS)

The Oil Spill Information System (OSIS), a joint development between AEA Technology and BMT-MIS, is a computer-based model for the prediction of the fate of oil spilt at sea. The calculations reported in this document are based on OSIS version 3. OSISv3 is the latest release of OSIS and has been extensively validated against a wide range of oil types.

OSIS represents an oil slick as a collection of particles, ranging in diameter from 1-800 μm , which are free to move independently of each other and which embody time-varying physical and chemical properties. OSIS comprises three key elements: a transport model, an oil properties model and an oil database.

- The transport model takes account of the three-dimensional transport processes acting on the oil droplets due to the tide, wind, waves, shear diffusion and buoyancy.
- The oil properties model uses algorithms to calculate the change in oil properties due to spreading, evaporation, emulsification and natural dispersion. The oil property input to OSIS is in the form of laboratory derived constants for a specific crude oil. These constants describe the probable degree of evaporative loss and the consequences of emulsification. OSIS does not model dissolution, sedimentation or biodegradation.
- The oil database is an extensive database, of approximately 150 oils, containing detailed information on the properties and weathering characteristics of each oil, including Azeri crude oil.

OSIS combines the predicted changes in spilled oil properties with current and wind inputs to simulate the persistence and drift trajectory of the spilled oil. Further details of OSIS and the algorithms used in the model may be found in Appendix 1 and Walker [1995].

OSIS can be used in both the 'deterministic' mode (where the calculations are undertaken for specific release and meteorological conditions and the results are expressed as a drift track and spilled oil properties output) and in 'stochastic' mode (where estimates are made of the likelihood of particular trajectories).

The stochastic module uses meteorological data in the form of either a windrose or a time-series of data to evaluate the probable distribution of oil in the event of a spill. For this assessment, the windrose approach has been used. Meteorological data for both the summer and winter seasons has been collated in the form of a windrose i.e. the frequency of occurrence of winds of particular speed and direction. OSIS undertakes simulations for each element of the windrose using the median speed and direction of that element. The results are combined, based on the frequency of occurrence of that element, to provide the probable distribution of oil.

3.2 MODEL INPUT DATA

3.2.1 Release Information

Two release scenarios have been considered:

- Scenario 1: a tanker collision resulting in a release of 500 tonnes of Azeri crude oil
Scenario 2: a major tanker accident resulting in the release of 10,000 tonnes of Azeri crude oil, simulated as 2,000 tonnes per hour over 5 hours.

The release location was taken to be: 36° 41' N 35° 45.14' E

The release location is shown in Figure 3.1. The site is approximately 3km offshore.

The duration of each simulation i.e. the period of time over which the fate of the slick was tracked was set to a maximum of 2 weeks i.e. 336 hours.

3.2.2 Current Data

The hydrodynamic database for the model uses residual currents derived from a circulation model developed by the University of Liege, based on data from the Mediterranean Oceanic Database. The original circulation model was developed using a grid spacing of 0.25° (20-25 km). The OSIS hydrodynamic database was prepared by BMT Marine Information Systems Ltd.

The residual current in Iskenderun Bay indicates distinct seasonal patterns, with a weak flow (0.05 m/s) in the winter, but a stronger current (0.18 m/s) in the summer.

3.2.3 Oil Type

The simulations are all based on Azeri crude oil, the properties of which have been described in Section 2.

3.2.4 Meteorological Data

Meteorological data was obtained from the UK Meteorological Office for the north eastern Mediterranean region. The seasonal windroses are illustrated in Figure 3.2.

During the winter, winds are predominantly from the north east (25%) and south west (20%). Wind speeds are relatively low, with speeds < 5 m/s (Force 3) for 56% of the time. Winds in excess 15 m/s (Force 7) occur for only 5% of the time.

During the summer, winds are predominantly from the south west and south (50%). Wind speeds are slightly lower than during the winter, with 65% of winds being < 5 m/s and only 2% in excess of 15 m/s.

Figure 3.1 Release location and residual current field

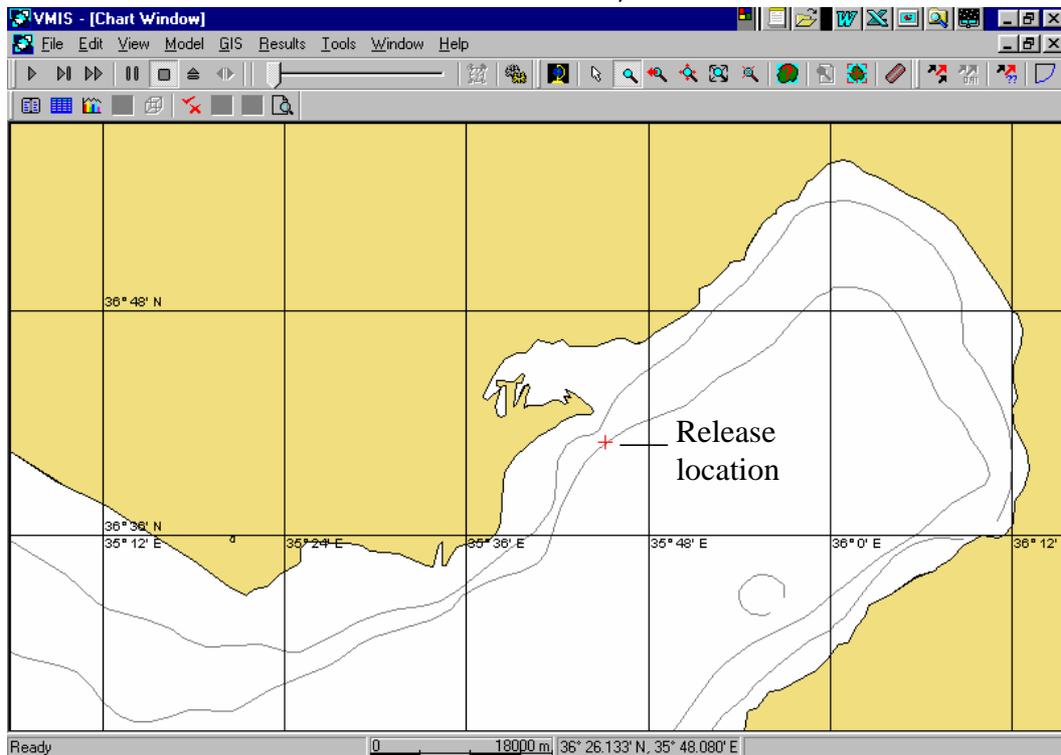
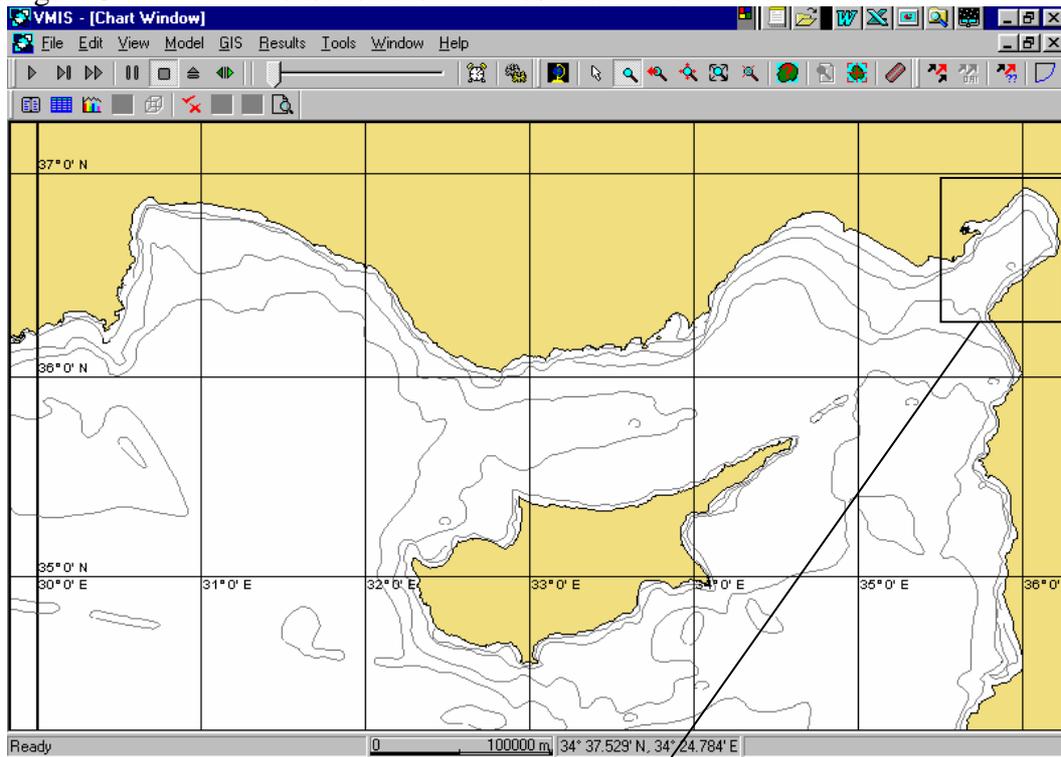


Figure 3.2a) Winter windrose

WIND ROSE FOR 37.0N 35.0N 034.5E 037.0E

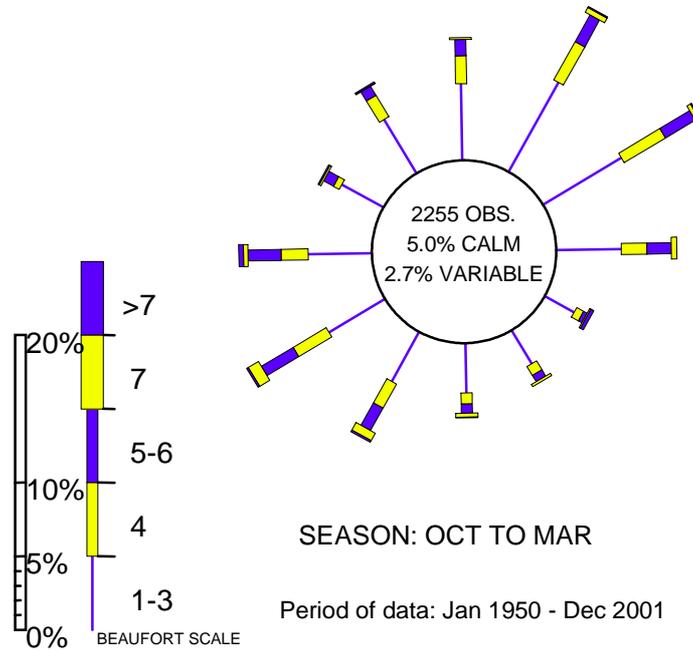
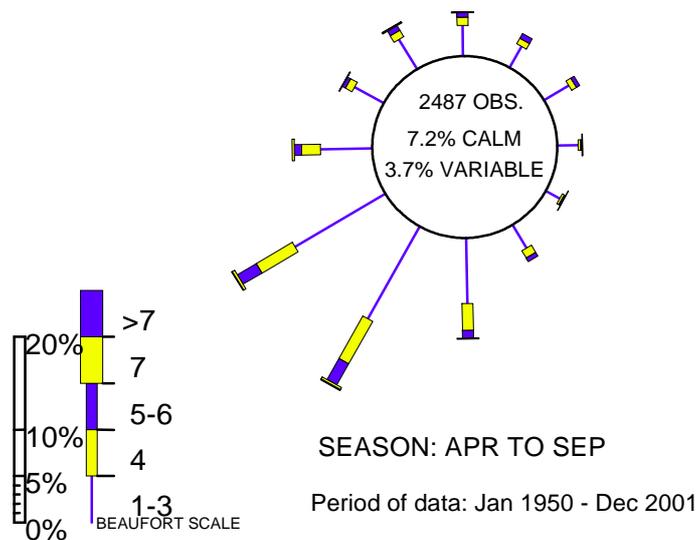


Figure 3.2b) Summer windrose

WIND ROSE FOR 37.0N 35.0N 034.5E 037.0E



3.3 RESULTS

3.3.1 Scenario 1 Tanker collision 500 tonne release

a) Winter

The probability of oil on the sea surface at a particular location is a function of its persistence (dispersibility versus emulsification) plus the degree to which it is transported by winds and currents. The surface oiling results provided by OSIS correspond to the relative frequency with which the oil particles are present at a depth of less than 20cm. The likelihood of surface oiling following a 500 tonne release in the winter is shown in Figure 3.3.

The results show that the most likely fate of the oil is for rapid beaching close to the release point. During the most frequent wind conditions i.e. Force 1-3, beaching is predicted to occur 8 – 30 hours after the release occurs. Under these conditions, relatively little emulsification of the oil would occur and the water content of the beached emulsion is predicted to be only 4%. The volume of oil beached is approximately 400 m³.

During strong onshore winds, beaching may occur in as little as 1-3 hours. However, the likelihood of these winds occurring is < 2%.

During stronger offshore winds i.e. above Force 4 (7 m/s), the oil moves away from the release point and beaches on the east and southern coasts of Iskenderun Bay. During westerly winds, the oil reaches the eastern coast of the bay approximately 13-20 hours after the release occurs. In the case of north westerly winds, the oil reaches the southern side of the bay after 30 hours in wind speeds of 7 m/s (1.8% occurrence) and 9 hours in wind speeds of 20 m/s (0.1% occurrence).

During northerly winds, the slick is predicted to leave Iskenderun Bay and to pass along the coastline of Syria. The model calculations indicate that approximately 150 m³ of emulsified oil would beach close to Tripoli, Lebanon after a period of 9-10 days. Although the model results show the slick passing the coastline of Syria, it should be considered that the model simulations use only a constant wind direction for each element of the windrose. In reality, changes in wind direction would be expected during the period that the slick is at sea and the results should be interpreted as indicating that there is a 3% probability that oil could beach anywhere along the Syrian coastline. A relatively small change in wind direction could result in up to 1,000 m³ of emulsified oil being beached along the coastline.

During north easterly winds, the slick moves towards Cyprus. Depending on the wind speed, the slick could reach the coastline of northern Cyprus after 4-5 days. The individual simulations undertaken for the probabilistic modelling indicated that the spill would pass close to Cyprus, but that only small quantities of the slick would beach. However, as discussed above for Syria, small changes in wind direction would cause the oil to beach and the results indicate that there is a 5% probability that oil could beach along the northern and eastern coasts of Cyprus. The volume of emulsified oil remaining in the slick when it reaches Cyprus is approximately 300 m³.

The overall probability of beaching is 99.9% for this scenario.

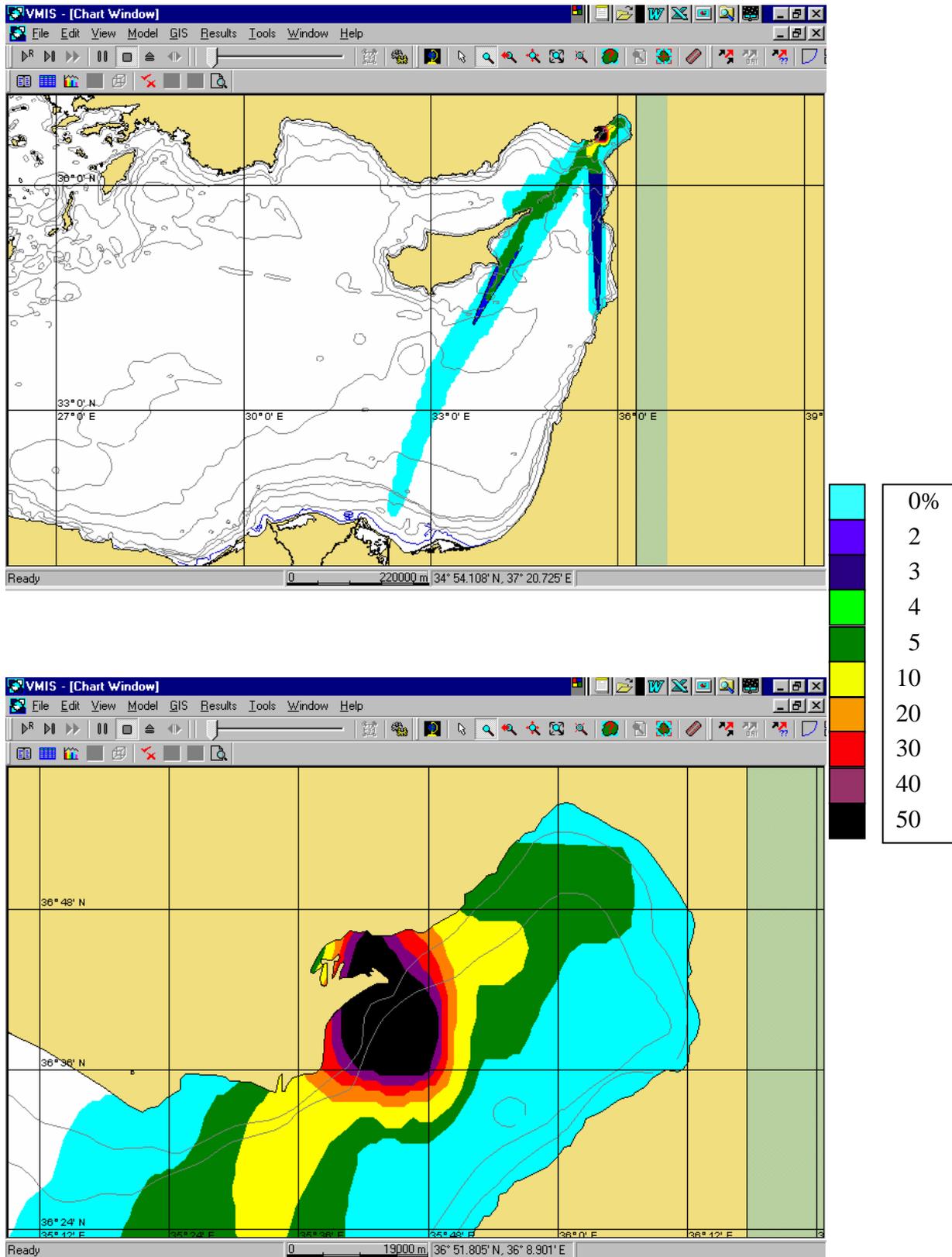


Figure 3.3 Probability of surface oiling, 500 tonne release of Azeri crude oil, winter

b) Summer

The probability of surface oiling following a release of 500 tonnes of Azeri crude oil in the summer is shown in Figure 3.4.

During the summer season, the winds are predominantly from the south and south west and the oil is predicted to remain principally within Iskenderun Bay. The likelihood that oil would leave the bay is < 2%.

During strong northerly winds i.e. in excess of Force 4 (7 m/s), the oil could leave the bay and beach on the coast of Syria. The time that elapses before beaching occurs ranges from 65 – 140 hours, depending on wind speed and the volume of emulsified oil impacting the coastline ranges from 240 – 112 m³.

Under most other conditions, the oil is predicted to beach somewhere within Iskenderun Bay. The most likely fate of the oil is for rapid beaching close to the release point. Under the most prevalent wind conditions i.e. Force 1-3 south westerly winds (24% occurrence), approximately 410 m³ of slightly emulsified oil reaches the shoreline to the north east of the release point, after approximately 5 hours. During stronger onshore winds the time taken for oil to reach the shoreline may be significantly shorter e.g. as little as 1 hour during Force 4 south easterly winds. The probability that beaching will occur less than 5 hours after the initial release is > 50%.

The time taken for oil to reach the east and south coast of the bay is typically 40 hours during Force 4 wind conditions and 10 hours during Force 7 wind conditions. During these higher wind speeds, stable emulsions are formed and the volume of emulsified oil beaching on the shoreline ranges from 900 – 1,500 m³. The likelihood of these events is < 2%.

The overall probability of beaching is 100% for this scenario i.e. all of the individual simulations were predicted to result in oil beaching.

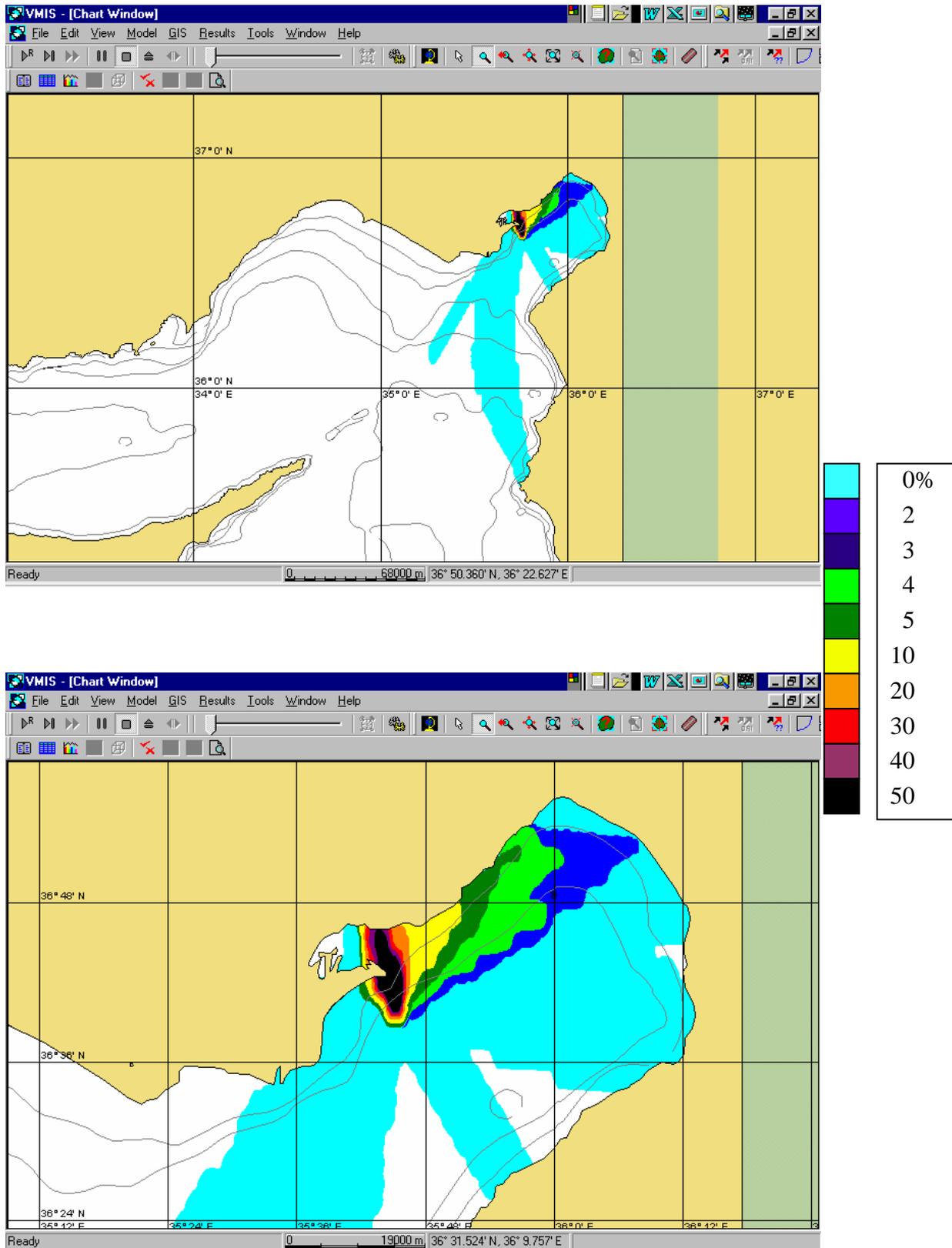


Figure 3.4 Probability of surface oiling, 500 tonne release of Azeri crude oil, summer

3.3.2 Scenario 2 Major tanker accident 10,000 tonne release

a) Winter

The probability of surface oiling following a release of 10,000 tonnes of Azeri crude oil in the winter is shown in Figure 3.5. The results are essentially identical to those already presented for the 500 tonne winter release scenario. The principal difference is in the volume of oil beached.

As before, the most frequent wind conditions are Force 1-3 i.e. 2.5 m/s and, at this wind speed, relatively little emulsification occurs. The volume of oil lost through evaporation and natural dispersion equates to the increase in volume due to emulsification and the volume of emulsion beached is approximately equal to the volume of oil released i.e. 10,000 m³. Beaching is predicted to occur 8 – 30 hours after the release occurs, depending on wind direction.

At higher wind speeds, beaching occurs on the east and south coast of the bay. The time to beaching ranges from 10-30 hours depending on wind speed. Under these conditions, significant emulsification occurs and the volume of emulsion beached may be up to three times greater than the volume of oil released.

The results indicate that oil could beach on northern Cyprus (probability 5%) or along the coast of Syria (probability 3%). The volume of emulsified oil beaching ranges from 8,000 – 20,000 m³. The slick would take 3-4 days to reach the northern part of the Syrian coastline.

Azeri crude oil forms stable emulsions of relatively high viscosity at winter temperatures, so spills under high wind speeds during the winter will persist for many days. Under Force 8 conditions, the surface oiling diagram indicates that the spill persists for sufficiently long to reach the northern coast of Egypt. A total volume of 1,500 m³ of emulsified oil is predicted to beach 300 hours after the initial release. However, as these conditions occur for only 0.4% of the winter i.e. a total of 20 hours in the season, this result is simply an artefact of the windrose approach. North easterly winds are unlikely to persist for sufficiently long to drive the slick past latitude 33°N.

The overall probability of beaching is 100% for this scenario i.e. all of the individual simulations were predicted to result in oil beaching.

b) Summer

The probability of surface oiling following a release of 10,000 tonnes of Azeri crude oil in the summer is shown in Figure 3.6. As above, the results are essentially identical to those already presented for the 500 tonne summer release scenario. The principal difference is in the volume of oil beached.

Due to the prevalent south westerly winds, the oil is predicted to remain principally within Iskenderun Bay. The likelihood that oil will beach on the coastline less than 5 hours after the release occurs is >50%. Since the most frequent wind speeds are Force 1-3, the volume of emulsion beached will be similar to that volume of oil released.

The overall probability of beaching is 100% for this scenario i.e. all of the individual simulations were predicted to result in oil beaching.

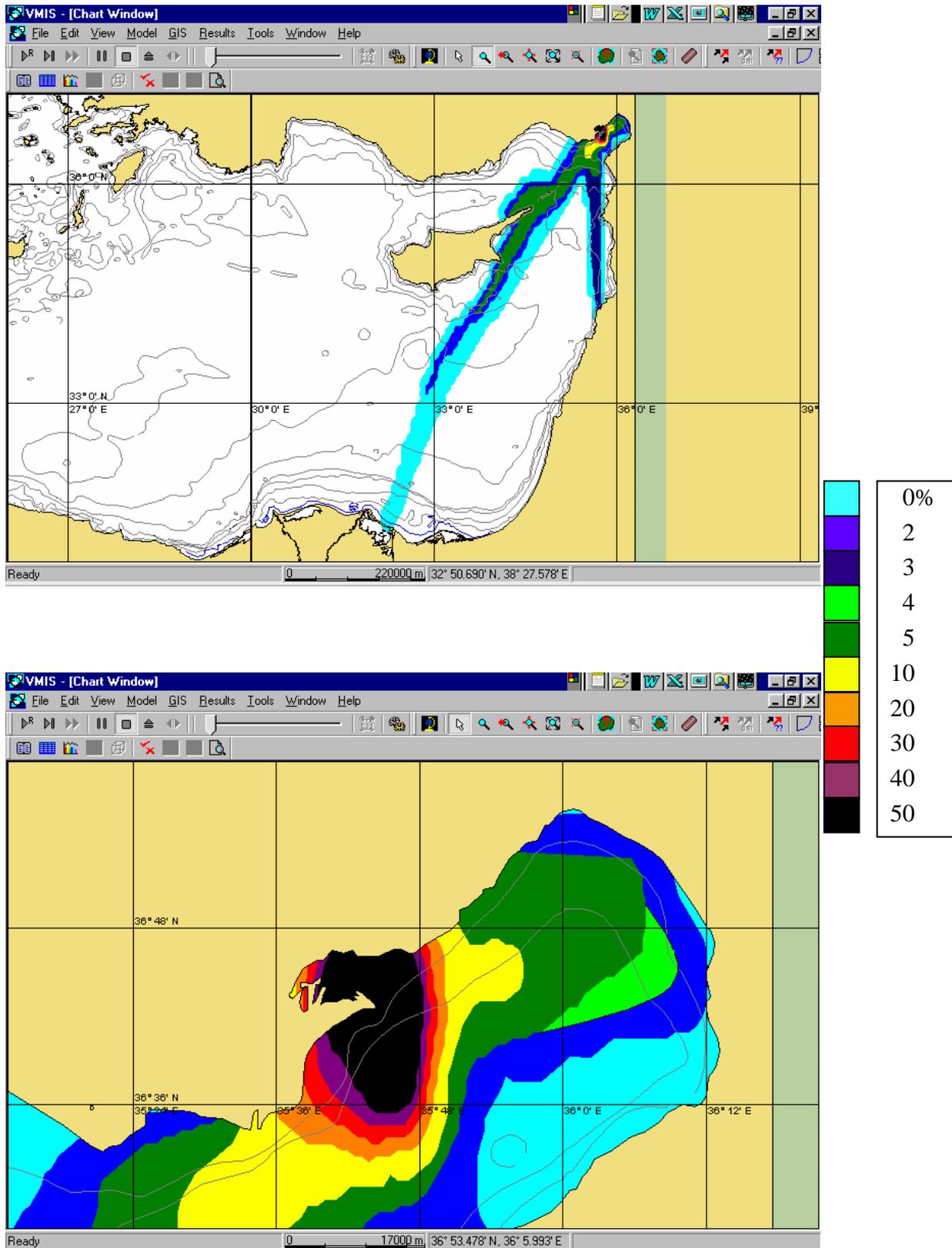


Figure 3.5 Probability of surface oiling, 10,000 tonne release of Azeri crude oil, winter

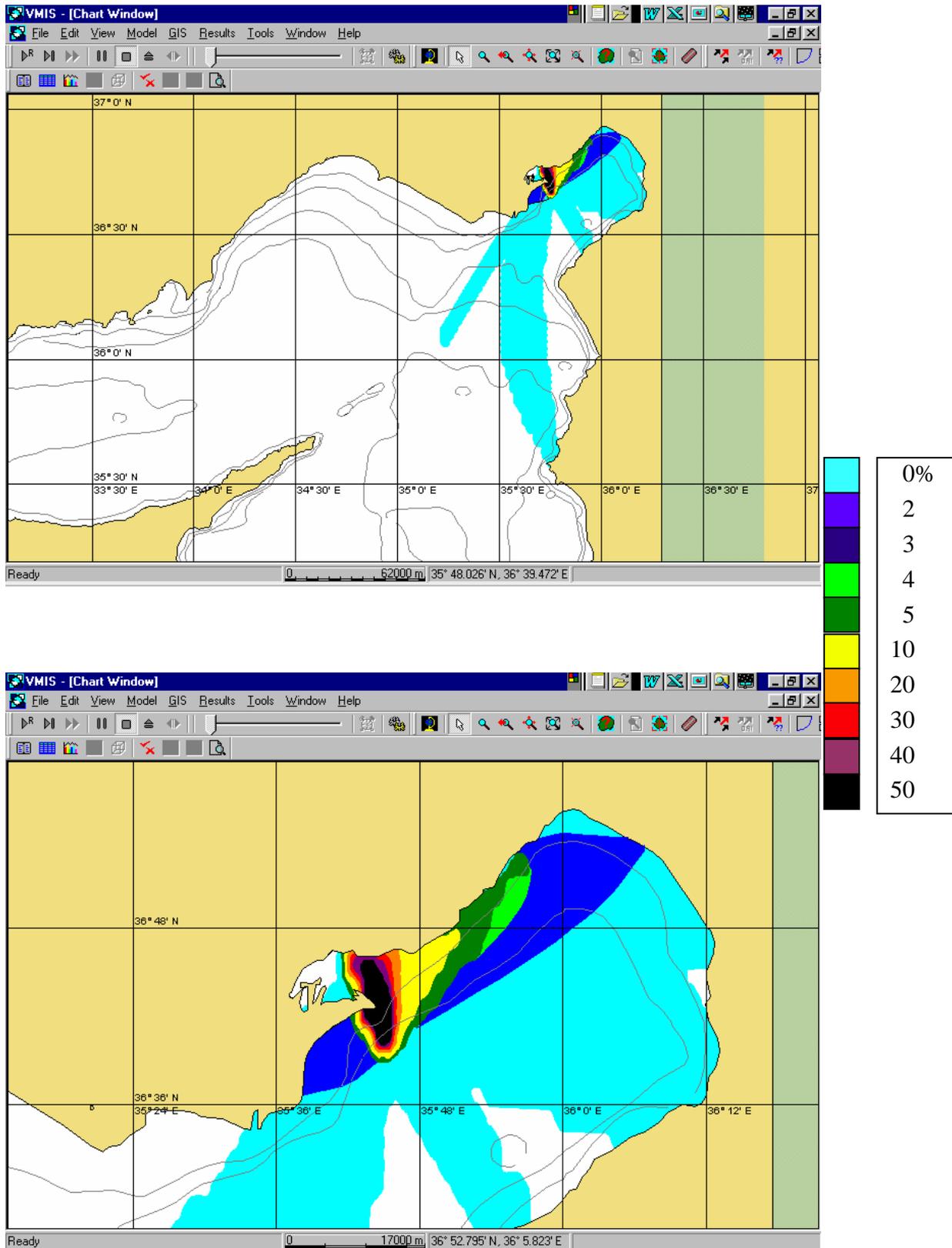


Figure 3.6 Probability of surface oiling, 10,000 tonne release of Azeri crude oil, summer

4 Summary

The OSIS oil spill model has been used to assess the expected fate of Azeri crude oil spilt during tanker operations in Iskenderun Bay, south eastern Turkey. The assessment has examined the fate of oil released during two scenarios:

- a tanker collision involving a release of 500 tonnes of Azeri crude oil, and
- a major tanker accident resulting in a release of 10,000 tonnes of Azeri crude oil.

The weathering behaviour of Azeri crude oil has previously been characterised and has been added to the OSIS oil database. The weathering study showed that Azeri crude oil forms stable emulsions with water content up to 82%. This indicates that at winds speeds in excess of 5 m/s (the threshold for emulsification to occur), the volume of emulsion present on the sea surface can be significantly greater than the volume of oil released. At winter temperatures, the viscosity of these emulsions will exceed 30,000 mPas and they are predicted to persist for many days at sea.

The OSIS model has been used to evaluate the overall fate of the spills, based on a probabilistic assessment using windrose data for winter and summer periods.

The currents used in the OSIS model are based on a 20 km grid scale circulation model developed by the University of Liege. Whilst this underlying model does reproduce observed patterns of large scale current movements, it should be noted that it may not fully reflect finer grid scale transport patterns within Iskenderun Bay.

During the winter, the prevailing winds are from the north east and south west. The most likely fate of the oil is for it to be beached close to the release point in Iskenderun Bay. The most frequent wind speeds lie in the range of Force 1-3. Under these conditions, the oil is predicted to beach between 8 and 30 hours after the spill and the volume of emulsion beached is similar to the volume of oil spilt.

At higher wind speeds, beaching may occur in a much shorter time, for example in 1-2 hours during Force 4 onshore winds, although the likelihood of these wind speeds is low (<2%). Westerly and north westerly winds will result in the slick beaching on the east or south coast of Iskenderun Bay. The slick will take between 10 and 30 hours to reach these shorelines, but due to emulsification at these higher wind speeds, the volume of emulsion beached may be 2-4 times greater than the volume of oil spilt.

The simulations indicate that, during the winter, there is a probability of approximately 5% that spilt oil could beach on the shoreline of either Cyprus or Syria, after a period of 3-5 days. In these cases, the volume of emulsion beached would range from 1-2 times the volume of oil spilt.

During the summer, the prevailing wind direction is from the south west and the model predicts that under almost all conditions, the oil would remain within Iskenderun Bay. The oil is expected to beach to the north and north east of the release point.

The likelihood that oil will beach on the coastline less than 5 hours after the release occurs is >50%. Since the most frequent wind speeds are Force 1-3, the volume of emulsion beached will be similar to that volume of oil released.

The time taken for oil to reach the east and south coast of the bay is typically 40 hours during Force 4 wind conditions and 10 hours during Force 7 wind conditions. During these higher wind speeds, stable emulsions are formed and the volume of emulsified oil beaching on the shoreline ranges from 2-4 times the volume of oil initially spilt. The likelihood of these events is < 2%.

The simulations again indicate that oil could be transported along the coast of Syria, but the probability is < 2%.

5 References

Davies, L., 2001. Weathering & Dispersibility of Azeri Crude Oil. AEAT/R/ENV/0739/A

Walker, M.I., 1995. The Oil Spill Information System (OSIS) and Eurospill Models: Background Documentation. AMSO International Workshop on the Modelling of Accidental Spills and other Calamities at Sea, The Hague, 15-17 Nov. 1995.

Appendix OSIS

A1. OSIS

OSIS represents an oil slick as a collection of particles, ranging in diameter from 1 - 800 μm , which are free to move independently of each other and which embody time-varying physical and chemical properties. OSIS can be divided into two principal parts: the transport model and the oil properties model. The transport model simulates the principal oceanographic processes responsible for the advection and spreading of an oil slick, whilst the oil properties model simulates the major weathering processes of evaporation, emulsification and dispersion.

Many of the processes controlling the behaviour of oil at sea are influenced by the physical and chemical properties of the oil itself. Since the chemical composition of each oil differs, so do its chemical and physical properties. The fate of oil spilt at sea therefore depends on the particular oil under study.

A1.1 THE TRANSPORT MODEL

The physical oceanographic processes modelled are regarded as most important in simulating the advection and spreading of a pollutant in the marine environment. The actions of tide, waves and wind together with the effect of sheared currents and turbulence are modelled in OSIS and the predicted movement and lateral and vertical spreading of a slick show a good representation of real slicks as observed following accidental spills and AEA Technology's sea trials.

The oceanographic parameters are used to construct a three-dimensional velocity field in which the motion of individual parcels, representing elements of the slick, can be tracked (particle-tracking). A random element simulating turbulence is applied which can enhance or decrease the spreading of a slick (random walk). Evidence that an oil patch can be considered as individual droplets which will be transported by currents and turbulence within the water column has been confirmed by the observation of oil droplets beneath a slick at depths exceeding 20m. Additional evidence comes from work with sonar equipment which shows that the depth penetration (in metres) of air bubbles is equal to the wind speed (in ms^{-1}). More recently *in situ* field measurements of oil droplet sizes have been made (Lunel, 1993).

Each particle is advected due to the effects of tide, wind, waves, diffusion and buoyancy; this is shown schematically as a force diagram in Figure 1. Because these effects can be parameterised in terms of environmental conditions, predictions can be made allowing for a wide variety of weather conditions. These oceanographic parameters have been measured during experiments at sea (Elliott and Wallace, 1989) and are at the heart of the OSIS model.

Horizontal advection is the result of tidal flow with a contribution from wind forcing and wave drift. For the purposes of this project, OSIS uses tidal and residual current fields supplied by BMT-MIS.

In the sea, the strongest currents are found near the surface and often there are vertical gradients of velocity (or shears) due to the separate effects of tide, wind, and waves. Velocity gradients in the sea generate shear diffusion which enhances the spreading of a slick and this is reproduced in OSIS. Sources of shear in the sea include wind forcing of surface water, wave-induced surface currents (Stokes drift) and the vertical profile of the tidal current. Wind and wave induced shear is dominant in the near-surface layer, whilst tidal current shear dominates near the sea bed.

5 independently acting forces

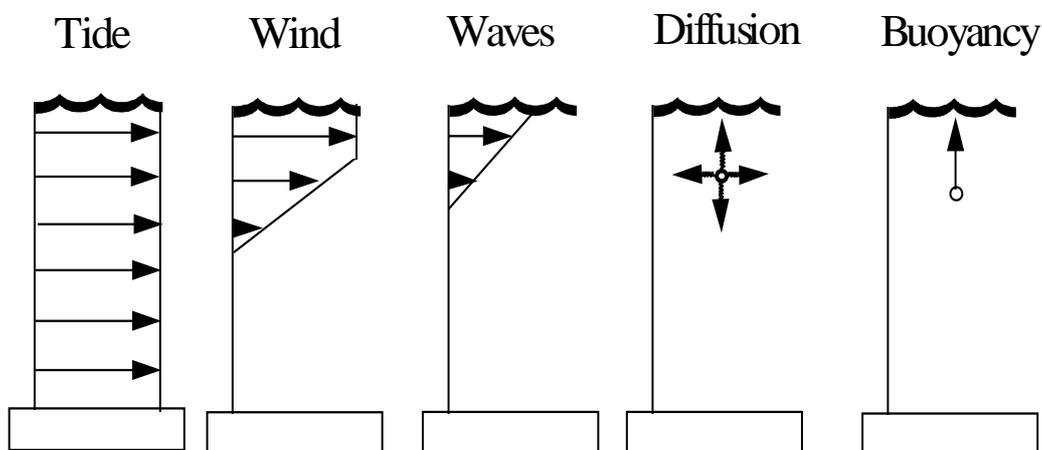


Figure 1. Force Diagram for Particle Advection

Wind forcing and wave drift are modelled using logarithmic depth profiles of velocity. It is generally accepted that the surface current moves at 2 to 3.5% of the wind speed in the direction of the wind. In OSIS the wind component of the surface current is taken to be 2.1% of the wind, but decays logarithmically with depth. The surface velocity of the wave-induced Stokes drift has a value between 1 to 2% of the wind speed.

Vertical advection is based on the buoyancy of a pollutant in sea water. For oil, this is included as a rise velocity resulting from buoyancy effects. Turbulence in the sea causes diffusion of a pollutant and is simulated by the random walk element of the model. A parcel may have its advection horizontally or vertically enhanced or decreased depending on the diffusion coefficients. The degree to which each droplet is advected is dependent on the amount of time it spends in the surface layers relative to the deeper waters.

From Figure 1 it can be seen that a particle spending a higher proportion of time in the surface layers will be advected further due to the effects of wind and waves. It is important to note that the advection forces are independent of each other so that the wind and waves can act in the same direction as the tide or against it. The amount of time each particle spends in the surface layers is, in turn, determined by the balance between the buoyancy and the vertical diffusion

rates. Thus, larger more buoyant droplets spend proportionately more time in the surface layers and are advected further due to the surface currents. The spreading of the slick is therefore a three-dimensional process controlled by the droplet size distribution and shear diffusion processes.

The model correctly predicts the occurrence of thicker oil towards the leading edge of the slick and the alignment and elongation of the slicks in the direction of the wind. This realistic prediction of the distribution of the slick is in marked contrast to the uniform circular or elliptical slicks predicted by variations on the Fay-Blokker approach (Fay, 1964; Blokker, 1971; Lehr et al, 1984). Another important improvement on the Fay-type approach is that the effects of tide, wind, and waves are separately parameterised enabling predictions for rough sea conditions where it is difficult to obtain empirical data.

A2. THE OIL PROPERTIES MODEL

The oil weathering model in OSIS simulates the major weathering processes occurring to spilled oil i.e. evaporation, emulsification and dispersion, and the consequent changes to physical properties such as density, viscosity.

A2.1 Evaporation

Oil spills generally result in a large slick area, consisting of a thin layer of oil, typically of the order tenths of a millimetre or less. Evaporation of the volatile components such as n-alkanes occurs rapidly, at a rate depending on the thickness of the slick and its spreading rate, ambient temperature and wind speed. Experimental spills of oil made in the North Sea (Buchanan, 1987; Buchanan and Hurford, 1988; Hurford, 1992; Walker et al, 1993) have shown that alkanes up to nonane can be lost within an hour, and alkanes to hexadecane can be lost after 2 days on the surface. Evaporation of refined products or light crude oils can be very rapid, with a large proportion of the original slick removed in a matter of hours. Heavier crudes can be far more persistent because of limited evaporation.

For a single chemical covering an area A , the rate of loss of mass by evaporation ($-dm/dt$) can be calculated from a knowledge of its vapour pressure (P) and molecular weight (M_W):

$$-\frac{dm}{dt} = \frac{K_E M_W P}{R T} A \quad 1$$

where K_E is a mass transfer coefficient which for hydrocarbons is related to wind speed (U):

$$K_E = 0.0025 U^{0.78} \quad 2$$

Equation 1 can be re-written in terms of the volume fraction evaporated (F) and thickness of the slick (h):

$$\frac{dF}{dt} = \frac{K_E P M_W}{h \rho R T} \quad 3$$

The term $PM_w/\rho RT$ can be considered as a Henry's Law Constant H . For oil, which is not a simple chemical but a complex mixture, it is necessary to predict the variation of H as evaporation proceeds. Stiver and Mackay, 1984 have shown that this variation can be determined experimentally by bubbling air through oil (gas stripping) and measuring the loss of oil volume with volume of air passed through it. They derived an expression for H , based on the gas stripping of 5 oils, which is related (using the Clausius Clapeyron equation) to the boiling point of the oil (T_B) at any fraction evaporated and ambient temperature T :

$$\ln H = \ln \frac{P M_w}{\rho R T} = 6.3 - 10.3 \frac{T_B}{T} \quad \mathbf{4}$$

T_B itself can be determined from a plot of boiling temperature against fraction evaporated (i.e. the distillation curve of the oil): assuming that the plot is linear with initial boiling point C_1 and slope C_2 then

$$T_B = C_1 + C_2 F \quad \mathbf{5}$$

Substitution into Equation 3 gives

$$\frac{dF}{dt} = \frac{K_E}{h} e^{6.3 - 10.3 \frac{C_1 + C_2 F}{T}} \quad \mathbf{6}$$

AEA Technology has carried out gas stripping experiments on about 60 oils. For each of the oils examined, individual values to replace the above constants 6.3 and 10.3 have been derived.

The values of the constants C_1 and C_2 for some 100 oils have been derived, either from literature distillation data (e.g. van Oudenhaven, 1983), or by laboratory distillations: these are stored in a database of oil properties for use by OSIS together with constants derived from gas stripping where available.

A2.2 Emulsification

Under the influence of wave action, water droplets may become entrained into the oil slick to form water-in-oil emulsions. Such emulsions can range from rather runny mixtures to the 'chocolate mousse' type found after the Torrey Canyon incident, which are highly viscous and resistant to treatment by chemical dispersants. The formation of widely scattered patches of high viscosity crude oils or emulsions makes mechanical recovery difficult. The processes which govern emulsion formation are not well understood, so an empirical approach has been taken to estimate rates of emulsification. Using recorded emulsion water contents for samples taken during the Ekofisk blow-out, a relationship between wind speed U and water content Y_W was determined by Mackay et al, 1980:

$$\frac{dY_W}{dt} = K_A (1 + U)^2 (1 - K_B Y_W) \quad 7$$

where K_A is the reciprocal of the maximum fractional water content (Y_F) of the emulsion (0.8) and K_B a curve fitting constant whose value varies with wind speed.

An attempt to improve this relationship has been made using data from a number of experimental spills. The equation above implies that all oils eventually emulsify to the same extent (i.e. a water content of 80%) and do so at the same rate. Evidence from many sources indicates that this is incorrect. A laboratory study of weathering and emulsification indicated that different oils take up different amounts of water with the rate of uptake varying between oils: the data from that study have provided oil specific values of Y_F .

A2.3 Dispersion

Dispersion is the means by which an oil or emulsion is removed from the sea surface, under the influence of turbulent mixing and wave breaking. The process involves the generation of oil droplets, of sizes thought to be between 1 and 500 μm diameter, which move down into the water column; recent and ongoing experimental work at sea has shown that droplets whose diameter is less than about 70 μm will remain dispersed in almost all sea conditions. Forces acting upon such droplets are vertical diffusion, downward turbulent mixing and buoyancy: if buoyant forces exceed downward mixing forces then the droplet rises to the surface, otherwise they remain below the sea surface and are considered to be dispersed.

Previous experimental work has demonstrated several features which allow dispersion to be modelled empirically: the work has shown that the dispersion process is wind-speed dependent, linked to spreading and slick thickness and occurs when waves are breaking, and that the amount of oil remaining at the sea surface is an exponential function of time. In OSIS the dispersion process is currently modelled by a simple exponential whose half life is a function of sea state, size of spill and length of time on the sea surface.

A2.4 Changes in Physical Properties

During the processes of evaporation and emulsification the density of oil increases, due to both evaporation of the low density volatiles and to the incorporation of water. The change of density of an oil during evaporation is linear with increasing volume fraction evaporated (F). Therefore the changes can be modelled by the equation

$$\rho_o = \rho_c + C_3 F$$

where ρ_c and ρ_o are density of crude and topped oil respectively, and C_3 a constant for each oil. In OSIS values of C_3 are stored in a database. Changes in density as a result of emulsification are modelled as a linear combination of oil and seawater densities, according to the fraction of each present.

The processes of evaporation and emulsification lead to increases in emulsion viscosity (η_e) of two or three orders over that of the crude oil (η_c) from which they are derived. The relationship between oil and emulsion viscosity can be predicted by

$$\eta_e = \eta_c e^{K_E F} e^{\frac{2.5\gamma_W}{1-K_W\gamma_W}}$$

where $\eta_{e,c}$ are the viscosities of the emulsion and crude oil respectively and $K_{W,E}$ are oil specific constants.

Appendix B5 - Livelihood Assessment For Settlements Neighbouring The Marine Terminal

Table 1: Livelihoods Analysis: Golovasi and Sahil Sitesi

NATURAL CAPITAL	
Land	<ul style="list-style-type: none"> • Expropriation of land for industrial development throughout the region has led to a decrease in availability for agriculture although the settlement has been less affected by expropriation than the other neighbouring settlements to date • 100% of land is privately owned by 19% of households • High inequality in distribution (a few landowners own the majority of the land) • 81% of households own no land • Average household land holding is 137 ha • 80% of the largest land plots owned by surveyed households have titles
Water	<ul style="list-style-type: none"> • Piped water is available but supply is irregular • Alternate sources of water include private wells and a village fountain
Agriculture	<ul style="list-style-type: none"> • Agriculture is of less importance than other sectors such as fishing and trade • Key crops cultivated are grain (75% of households), cotton (75% of households) and fruit trees (25% of households) • Grain is mainly grown for subsistence; cotton is grown for sale and fruit is grown by individual households for their own consumption • Grain productivity is the highest in Golovasi due to good growing conditions, including sufficient precipitation • 36% of land is irrigated, 64% is rain-fed • Production has decreased due to aridity and insect outbreaks • Key agricultural issues: high input costs and irrigation problems
Livestock	<ul style="list-style-type: none"> • Animal husbandry is of low importance in Golovasi in terms of income generation. It is primarily carried out for household consumption • 40% of livestock is cattle and the remainder are sheep
Marine Fishing	<ul style="list-style-type: none"> • Marine fishing is the most important source of livelihood in Golovasi (39% of households) • 31% of households are employed in fishing • Average costs are 108 – 800 m TL, total revenues are 125 – 834 m TL • Fishermen state there has been a decline in catch size due to: <ul style="list-style-type: none"> • an increase in environmental pollution • trawling by non-local fishermen • over-fishing • increasing size of marine exclusion zones • illegal fishing by local villagers • Fishing has become progressively less profitable as catches have fallen and input prices risen • The main fishing months are March to September • Key fishing issues: problems with the existing security zone, decline in stock
Quality of environment	<ul style="list-style-type: none"> • The presence of holiday homes in Sahil Sitesi is an indication of a relatively high quality of environment and also the availability of land • Increasing industrial development has led to a rise in levels of noise, dust and traffic (particularly disliked by summerhouse owners) • There are reports of oil leakages harming birds, fish and marine species • Decreased fishing catches has been blamed partly on an increase in environmental pollution

**BTC PROJECT EIA
TURKEY**

HUMAN CAPITAL	
Population	<ul style="list-style-type: none"> • Highest population total of the surveyed settlements is 1,710 • High percentage of adults of working age (66%) • Ratio of males to females is 47 to 53 • Total number of households is 600 • The population is naturally increasing due to an increase in birthrate • There is no out-migration from Golovasi or Sahil Sitesi. There is some in-migration to Sahil Sitesi by secondary home owners • Low birth rate, low elderly population and very low dependency ratios (0.5 dependents per working adult)
Skills	<ul style="list-style-type: none"> • Wide range of skills available (beyond agricultural, fishing and trade skills) • 46% have construction experience in Golovasi and 38% in Sahil Sitesi • Out of the 26 respondents in Golovasi, the following skills are available: welders (5); operators of heavy machinery (6); mechanics (2); drivers of heavy vehicles (7); catering (5); forestry (3); security (5); administration (4); construction eg of roads (6); construction of water/ sewage pipes (2); construction of electricity and telecommunications infrastructure (2); construction of marine facilities (3) • Golovasi has a particularly high level of skills available, compared with other settlements
Knowledge & Information	<ul style="list-style-type: none"> • Traditional knowledge and forms of livelihood are increasingly unprofitable. Revenue from both fishing and agriculture is falling due to a combination of lost resources to expropriation and industrial development, environmental problems such as aridity, higher input costs and lower revenue from sales • Villagers have high expectations of future permanent employment in the new industrial development
Ability to Work	<ul style="list-style-type: none"> • High levels of unemployment (11% of respondents) • Very low dependency ratio (0.5 dependents per adult), so high proportion of residents available to work • 80% of respondents would accept a temporary job offer • The majority of women work as housewives
Health	<ul style="list-style-type: none"> • 63% of households have had one of their members hospitalised during the last year
Education	<ul style="list-style-type: none"> • There is 100% literacy • Of the 26 respondents, 1 received no formal education, 12 reached primary school, 7 secondary school, 3 high school and 3 university education • 3 of the 5 university educated respondents in the marine terminal area came from Golovasi
PHYSICAL CAPITAL	
Transport	<ul style="list-style-type: none"> • Most of the fishermen own their own boats • Good market and transport facilities (eg mini-bus services) • Low quality asphalt roads • New roads have been constructed within the last 5 years • No new roads are planned
Communications & markets	<ul style="list-style-type: none"> • Trade is the second most important employment sector (eg 19% of households) • 4 out of the 26 households surveyed own a telephone • Although there is relatively good mobile network coverage, only 20% of respondents have mobile telephones
Energy	<ul style="list-style-type: none"> • All households surveyed have access to electricity, although for 59% it is an irregular supply • Alternative sources of energy, such as bottled gas, solar energy, bought wood and cut wood are also used • Electricity is used for lighting energy, while energy for cooking, heating water and heating is usually derived from other sources
Shelter	<ul style="list-style-type: none"> • Of the 34 households surveyed, 20 have a finished floor, 9 have a concrete floor, 3 have a faience floor, 1 has a ground (earth) floor, 1 has square cement floor tiles, 30 have concrete roofs and 2 have roof tiles

**BTC PROJECT EIA
TURKEY**

Water and Sanitation	<ul style="list-style-type: none"> • Irregular supply of piped water • Alternative sources of water are private wells, village fountains, private water depots and water carried by tankers from nearby sources • There is no public sewerage system. Sewage is mainly disposed of via covered or uncovered wells • There is no formalized public sanitation service, methods used for disposal include burning, the settlement dump, garbage trucks, dumping in the village stream and use in fertilizers
Tools	<ul style="list-style-type: none"> • Most of the fishermen own their own boats • 5 out of the 34 respondents have tractors, none have trucks, 13 have boats and 10 have fishing nets
Schools	<ul style="list-style-type: none"> • There is a primary school in Golovasi but no high school. The nearest high school is 25km away
Health facilities	<ul style="list-style-type: none"> • There are no health centres in the villages • Nurses visit regularly but overall health services are unsatisfactory • Health services in Adana and Ceyhan are used • No households have private health insurance
Other	<ul style="list-style-type: none"> • The majority of services (eg fire, library, post office, financial, local government) are not available in the villages • A coffee house is present • The fishing port is in good condition • The market is in good condition
FINANCIAL CAPITAL	
Savings and Credit	<ul style="list-style-type: none"> • Debt in Golovasi, (53.8% of households surveyed are in debt), is higher than in other neighbouring settlements due to the costs of fishing equipment, petroleum for boats and the fall in fish stocks (agricultural prices for the small number of farmers) • Money is generally owed to private fishing companies rather than family members as is the case in other local communities in the region • The ability to pay off debt is particularly low in Golovasi as it is directly dependent on income from fishing
Incomes, including Wage income	<ul style="list-style-type: none"> • Main income source is fishing followed by wage income (defined as regular paid employment) • Average monthly revenues for fishermen range between 125m TL and 900mTL (US\$85-US\$614) • Breakdown of household income sources: fishing (38%), wage income (35%) pension (27%), tourism/ trade (15%), agriculture (19%) and help from relatives (4%) • 9% of respondents have permanent salaried jobs • Main employment sectors are fishing (31%) and trade (19%) • Golovasi has the highest proportion of surveyed households and fishing is a main source of income • Most fishermen are self-employed and own their own boats • Profitability from fishing is falling as input costs rise and catches fall • 10% of the economically active population are seasonal workers. • Tourism is a source of secondary employment
Pensions	<ul style="list-style-type: none"> • 27% of surveyed households rely on pensions and pension allowances
SOCIAL CAPITAL	
Networks and Groups	<ul style="list-style-type: none"> • There is minimal access to economic institutions, women's groups or religious organisations • There is no mosque in Golovasi
Leadership	<ul style="list-style-type: none"> • Muhtars are found in each settlement and village elders, religious leaders and teachers play an important role

**BTC PROJECT EIA
TURKEY**

Tolerance	<ul style="list-style-type: none"> • There is tension between the local fishermen who use traditional nets and non-local fishermen who use capital-intensive methods, fish in deeper water and (according to the local fishermen) damage the sea bed fauna and flora • Some tensions exist resulting from the lack of employment and social and environmental impacts from existing industrial developments • The communities are generally close-knit and not used to outsiders • Communities are worried about the impact of in-migrants on competition for the already scarce resources and the impact of construction workers on current codes of social behaviour • Inhabitants are concerned over the loss of access to fishing grounds, environmental pollution disturbance to the marine ecology and the lack of employment for local people at the current Botaş developments
Access to wider institutions & ability to demand	<ul style="list-style-type: none"> • There is negligible access to wider institutions • There is no organised civil society and ability to demand is minimal • Five households are aware of a fishing association called 'Yumurtalık Balıkçılık ve Su Ürünleri cooperation'

Table 2: Livelihoods Analysis: Karatepe

NATURAL CAPITAL	
Land	<ul style="list-style-type: none"> • A large proportion of settlement arable land was expropriated during the 1990s and declared a Free Trade Zone. Much of this land remains unused. This expropriation significantly decreased the land available to villagers for agriculture • 65% of land is owned by the state and is rented by villagers, 25% is privately owned and 10% is communal • 83% of surveyed households own no land • 55% of the largest plot of land is owned by surveyed households has titles • The average household land holding is 19ha, many landowners own a small area • Very small average plot size (0.9ha) suggesting a high degree of fragmentation due to division through inheritance and due to the large amount of land expropriated for industrial developments • Some land is rented for use from other settlements
Water	<ul style="list-style-type: none"> • All have piped water but the supply is irregular
Agriculture	<ul style="list-style-type: none"> • Agriculture is the main source of income • Agriculture is of greater importance to livelihoods in Karatepe than in Golovasi and Incirli, where fishing is a more significant • Inherited land is split between many benefactors due to the high dependence on agriculture for income within the community. This has resulted in a large number of agricultural plots, land fragmentation and higher levels of dependence on the same land • Agriculture is largely subsistence, with low crop diversity • 100% of land is rain-fed, none is irrigated • Dominant land use is cultivation of field crops (27% of households) and cotton (7% of households) • Field crops are grown mostly for subsistence and cotton is largely grown for sale • Production has decreased due to aridity, fallow land, lack of productivity and the economic crisis experienced by Turkey • Key agricultural issues: scarcity of land, funding of inputs, irrigation and unproductive land
Livestock	<ul style="list-style-type: none"> • Secondary source of income • Cattle and poultry are the most important types of livestock • 64% of surveyed households keep cattle • Key issues: problems with grazing areas, reduced grazing areas due to expropriation by BOTAŞ. Livestock breeding is increasingly more market oriented

**BTC PROJECT EIA
TURKEY**

Marine Fishing	<ul style="list-style-type: none"> Fishing is not an important economic activity for Karatepe, only one household surveyed relies on fishing as the main source of income Fishermen have experienced a decline in catch size which they attribute to an increase in environmental pollution, over-fishing and earthquakes Fishing has increasingly become less profitable as catches have fallen and input prices rise
Quality of environment	<ul style="list-style-type: none"> Increasing industrial development has led to an increase in levels of noise, dust and traffic (particularly unpopular with summerhouse owners) Aridity is a significant problem for agriculture Residents reported that there had been oil leakages causing harm to birds, fish and marine species Odour from storage tanks is a problem, notably because Karatepe is directly adjacent to the tanks
HUMAN CAPITAL	
Population	<ul style="list-style-type: none"> Highest total population: 500 individuals Percentage of adults of working age: 49% between 19-59 years Ratio of males to females: 50 to 50 Total number of households: 80 Natural increase in population due to increase in birthrate, no out-migration or in-migration
Skills	<ul style="list-style-type: none"> A broad range of skills is present in addition to traditional skills in animal husbandry and agriculture based activities 30% of respondents have construction experience Out of the 30 respondents, the following skills are available: welders (3); Operators of heavy machinery (6); mechanics (1); drivers of heavy vehicles (8); catering (2); forestry (1); security (2); administration (2); construction (eg of roads) (7); construction (eg water/sewage pipes) (3); construction of electricity and telecommunications infrastructure (3); construction of marine facilities (2) Older women weave valuable handmade carpets
Knowledge & Info.	<ul style="list-style-type: none"> Traditional knowledge and forms of livelihood are increasingly unprofitable. Revenue from both fishing and agriculture is falling due to a combination of resource loss through expropriation and industrial development, environmental problems such as aridity, higher input costs and lower revenue from sales Villagers are extremely concerned about potential for future employment in the new industrial development particularly after a perceived lack of opportunities from the original BOTAŞ development
Ability to Work	<ul style="list-style-type: none"> Particularly high levels of unemployment (18%) Dependency ratio: 40% below 19yrs 80% of respondents would accept a temporary job offer
Health	<ul style="list-style-type: none"> There is a high incidence of pulmonary and heart diseases At least nine households, out of a total of 30, had one member with a serious health problem over the last year The reasons for health problems are: insufficient health care services, poverty, low quality of drinking water, food and old age
Education	<ul style="list-style-type: none"> 9 out of the 30 respondents have children aged 6-15 and all of them attend school. There is a 100% literacy rate
PHYSICAL CAPITAL	
Transport	<ul style="list-style-type: none"> Low quality asphalt roads New roads have been constructed within the last 5 years A new highway near to the village is currently under construction
Communications & markets	<ul style="list-style-type: none"> 77% of surveyed households have telephones, 5% have mobile telephones There are no public telephones
Energy	<ul style="list-style-type: none"> All of the households surveyed have access to electricity, 79% have a regular supply Alternative energy sources are bottled gas, solar energy, coal, bought wood and cut wood which are use for cooking, heating water and heating

**BTC PROJECT EIA
TURKEY**

Shelter	<ul style="list-style-type: none"> • Of the 30 households surveyed 18 have a concrete floor, 12 have finished floor, 23 have concrete roof, 3 have zinc roof, 2 have roof tiles and 1 has a panel
Water and Sanitation	<ul style="list-style-type: none"> • Piped water supply is available and 43% have a regular supply, the remainder have irregular supplies • Alternative water sources include a private water well, the private water depot, and water carried by tankers from Toros Fertiliser and nearby villages • There is no public sewerage system instead private, covered wells are used for sewage disposal • There is a formalized waste disposal service and garbage trucks collect waste from almost all households, only two households use the local settlement dump
Tools	<ul style="list-style-type: none"> • None of the surveyed villagers have a truck, one has a boat and one has a fishing net
Schools	<ul style="list-style-type: none"> • No primary school or high school • Closest primary school is 2km away and the closest high school is 20km away
Health facilities	<ul style="list-style-type: none"> • No health centres • Services in Ceyhan, Kurtkulagi and Adana are used • Nurses visit the settlement, and midwifery services are adequate • Overall health services are unsatisfactory • There is no private health insurance • 11 of the 30 respondents have public health insurance
Other	<ul style="list-style-type: none"> • Majority of services (eg fire services, library, post office, financial, local government) are not available • A coffee house is present
FINANCIAL CAPITAL	
Savings and Credit	<ul style="list-style-type: none"> • 30% of surveyed households are in debt, the lowest percentage of the directly impacted villages • The majority of debt is owed to relatives, a common characteristic of less wealthy communities
Incomes, including Wage income	<ul style="list-style-type: none"> • Karatepe has the lowest income and asset levels of the settlements around the marine terminal, due to its high dependence on agriculture • Living conditions have deteriorated over the last 5 years • The main income sources are agriculture and semi-skilled work (eg driving) • The sources of income include: fishing (3% of households), wage income (20%) pension (7%), exchange of goods (13%), agriculture (33%), animal husbandry (7%) and help from relatives (13%) • Animal husbandry is the primary form of employment (36% of households surveyed), followed by 'other', such as construction or trade (18% of households surveyed) • 20% of surveyed households have a wage income • Tourism is a source of secondary employment • Karatepe is noticeably less affluent than other directly affected settlements in the area • It has a significantly lower than average per capita income (55% less than the average for the marine area) corresponding with high unemployment rates • Karatepe has the second highest inequality in income distribution due to high unemployment levels • 1% of the economically active population are seasonal workers (agriculture and construction)
Pensions	<ul style="list-style-type: none"> • None of the surveyed households rely on pension or pension allowances
SOCIAL CAPITAL	
Networks and Groups	<ul style="list-style-type: none"> • There is minimal access to economic institutions, women's groups or religious organisations • There is no mosque in Karatepe
Leadership	<ul style="list-style-type: none"> • Muhtars are found in each settlement and village elders, religious leaders and teachers play an important role

**BTC PROJECT EIA
TURKEY**

Tolerance	<ul style="list-style-type: none"> • There is tension between the local fishermen, who use traditional nets, and non-local fishermen who use capital-intensive methods and fish in deeper water. This can damage sea bed fauna and flora • Communities are generally tight-knit and are not used to outsiders • Communities are worried about the impact of in-migrants on competition for scarce resources and the impact of construction workers on current codes of social behaviour • There is concern over the potential loss of access to fishing grounds, environmental pollution disturbing the ecology, and lack of employment opportunities for locals at the current Botaş developments
Access to wider institutions & ability to demand	<ul style="list-style-type: none"> • Negligible access to wider institutions available • No organised civil society and ability to demand is minimal • Five households are aware of a fishing association called 'Yumurtalık Balıkçılık ve Su Ürünleri cooperation'

Table 3: Livelihoods Analysis: Incirli

NATURAL CAPITAL	
Land	<ul style="list-style-type: none"> • A large proportion of arable land was expropriated during the 1990s and declared a Free Trade Zone. A proportion of this land remains unused • Uneven distribution of land is due to previous expropriation and concentration of land into the hands of a few residents and intensively farmed • 95% of land is owned by the state and is neither used nor rented • 83% of surveyed households own no land • There is no communal land • 70% of land owned by surveyed households have land titles for their main plot • Average surveyed household land holding size is small (5ha). • Fragmentation of land occurs due to division through inheritance. • Very small average plot size (0.44ha) due to large amount of land expropriated for industrial developments and fragmentation
Water	<ul style="list-style-type: none"> • There is a piped water supply although most (22 out of 23 respondents) do not have access • Alternative sources used are village fountain and a private water depot
Agriculture	<ul style="list-style-type: none"> • 33% of the settlement land is irrigated, 67% is rain-fed • Agriculture is largely subsistence, with low crop diversity • Land is mainly used for crop cultivation eg grain • Production has decreased due to the decrease in the use of organic fertilisers • Key agricultural issues: land is scarce and inputs are expensive
Livestock	<ul style="list-style-type: none"> • Livestock is the secondary source of income, although bred primarily for household consumption • Animal husbandry is particularly important • 61% of surveyed households keep cattle • Key issues: problems with grazing areas, grazing areas expropriated by BOTAŞ
Marine Fishing	<ul style="list-style-type: none"> • Fishing is one of two main sources of income for 26% of households • Fishermen state there has been a decline in catch size due to: 1) an increase in environmental pollution; 2) trawling by non-local fishermen; 3) over-fishing; 4) increasing size of marine exclusion zones; and 4) illegal fishing by local villagers • Fishing has become progressively less profitable as catches have fallen and input prices have risen • Main fishing months are October and November (mullet is fished all year round) • Key issues: problems with existing security zone, decline in fish stocks
Quality of environment	<ul style="list-style-type: none"> • Increasing industrial development has led to an rise in levels of noise, dust and traffic • Aridity is a significant problem for local agriculture • Respondents reported that oil leakages had harmed birds, fish and marine species • Decreases in fishing catches partly attributed to an increase in environmental pollution

**BTC PROJECT EIA
TURKEY**

HUMAN CAPITAL	
Population	<ul style="list-style-type: none"> • Highest total population: 500 • Total number of households: 100 • Percentage of adults of working age (38%) • Ratio of males: females: 60:40 • Natural increase in population due to increase in birth-rate, no out-migration or in-migration was reported by households • Dependency ratio: 50% of population are aged less than 19 years
Skills	<ul style="list-style-type: none"> • Broad ranges of skills are present, in addition to the more traditional skills of fishing, animal husbandry and agriculture-based activities • 22% of respondents have construction experience • Available skills of the 23 respondents: welders (4); Operators of heavy machinery (2); mechanics (2); drivers of heavy vehicles (5); catering (6); forestry (6); security (3); administration (2); construction eg of roads (4); construction of marine facilities (1)
Knowledge & Info.	<ul style="list-style-type: none"> • Traditional knowledge and forms of livelihood are increasingly unprofitable. Revenue from both fishing and agriculture is falling due to a combination of loss of the land to expropriation and industrial development, environmental problems such as aridity, higher input costs and lower revenue from sales of agricultural products • Villagers are extremely concerned about future employment impacts of the new industrial development
Ability to Work	<ul style="list-style-type: none"> • High levels of unemployment (9% of the respondents) and severe underemployment • 74% of respondents would accept a temporary job offer
Health	<ul style="list-style-type: none"> • Six households had at least one member with a serious health problem during the last year ie stomach problems, fever, gall bladder problems • Reasons for health problems include insufficient health care, insufficient nutrition, poverty, low quality drinking water and contagious illnesses
Education	<ul style="list-style-type: none"> • 100% literacy rate • 12 out of the 23 respondents have children between 6-15 years. All these children attend school
PHYSICAL CAPITAL	
Transport	<ul style="list-style-type: none"> • Low quality asphalt roads • New roads have been constructed within the last five years • No new roads planned
Communications & markets	<ul style="list-style-type: none"> • Most households have access to national telecommunication networks • No public telephones available • 70% of households have a reliable phone service • There is a mobile phone network and 5% of households have mobile telephones
Energy	<ul style="list-style-type: none"> • All households surveyed have access to electricity, although 35% have an irregular supply • Alternative energy sources eg bottled gas, solar energy, bought wood, cut wood and coal are used for heating, cooking and heating water
Shelter	<ul style="list-style-type: none"> • Of the 23 households surveyed 22 have finished floors, 1 has a ground (earth) floor, 20 have a concrete roof, 1 has roof tiles, 1 has a panel and 1 has a tent canvas
Water and Sanitation	<ul style="list-style-type: none"> • Majority of houses have access to piped water, although only 64% of households have a regular supply • Alternative sources: village fountain and a private water depot • No public sewerage system • There is a formalized waste disposal service and garbage trucks collect waste. Other methods used for waste disposal by a few households include burning and usage as fertilizer
Tools	<ul style="list-style-type: none"> • Of the 23 households surveyed, 4 have tractors, none have trucks, 4 have boats and 7 have fishing nets
Schools	<ul style="list-style-type: none"> • No primary or high schools • Closest primary school is 10km away • All 12 children below 15 years belonging to surveyed households attend school

**BTC PROJECT EIA
TURKEY**

Health facilities	<ul style="list-style-type: none"> • No health centres • Nurses visit the settlement and midwifery services are adequate • Overall health services unsatisfactory • Health services in Kurtkulagi, Ceyhan and Adana are used • No private health insurance, there are various public health insurance systems
Other	<ul style="list-style-type: none"> • Majority of services (fire, library, post office, financial, local government) are not available • A coffee house is present • The market is in good condition • There is a fishing port
FINANCIAL CAPITAL	
Savings and Credit	<ul style="list-style-type: none"> • 44% of households are in debt • The majority of debt is owed to relatives as is characteristic of poorer communities
Incomes, including Wage income	<ul style="list-style-type: none"> • Incirli is ranked seventh amongst the 9 settlements in terms of income and assets • Living conditions have deteriorated over the last 5 years • Main income sources are animal husbandry and fishing • Breakdown of income sources: fishing (30%); wage income (30%); pension (17%); tourism/ trade (9%); agriculture (17%); and help from relatives (13%); animal husbandry (30%) • 30% of households have a wage income (permanent salaried job) • Main employment sectors are animal husbandry (36% of surveyed households), the utilities (electricity, gas, water) (26%), and fishing (23%) • Tourism is a source of secondary employment
Pensions	<ul style="list-style-type: none"> • None of the surveyed households rely on pensions and pension allowances
SOCIAL CAPITAL	
Networks and Groups	<ul style="list-style-type: none"> • Minimal access to economic institutions, women's groups or religious organisations. • There is no mosque in Incirli
Leadership	<ul style="list-style-type: none"> • Muhtars are found in each settlement and village elders, religious leaders and teachers play an important role
Tolerance	<ul style="list-style-type: none"> • There is tension between the local fishermen who use traditional nets and non-local fishermen who use capital-intensive fishing methods, fish in deeper water and may damage the sea bed fauna and flora • The communities are generally close-knit and not used to outsiders • Communities are worried about the impact of in-migrants on competition for already scarce resources and the impact of construction workers on current codes of social behaviour • There is concern over the potential loss of access to fishing grounds, environmental pollution disturbing the ecology, and lack of employment opportunities for locals at the current Botaş developments
Access to wider institutions & ability to demand	<ul style="list-style-type: none"> • Negligible access to wider institutions • No organised civil society and ability to demand is minimal

Appendix B6 - Location Impacted Surveyed Settlements

Box 1: Location Impacted Surveyed Settlements

Settlements within 500 meters of the pipeline route (D):

Ardahan: Turkoğlu, Armutveren, Kayımlı, Doğrular, Posof Merkez, Çakırkoç, Asmakonağı, Kırkoy (Damla), Subaşı, Çimliçayır, Alaçam, Ardahan Merkez İlçe, Balıkçılar, Kartal Pınar, Orta Geçit, Tepesuyu, Dağcı

Kars: Tuynun, Hasbey, Beykoy, Başkoy, İsisu, Karaorgan

Erzurum: Yukarı Bademozu, Akçataş, Kırkdikme, Aşağı Çakmaklı, Yapağı, Tepecik, Altınbaşak, Beypınarı – Oznu, Kahramanlar, Paşayurdu, Karabıyık, Çaykoy, Gulludere, Yenikoy, Hacı Hamza, Kukurtlu, Çatalbayır, Yukarı Sogutlu

Erzincan: Tercan (Merkez), Topal Hasan, Begendik, Bakacal Mah, Harman Tepe, Balıklı Koy, Yeşil Kaya, Verimli, Doganyuva, Başkoy, Yayla Kent, Yurtbaşı dogankent, Alacaath

Gumüşhane: Gunbatur, Guzyurdu

Sivas: Kemerli, Piredede, Çukuryurt, Durucan, Yaylacık, Derekoy, Kılıçkoy, Adamfakı, Yukarı Adamfakı, Sucak, Topçuyenikoy, Akpınar, Tahtakement, Sivritepe, Beştepe, Paşakoy, Harmandalı, Taşlıhoyuk.

Kayseri: Uçpınar, Hilmiye, Aşağı Borandere, Yukarı Borandere, Karapınar, Tekneli, Yaylacı, İncedere Mah, Sarız Merkez, Altısogut, Karayurt, İnce mağara, Kurudere

Kahramanmaraş: Keklikoluk, Tahirbey, Mahmutbey, Mehmetbey, Çağlayan, Taşoluk, Çokak, Akifiye, Altınboga, Andırın Merkez, Altınoluk, Yeşilova (Tokmaklı), Kesim (Yeşilova), Kumarlı

Osmaniye: Sakarcalık

Adana: Gunyazı, İmran

Settlements with land intersected by the pipeline (L):

Ardahan: Turkoğlu, Armutveren, İncedere (Taskıran), Kayımlı, Doğrular, Posof Merkez, Çakırkoç, Kırkoy (Damla), Sogutlukaya, Aşıkzulali, Burmadere, Çimliçayır, Avcılar, Koyunpınar Koyu, Alaçam, Ardahan Merkez İlçe, Balıkçılar, Kartal Pınar, Orta Geçit, Tepesuyu, Kuçuk Sutluce, Çobanlı, Beşiktaş, Haskoy, Çalabaş, Dağcı.

Kars: Buyukbogatepe, Bozkuş, Hasbey, Baykara Koyu, Darbogaz, Akçakale, Yenice, Karakale, Beykoy, Başkoy, Kurbançayırı, İsisu, Karaorgan

Erzurum: Horum, Hacı Ahmet, Yukarı Bademozu, Aşağı Bademozu, Akçataş, Mollamelik, Kalender, Kırkdikme, Aşağı Kızılca, Aşağı Çakmaklı, Yapağı, Esendere, Tepecik, Altınbaşak, Alvar, Yukarı Çakmak, Gogender, Çiçekli, Ağaclar, Golcegiz, Ovakoy, Korucuk, Buyuktuy, Pusudere Village, Uzun Ahmet, Uzun Ahmet, Çayırtepe, Sogucak, Dadaş, Ortaduzu, Yeşilova, Mulk, Altınbulak, Çayırca, Beypınarı – Oznu, Kahramanlar, Alabey, Paşayurdu, Çigdemli, Alaca, Gelinkaya, Başçakmak, Tazegul, Ortabahçe, Karabıyık, Çaykoy, Merdivenkoy, Gulludere, Yenikoy, Yenikoy, Hacı Hamza, Kukurtlu, Çatalbayır, Azap, Yukarı Danişment, Yukarı Sogutlu

Erzincan: Aktaş, Tercan (Merkez), Topal Hasan, Begendik, Çadırkaya, Harman Tepe, Çayırılı (Merkez), Balıklı Koy, Verimli, Başkoy, Yayla Kent, Çaykent, Gunyuzu, Yurtbaşı dogankent, Alacaath, Teknecik Mah, Şahverdi, Kalkancı, Avşarozu, Hacı koy, Arpayazı, Halitler, Aydın (cık)

Gumüşhane: Gulluce, Gunbatur, Guzyurdu, Akdag

Sivas: Kevenli, Kemerli, Piredede, Çukuryurt, Durucan, Valituncel Mah, Yaylacık, Begendik, Derekoy, Kılıçkoy, Adamfakı, Yukarı Adamfakı, Nasır, Sucak, Tekkekoy, Topçuyenikoy, Derebent, Demiryurt, Alçıoren, Golcuk, Bakımlı, Celalli, Akpınar, Karayun, Tahtakement, Yavu, Sivritepe, Beştepe, Harmanlık, Tutmaç, Karaşar, Kurtlukaya, Bogazdere, Yazıcık, Yeşilyurt, Başoren, Paşakoy, Mutubey, Harmandalım, Kurçuyurt, Taşlıhoyuk, Alaca Mah, Hacimirza, Karşıyaka Mah, Safak, Tuzluçayır

Kayseri: Methiye, Pazarsu, Taşlıgeçit, Orenşehir, Uçpınar, Hilmiye, Taşoluk, Alamescit Koyu, A.Kızılcıevik, Altıkesek, Aşağı Borandere, Yukarı Borandere, Karapınar, Tekneli, Yaylacı, İncedere Mah, Sarız Merkez, Çorekdere, Kızılınar, Altısogut, Fettahdere, Ayrınlık, Karayurt, İnce mağara, Kurudere, Yeşilkent Koyu 1, Yeşilkent Koyu 2, Yeni Mah, Bahçeli

Kahramanmaraş: Dogankonak, Keklikoluk, Mursel, Bozhoyuk, Tahirbey, Mahmutbey, Mehmetbey, Yeni Mah, Yiricek Koyu, Taşoluk, Fındıklı Koyak, Degirmendere, Kuçuk Çamurlu, Geben, Çokak, Akifiye, Altınboga, Tufanpaşa, Altınoluk, Başdoğan, Hacive Uşığı, Yeşilova (Tokmaklı), Kesim (Yeşilova), Kumarlı, Çiçekli, Gokçeli, Orhaniye

Osmaniye: Kayasuyu, Yenigun, Çıgıcık Koyu, Topraktepe, Y.Bozkuyu, Aşağıbozkuyu, Orhaniye, Sakarcalık, Kesim, Kırmacı

Adana: Gunyazı, İmran, Hamdilli, Abidiye, Selimiye, Sarımazi, Kurtkulacı, Kurtpınar, Tatarlı

Settlements within 5km of a Pump Station or the Pressure Reduction Station (P):

PT1 - Ardahan: Çakırkoç, Asmakonağı, Kırkoy (Damla), Subaşı, Sogutlukaya, Aşıkuzeyir

PT2 – Erzurum: Alvar, Yukarı Çakmak, Gogender, Çiçekli, Ağaclar, Ovakoy, Bingol, Yigittaş

PT3 – Erzincan: Başkoy, Orenşehir, Esendoruk, Turnaçayırı, Yaylalkoy

PT4 – Sivas: Kazanpınar, Bogazdere, Yazıcık, Başoren, Alaca Mah

IPT 1 – Kahramanmaraş: Geben, Çokak, Akifiye

Settlements within 5km of a Primary Construction Camp (C):

Lot A – Erzurum: Çobandede (Koprıkoy), Egirmez, Epsence, Esendere, Tepecik, Yukarı Danişment

Lot B – Sivas: Kalkan Çiftliği Mahallesi, Kadriye, Tekkekoy

Lot C - Kahramanmaraş: Mehmetbey, Çamkopru, Buyukpınar, Gumgum, Çağlayan, Karadurdular Mah, Elekler Mah, Goksun

**BTC PROJECT EIA
TURKEY**

Settlements within 2km of a Block Valve Station (B):

Ardahan: İncedere (Taskiran), Kalkankaya, Kayımlı, Dogrular, Posof Merkez, Çakırkoç, Subaşı, Sogutlukaya, Avcılar, Kartal Pınar, Beşiktaş

Kars: Bozkuş, TuYGun

Erzurum: Akçataş, Altınbaşak, Çobandede (Koprakoy), Çayırtepe, Alabey, Karabıyık

Erzincan: Verimli, Mustafa Bey, Yurtbaşı dogankent, Alacaatlı, Arpayazı

Gumüşhane: Gunbatur, Guzyurdu, Akdag

Sivas: Gokdere, Koyunkaya, Uyanık, Toklucak, Çukuryurt, Adamfakı, Yukarı Adamfakı, Topçuyenikoy, Golcuk, Celalli, Sivritepe, Tutmaç, Paşakoy, Kurçuyurt

Kayseri: Uçpınar, Yukarı Borandere, Kotukoy, Tekneli, Kurudere

Kahramanmaraş: Tahirbey, Yeşilova (Tokmaklı)

Osmaniye: Aşagıbozkuyu, Koyyeri

Adana: Erenler

Settlements within 2km downstream of the pipeline route (R):

Ardahan: Ardahan Merkez İlçe

Kars: Buyukbogatepe

Erzurum: Hacı Ahmet, Akçataş, Degirmenler, Buyuktuy, Çigdemli

Erzincan: Tercan (Merkez), Topal Hasan, Harman Tepe, Yayla Kent, Çilhoroz, Sıpdığın, Kandilkoy, Tuzluçayır, Kasaplar

Gumüşhane: Gulluce

Sivas: Topçuyenikoy

Kayseri: Uçpınar, Hilmiye, Aşagı Borandere, Karayurt, Kurudere.

Kahramanmaraş: Mehmetbey, Taşoluk, Degirmendere, Geben, Altınboga, Bektaşlı

Osmaniye: Cebicli, Tokmaklı

Adana: Gunyazı

APPENDIX B7 - SOIL ASSESSMENT TECHNICAL NOTE

1 INTRODUCTION

This appendix summarises the methods used to assess the project's soil-related environmental impacts. It should be noted that the methodology was applied at an early stage in an evolving design and with the objectives of feeding into the EIA and the development of reinstatement measures. At the time the work was undertaken, only limited opportunities for field work were possible due to seasonal access constraints. For this reason a key component of the implementation phase will be systematic pre-construction field surveys by soils experts to feed into site-specific reinstatement procedures.

The BTC corridor cuts across numerous soil landscapes and several soil climates, each with its own intrinsic characteristics and related functions in terms of land use, vegetation, drainage etc. Soils are complex entities. To facilitate the assessment they were looked at especially in terms of their erosion potential as this has important implication to construction methods and reinstatement specifications. Other important issues are soil productivity, drainage (particularly vulnerability to waterlogging), soil quality (and potential contamination) and the secondary impacts to watercourses from the mobilisation of sediment to them. Soil contamination is addressed in the EMMP (Appendix C1) and water related impacts are addressed in Section 3 'significance criteria'. This technical note focuses on erosion, together with productivity and vulnerability to waterlogging.

Time and the magnitude of change are important factors to consider. The project requires that land is trenched, its soil stored, and then reinstated. However, different soils behave in different ways, and not all will be simple to return to a pre-project condition. The question becomes one of duration: of how long it would take the soils to return to a near pre-project condition; and of amount: of how big the change will be. In the case of some soils, it may require time potentially measured in terms of decades; other soils will require less, say two to three years, to return to a state that is capable of fulfilling most of its original functions.

Three notions of impact are therefore important: (1) the condition of land prior to reinstatement, (2) its condition after reinstatement, otherwise addressed as (short-term) *residual impact*, and (3) the longer term impact that depends on the recovery of soil over time with or without further management intervention. In evaluating residual impacts, it has been assumed the project will enact perfect reinstatement: for example, that mineral fertiliser will be applied to compensate for fertility loss and that soil erosion will be controlled according to engineering specifications. However, residual impacts will remain, generally on the poorer soils of the sort that do not respond well to mineral fertilisers or that have characteristics that will significantly challenge traditional soil erosion control methods.

The remainder of this Technical Note summarises the methodology used for assessing erosion, and also provides some notes on productivity and potential for waterlogging. The results of the assessment are summarised on the Impact Tables in section 6, and appear elsewhere in the EIA.

2 EROSION

The project affects numerous soils. Each soil offers a unique response to rainfall and runoff: some generate more runoff than others; some have particles that detach more readily than others; some occur on steep lands whose low mechanical strength contributes to soil loss. These considerations were taken into account by applying the Universal Soil Loss Equation (USLE)¹ to different configurations of soil, landscape, and soil erosion control method. The project's reinstatement procedures are configured around notions of soil loss tolerance rates as determined by the USLE. Under this concept, soil loss is the rate of soil removal that is balanced by the rate of soil generation. The assessment is based on a soil loss tolerance rate of 7 tonnes per hectare per year ($7 \text{ T ha}^{-1} \text{ y}^{-1}$). This is in line with the Reinstatement Plan's Project Erosion Performance Criteria, which requires areas outside of Ecologically Sensitive Areas (ESAs) to meet a moderate Erosion Class III (ranging between 5 and $10 \text{ T ha}^{-1} \text{ y}^{-1}$). ESAs will meet Erosion Class II (ranging between 2 and $5 \text{ T ha}^{-1} \text{ y}^{-1}$).

Residual impacts will occur wherever soil losses exceed the general reinstatement measure. In tuff, for example, its low rate of soil generation (probably in the order of $1\text{--}2 \text{ T ha}^{-1} \text{ y}^{-1}$) will result in soil loss despite standard engineering methods of soil erosion control being implemented, and will therefore require additional measures if significant erosion is to be avoided or at least controlled to a manageable level. A second example of high residual impact involves steep marlacious soils in high rainfall areas, where landslides might result where internal drainage has been disturbed.

Tables 1 and 2 provide supporting information on project area soils and their management; Table 3 summarises erosion potential, mitigation and residual impact based on the application of the methodology described below.

The reinstatement topics discussed below can be organised as belonging to the fields of hydrology and hydraulics, soil conservation and agricultural engineering, and agronomy.

2.1 HYDROLOGY AND HYDRAULICS

Hydrology and hydraulic engineering affects the sizing of drains, channels, and chutes. Small-scale structures for soil conservation have been sized to pass runoff from the 10-year return interval design storm. Selection of the 10-year return period results from the experience of the Bureau of Reclamation in the United States, where it has proven its utility since the 1920s as a sound basis for the design of canals and drainage works. Larger structures, such as broad-base weirs and sills downstream of large pipeline crossings, require engineering designs that take into account the momentum and power of flows having return periods greater than ten years.

Maps of 24-hour storm depths for different return intervals are available from Turkey's DMI Genel Mudurlugu. The pipeline crosses four zones having 24-hour rainfall between 50 and 150mm. Because the transition between the 50 and 150 mm is a narrow band, the designs that follow reduced their analyses to two depths, 50 and 150 mm, with a slender zone of possible over- or under-design separating them.

¹ Wischmeier, W.H., and D.D. Smith. 1978. *Predicting rainfall erosion losses — a guide to conservation planning*. Agriculture Handbook No. 537. U.S. Department of Agriculture, Washington, D.C.

Twenty-four-hour storms are too long for the design of small structures, and depths corresponding to smaller durations, generally less than 10 minutes, were computed from

$$RR_t := \frac{t}{24} \left(\frac{b + 24}{b + t} \right)^n$$

where RRT is the ratio of rainfall falling in duration t to its 24-hour total,
t is time in hours, and
b and n are coefficients.

In Turkey, b = 0.6 and n = 0.835 (DMI Genel Müdürlüğü).

In the specifications that follow, runoff intercepted by cross-drains, chutes, and waterways was calculated from the *Rational Equation*, which calls for design storm intensity in mm h⁻¹ calculated for a duration equal to the time of concentration². Runoff coefficients for use in the *Rational Equation* range between 0.4 for agriculture and 0.7 for construction sites (Schwab et al, 1981; Tourbier and Westmacott, 1981).

Where channel linings are required to resist the tractive shear of flowing water, channel dimensions were computed using the maximum allowable velocity method (Chow, 1959) and taking into account the angles of repose of non-cohesive material. In every case, water velocities were computed to be non-erosive yet remain rapid enough to prevent lodging sediment in the channel.

2.2 SOIL CONSERVATION AND AGRICULTURAL ENGINEERING

The spacing of interceptor cross-drains was computed from the *Universal Soil Loss Equation*, developed in the United States during the 1950–60s for the rationalisation of soil conservation structures in agricultural areas (Wischmeier and Smith, 1978). The *USLE* estimates soil loss from

A = RKLSCP, where

A is the computed soil loss per unit area,
R is the rainfall and runoff factor as erosivity,
K expresses soil erodibility,
L expresses slope length,
S expresses slope steepness,
C is the cover and management factor, and
P is the support practice factor.

The kinds of soil conservation in terms of the engineering aspects of reinstatement proposed by the project relies heavily on L, the slope-length factor, which becomes the spacing between structures such as slope breakers. Accordingly, L can be solved for in the USLE, giving

$$L = \frac{A}{RKSCP}$$

² Time of Concentration: The time of travel from the most remote part of a watershed to its outlet (see Technical Glossary).

In this case, A becomes an index soil loss rate that can be compared to the rate of soil generation. A rate of $7 \text{ T ha}^{-1} \text{ Y}^{-1}$ was developed especially to address the requirements of a number of low formation rate soils in the Project area.

The results separated into three groups: (1) conditions where cross drains are not required (where vegetation alone is sufficient to control soil erosion), (2) conditions where cross drains are required (in addition to vegetation), and (3) conditions where cross drains and vegetation need to be supplemented with mulch. As with cross drains, mulching requirements were computed using the *USLE*.

The main consequence of fewer slope breakers is that additional reinstatement is required to address potential problems on vulnerable slopes. Details are provided in the Reinstatement Plan (see Appendix C2). These revolve around use of jute matting, planting, mulching, promoting rapid growth through use of fertilisers (subject to potential constraints where water resources might be impacted). Additional survey work will be undertaken to formulate these requirements into site-specific reinstatement procedures in the more vulnerable soil areas. In addition such areas will be the focus for post-reinstatement monitoring of recovery and after-care intervention where it may be required.

The resulting recommendations are suitable for a medium level of design by a trained soil conservationist. For general use, the method is preceded by a summary table that reduces spacing to a variable dependent on slope. The summary does not supersede the recommendations but gives guidance suitable for a quick estimate of slope breaker quantities. Its use for construction requires its approval by an on-site environmental inspector.

2.3 AGRONOMY

Planting requirements were estimated on the basis of guidance given in Tourbier and Westmacott (1981) following adjustment for conditions observed in Turkey.

3 PRODUCTIVITY

In engineering terms, topsoil is regarded as the top 0.15 m of the soil profile, albeit some variation to this rule may happen in the case of obviously thin soils or in soils having little horizon development. The removal, storage, and ultimate replacement of topsoil represents a radical disturbance of an environment typically expressed in terms of layers, most of which are thinner and more variable than 15 cm. While the soil's physical constituents of clay, silt, and sand will remain unchanged, the way these interact with soil pores, organic matter, surface litter, infiltration, and soil flora and fauna become very much affected. Expressed as a time sequence, soil flora and surviving fauna will undergo an initial period of enhanced contact with organic material, which they will convert into CO₂ and waste. Mechanically turning over the soil will increase its porosity, thereby augmenting the role of oxygen in the decay and oxidation of organic matter. A period of rapid decline of soil flora and fauna populations will follow once their food (soil organic matter) is consumed.

Heavy equipment will meanwhile be operating on top of subsoil, which it will compact on either side of the trench. Material set aside from the trench, while much lower in organic matter than the topsoil, will nonetheless have its composite layers of rock and gravel mixed up. The reinstatement sequence calls for subsoil to be infilled and compacted on top of the pipe - large debris will be removed for disposal in a registered site. Ripping, subsoiling, or chiselling will then relieve compaction of the subsoil. Mineral composite fertiliser will either be broadcast on top of the subsoil or be mixed with the topsoil, which will then be replaced. Temporary and permanent runoff barriers will be sculpted into the soil surface, which will then be sown (areas in forest or shrubs will be planted) and, depending on erosion hazard, mulched.

Research in tillage systems in North America³ demonstrates a period of about three years before soil flora and fauna populations begin to recover; the recovery for agricultural areas, because soils are evolving into another albeit less severe type of disturbance, will occupy at least two years. Water stable aggregates are unlikely to form until humic cements and other natural substances evolve within the soil profile as part of this process. Soil erodibility will for this reason remain higher than that of the surrounding terrain. Disturbance of subsoil from the trench is unlikely to be important as long as large cobbles and boulders are removed to a registered disposal location.

Soil quality relates in large part to soil structure and tilth. Soil structure can be described in the context of form, stability, and resilience of soil aggregates; tilth is a term that predates modern agriculture but relates to ease of management and productivity. The impact of the project will be to reduce soil quality, albeit with an eventual recovery generally within the range 2–3 years. Exceptions will involve soils having low formation rates, especially those formed from tuff, soft limestone and gypsum. Tuff-derived soils could require 15–20 years to recover, for example.

Soil productivity as crop yields or biomass is compensated to a large extent by the addition of mineral fertiliser and by cultural treatments that relieve subsoil compaction and control soil erosion. Mulch will help prevent surface crusting and ensure a suitable soil habitat for seed germination. Plants absorb nutrients from the soil (and from fertiliser) during their period of vegetative growth; their nutrient requirements as seedlings or later during their seed formation stage is low. The construction contractor may not be able to apply fertiliser according to a rigorous calendar of plant requirements, and fertiliser unused by vegetation would be available for transport. Ammonium-nitrogen, for example, is toxic to fish; nitrate-nitrogen features in drinking water quality standards; phosphate-phosphorus can increase the growth of aquatic plants and algae that increase the eutrophication of

³ See Soil and Water Conservation Society, 1995, *Farming for a Better Environment: A White Paper*, Ankeny, Iowa, 67pp.

water bodies. All fertiliser use, especially near to water resources and in areas of botanical value will be liable to strict management.

4 WATERLOGGING

Ponded water can result from poor reinstatement, and is unlikely to be a problem other than in mountain valleys where waterlogging is already a problem. Its evaluation results purely from experience with flood planning in poorly drained areas, and derives from visual assessment of potential channel storage.

BIBLIOGRAPHY

Wischmeier, WH and DD Smith. 1978. *Predicting Rainfall Erosion Losses: A Guide to Conservation Planning*. US Dept Agriculture. Agriculture Handbook No. 537.

Tourbier, T and R Westmacott. 1981. *A Handbook of Measures to Protect Water Resources in Land Development*. The Urban Land Institute. WaDC. 176 pp.

Table 1: Project soils and their management

Temp. Regime	Terrain	Topography	Abbreviated Soil Taxonomy ⁴	Soil Erodibility ⁵	Construction mitigations required by the project	
1. Thermic	1.1 Thermic plains	1.1.1 Alluvial plains	Quartzipsamments	High	Minimise disturbance. Replace soil sequence. Avoid dust on neighbouring fields. Avoid construction on saturated soils.	
		1.2.1 Sloping lands	Calcixerolls	Moderate	Avoid mixing topsoil with subsoil. Avoid actions that increase soil humidity on steep slopes. Avoid construction on saturated soils.	
		1.2.2 Valley lands	Calcixerolls	Moderate		
	1.2 Thermic foothills	1.2.3 Fluvial lands	Calcixerolls	Moderate	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.	
		2.1.1 Plateau flat and undulating lands	Marl	Calcixerolls	Low	Avoid mixing surface with underlying tuff
			Tuff	Dystrandepts	Moderate	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.
2.1 Mesic plateaux	2.1 Mesic plateaux	2.1.2 Plateau scarps	Alluvium	Xerorthents	High	Control runoff. Replace soil sequence. Replant disturbed surfaces.
			Xerochrepts	Xerochrepts	High	
			Tuff	Dystrandepts	Moderate	
		2.1.3 Sloping and dissected lands	Non-tuff	Xerochrepts	High	Control runoff. Replace soil sequence. Replant disturbed surfaces.
			Xerochrepts	Xerochrepts	High	Control runoff. Replace soil sequence. Replant disturbed surfaces.
			Skeletal	Xerochrepts	High	Control runoff. Replace soil sequence. Replant disturbed surfaces.
	2.2 Mesic uplands	2.2.1 Mountains and sloping land	Haploxeralfs or Rhodoxeralfs	Xerochrepts	Moderate	Control runoff. Replace soil sequence. Replant disturbed surfaces.
			Xerochrepts	Xerochrepts	Moderate	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.
			Xerofluvents	Xerofluvents	High	Use equipment mats where appropriate. Replace soil sequence. Replant disturbed surfaces.
		2.2.2 Valley flat and undulating land	Xerochrepts	Xerochrepts	High	Control runoff. Replace soil sequence. Replant disturbed surfaces.
			Calcixerolls	Calcixerolls	Low	Avoid mixing topsoil with subsoil. Avoid construction on saturated soils.
			Xerochrepts	Xerochrepts	High	Control runoff. Replace soil sequence. Replant disturbed surfaces.
2.3 Mesic gypseous uplands	3.1.1 Mountains and sloping lands	Cryochrepts	Cryochrepts	High	Avoid construction during spring thaw or on saturated soils. Control runoff. Replace soil sequence. Replant disturbed surfaces.	
		Cryorthents	Cryorthents	High	Control soil moisture in construction zone, possibly by diverting irrigation. Employ construction mats. Replace soil sequence. Replant.	
		Cryandepts	Cryandepts	Moderate	Control runoff. Replace soil sequence. Replant.	
	3.1.2 Valleys	Cryochrepts	Cryochrepts	High	Avoid construction during spring thaw or on saturated soils. Control runoff. Replace soil sequence. Replant disturbed surfaces.	
		Cryochrepts	Cryochrepts	High	Avoid construction during spring thaw or on saturated soils. Control runoff. Replace soil sequence. Replant disturbed surfaces.	
		Cryochrepts	Cryochrepts	High	Avoid construction during spring thaw or on saturated soils. Control runoff. Replace soil sequence. Replant disturbed surfaces.	

⁴ Soil Taxonomy developed in 1960 by the Soil Survey Staff of the US Department of Agriculture and modified in 1964, 1975, and 1994.

⁵ Rate of soil loss on a unit plot 72.6 ft long, with a uniform length-wise slope of 09 percent, in continuous fallow, and tilled up and down the slope.

Table 2: Understanding project soils

Soil Name	Simplified Meaning of Soil Name	Principal Soil Value	Soil Constraints/ Impacts	Soil Management
Thermic Sandy Orthic Quartzipsammments	Warm sandy soils, little horizon differentiation	Irrigated agriculture	Rapid drainage requires high frequency of irrigation	Minimise disturbance. Replace soil sequence. Avoid dust on neighbouring fields. Avoid construction on saturated soils.
Thermic Orthic Calcixerolls	Warm calcareous soils having a dark brown surface	Rainfed agriculture, natural vegetation	Soil erosion. Deep-seated landslides on slopes steeper than 30°.	Avoid mixing topsoil with subsoil. Avoid actions that increase soil humidity on steep slopes. Avoid construction on saturated soils.
Thermic Typic Xerofluvents	Flood-plain soils having little horizon differentiation	Agriculture, often for irrigated row crops. Flood plain channel storage.	Bank erosion, soil drought	Replace soil sequence. Avoid construction on saturated soils. Strengthen banks at crossings.
Mesic Calcixerolls	Calcareous soils that are dry during the summer and have a dark brown surface	Rainfed agriculture, often for cereals	Soil erosion	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.
Mesic Entic Dystrandeps	Infertile soils formed over tuff and having a pale brown surface. Low summer rainfall.	Watershed, light grazing, conservation forestry, habitat	Soil productivity, despite its low value, is difficult to maintain.	Avoid mixing surface with underlying tuff.
Mesic Xerorthents	Depositional soil having little horizon differentiation. Low summer rainfall. Brown surface.	Rainfed agriculture, usually for cereals.	Soil erosion	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.
Mesic Xerochrepts	Soils formed in place on slopes with little horizon development. Low summer rainfall. Pale brown surface.	Watershed, light grazing, habitat	Soil erosion	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Mesic Xerofluvents	Flood-plain soils having little horizon differentiation. Low summer rainfall.	Agriculture, grazing, flood-plain channel storage, habitat	Often saturated throughout much of summer	Use equipment mats where appropriate. Replace soil sequence. Replant disturbed surfaces.
Typic Haploxeralfs	Soils on shallow slopes with strong soil horizon development	Agriculture, grazing, forestry, habitat, watershed	Soil erosion.	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Typic Rhodoxeralfs	Reddish-coloured soils on shallow slopes with strong soil horizon development	Agriculture, grazing, forestry, habitat, watershed	Soil erosion	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Cryochrepts	Cold soils formed on slopes, often with a pale brown surface	Grazing, conservation forestry, habitat, watershed	Soil erosion, shallow land slides, frost heaving.	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Andeptic Cryorthents	Cold, meadow soils	Hay, habitat, grazing	Often saturated throughout summer. Frost heaving.	Control soil moisture in construction zone, possibly by diverting irrigation. Use construction mats. Replace soil sequence. Replant.
Typic Cryandepts	Cold pale-brown soils on flat and undulating lands over tuff, other volcanic rocks	Habitat, low-productivity forestry, grazing, watershed	Soil productivity	Control runoff. Replace soil sequence. Replant.
Andic Cryochrepts	Cold, thin, pale-brown soils on sloping lands over tuff, other volcanic rocks.	Habitat, low-productivity forestry, grazing, watershed	Soil productivity. May be thin	Control runoff. Replace soil sequence. Replant.

Table 3 Soil erosion potential, mitigation and residual impact

Soil Temp. Regime	Soil landscape	Topography	Abbreviated Soil Taxonomy	Intrinsic Soil Erodibility ⁶	Unmitigated Soil Loss following construction ³	Mitigation Measures ⁷	Mitigated Soil Loss 3 years following construction ⁸	Natural rate of soil generation ⁹	Residual Impact ¹⁰	
1. Thermic	1.1 Thermic plains	1.1.1 Alluvial plains	Quartzipsamments	High	Low	1.1.1	Low	LTI	Low	
		1.2.1 Sloping lands	Calcixerolls	Moderate	High	1.2.1	Horticultural rate	LTI	High ¹¹	
		1.2.2 Valley lands	Calcixerolls	Moderate	Moderate	1.2.2	Horticultural rate	=	Low	
	1.2 Thermic foothills	1.2.3 Fluvial lands	1.2.3.1	Calcixerolls	Moderate	Moderate	1.2.3	Low	=	Low
			2.1.1 Plateau flat and undulating lands	Marl Tuff Alluvium	Low Moderate High	Moderate Moderate Low to moderate	2.1.1.1 2.1.1.2 2.1.1.3	Horticultural rate Low Low	LTI LTI = or LTI	Low High ¹² Low
			2.1.2 Plateau scarps	Xerochrepts	High	Very high	2.1.2	Moderate to high	LTI	High ⁹
	2.1 Mesic plateaux	2.1.3 Sloping and dissected lands	2.1.3.1	Dystrandeps	Moderate	High	2.1.3.1	Moderate	LTI	High ⁹
			2.1.3.2	Xerochrepts	High	High	2.1.3.2	Moderate	= or LTI	Moderate to high
			2.1.4 Fluvial lands	Xerochrepts	High	Low to moderate	2.1.4	Low to moderate	=	Low
			2.2.1 Mountains and sloping land	Skeletal Xerochrepts	High	Very high	2.2.1	Moderate	LTI	Moderate to high
2.2 Mesic uplands	2.2.2 Valley flat and undulating land	2.2.2.1	Haploxeralfs	Moderate	High	2.2.1	Low to moderate	= or LTI	Low to moderate	
		2.2.2	Xerochrepts	Moderate	Low to moderate	2.2.2	Horticultural rate	=	Low	
		2.2.3 Fluvial lands	Xerifluvents	High	Low to moderate	2.2.3	Low	=	Low	
2.3 Mesic gypseous uplands	2.3.1 Gypseous ridges	2.3.1	Xerochrepts	High	Very high	2.3.1	Moderate	LTI	High	
		2.3.2	Calcixerolls	Low	High	2.3.2.1	Moderate	=	Low	
		2.3.2	Xerochrepts	High	Moderate	2.3.2.2	Low	LTI	Low to moderate	
3. Cryic uplands	3.1.1 Mountains and sloping lands	3.1.1	Cryochepts	High	Very high	3.1.1	Moderate to high	LTI	Moderate	
		3.1.2 Valleys	Cryorthents	High	High	3.1.2	Low to moderate	=	Low	

⁶ See footnote 2. Low, <10 T ha⁻¹ Y⁻¹; moderate, 10–50 T ha⁻¹ Y⁻¹; high, 50–200 T ha⁻¹ Y⁻¹; very high, 200 < T ha⁻¹ Y⁻¹ (source: FAO, 1979, *A provisional methodology for soil degradation assessment*).

⁷ Refers to row numbers in Table 1.a.

⁸ Assumes perfect reinstatement with post-construction maintenance. Horticultural rate means rate dependent on agricultural management, probably low to moderate.

⁹ LTI means average soil generation rate less than index value of 7 T ha⁻¹ Y⁻¹; MTI means more than index value of 7 T ha⁻¹ Y⁻¹; = means about equal to index value of 7 T ha⁻¹ Y⁻¹.

¹⁰ Low, moderate, or high. Assumes perfect reinstatement with maintenance. Refers solely to soil-related issues.

¹¹ Potentially high rating results from deep-seated landslide risk

¹² Potentially high rating results from difficulty of reinstating dystric soils, soils having low inherent mechanical strength, or soils having other characteristics that make them difficult to reinstatement.

BTC PROJECT EIA
TURKEY

Soil Temp. Regime	Soil landscape	Topography	Abbreviated Soil Taxonomy	Intrinsic Soil Erodibility ⁶	Unmitigated Soil Loss following construction ³	Mitigation Measures ⁷	Mitigated Soil Loss 3 years following construction ⁸	Natural rate of soil generation ⁹	Residual Impact ¹⁰
	3.2 Cryic plateaux	3.2.1 Plateau flat and undulating lands 3.2.2 Sloping and dissected lands	Cryandepts Cryochrepts	Moderate High	Moderate to High Very high	3.2.1 3.2.2	Low Moderate to high	= LTI	Low Low to moderate

Appendix B8 – Information and Documents Requested by State the Authorities

- 1. Forestry Evaluation Forms**
- 2. Distance of AGIs to the Nearest Forest Land**
- 3. Field Data Table**
- 4. Amount of Forest Lands Traversed by BTC Pipeline Route in Each Province**

Note: Relevant forestry maps are available for viewing upon request to the Ministry of Environment, Ministry of Forestry and BOTAS offices.

Investigation and Evaluation Form

REGIONAL DIRECTORATE OF FORESTRY : ADANA
DIRECTORATE OF FORESTRY ADMINISTRATION : KADIRLI
FORESTRY ADMINISTRATION OFFICE : KADIRLI (Center)

Province : OSMANİYE
District : KADIRLI
Village : Kesim, Yenigun, Kayasuyu, Y. Cıyanlı, Cigdemli, Topraktepe,
Yukaribozkuyu

1. Applicant

Name SURNAME : BOTAS PETROLEUM PIPELINE CORPORATION
Address : -

2. Type of Facility and
Related Law : -

3. Name of Series : Kadirli

4. Number of Divisions : 253, 258, 257, 245, 246, 227,226, 225, 192, 198, 197,
196, 177, 158, 159, 157, 160, 138, 114, 115, 92, 70,
68, 71, 72, 74, 75, 77, 78, 59.

5. Tree Species and Density

a) Management Type : Grove
b) Existing Tree Types : Çz
c) Types of Tree Species : Çbçz, Çza, ÇbkBt.

6. The coordinates of the boundary points of the subject area within the EIA
Report shown on 1/25.000 scaled maps.

	Point 1	Point 2	Point 3	Point 4
Horizontal (X)	4134955,895	4139710,549	4142137,361	4144074,603
Verticle (Y)	514707,910	516934,696	517440,241	322080,950

7. The coordinates of the area which permit is demanded for Operation shown on
1/1.000 scaled maps.

	Point 1	Point 2	Point 3	Point 4
Horizontal (X)				
Verticle (Y)				

8. The Cadastre and Restriction Condition of Forest:

Area of the Operation Site : 440.000 m²
a) Forest Area : 165.000 m²
b) Non-Forest Area :

9. The Area of the Site asked for Permit : 165.000 m²

10. Purpose of Demand : Crude oil Pipeline Facility

11. Any other Application for the Demanded Site : No.
12. Whether the demanded area was burnt by fire, separated for rejuvenation or if it is within the afforestation area of the dam basin according to matter 18 of 6831 numbered Forestry Law:
There has been no existing fire in the area and no part has been separated for rejuvenation. It corresponds to the afforestation area.
13. Whether the demanded area is in the; tohum mesceresi, national parks, game and wild life areas, tourism area, specific environmental conservation region, forbidden military region and site area.
No it is not.
14. Whether there will be any problem considering the forestry works or Forest-Public relations:
No problem will be caused.
15. What should be the sensitivity level and the measures to be taken according to Forest Fires:
The forest cover on the demanded area should be removed.
16. How the forest assets will be used:
A major part of the area is corrupted, it will be sold as fire wood.
17. The location of the facility, the population of in-forest villages in the vicinity and the distance to the nearest villages (if there exist any in-forest villages, the effects on drinking water on health, agricultural areas, animal husbandary etc.):
Drinking water passes through Kayasuyu and Yenigun villages and has no effects on public health.
18. What effects will establishing the facility bring to employment:
New job opportunities will be provided.
19. Are there any activities within the area that has been given the EIA approval document (if there is what is the type, company and field of activity (Ha)):
There exist no activities.

The Investigation and Evaluation Form was prepared by

Kadastro ve Mül. Şube Müd.
Asım Sağbili

İşletme Müd. Yard.
Fevzi Özdil

Kadirli Orman İşl. Şef.
Mehmet Solak

Investigation and Evaluation Form

REGIONAL DIRECTORATE OF FORESTRY : ADANA
DIRECTORATE OF FORESTRY ADMINISTRATION : Saimbeyli
FORESTRY ADMINISTRATION OFFICE : Tufanbeyli

Province : Adana
District : Turfanbeyli
Village : Keklikoluk
Place : Sakaltutan

1. Applicant

Name SURNAME : Ministry of Energy and Natural Resources Department
of Transit Pipeline

Address : -

2. Type of Facility and

Related Law : Petroleum Pipeline

3. Name of Series : Tufanbeyli

4. Number of Divisions : 317

5. Tree Species and Density

a) Management Type : Preservation

b) Existing Tree Types :

c) Types of Tree Species : ÇBGS-T

6. The coordinates of the boundary points of the subject area within the EIA Report shown on 1/25.000 scaled maps.

	Point 1	Point 2	Point 3	Point 4
Horizontal (X)	-	-	-	-
Verticle (Y)	-	-	-	-

7. The coordinates of the area which permit is demanded for Operation shown on 1/1.000 scaled maps.

	Point 1	Point 2	Point 3	Point 4
Horizontal (X)	-	-	-	-
Verticle (Y)	-	-	-	-

8. The Cadastre and Restriction Condition of Forest:

Area of the Operation Site : 49.500 m²

a) Forest Area : 5.500 m²

b) Non-Forest Area : 44.000 m²

9. The Area of the Site asked for Permit : 5.500 m²

10. Purpose of Demand : Crude Oil Pipeline Facility

11. Any other Application for the Demanded Site : No other application was made.
12. Whether the demanded area was burnt by fire, separated for rejuvenation or if it is within the afforestation area of the dam basin according to matter 18 of 6831 numbered Forestry Law:
The area is not located within the specified areas.
13. Whether the demanded area is in the; tohum mesceresi, national parks, game and wild life areas, tourism area, specific environmental conservation region, forbidden military region and site area.
No it is not.
14. Whether there will be any problem considering the forestry works or Forest-Public relations:
No problem will be caused.
15. What should be the sensitivity level and the measures to be taken according to Forest Fires:
The area is not considered sensitive. The necessary measures have been taken.
16. How the forest assets will be used:
No considerable forestry asset exist.
17. The location of the facility, the population of in-forest villages in the vicinity and the distance to the nearest villages (if there exist any in-forest villages, the effects on drinking water on health, agricultural areas, animal husbandary etc.):
Area of the facility : 49.500 m²
Number of Households in village : 77, Population: 130
Distance of the village to facility : 500 m
18. What effects will establishing the facility bring to employment:
New job opportunities will be provided.
19. Are there any activities within the area that has been given the EIA approval document (if there is what is the type, company and field of activity (Ha)):
There exist no activities.

The Investigation and Evaluation Form was prepared by

Kadastro ve Mül. Şube Müd.
Asım Sağbılı

İlgili İşletme Müd. Yrd.
Mustafa Pekel

İlgili İşletme Şef.
Abdullah Akbaş

Investigation and Evaluation Form

REGIONAL DIRECTORATE OF FORESTRY : ADANA
DIRECTORATE OF FORESTRY ADMINISTRATION : Kayseri
FORESTRY ADMINISTRATION OFFICE : Pinarbasi

Province : Kayseri
District : Pinarbasi-Sariz
Village : Kirkgecit-Kemer
Place : -

1. Applicant

Name SURNAME : BOTAS PETROLEUM PIPELINE CORPORATION
Address : Department of Transit Pipeline Inonu Blv. No: 27
06490 Bahcelievler, Ankara

2. Type of Facility and

Related Law : Petroleum Pipeline

3. Name of Series : Pinarbasi

4. Number of Divisions : 219 – 21 238, 254, 270, 271

5. Tree Species and Density

a) Management Type : -

b) Existing Tree Types : Oak, Juniper

c) Types of Tree Species : ÇbarM

6. The coordinates of the boundary points of the subject area within the EIA Report shown on 1/25.000 scaled maps.

	Point 1	Point 2	Point 3	Point 4
Horizontal (X)	No route was marked on the maps			
Verticle (Y)				

7. The coordinates of the area which permit is demanded for Operation shown on 1/1.000 scaled maps.

	Point 1	Point 2	Point 3	Point 4
Horizontal (X)	No route was marked on the maps			
Verticle (Y)				

8. The Cadastre and Restriction Condition of Forest:

Area of the Operation Site :

a) Forest Area : 8 hectar

b) Non-Forest Area : -

9. The Area of the Site asked for Permit :

10. Purpose of Demand : Crude Oil Pipeline Facility

11. Any other Application for the Demanded Site : No other application was made.
12. Whether the demanded area was burnt by fire, separated for rejuvenation or if it is within the afforestation area of the dam basin according to matter 18 of 6831 numbered Forestry Law:
The area is not located within the specified areas.
13. Whether the demanded area is in the; tohum mesceresi, national parks, game and wild life areas, tourism area, specific environmental conservation region, forbidden military region and site area.
No it is not.
14. Whether there will be any problem considering the forestry works or Forest-Public relations:
No problem will be caused.
15. What should be the sensitivity level and the measures to be taken according to Forest Fires:
The area is fourth degree sensitive and the precautions within the contract have been taken.
16. How the forest assets will be used:
It will be used by the Forestry Administration Office.
17. The location of the facility, the population of in-forest villages in the vicinity and the distance to the nearest villages (if there exist any in-forest villages, the effects on drinking water on health, agricultural areas, animal husbandary etc.):
Kirkgecit has 23 households with 97 people, Kemer 82 households with 426 people and the distance of the facility to the villages is 750 m, it has no negative impact.
18. What effects will establishing the facility bring to employment:
It will have no effects.
19. Are there any activities within the area that has been given the EIA approval document (if there is what is the type, company and field of activity (Ha)):
There exist no activities.

The Investigation and Evaluation Form was prepared by

Kadastro ve Mül. Şube Müd.
.....

İşletme Müd. Yard.
Ali Hasbenlioğlu

İlgili İşletme Şef.
Turhan Yılmaz

Investigation and Evaluation Form

REGIONAL DIRECTORATE OF FORESTRY : K. Maras
DIRECTORATE OF FORESTRY ADMINISTRATION : Andirin
FORESTRY ADMINISTRATION OFFICE : Andirin

Province : Kahramanmaras
District : Andirin
Village : Geben Beldesi, Cokak, Akifiye, Orhaniye, Altinboga, Yesilyurt,
Alinoluk, Andirin Merkez, Torun, Basdogan, Yesilova Beldesi, Bektasli,
Kumarli
Place : Various

1. Applicant

Name SURNAME : BOTAS PETROLEUM PIPELINE CORPORATION
Address : Botas Petroleum Pipeline Corporation, Ankara

2. Type of Facility and

Related Law : BAKU, TBILISI, CEYHAN Crude Oil Pipeline 17.
matter of the 6831 numbered law

3. Name of Series : Kaleboyu series-Akifiye series-Andirin series-Kesim
series

4. Number of Divisions : Kaleboyu series- 1-2-3-4-7-8-9-24-25-26-27-39-40-49-
50-51-73-74-87-88-89-91-92-93-94-95-103-104-105-
106-107-108
Akifiye series- 89-101-102-103-123-124-122-138-139-
166-153-186-202-220-219-218-231-217-216-238-236-
235-255-254-275-274-273-301-272-300-299-318-317-
328-329-347-345-346
Andirin series- 94-95-96-150-149-204-261-206-262-
263-317-316-318-319-367-365-364-363-403-402-450-
449-495-456-538-537-536-575-596
Yesilova and Kesim series- 24-27-61-28-62-112-111-
142-175-174-172-167-206-205-166-202-203

5. Tree Species and Density

a) Management Type : Grove - coppice
b) Existing Tree Types : Çk-S-G-Ar-Kn-M-Çz ve DY
c) Types of Tree Species : Various

6. The coordinates of the boundary points of the subject area within the EIA
Report shown on 1/25.000 scaled maps.

Andirin Administration	Start Point	Finish Point
	Gaziantep M37 b3	Gaziantep N36 b1
	Y: 72000	57100
	X: 92625	46100

7. The Cadastre and Restriction Condition of Forest : There exist areas that have their cadastre and that do not.
Area of the Operation Site : 1.311.750 m²
a) Forest Area : 596.200 m²
b) Non-Forest Area : 715.550 m²
8. The Area of the Site asked for Permit : 1.311.750 m²
9. Purpose of Demand : Crude Oil Pipeline Facility
10. Any other Application for the Demanded Site : No other application was made.
11. Whether the demanded area was burnt by fire, separated for rejuvenation or if it is within the afforestation area of the dam basin according to matter 18 of 6831 numbered Forestry Law:
The stated areas in last paragraph of the matter 18 exist. Especially, there remain areas which are afforested.
12. Whether the demanded area is in the; tohum mesceresi, national parks, game and wild life areas, tourism area, specific environmental conservation region, forbidden military region and site area.
Akifiye Administration Office, Akifiye Series, 123-124 numbered sections are tohum mesceresi. Besides this, there remain no other special area that is clarified in the related matter.
13. Whether there will be any problem considering the forestry works or Forest-Public relations:
The facility will cause no problem due to the forest-public relations. However, since the area consists groves, afforestation area, corrupted groves and coppice, there are many trees to be cut.
14. What should be the sensitivity level and the measures to be taken according to Forest Fires:
The area is second degree sensitive. During a fire event, the work will be stopped with all workers and equipment included in the fire fighting activities and necessary sensitivity will be shown by the construction contractor. Additionally, all precautionary measures suggested by the directorate of administration will be taken.
15. How the forest assets will be used:
The forest assets that will be obtained from the area will be cut by the Andirin Forestry Directorate Administration and be utilized. No tree will be cut without the permission of the Administration.
16. What effects will establishing the facility bring to employment:
During the establishment of the facility, it is probable that unqualified local people will be employed. Because of this, it will have a positive effect on employment.

17. Are there any activities within 1 km vicinity of the area that has been given the EIA approval document (if there is what is the type, company and field of activity (Ha)):

There are sites 1 km in the vicinity of the area that are given the "EIA effects are unimportant" document (Highways 5. Region Directorate MERSIN, type of activity stone quarry, Activity Area 25.7 Ha) 12.02.2002.

The Investigation and Evaluation Form was prepared by

Kadastro ve Mül. Şube Müd.
.....

İşletme Müd. Yard.
Ahmet Kara

İlgili İşletme Şef.
Turhan Yılmaz

Investigation and Evaluation Form

REGIONAL DIRECTORATE OF FORESTRY : K. Maras
DIRECTORATE OF FORESTRY ADMINISTRATION : Goksun
FORESTRY ADMINISTRATION OFFICE : Goksun-B. Camurlu

Province : Kahramanmaras
District : Goksun
Village : Keklikoluk, Bozhoyuk Beldesi, Tahirbey, Mahmutbey, Mehmetbey,
Caglayan, Goksun Merkez, Yiricek, Tasoluk Beldesi, Findiklikoyak,
Degirmendere Beldesi, K.Camurlu
Place : Various

1. Applicant

Name SURNAME : BOTAS PETROLEUM PIPELINE CORPORATION
Address : Botas Petroleum Pipeline Corporation, Ankara

2. Type of Facility and

Related Law : BAKU, TBILISI, CEYHAN Crude Oil Pipeline 17.
matter of the 6831 numbered law

3. Name of Series : Goksun series-B.Camurlu series

4. Number of Divisions : Goksun series 1-2-14-15-41-42-40-80-82-126-130-
131-166-171-172-173-174-213-255-278-279-290-301-
302-309-314-321-324-325-328-329
B.Camurlu series- 224-225-226-227-241-242-245-246-
265

5. Tree Species and Density

a) Management Type : Grove – Corrupted Grove

b) Existing Tree Types : Çk- Ar

c) Types of Tree Species : Various

6. The coordinates of the boundary points of the subject area within the EIA
Report shown on 1/25.000 scaled maps.

Goksun Administration Start Point	Finish Point
Elbistan L36 c2	Gaziantep M36 b3
Y: 76875	72000
X: 32260	92625

7. The Cadastre and Restriction Condition of Forest : There exist areas that
have their cadastre and that do not.

Area of the Operation Site : 935.000 m² (42,5 km)

a) Forest Area : 182.600 m² (8,3 km)

b) Non-Forest Area : 752.400 m² (34,2 km)

8. The Area of the Site asked for Permit : 935.000 m² (42,5 km)

9. Purpose of Demand : Crude Oil Pipeline Facility

10. Any other Application for the Demanded Site : No other application was made.
11. Whether the demanded area was burnt by fire, separated for rejuvenation or if it is within the afforestation area of the dam basin according to matter 18 of 6831 numbered Forestry Law:
Even though there exist no afforestation area according to the plan data, the route to be established due to the current structure includes afforestation areas. Besides this, there exist no area in the extent of matter 18.
12. Whether the demanded area is in the; tohum mesceresi, national parks, game and wild life areas, tourism area, specific environmental conservation region, forbidden military region and site area.
The area is not located within the specified areas.
13. Whether there will be any problem considering the forestry works or Forest-Public relations:
The facility will cause no problem due to the forest-public relations. However, since the area crosses 8.3 km forest area all the assets in this area will be taken.
14. What should be the sensitivity level and the measures to be taken according to Forest Fires:
During a fire event, the work will be stopped with all workers and equipment included in the fire fighting activities and necessary sensitivity will be shown by the construction contractor. Additionally, all precautionary measures suggested by the directorate of administration will be taken.
15. How the forest assets will be used:
The forest assets that will be obtained from the area will be cut by the Goksun Forestry Directorate Administration and be utilized. No tree will be cut without the permission of the Administration.
16. What effects will establishing the facility bring to employment:
During the establishment of the facility, it is probable that unqualified local people will be employed. Because of this, it will have a positive effect on employment.
17. Are there any activities within 1 km vicinity of the area that has been given the EIA approval document (if there is what is the type, company and field of activity (Ha)):
There exist no activities.
18. The location of the facility, the population of in-forest villages in the vicinity and the distance to the nearest villages (if there exist any in-forest villages, the effects on drinking water on health, agricultural areas, animal husbandary etc.):
Since the facility will pass under the soil and through pipes, there will be no negative effects on drinking water, agricultural areas, animal husbandry etc.
The facility passes through the intersection of Keklikoluk, Bozhoyuk Beldesi, Tahirbey, Mahmutbey, Mehmetbey, Caglayan, Goksun Merkez, Yiricek, Tasoluk Beldesi, Findiklikoyak, Degirmendere Beldesi, K. Camurlu settlement areas. It is estimated that a total of 51,000 people are living here.
-

**BTC PROJECT EIA
TURKEY**

The Investigation and Evaluation Form was prepared by: (13/02/2002)

Kadastro ve Mül. Şube Müd.
Mehmet Serdaroğlu

İşletme Müd. Yard.
Yaşar Tükenmez

Kad. Mülk. Şb. Teknikeri
Ahmet Sağır

Göksun Orman İşl. Şf.
İşl. Md.
Abduselîm Gökçe

B.Çamurlu Orman İşl. Şf.
Kemal Topal

Göksun Orman
Yakup Paksoy

Distances of AGIs to the Nearest Forest Land

Station	Province	Distance to the Nearest Forest land (m)*	Soil Type
BVS-001	Ardahan	0	Z-OT
BVS-002	Ardahan	0	OT
BVS-003	Ardahan	0	Z-OT
BVS-004	Ardahan	0	Me-OT
BVS-005	Ardahan	0	Me-OT
BVS-006	Ardahan	0	Me-Z
BVS-007	Ardahan	0	Me-Z
BVS-008	Ardahan	0	Me-Z
BVS-009	Kars	0	Me-Z
BVS-010	Kars	0	Me-Z
BVS-011	Kars	0	Me-Z
BVS-012	Kars	0	OT
BVS-013	Erzurum	0	E
BVS-014	Erzurum	0	OT
BVS-015	Erzurum	0	OT
BVS-016	Erzurum	0	OT
BVS-017	Erzurum	0	OT
BVS-018	Erzurum	0	OT
BVS-019	Erzurum	0	OT
BVS-020	Erzurum	0	OT
BVS-021	Erzincan	0	OT
BVS-022	Erzincan	0	OT
BVS-023	Erzincan	0	OT
BVS-024	Gumushane	0	Z-OT
BVS-025	Gumushane	80	Z
BVS-026	Gumushane	0	OT
BVS-027	Gumushane	0	OT
BVS-028	Gumushane	0	OT
BVS-029	Erzincan	0	Z-OT
BVS-030	Erzincan	0	OT
BVS-031	Erzincan	0	OT
BVS-032	Erzincan	0	OT
BVS-033	Sivas	2082	Z
BVS-034	Sivas	440	Z
BVS-035	Sivas	0	OT-T
BVS-036	Sivas	825	Z
BVS-037	Sivas	2900	Z
BVS-038	Kayseri	8094	Z
BVS-039	Kayseri	4125	Z
BVS-040	Kayseri	14400	Z
BVS-041	Kayseri	45400	Z
BVS-042	Kayseri	21030	Z
BVS-043	K.Maras	2500	Z
BVS-044	K.Maras	4970	Z
BVS-045	K.Maras	1630	Z
BVS-046	K.Maras	0	OT
BVS-047	Osmaniye	627	Z
BVS-048	Osmaniye	30	Z
BVS-049	Adana	40	Z
BVS-050	Adana	31	Z

**BTC PROJECT EIA
TURKEY**

Station	Province	Distance to the Nearest Forest land (m)*	Soil Type
BVS-051	Adana	1030	Z
BVS-052	Adana	140	Z
PT1	Ardahan	0	Me-OT
PT2	Erzurum	0	Z-OT
PT3	Erzincan	0	OT
PT4	Kayseri	7810	Z
IPT1	Adana	600	Z

* : Although most of the AGIs seem to be on the forest lands, these areas are private lands. The discussions on these lands are still ongoing with the Ministry of Forestry.

E : Erosive land

Me : Pasture, grassland, plateau, meadow, steppe

OT : Forest land (without tree)

Z : Agricultural land (arable field, gardens and orchards etc.)

Field Data Table

**BTC PROJECT EIA
TURKEY**

Regional Directorates	Management Directorates	Management Offices of Chief	FIELD DATA TABLE						Approximate Number of Trees to be Cut	LAND USE TYPE AND MAJOR SOIL GROUPS				SLOPE	Annual Precipitation (mm)
			Section No.	Stand Type	Forest Cover Degree	Section Length (3D) (m)	Corridor Width (m)	Area (m ²)		MSG	ERS	LUT	SCC		
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	Z-OT	0	955.7	28	26656	0	C	2	S	III	5.59	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	Z-OT	0	1086.7	28	30016	0	C	3	M	VII	11.92	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	OT	0	284.9	28	7952	0	C	3	M	VII	6.09	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	Z-OT	0	111.9	28	3080	0	C	3	M	VII	17.17	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	Z-OT	0	1.3	28	28	0	C	2	K	III	0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	Z-OT	0	708.1	28	19628	0	C	2	K	III	11.24	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	18	Z-OT	0	653.8	28	18312	0	C	3	M	VII	0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	16,31,15,14,28,27	BCsDy	1	449.5	28	11676	46	C	3	M	VII	33.56	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	16,31,15,14,28,27	OT-T	0	642.3	28	17556	0	C	3	M	VII	12.06	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	16,31,15,14,28,27	Z-OT	0	258.2	28	7224	0	C	3	M	VII	5.49	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	16,31,15,14,28,27	Z-OT	0	4832.2	28	134848	0	C	2	K	III	6.92	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	26	Z-OT	0	220.4	28	6104	0	Y	2	M	VI	11.68	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	26	Z-OT	0	448.5	28	12376	0	C	3	O	VII	17.41	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	26	BKvDy	2	656.3	28	17668	59	C	3	O	VII	27.63	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	26	BKvDy	2	51.2	28	1288	59	Y	2	M	VI	40.04	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	26	Me-OT	1	144.3	28	3892	0	Y	2	M	VI	21.37	597.3
Erzurum	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	BKvDy	1	59.4	28	1652	5	Y	2	M	VI	0.00	597.3

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	Csa	1	273.2	22	5720	0	Y	2	M	VI	28.09	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	Csa	1	5.6	22	110	0	Y	2	M	VI	32.06	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	BKBt	1	41.2	28	1120	0	Y	2	M	VI	24.10	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	Csa	1	9.6	22	220	0	Y	2	M	VI	0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	Csa	1	223.9	22	4818	0	Y	2	M	VI	21.64	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	Csa	1	2.2	22	44	0	Y	2	M	VI	0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	39	Me-OT	2	801.2	28	22260	0	Y	2	M	VI	12.13	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	38	Me-OT	2	432.8	28	11788	0	C	3	O	VII	21.06	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.		BKvDy	1	5.6	28	140	72	C	3	O	VII	32.06	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	44,46	BKvDy	2	835.1	28	23072	72	C	3	O	VII	14.48	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	46	Cscd	2	376.2	28	9940	265	C	3	O	VII	34.39	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	46	BKvDy	2	165.3	28	4396	14	C	3	O	VII	32.06	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	46	BKvDy	1	1.3	28	28	14	C	3	O	VII	0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	46	BKvDy	1	5.6	28	140	14	C	2	K	IV	32.06	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	46	Me-OT	2	242.0	28	6384	0	C	2	K	IV	32.14	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	46	Z-OT	0	223.9	28	6132	0	C	2	K	IV	21.64	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	75	BKvDy	1	34.2	28	924	71	C	2	K	IV	32.87	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	75	BKvDy	1	798.8	28	21700	71	C	3	O	VII	23.93	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	75	Ku	0	55.3	28	1540	0	C	2	K	IV	0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	75	Ku	0	36.8	28	1036	0					0.00	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	75	Ku	0	119.3	28	3332	0	C	2	K	IV	0.00	597.3

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	76	BKBt	1	168.0	28	4676	0	C	3	M	VII	8.76	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.		BKBt	1	56.3	28	1512	0	Y	3	M	VI	28.31	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	76,77,78	Z-OT	0	2971.0	28	82152	0	Y	3	M	VI	14.38	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	77,120	Me-OT	2	1657.9	28	45696	0	Y	3	M	VI	14.11	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	120,179,180	Me-OT	3	4711.7	28	131068	0	Y	2	M	VI	9.35	597.3
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Posof Man.Ch.Fr.	180,181	Me-OT	0	1481.3	28	41356	0	Y	2	K	VI	4.69	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr.		Me-Z	0	11704.2	28	326620	0	Y	2	M	VI	5.61	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr.	8,7,16	Me-Z	0	10362.6	28	289744	0	X	2	K	III	3.63	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	8,7,16	Me-Z	0	208.2	28	5824	0	A	1	C	II	0.52	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	8,7,16	Me-Z	0	38.9	28	1092	0					0.54	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	8,7,16	Me-Z	0	289.0	28	8092	0	A	1	C	II	0.45	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	45,51	Me-Z	2	4033.1	28	112700	0	C	2	K	III	3.69	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	51	Me-Z	0	144.7	28	3836	0	X	1	O	VI	31.33	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	49	OT	0	463.9	28	12852	0	X	1	O	VI	5.42	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	48	Csa	1	760.7	22	16698	0	X	1	O	VI	2.11	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	29.3	28	812	0	X	1	O	VI	0.00	590.7
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	344.6	28	9576	0	X	3	M	VII	8.45	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	67	Me-Z	0	1423.6	28	39816	0	X	2	M	III	2.86	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	67	Me-Z	0	450.9	28	12600	0	X	3	M	VII	4.24	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	66	BKv-T	1	985.9	28	27300	0	X	3	M	VII	12.12	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	66	Me-Z	1	646.3	28	18088	0	X	3	M	VII	2.64	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan	66	Me-Z	1	1490.9	28	41636	0	C	2	M	VI	6.65	511.9

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.		Man.Ch.Fr. (I)													
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	216.6	28	6076	0	X	3	M	VII	1.12	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	799.6	28	22372	0	C	2	M	VI	3.01	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	1888.1	28	52836	0	C	2	K	III	2.65	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	297.4	28	8316	0	C	2	M	VI	0.00	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	51.8	28	1428	0					18.45	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	5064.3	28	141680	0	C	2	M	VI	3.57	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	5.7	28	168	0	X	2	M	VI	1.87	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	2113.2	28	58800	0	X	2	M	VI	9.00	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	3775.2	28	105616	0	X	2	M	IV	3.02	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	1104.6	28	30940	0	X	1	M	II	0.32	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	3405.7	28	95312	0	X	2	M	VI	2.94	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	750.8	28	20720	0	C	2	M	VI	13.50	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	2385.0	28	66780	0	K	2	C	II	0.00	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	5.7	28	168	0	K	2	C	II	1.87	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	196.7	28	5516	0	X	2	C	IV	0.00	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	2029.3	28	56700	0	C	2	M	IV	3.64	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	436.8	28	12208	0	C	2	M	III	4.69	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	6269.3	28	175504	0	A	1	C	II	0.42	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	3116.3	28	87024	0	X	2	M	IV	5.43	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	1793.4	28	50204	0	X	2	K	III	1.45	511.9	
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)	Me-Z	0	344.6	28	9576	0	X	2	M	IV	8.45	511.9	

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	814.7	28	22792	0	X	2	K	III	2.46	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	2.2	28	56	0	X	2	K	III	0.00	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	1164.4	28	32508	0	X	2	M	IV	5.22	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	240.6	28	6720	0	X	2	C	III	7.73	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Ardahan Man.Ch.Fr. (I)		Me-Z	0	3538.6	28	98840	0	X	2	M	IV	4.84	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Koroglu Man.Ch.Fr.		Me-Z	0	5827.4	28	163016	0	X	2	M	IV	3.26	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Koroglu Man.Ch.Fr.	148	Me-Z	0	2305.9	28	64568	0	X	2	C	III	1.26	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Koroglu Man.Ch.Fr.	148	Me-Z	0	1494.6	28	41776	0	X	2	M	IV	3.47	511.9
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Koroglu Man.Ch.Fr.	148	Me-Z	0	4615.5	28	129052	0	X	2	C	III	4.62	501.1
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Koroglu Man.Ch.Fr.	148	Me-Z	0	6170.5	28	172480	0	X	2	M	III	3.88	501.1
Erzurum Rg.Dir.Fr.	Ardahan Dir.Man.Fr.	Koroglu Man.Ch.Fr.	148	Me-Z	0	4808.7	28	134624	0	C	2	M	III	0.27	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.			Me-Z	0	735.2	28	20300	0	C	3	M	VII	16.61	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.			Me-Z	0	614.9	28	16940	0	X	2	M	VI	18.33	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1284.9	28	35644	0	C	1	C	IV	13.68	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	3164.3	28	88284	0	C	2	K	III	7.67	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	246.4	28	6888	0	C	2	M	VI	0.00	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1.3	28	28	0	C	2	M	VI	0.00	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1991.3	28	55608	0	C	2	K	III	5.04	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	2095.4	28	58604	0	C	2	K	III	2.96	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1438.1	28	40264	0	C	2	C	III	2.48	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	2617.2	28	73248	0	C	2	K	III	2.39	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1320.8	28	36652	0	X	2	M	IV	8.89	413.8

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	707.7	28	19768	0	C	2	K	II	6.01	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1137.3	28	31836	0	K	2	K	II	2.35	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	4023.7	28	112644	0	C	2	K	II	1.60	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	6136.8	28	171752	0	K	2	C	II	1.59	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	2.2	28	56	0	K	2	C	II	0.00	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	402.6	28	11284	0	C	2	K	II	0.00	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	996.7	28	27916	0	K	2	C	II	0.00	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	2.2	28	56	0	K	2	C	II	0.00	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	714.5	28	19992	0	C	2	K	II	0.59	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	387.4	28	10836	0	K	2	C	II	1.36	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	30.3	28	840	0	K	2	C	II	2.39	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	111.2	28	3108	0	C	2	K	II	1.94	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	5.6	28	140	0	K	2	C	II	32.06	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	371.3	28	10304	0	K	2	C	II	10.29	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	3094.0	28	86548	0	C	2	M	IV	3.27	413.8
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1459.4	28	40628	0	C	3	M	VII	8.41	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	1061.1	28	29624	0	C	2	M	IV	6.01	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.		3	Me-Z	0	2255.4	28	62748	0	C	2	M	III	8.44	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	2	Me-Z	0	1210.8	28	33880	0	C	3	K	VI	1.89	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	2	OT	0	620.0	28	17360	0	N	2	M	III	0.00	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	7	OT	0	60.7	28	1680	0	C	4	M	VII	18.54	447

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.		BCs	1	7.8	28	224	4	C	4	M	VII	19.07	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	8,29	BCs	1	51.8	28	1428	4	N	2	O	IV	18.45	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	8,29	Csb	3	371.3	28	10304	940	N	2	O	IV	10.29	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	30	OT	0	282.8	28	7784	0	N	2	O	IV	16.66	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	30	Csb	1	30.3	28	840	108	N	2	O	IV	2.39	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	30	OT	0	111.9	28	3080	0	N	2	O	IV	17.17	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	30	Cscd	2	86.9	28	2408	71	N	2	O	IV	14.74	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.		Cscd	2	38.9	28	1092	71	N	2	O	IV	0.54	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.		Cscd	2	11.0	28	308	71	N	2	K	III	0.45	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Boyalı Man.Ch.Fr.	27	OT-T	0	109.1	28	3052	0	N	2	K	III	4.21	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	4	OT	0	121.3	28	3388	0	X	2	M	IV	4.47	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	4	OT	0	1.3	28	28	0	X	2	M	IV	0.00	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	15,44,43,42	OT	0	4277.1	28	119672	0	X	2	M	IV	2.71	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	42	OT	0	590.8	28	16408	0	X	3	M	VI	12.63	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	42,77	OT	0	810.5	28	22652	0	X	2	M	IV	3.22	447
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	77	OT	0	673.9	28	18844	0	X	2	M	IV	4.69	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	111	E	1	135.1	28	3780	0	X	2	M	IV	3.97	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	110	E	1	502.1	28	14000	0	X	2	M	IV	6.86	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	158	E	1	132.1	28	3696	0	X	3	M	VII	6.57	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	158,159	E-OT	0	485.7	28	13552	0	X	3	M	VII	6.43	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	159	OT	0	1.3	28	28	0	X	3	M	VII	0.00	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	159,157	OT	0	168.0	28	4676	0	X	3	M	VII	8.76	581.5

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	193,194	OT	0	959.3	28	26824	0	X	3	M	VII	2.18	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	246	OT	0	303.5	28	8484	0	X	2	M	IV	5.01	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	295	OT	0	80.6	28	2268	0	K	2	S	III	0.00	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	295	OT	0	541.3	28	15120	0	X	2	K	IV	5.32	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	294,293	OT	0	881.3	28	24668	0	X	2	K	IV	0.14	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	293	OT	0	182.6	28	5124	0	X	2	K	IV	0.00	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	293,292	OT	0	407.1	28	11368	0	X	3	M	VII	5.01	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	292	OT	0	437.5	28	12152	0	X	2	K	IV	10.78	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	333	E	0	318.1	28	8792	0	X	2	K	IV	14.53	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	4	E	0	76.5	28	2128	0	X	3	M	VII	6.49	581.5
Erzurum Rg.Dir.Fr.	Sarikamis Dir.Man.Fr.	Camyazi Or. Is.Sf.	4	E	0	1494.5	28	41832	0	C	2	K	III	0.98	581.5
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	E	0	6266.2	28	175280	0	C	2	K	III	2.71	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	E	0	390.0	28	10892	0	C	2	M	VI	2.87	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	E	0	3753.0	28	104916	0	C	2	K	III	3.30	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	E	0	839.1	28	23380	0	C	2	M	VI	9.03	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	E	0	566.0	28	15820	0	C	3	M	VII	1.79	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	E	0	712.7	28	19880	0	K	2	S	III	5.62	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	E	0	445.6	28	12488	0	C	2	M	VI	0.00	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	E	0	1704.7	28	47712	0	C	2	K	III	2.78	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	E	0	1.3	28	28	0	C	2	K	III	0.00	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	E	0	988.9	28	27580	0	C	3	M	VI	8.53	401.1

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	E	0	692.2	28	19376	0	K	1	S	I	1.55	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	E	0	462.9	28	12908	0	C	3	K	IV	8.55	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	E	0	1167.3	28	32676	0	C	2	K	III	0.91	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	E	0	522.5	28	14616	0	C	3	M	VI	1.20	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	E	0	924.1	28	25872	0	K	1	Sy	I	3.10	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6,7	E	0	4686.7	28	131180	0	C	1	K	II	2.02	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		7	E	0	1490.9	28	41636	0	C	2	K	IV	6.65	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		7	E	0	1751.5	28	49028	0	C	1	K	II	1.86	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	3801.8	28	106428	0	C	1	K	II	2.07	401.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	381.6	28	10668	0	C	2	K	III	2.91	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	73.5	28	2044	0	C	2	K	IV	9.75	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	584.6	28	16268	0	C	2	K	III	11.26	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	207.1	28	5796	0	C	2	K	IV	0.00	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	314.7	28	8820	0	C	2	K	III	1.92	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	227.1	28	6356	0	C	1	K	II	1.84	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	1.5	28	56	0	C	1	K	II	4.27	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	166.8	28	4676	0	C	2	K	III	2.25	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	1103.5	28	30884	0	C	1	K	II	1.91	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	3459.4	28	96768	0	C	2	K	III	3.16	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28	OT	0	3161.9	28	88480	0	X	2	K	III	1.65	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		28,27	OT	0	1776.5	28	49756	0	C	1	Sy	IV	0.00	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		27,26	OT	0	1453.7	28	40712	0	C	1	S	III	0.00	447

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		26	OT	0	2943.6	28	82432	0	C	2	K	IV	0.40	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		26	OT	0	514.1	28	14392	0	K	1	S	I	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		26	OT	0	258.6	28	7252	0				VIII	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		26	OT	0	561.5	28	15708	0	K	1	S	I	1.95	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		26,22	OT	0	1212.6	28	33964	0	K	1	S	I	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32	OT	0	27.4	28	756	0				VIII	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32	OT	0	32.1	28	896	0					0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32	cy	0	1.5	28	56	0				VIII	4.27	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32	cy	0	225.0	28	6300	0				VIII	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32	cy	0	401.8	28	11256	0	A	1	F	II	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32	OT	0	51.3	28	1428	0	A	1	F	II	0.00	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		32,31,30,29	OT	0	25485.8	28	713552	0	A	1	S	I	0.62	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		14	OT	0	2306.3	28	64568	0	K	1	Sy	I	1.77	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		14	OT	0	2658.4	28	74424	0	K	1	S	II	1.94	359.9
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		13	OT	0	52.4	28	1456	0	X	2	M	III	0.00	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		13	OT	0	5.5	28	168	0	X	2	M	III	8.43	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		13	OT	0	327.4	28	9156	0	K	1	S	II	0.00	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	684.8	28	19180	0	K	2	C	II	0.00	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	491.9	28	13440	0	X	3	M	VII	15.74	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	649.8	28	18172	0	X	2	M	III	3.78	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	1406.9	28	39368	0	X	2	M	III	2.03	447

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	56.9	28	1596	0					2.63	447
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	317.1	28	8876	0	X	2	M	III	5.22	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	664.7	28	18620	0	X	3	M	VI	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	619.8	28	17248	0	X	3	M	VII	6.52	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	1152.1	28	31864	0	X	2	M	IV	14.05	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	1194.8	28	33460	0	K	2	K	III	0.55	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	1896.5	28	53116	0	K	1	S	I	0.19	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		42	OT	0	2966.0	28	83048	0	A	1	M	III	0.32	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		39	OT	0	687.2	28	19236	0	A	1	C	II	0.31	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		39	OT	0	4598.9	28	128772	0	A	1	C	II	0.26	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		39	OT	0	70.0	28	1960	0	A	1	S	I	0.35	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		39,38	OT	0	6947.8	28	194544	0	A	1	K	II	0.15	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		38	OT	0	1431.8	28	40096	0	A	1	M	III	0.79	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		38	OT	0	1309.3	28	35784	0	K	1	K	I	16.81	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		38	OT	0	1758.3	28	49224	0	C	2	K	III	0.78	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	672.4	28	18816	0	K	1	K	I	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	596.2	28	16688	0	K	2	K	II	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	1263.8	28	35392	0	K	1	K	I	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	2743.8	28	76832	0	K	2	K	II	0.70	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	424.4	28	11872	0	K	2	C	II	1.59	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	2755.5	28	77140	0	K	2	K	II	1.81	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	1299.5	28	36344	0	C	2	K	III	2.70	447.0

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	1010.6	28	28308	0	C	1	K	I	0.23	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	5543.4	28	155204	0	C	1	K	II	0.74	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	7796.5	28	218288	0	C	1	K	I	0.70	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	702.0	28	19432	0	C	3	K	VII	12.45	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	180.9	28	5068	0				VIII	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		37	OT	0	40.1	28	1120	0					4.46	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		51	OT	0	35.1	28	980	0				VIII	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		51	OT	0	250.8	28	7028	0	A	1	S	I	2.27	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		51	OT	0	318.4	28	8848	0	K	2	K	II	12.14	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		51	OT	0	1500.7	28	41412	0	C	3	K	VI	11.16	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		51	OT	0	27.4	28	756	0	K	2	K	II	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		51,50	OT	0	1121.2	28	31388	0	K	2	S	II	0.76	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		50	OT	0	1296.0	28	36260	0	K	2	K	II	2.94	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		50,49	OT	0	4484.6	28	125132	0	C	2	K	VI	5.72	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	545.4	28	15260	0	C	2	M	VI	3.11	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	450.9	28	12544	0	C	2	K	II	8.53	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	1754.3	28	48748	0	C	2	M	VI	10.50	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	239.1	28	6636	0	C	2	M	IV	12.42	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	1594.1	28	44184	0	C	2	M	VI	11.79	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	1055.2	28	29372	0	K	2	K	III	10.05	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	1105.6	28	30688	0	C	2	K	VI	10.33	447.0

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	529.3	28	14812	0	C	2	K	IV	0.00	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	1480.0	28	41384	0	C	2	K	VI	2.30	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		49	OT	0	1355.3	28	37576	0	C	2	K	IV	9.48	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		47	OT	0	1556.3	28	43120	0	C	3	M	VII	7.22	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		48	OT	0	3904.6	28	108612	0	C	3	K	VI	6.43	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		48	OT	0	1382.0	28	38584	0	C	2	K	IV	4.24	447.0
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		58	OT	0	2407.2	28	67144	0	C	3	K	VI	4.18	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		58	OT	0	1.3	28	28	0	C	3	M	VII	0.00	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		58	OT	0	1727.8	28	47460	0	C	3	M	VII	14.82	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	2602.6	28	72604	0	C	2	K	VI	5.75	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	668.0	28	18704	0	K	2	K	IV	0.00	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	1178.4	28	32844	0	K	2	K	IV	5.03	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	1286.8	28	35924	0	B	3	M	VII	3.21	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	1389.8	28	38780	0	B	2	K	VI	6.85	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	311.9	28	8708	0	B	2	K	IV	8.97	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	1706.6	28	47684	0	B	2	K	VI	4.77	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	614.6	28	17220	0	B	2	K	III	0.00	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	1151.8	28	32228	0	B	3	K	VI	2.48	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	725.3	28	20272	0	B	2	K	IV	4.11	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	686.7	28	19096	0	B	3	K	VI	11.68	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	239.1	28	6636	0	B	2	K	IV	12.42	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	3658.9	28	102256	0	B	2	K	IV	3.45	429.1

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5	OT	0	1236.7	28	34412	0	C	3	M	VII	5.13	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		5,4	OT	0	2600.7	28	72212	0	B	2	K	IV	9.80	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		4	OT	0	4603.4	28	128604	0	B	2	K	IV	3.87	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	1742.2	28	48580	0	K	1	S	III	5.98	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	1728.8	28	48412	0	B	1	K	I	0.99	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	867.9	28	24304	0	B	1	S	I	1.26	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	366.6	28	10276	0	B	1	K	I	1.26	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	1627.3	28	45556	0	B	2	K	III	1.15	429.1
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	2729.3	28	76412	0	B	1	K	I	1.80	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	434.2	28	12152	0	B	3	M	VI	1.45	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	89.8	28	2520	0	A	1	C	II	3.06	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	1.3	28	28	0	A	1	C	II	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	811.1	28	22708	0	B	3	M	VI	2.32	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	360.3	28	10080	0	A	1	C	II	1.13	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		3	OT	0	62.3	28	1736	0					0.93	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	68.4	28	1904	0	A	1	C	II	1.03	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	532.0	28	14896	0	A	1	S	II	0.84	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	732.4	28	20496	0	B	3	M	VI	2.70	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	716.8	28	20076	0	B	1	K	I	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	394.8	28	11060	0	B	3	M	VI	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	2426.8	28	67956	0	B	1	S	I	0.00	405.4

**BTC PROJECT EIA
TURKEY**

Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	563.7	28	15792	0	B	3	M	VI	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	3147.0	28	87836	0	B	1	S	I	3.78	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15	OT	0	1229.1	28	34356	0	K	2	S	III	2.34	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		15,6	OT	0	4700.3	28	131516	0	A	1	S	I	2.17	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	OT	0	57.8	28	1624	0	K	2	S	III	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	OT	0	14.1	28	392	0	A	1	S	I	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	OT	0	1312.7	28	36764	0	A	1	S	I	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		6	OT	0	1010.6	28	28308	0				VIII	0.23	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		13	OT	0	5856.5	28	163884	0	A	1	S	I	1.71	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		13	OT	0	993.8	28	27804	0	B	2	K	II	0.60	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		13,12	OT	0	1850.9	28	51716	0	K	2	S	II	5.09	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		12	OT	0	1.3	28	28	0	A	1	S	I	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		12	OT	0	274.7	28	7700	0	A	1	S	I	0.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		12	OT	0	2746.7	28	76860	0	K	2	S	II	1.53	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		12	OT	0	1869.0	28	52276	0	B	2	M	III	3.11	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		12	OT	0	76.4	28	2128	0	K	2	S	II	1.73	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		12	OT	0	2510.0	28	69916	0	B	3	M	VI	6.36	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		11	OT	0	808.6	28	22596	0	K	2	S	II	6.60	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		11	OT	0	1299.5	28	36344	0	B	3	M	VI	2.70	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		11	BBt	1	553.2	28	15372	0	B	3	M	VI	11.16	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		11	OT	0	2884.6	28	80444	0	B	3	M	VI	5.00	405.4
Erzurum Rg.Dir.Fr.	Erzurum Dir.Man.Fr.		10	OT	0	3451.3	28	95732	0	C	4	M	VII	11.12	405.4

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	228	OT	0	1556.3	28	43120	0	B	3	M	VII	7.22	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	227	OT	0	3379.8	28	92008	0	B	4	M	VII	16.74	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	227	OT	0	466.8	28	12684	0	B	3	K	VI	21.59	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	227	OT	0	89.4	28	2492	0	B	3	M	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	210	Z-OT	0	1846.1	28	51380	0	B	3	M	VII	8.01	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	210,209	Z-OT	0	1715.3	28	47740	0	B	3	M	VII	8.97	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	209	Z-OT	0	331.1	28	9268	0	K	1	K	II	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	209	Z-OT	0	326.0	28	9100	0	B	2	K	III	3.48	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	209	Z-OT	0	771.5	28	20916	0	C	3	M	VII	22.50	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	205,208	Z-OT	0	438.4	28	12264	0	K	1	K	II	0.44	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.		Z-OT	0	49.3	28	1372	0	B	2	K	III	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	208	Z-OT	0	1684.4	28	47152	0	B	3	M	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	208,207	Z-OT	0	3055.7	28	84896	0	B	4	M	VII	8.34	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	207	Z-OT	0	120.4	28	3360	0	C	2	K	III	8.66	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	220	CBCsKv	1	862.8	28	23800	0	M	3	O	VII	10.02	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	220	OT	0	438.6	28	11956	0	M	3	O	VII	19.24	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	220	CBCsKv	1	38.6	28	1064	0	M	3	O	VII	23.05	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	217	CBMBt	1	504.7	28	14140	0	M	3	O	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.		OT	0	101.4	28	2828	0	M	3	O	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.		OT	0	5.5	28	168	0	M	3	O	VII	8.43	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	217	OT	0	2388.5	28	64512	0	M	3	O	VII	14.82	354.1

**BTC PROJECT EIA
TURKEY**

Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	203,202	OT	0	1675.6	28	46032	0	C	3	M	VII	16.28	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	202,216	OT	0	4456.9	28	122612	0	C	4	M	VII	14.30	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	216	OT	0	318.4	28	8848	0	K	1	S	II	12.14	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	216	Z-OT	0	25.6	28	728	0	K	1	S	II	1.39	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	216	Z-OT	0	428.7	28	11760	0	C	3	M	VII	14.16	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	200	Z-OT	0	1553.2	28	43428	0	C	2	K	IV	1.37	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	200	Z-OT	0	365.7	28	9996	0	C	3	M	VII	19.06	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	199	Z-OT	0	765.9	28	21140	0	C	3	O	VII	13.36	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.		Z-OT	0	76.4	28	2128	0	C	3	M	VII	1.73	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	199,214	Z-OT	0	816.6	28	22820	0	K	1	S	II	5.56	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.		OT	0	5.5	28	168	0	K	1	S	II	8.43	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	197,214	OT	0	2520.5	28	69496	0	B	4	M	VII	12.27	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	197	OT	0	5.4	28	140	0	B	4	M	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	197	OT	0	247.2	28	6916	0	C	3	O	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	214,196	OT	0	3186.7	28	88620	0	B	4	M	VII	6.33	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	172	Z-OT	0	217.0	28	6076	0	B	4	M	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.		OT	0	364.8	28	10220	0	B	4	M	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	172	Z-OT	0	557.7	28	15624	0	B	4	M	VII	0.00	354.1
Trabzon Rg.Dir.Fr.	Gumushane Dir.Man.Fr.	Kelkit Man.Ch.Fr.	1	OT	0	1730.9	28	48300	0	B	4	M	VII	5.90	354.1
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		1	OT	0	6213.8	28	173068	0	B	2	M	IV	5.45	354.1
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		1	OT	0	14665.9	28	409164	0	B	2	M	III	4.00	366.9
Erzurum	Erzincan Dir.Man.Fr.		91,117	OT	0	2901.2	28	80108	0	B	3	M	VI	10.51	542.0

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		116,115	OT	0	1202.1	28	33152	0	B	4	M	VII	12.25	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		115	Z-OT	0	48.0	28	1316	0	B	4	M	VII	23.43	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		115	Z-OT	0	295.5	28	8064	0	B	3	M	VI	23.41	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		115	OT	0	295.0	28	8232	0	B	3	M	VI	2.93	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		115	OT	0	508.1	28	13412	0	B	4	M	VII	32.14	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		115,161	Z-OT	0	259.6	28	7056	0	B	4	M	VII	18.06	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		161,112,160,158	Z-OT	0	2415.6	28	67508	0	B	2	K	IV	4.43	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		158	Z-OT	0	1.5	28	56	0	B	3	F	I	4.27	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		158	Z-OT	0	24.5	28	700	0	B	3	F	I	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		158	Z-OT	0	7.8	28	224	0	B	3	F	I	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		158	Z-OT	0	85.1	28	2380	0	K	2	K	II	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		158,139	OT	0	567.3	28	15876	0	K	2	K	II	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		139	Z-OT	0	193.0	28	5404	0	K	2	K	II	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		139	OT	0	14.9	28	420	0	K	2	K	II	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		139,138,137	OT	0	1337.1	28	37128	0	K	2	K	II	6.77	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	32.1	28	896	0	K	2	K	II	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		136	OT	0	975.7	28	27300	0				VIII	0.71	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		136	OT	0	7.3	28	196	0	K	2	K	II	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		136,156,135,76	OT	0	1907.8	28	53368	0	K	2	K	II	2.76	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		76	OT	0	983.5	28	27552	0				VIII	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		76,75,74,60,104,103,	OT	0	6762.2	28	189280	0	A	1	S	I	0.95	542.0

**BTC PROJECT EIA
TURKEY**

			102,125,73 ,72,71												
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		71,99,98	OT	0	1368.6	28	38192	0	A	1	C	I	5.07	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		98,97,96,1 41	OT	0	2729.3	28	76412	0	U	2	M	III	1.80	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		141,166,16 5,164,140	OT	0	5122.8	28	143080	0	U	2	K	IV	4.85	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	2865.1	28	80164	0	A	1	Sy	I	1.79	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	796.4	28	21952	0	U	3	M	VII	17.16	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	1825.1	28	50680	0	B	2	K	III	9.64	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	1.5	28	56	0	B	2	K	III	4.27	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	5504.0	28	153356	0	U	3	M	VII	4.22	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	4987.4	28	139216	0	U	3	M	VII	4.30	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.			OT	0	829.5	28	23212	0	U	3	M	VI	1.41	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		169,168,17 7	OT-BC	0	306.8	28	8512	0	U	3	M	VI	12.60	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		169,168,17 7	OT-BC	0	123.3	28	3444	0	N	3	F	VII	0.00	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		169,168,17 7	OT	0	2540.4	28	70952	0	N	3	F	VII	3.19	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		166	OT	0	593.8	28	16100	0	U	3	M	VI	17.68	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		166,161	OT	0	2641.5	28	73528	0	U	2	M	IV	5.82	542.0
Erzurum Rg.Dir.Fr.	Erzincan Dir.Man.Fr.		161,160,14 4	OT	0	2724.9	28	75600	0	U	3	M	VI	10.64	542.0
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	7	OT	0	2182.4	28	61096	0	U	3	K	VI	0.00	542.0
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	7	OT	0	366.6	28	10276	0	U	3	M	VI	1.26	542.0
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	7	OT	0	5.5	28	168	0	U	3	M	VI	8.43	542.0
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	7	OT	0	32.1	28	896	0	U	3	K	VI	0.00	542.0
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	7	OT	0	1030.5	28	28224	0	U	3	M	VI	17.76	542.0

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	7,6,5,4,15	OT	0	5447.1	28	151676	0	U	3	K	VI	6.17	542.0
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	15	OT	0	864.0	28	23744	0	M	3	K	VI	15.72	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3,13,12	OT	0	4311.5	28	119924	0	N	4	M	VII	5.45	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	12,11,2	OT	0	6292.1	28	174776	0	M	4	K	VI	8.08	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT	0	883.2	28	24584	0	M	4	M	VII	6.68	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT	0	477.1	28	13188	0	M	3	K	III	11.48	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	1	OT	0	2478.9	28	69216	0	B	3	K	VI	5.53	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	453.7	28	12712	0	B	1	K	II	1.27	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	1.3	28	28	0	M	3	M	VII	0.00	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	165.2	28	4620	0	M	3	M	VII	2.66	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	9.9	28	280	0	M	3	M	VII	6.38	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2,1	OT-T	0	1214.2	28	33992	0	M	3	M	VII	2.65	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	1	OT-T	0	725.3	28	20272	0	M	3	K	IV	4.11	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	1	OT-T	0	1515.0	28	42392	0	M	3	M	VII	1.21	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	1	OT-T	0	2.7	28	84	0	M	3	M	VII	7.97	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	1	OT-T	0	4266.6	28	119224	0	M	3	K	IV	4.63	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	1	OT-T	0	3828.7	28	106764	0	M	3	M	VII	6.35	460.4
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	381.7	28	10584	0	M	4	M	VII	12.55	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	169.7	28	4592	0	A	1	Sy	I	17.41	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	2	OT-T	0	73.6	28	2072	0					0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.		OT-T	0	35.1	28	980	0	A	1	Sy	I	0.00	547.5

**BTC PROJECT EIA
TURKEY**

Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	185.1	28	5180	0	M	4	M	VII	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	87.2	28	2436	0	K	1	K	I	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	552.0	28	15400	0	M	3	K	VI	6.64	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	272.4	28	7560	0	M	3	K	VI	4.39	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	134.8	28	3724	0	M	3	K	VI	14.48	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	is	0	73.5	28	2044	0	M	3	K	VI	9.75	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	260.1	28	7280	0	M	3	K	VI	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	8	OT-T	0	227.1	28	6356	0	M	3	K	VI	1.84	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	4	OT	0	273.9	28	7672	0	F	4	M	VI	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	4	OT	0	190.6	28	5348	0	F	2	K	II	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	4	OT	0	422.5	28	11816	0	F	4	M	VI	2.39	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	4	OT	0	806.7	28	22540	0	F	1	K	II	3.47	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	4	OT	0	1034.7	28	28868	0	F	2	K	II	5.29	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	3148.0	28	86828	0	F	3	M	VII	7.14	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	179.9	28	5040	0	F	2	K	III	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	105.8	28	2968	0	F	2	K	III	3.26	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	11.7	28	336	0	F	3	M	VII	5.20	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	294.3	28	8204	0	F	2	K	III	9.62	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	450.9	28	12544	0	F	3	M	VII	8.53	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	296.2	28	8288	0	F	2	K	III	3.47	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	529.3	28	14812	0	F	3	K	IV	0.00	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Serifiye Man.Ch.Fr.	3	OT	0	715.4	28	20020	0	F	2	K	III	1.53	547.5

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	49.7	28	1400	0	F	2	K	IV	2.91	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	664.0	28	18536	0	F	4	M	VII	4.19	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	56.9	28	1568	0	A	1	K	I	17.33	547.5
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	Me	0	335.9	28	9380	0	A	1	C	I	2.61	418.9
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	204.6	28	5740	0	F	2	K	IV	0.00	418.9
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	490.9	28	13748	0	F	4	M	VII	0.00	418.9
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	73.6	28	2072	0	A	1	Sy	I	0.00	418.9
Amasya Rg.Dir.Fr.	Koyulhisar Dir.Man.Fr.	Hafik Man.Ch.Fr.	1	OT	0	56.9	28	1596	0	F	3	K	VI	2.63	417.0
Adana Rg.Dir.Fr.	Kayseri Dir.Man.Fr.	Pinarbasi Man.Ch.Fr.	238	CBArM	1	76.4	28	2128	5.32	C	4	M	VII	1.73	425.9
Adana Rg.Dir.Fr.	Kayseri Dir.Man.Fr.	Pinarbasi Man.Ch.Fr.	270	CBArM	2	117.7	28	3164	7.91	C	4	M	VII	29.89	500.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	1	is	0	12.8	28	364	0					0.00	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	1	is	0	121.2	28	3388	0	U	4	M	VII	4.99	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	1	OT-T	0	351.9	28	9856	0	U	4	M	VII	3.70	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	2	OT-T	0	285.7	28	8008	0	K	1	K	IV	2.78	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	14	OT	0	109.7	28	3080	0	U	2	K	VI	3.18	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.		OT	0	24.5	28	700	0	U	2	K	VI	0.00	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	14	OT	0	507.0	28	14196	0	U	4	M	VII	3.09	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	41	OT	0	282.9	28	7924	0	U	2	K	VI	2.26	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	43,42	OT	0	1389.9	28	38920	0	U	2	K	VI	0.85	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	42,40	OT	0	365.8	28	10248	0	U	2	M	II	0.00	601.0
K.Marash Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	83,126	OT	0	159.7	28	4480	0	U	2	M	II	1.88	601.0

**BTC PROJECT EIA
TURKEY**

K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	126	OT	0	150.2	28	4200	0	U	2	M	II	6.94	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	126	OT	2	614.6	28	17220	0	U	2	M	II	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	126	OT	0	1.5	28	56	0	A	1	S	I	4.27	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	166	OT	0	91.2	28	2548	0	A	1	S	I	4.14	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	166	OT	0	93.6	28	2632	0	A	1	S	I	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	174	CBAr	1	772.1	28	21616	41.0704	U	4	M	VII	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	213	is	0	154.2	28	4312	0	A	1	S	I	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	314	OT	0	52.4	28	1456	0	K	2	S	II	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	314	OT	0	9.9	28	280	0	U	3	K	VI	6.38	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	314	OT	0	224.5	28	6244	0	U	3	K	VI	8.45	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	314	OT	0	144.5	28	4032	0	U	3	K	VI	3.12	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	321	CBCK	1	100.1	28	2800	5.32	U	3	K	VI	3.92	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	321	CBCK	1	462.9	28	12964	24.6316	U	3	K	VI	1.37	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	321,324	CBCK	1	409.6	28	11368	21.5992	N	2	O	IV	12.51	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	324	Ckc	1	299.2	28	8372	140.6496	N	2	O	IV	0.01	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	324	Ckbc	1	193.0	28	5404	0	N	2	O	IV	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	324	Ckc	1	123.3	28	3444	57.8592	N	2	O	IV	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	324	CBCK	2	61.4	28	1708	3.2452	N	2	O	IV	8.12	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	324,325	Ckbc	2	114.4	28	3192	0	N	2	O	IV	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	325	Ckbc	2	80.7	28	2268	0	N	4	O	VII	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	325	CBCK	1	272.4	28	7588	14.4172	N	4	O	VII	7.42	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	Ckcd	1	101.4	28	2828	44.6824	N	4	O	VII	0.00	601.0

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	CBCK	1	192.9	28	4816	9.1504	N	4	O	VII	45.53	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	Ckcd	1	56.9	28	1596	25.2168	N	4	O	VII	2.63	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	CBCK	1	1.3	28	28	0.0532	N	4	O	VII	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	CBCK	1	134.8	28	3724	7.0756	N	4	O	VII	14.48	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	Ckcd	2	73.6	28	2072	32.7376	N	4	O	VII	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	CBCK	1	24.2	28	672	1.2768	N	4	O	VII	1.26	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328	Ckcd	2	204.9	28	5600	88.48	N	4	O	VII	18.45	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	328,329	CBAr	1	121.2	28	3388	6.4372	N	4	O	VII	4.99	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Goksun Man.Ch.Fr.	329	CBAr	1	1561.8	28	43316	82.3004	N	4	O	VII	6.51	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Buyukcamurlu Man.Ch.Fr.	227	CBAr	1	18.9	28	532	1.0108	M	3	M	VI	0.00	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Buyukcamurlu Man.Ch.Fr.	227	CBAr	1	1.5	28	56	0.1064	M	3	M	VI	4.27	601.0
K.Maras Rg.Dir.Fr.	Goksun Dir.Man.Fr.	Buyukcamurlu Man.Ch.Fr.	227	CBAr	1	260.1	28	7280	13.832	M	3	M	VI	0.00	601.0
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	27,26	OT	0	269.3	28	7532	0	K	1	K	I	2.70	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.		OT	0	9.9	28	280	0	M	3	O	VII	6.38	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	26,40	CBcks	1	809.9	28	21924	114.0048	M	3	O	VII	22.74	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	40	CBcks-T	1	85.9	28	2408	12.5216	M	3	O	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	40	Ckcd	2	128.0	28	3528	112.1904	M	3	O	VII	17.16	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	40,24	CBcks-T	1	432.9	28	12096	62.8992	M	3	O	VII	4.57	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	24	CBcks-T	1	2.7	28	84	0.4368	K	2	S	II	7.97	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	50	Ckcd	1	68.4	28	1904	36.9376	K	2	S	II	1.03	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	50	Ckcd	1	296.2	28	8288	160.7872	M	3	O	VII	3.47	1522.2

**BTC PROJECT EIA
TURKEY**

K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	50	CBCK	1	192.9	28	4816	9.1504	M	3	O	VII	45.53	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	51	CBCK	1	5.4	28	140	0.266	M	3	O	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	51	Ckcd	1	162.6	28	4536	87.9984	M	3	O	VII	6.86	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	51	CBCK	1	80.7	28	2268	4.3092	M	3	O	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	51	Ckcd	1	24.2	28	672	13.0368	M	3	O	VII	1.26	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	51,73	OT	0	584.6	28	16268	0	M	2	K	IV	11.26	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	73	is	0	134.0	28	3752	0	K	2	S	II	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	73	is	0	56.9	28	1568	0	K	2	S	II	17.33	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	73	is	0	73.5	28	2044	0	K	2	S	II	9.75	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	94,93,107	OT	0	1250.0	28	34832	0	M	4	O	VII	2.84	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	107,106	Ckcd	1	87.2	28	2436	77.4648	M	4	O	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	105,104,103	Cka	1	867.8	28	23688	0	M	4	O	VII	15.63	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	103	KnCkbc	3	771.5	28	20916	1386.7308	M	4	O	VII	22.50	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kaleboynu Man.Ch.Fr.	103	Ckcd	2	91.2	28	2548	810.264	M	4	O	VII	4.14	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	94	CBCK	1	313.2	28	8764	0	M	3	O	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	94	OT	0	33.2	28	924	0	M	3	O	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	94,95	OT	0	65.5	28	1848	0	K	2	N	II	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	204,261	CBKBt	1	309.0	28	8652	0	M	4	F	VII	3.97	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	261	CBKBt	1	1.3	28	28	0	K	2	N	II	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	262	CBKBt	1	258.6	28	7252	0	M	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	263	CBKBt	1	250.6	28	6608	0	M	4	F	VII	35.27	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	367,365	CBKBt	1	150.8	28	4228	0	M	4	F	VII	1.37	1522.2

**BTC PROJECT EIA
TURKEY**

Rg.Dir.Fr.															
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	365	is	0	255.1	28	7084	0	M	4	F	VII	9.27	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	365	is	0	1.3	28	28	0	M	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	365	is	0	29.4	28	812	0	K	2	N	III	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	365	is	0	220.3	28	6160	0	M	4	F	VII	3.57	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	363	Cza	1	85.9	22	1892	0	M	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	363	Cza	1	35.1	22	770	0	M	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	363	Cza	1	137.3	22	3014	0	M	4	F	VII	8.76	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	402	CBKBt	1	180.4	28	4956	0	M	4	F	VII	11.63	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	402,450	CBKBt	1	281.1	28	7448	0	M	4	F	VII	33.13	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	450	CBKBt	1	87.2	28	2436	0	M	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	450	CBKBt	1	174.1	28	4788	0	M	4	F	VII	18.08	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	495	Cza	1	287.4	22	6314	0	K	2	S	II	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	496	CBKBt	1	317.1	28	8876	0	M	4	O	VII	5.22	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	496	CBKBt	1	23.1	28	644	0	T	3	F	VII	8.13	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	496,538	CBKBt	1	378.9	28	10444	0	T	3	F	VII	15.25	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	536	is	0	195.5	28	5488	0	K	2	N	IV	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	575	CBKBt	1	120.4	28	3360	0	T	3	F	VII	8.66	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Andirin Man.Ch.Fr.	596	CBKBt	2	172.6	28	4844	0	T	3	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	24	CBDy	1	370.6	28	10332	0	T	3	F	VII	6.17	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	27	CBDy	1	96.0	28	2660	0	T	3	F	VII	17.51	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	27	CBDy	2	248.1	28	6832	0	T	3	F	VII	18.57	1522.2

**BTC PROJECT EIA
TURKEY**

K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	27	is	0	140.8	28	3920	0	T	2	N	VI	8.99	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	61	is	0	96.0	28	2660	0	T	2	N	VI	17.51	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	63,62	CBDy	1	474.1	28	13244	0	T	2	N	VI	2.36	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	62,112	CBDy	2	570.1	28	15960	0	T	2	N	VI	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	112	CBDy	1	248.1	28	6832	0	T	2	N	VI	18.57	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	112,111	CBDy	1	543.1	28	14924	0	T	4	F	VII	19.31	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	111	CBDy	1	14.9	28	420	0	T	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	111,142	CBDy	1	527.4	28	14644	0	T	4	F	VII	10.64	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	142,175	CBDy	1	493.3	28	13804	0	T	4	F	VII	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	175	CBDy	1	68.4	28	1904	0	K	2	S	II	1.03	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	174	CBDy	1	70.0	28	1960	0	T	4	F	VII	0.35	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	174	is	0	77.6	28	2184	0	A	1	S	I	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	206,205	is	0	250.8	28	7028	0	M	2	N	III	2.27	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	202,203	Z-is	0	752.0	28	20972	0	M	2	N	III	5.05	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	203	OT	0	146.0	28	4088	0	M	2	N	III	0.00	1522.2
K.Maras Rg.Dir.Fr.	Andirin Dir.Man.Fr.	Kesim Man.Ch.Fr.	203	OT	0	272.8	28	7644	0	M	3	F	VII	1.43	1522.2
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	59	CBCz	4	118.0	28	3304	0	M	3	F	VII	6.34	1522.2
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	59	CBCz	3	51.3	28	1428	0	M	3	N	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	78	CBCz	2	38.6	28	1092	0	M	3	N	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	78	CBCz	1	401.1	28	11116	0	M	3	N	VII	13.56	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	78,56	CBCz	1	182.7	28	5124	0	M	3	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	75	CBCz	3	381.7	28	10584	0	M	3	N	VII	12.55	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	75	CBCz	1	32.1	28	896	0	M	3	N	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	71	CBCz	1	35.9	28	1008	0	M	3	N	VII	2.91	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	71,70	CBCz	1	98.6	28	2744	0	M	3	O	VII	5.59	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	70	CEKBt	1	77.6	28	2184	0	M	3	O	VII	0.00	755.7

**BTC PROJECT EIA
TURKEY**

Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	138	CBCz	1	70.7	28	1988	0	M	3	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	178	CBCz	1	148.1	28	4144	0	M	3	F	VII	7.55	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	177	CBCz	1	76.8	28	2156	0	M	3	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	200	Cza	1	209.3	22	4598	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	197	OT	2	260.1	28	7280	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	200	Cza	1	1.5	22	44	0	M	4	F	VII	4.27	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	200	Cza	1	281.1	22	6072	0	M	4	F	VII	18.88	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	199	Cza	1	67.1	22	1474	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	225	CBKBt-OT	1	102.3	28	2856	0	M	4	F	VII	4.86	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	226,227	CBKBt-OT	1	342.9	28	9604	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	247	Cza	1	101.4	22	2222	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	247,246	CBKBt	1	277.4	28	7756	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	245	CBKBt	1	80.7	28	2268	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	245	CBKBt	1	1.3	28	28	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	245	CBKBt	2	209.3	28	5852	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	253	CzCha	1	154.2	22	3388	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Kadirli Dir.Man.Fr.	Kadirli Man.Ch.Fr.	257	CBCz	1	101.4	28	2828	0	M	4	F	VII	0.00	755.7
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	53	OT	0	370.3	28	10360	0	M	1	F	VII	1.43	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	84	OT	0	747.5	28	20916	0	M	3	N	VI	1.51	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	85	OT	0	133.4	28	3696	0	M	3	N	VI	16.63	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	86	CBBt-OT	1	131.8	28	3584	0	M	3	N	VI	20.09	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	86	CBBt-OT	2	109.8	28	3080	0	M	3	N	VI	0.00	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	87	CBBt-OT	4	135.9	28	3780	0	M	3	N	VI	13.83	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	87	CBBt-OT	1	20.5	28	560	0	M	3	N	VI	8.80	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	79	CBBt-OT	2	111.8	28	3136	0	M	3	N	VI	0.00	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	117	CBBt-OT	1	76.8	28	2156	0	M	2	S	II	1.79	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	117	CBBt-OT	2	81.0	28	2184	0	M	1	M	VII	29.54	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	117	CBBt-OT	3	108.3	28	2828	0	M	1	M	VII	37.49	672.4
Adana Rg.Dir.Fr.	Adana Dir.Man.Fr.	Ceyhan Man.Ch.Fr.	117,116	OT-T	0	1326.3	28	36988	0	M	1	M	VII	6.39	672.4

**BTC PROJECT EIA
TURKEY**

II	2. Class														
III	3. Class														
IV	4. Class														
V	5. Class														
VI	6. Class														
VII	7. Class														
VIII	8. Class														

Amount of Forest Lands Traversed by BTC Pipeline Route in Each Province

Province	Forest Land (ha)
Ardahan	14.4
Kars	9.3
Erzurum	32.5
Gumushane	12
Erzincan	108.7
Sivas	-
Kayseri	8.4
Kahramanmaras	57.1
Osmaniye	9.4
Adana	3.1

Appendix C1 – Environmental Management and Monitoring Plan (EMMP)

1 INTRODUCTION

1.1 OVERVIEW

An Environmental Impact Assessment (EIA) has been undertaken to assess and report the environmental and social impacts associated with the Turkish section of the Baku-Tblisi-Ceyhan Crude Oil Pipeline (BTC Pipeline) Project. The EIA has examined negative and positive, biophysical and socio-economic effects of all components of the BTC Project including the construction, commissioning, operation and decommissioning of the pipeline, above ground facilities and BTC Marine Terminal.

During the course of the EIA project, design decisions have been made taking account of the need to avoid, minimise and reduce negative environmental impacts. Where potential adverse impacts have been identified, the EIA has examined the extent to which these impacts would be mitigated through the adoption of good practice methods of working in line with international guidelines.

In certain cases, additional project and site-specific mitigation measures have been identified to minimise disruption to local communities and damage to the natural environment. These actions include choice and programming of construction methods, practices and logistics, process and pollution control technology and management procedures.

This Environmental Management and Monitoring Plan (EMMP), and the suite of complementary management plans that support it (see Section 2.3), describes these actions in terms of:

- generic good practice measures which will ensure that the facilities are built and operated to standards of international best practice;
- site-specific measures, the implementation of which is mandatory in order to validate the basis (and hence conclusions) of the EIA.

1.2 SCOPE AND PURPOSE

In order to avoid unnecessary repetition the generic and site-specific mitigation measures included in the EIA have not been repeated in this document. However, this document provides additional guidance on the means, methods and mechanisms by which such measures will be implemented and should be read in conjunction with the EIA. As the Project progresses, the EMMP, and its supporting management plans, will increasingly become the focus of the environmental management actions to which the Project is committed and, as such, will evolve into the principal depository of environmental management information.

As noted above, this EMMP is supported by a number of complementary management plans (see Section 2.3). The EMMP, together with the supporting plans, is a tool for the management of potential adverse impacts and aims to enhance project benefits and to introduce standards of good practice to be adopted for all project works. The supporting management plans are a set of stand-alone documents that will evolve during the lifetime of the Project to encompass the construction, commissioning, operation and decommissioning of the BTC Project and will be integrated into the overall BOTAŞ Environmental and Quality Management Systems.

For each of these facilities, the EMMP and supporting plans specify the requirements to ensure effective mitigation of the potential biophysical and socio-cultural impacts identified in the EIA. For each impact, or operation, that could otherwise give rise to impact, the following information is presented:

- a description of the mitigation measures (actions) that BOTAŞ or its Contractors will implement;
- designation of responsibility for ensuring full implementation of the required action;
- parameters that will be monitored to track how effectively actions and mitigation are implemented;
- timing for implementation of the action to ensure that the objectives of mitigation are fully met.

BOTAŞ is committed to the adoption of all of these measures and will carry out ongoing inspection and audit to ensure their implementation and effectiveness.

2 ENVIRONMENTAL MANAGEMENT FRAMEWORK

2.1 BOTAŞ ENVIRONMENTAL MANAGEMENT SYSTEM

Environmental management is considered to be an integral part of the overall Project Management System. BOTAŞ will maintain an effective Environmental Management System (EMS) in order to ensure that the protection of the environment is given a high priority throughout the BTC Project. The aim of the EMS will be to ensure that environmental requirements are identified, planned, achieved, maintained, documented and, where appropriate, improved.

The EMS is made up of the following components:

- environmental performance requirements and criteria;
- planning of the EMS;
- measurement of performance;
- verification of the activities performed;
- continuous improvement of the process;
- retention of documentation and experience.

BOTAŞ has an EMS that meets the requirements of ISO14001; this EMS will be continuously developed as the Project proceeds. This EMMP and the supporting management plans are an integral part of the overall EMS and will be fully integrated into the Project Management System.

2.2 THE EMMP

This EMMP is intended to be an overview document that guides the environmental management and monitoring of all aspects of the BTC Project. This document addresses project wide issues and requirements that will be adhered to by BOTAŞ and its Contractor in all aspects of the BTC Project. In addition, this document acts as a guide to the supporting topic specific management plans and other documentation that together constitute the environmental management framework for the Project. In its current form, this document is primarily focused on the construction and commissioning phases of the Project; however, the EMMP will be the subject of ongoing review and revision as the Project develops through to the operational and, ultimately, to the decommissioning phases.

2.3 SUPPORTING MANAGEMENT PLANS

The EMMP is supported by a suite of project-wide management plans that set out the project-wide standards and requirements applying to particular topics and areas of environmental management. BOTAŞ and its Contractors will adhere to the standards and requirements set out in these plans wherever they apply to a particular project activity. The supporting management plans are as follows:

- the Reinstatement Plan;
- the Waste Management Plan;
- the Pollution Prevention Plan;
- the Traffic Management Plan;
- the Oil Spill Response Plan ;
- the Cultural Heritage Management Plan;
- the Aggregates Management Plan;
- the Social Management and Monitoring Plan.

The following descriptions of each plan provide a brief summary of the scope of the various management plans that support and complement the EMMP.

2.3.1 Reinstatement Plan

This plan specifies the minimum technical requirements for reinstatement and restoration of areas affected by construction activities excluding areas of permanent land take. The primary aim of the Reinstatement Plan (RP) is that all such areas shall be returned to their pre-construction state. The RP is applicable to the stabilisation and restoration of terrain before, during and after construction of the pipeline Right of Way (RoW), access roads/tracks, above ground installations (AGIs), staging areas and any additional areas utilised during construction of the various components of the BTC Project.

2.3.2 Waste Management Plan

The Project-wide Waste Management Plan (WMP) identifies wastes which are likely to be generated during the construction of the BTC Project and documents the 'cradle to grave' management practices to be employed for the collection, storage, treatment and/or disposal of waste arisings.

The WMP focuses primarily on wastes generated by construction and related activities including the following sources.

- construction and commissioning of all facilities;
- accommodation both temporary and permanent (used during construction);
- infrastructure such as transport and helicopter pads.

The WMP describes how waste will be managed and how the Project will:

- minimise the potential to cause harm to human health and the environment;
- achieve and maintain compliance with Turkish regulations and BOTAŞ environmental goals;
- reduce operational costs and reduce any potential liabilities that may arise from waste handling operations.

As the project progresses the WMP will be amended and refocused to define specific provisions for the management of waste generated during the commissioning, operation and decommissioning of the pipeline.

2.3.3 Pollution Prevention Plan

The Pollution Prevention Plan (PPP) documents the project-wide measures that are required to avoid and minimise pollution during project activities and to respond to any pollution incidents that occur. Specifically, the PPP addresses the following areas:

- fuel storage and handling;
- protection of surface and groundwaters;
- preventing marine pollution;
- controlling dust and other emissions to air;
- controlling noise;
- spill prevention and control.

2.3.4 Traffic Management Plan

The Traffic Management Plan (TMP) addresses the measures that will be adopted throughout the BTC Project to minimise traffic related impacts. Specifically, the TMP addresses:

- relevant traffic management policies and standards;
- potential traffic impacts of the Project;
- appropriate measures and procedures for mitigating the impacts.

2.3.5 Cultural Heritage Management Plan

The Cultural Heritage Management Plan (CHMP) documents the means by which the potential impacts on Turkish cultural heritage resources will be managed.

The Turkish CHMP will specifically address the following issues:

- a phased approach to archaeological baseline study and data collection;
- requirements and procedures for undertaking intrusive archaeological investigations;
- specific management strategies for identified archaeological and cultural heritage sites;
- chance find procedures to be adhered to in the event of an archaeological find during construction activities;
- procedures for the reporting of archaeological finds.

The CHMP for the Turkish section of the BTC Pipeline has been prepared within the framework established by the Archaeological Management Strategy that will apply to the overall BTC Project, including the Azerbaijan and Georgian components of the Project. The strategy has been developed by the BTC Owners to ensure that archaeological management is treated in a consistent way in all three countries.

2.3.6 Oil Spill Response Plan

The Oil Spill Response Plan (OSRP) documents the responsibilities, procedures and methods of response that will be utilised in the event of an oil spill during the operational phase of the Project. A project-wide oil spill response strategy has been developed by the BTC Company (BTC Co) in order to ensure consistency and the efficient use of resources throughout all three countries. The Turkish OSRP will be consistent with the requirements of this strategy document. An outline Turkish OSRP has been developed at this stage and will continue to be developed by BOTAŞ during the construction phase of the Project in line with the development of operational responsibilities, procedures and planning.

2.3.7 Aggregates Management Plan

The Project-wide Aggregates Management Plan (AMP) identifies the estimated requirements for construction aggregates, outlines the existing capacity in Turkey to provide aggregates for the Project, identifies the potential impacts of aggregate sourcing and recommends appropriate measures to mitigate them.

The Contractor shall use the Project-wide AMP as the basis for preparing a detailed AMP to identify the actual quantity of aggregates needed per Contract, and will include detailed procedures for the management and mitigation of the potential impacts of aggregate extraction and transportation.

2.3.8 Social Management and Monitoring Plan

The Social Management and Monitoring Plan (SMMP) has been developed to achieve the following overarching objectives:

- build positive, non-dependent relationships between the Project and local communities;
- optimise potential benefits brought by the Project;
- minimise negative social impacts caused by the Project.

The social mitigation measures have been grouped into six supporting social management plans that need to be taken forward in parallel by different parties within the Project and Contractor teams. For each of the plans, the Construction Contractor, BOTAŞ and the BTC Co have been identified as having primary responsibility.

The plans required to implement the social impact mitigation measures identified during the EIA process are as follows:

- **Community Liaison Management Plan** outlining measures required to prevent negative impacts that could be caused by construction workers and construction camps and also measures required to ensure effective two-way communication with local settlements.
- **Construction Impacts Management Plan** outlining measures required to minimise impacts caused during construction of the facilities.

- **Community Safety Management Plan** outlining measures to ensure the safety of local communities. Many of these measures also appear in the other plans, but are brought together here to provide a focus for their management and monitoring.
- **Employment and Training Management Plan** outlining measures to maximise employment opportunities to project affected communities and the local regions through which the pipeline passes and in which the marine terminal is located.
- **Procurement and Supply Chain Management Plan** outlining measures to maximise opportunities to project affected communities and the local regions through which the pipeline passes to benefit from supply of goods and services required by the Project.

Monitoring Plans for the construction and operation of the pipeline, AGIs, construction camps and BTC Marine Terminal have also been compiled. These plans outline the monitoring actions, responsibilities and timing for key mitigation measures, as well as the targets against which performance will be assessed in each area.

Further details regarding the management of social and economic issues are provided in Appendix C8.

2.3.9 Ongoing environmental management

The EMMP and the supporting management plans will be living documents that will be developed and revised as project design, planning and implementation develops. BOTAŞ will be responsible for ensuring that these Plans are regularly revised and reviewed and are fit for purpose in line with the stage of development of the Project. Throughout this document, references to the EMMP shall be taken to include this document and each of the supporting management plans noted above.

In addition to the EMMP and supporting management plans described above, a number of other project documents are indirectly related to the EMMP. This includes documents such as Journey Management Plans, Emergency Response Plans, and Health and Safety Plans. These documents are referred to as appropriate in the relevant section of the EMMP or supporting plans.

2.4 CONTRACTOR ENVIRONMENTAL MANAGEMENT PLANS AND PROCEDURES

This EMMP and the supporting management plans are project wide plans that specify the standards and requirements that will apply to all aspects of the BTC Project. The project itself is made up of a number of separate stages and components covering a variety of locations and activities. In order to ensure both consistency in environmental performance and the successful application of the project-wide standards and requirements in a variety of circumstances, all BOTAŞ Contractors will be required to adopt and implement the requirements of the EMMP, and supporting management plans, as they pertain to the scope of their contract.

In order to achieve this, all Contractors shall be required to submit an outline, contract-wide Environmental Management and Monitoring Plan (CEMMP) within 30 days of being appointed; the CEMMP will include site-specific environmental management procedures. These submittals shall demonstrate the means and methods by which the requirements of the outline EMMP will be implemented. The site-specific environmental management procedures are to be submitted in

their final form 12 weeks prior to the clearance of the RoW or the breaking of ground at other construction sites and will be approved by BOTAŞ prior to implementation.

The CEMMPs will be reviewed and approved by BOTAŞ to ensure the requirements of the project-wide EMMP and management plans will be fully met in a consistent manner throughout all aspects of the BTC Project.

This EMMP is a generic document intended as guidance to the Contractor and to assist the Contractor in the development of his/her CEMMP. To develop the above-mentioned contract-wide and site specific CEMMP, the Contractor will need to undertake the following tasks:

- identify all site-specific mitigation measures specified in the EIA that are relevant to the Contractor's scope of work – these measures should be tabulated together with the means by which each measure will be implemented, the timing of implementation and the person responsible for ensuring implementation of the measure;
- specify the detailed management structure that will be adopted by the Contractor including the lines of responsibility for ensuring the implementation of both generic and site-specific mitigation measures identified in the EIA;
- clearly specify the roles and responsibilities of different project personnel with respect to environmental management including the roles and responsibilities of the *Contractor's Environmental Manager*, the *Contractor's Environmental Inspectors* and archaeological and ecological specialists;
- develop a detailed monitoring plan including a sampling programme which specifies the responsible person, sampling frequency, sampling methods and protocols that will be adopted, laboratories to be used, parameters to be measured and the performance standard against which the results will be compared;
- develop a detailed environmental inspection and audit programme including the responsible persons, timing, scope, pro forma checklists, and mechanisms for implementation of corrective actions;
- develop a detailed training programme for construction personnel including content, schedule and provider;
- describe the document control procedures that will be implemented for environmental records and information.

The review and approval of the Contractor's plans and procedures shall be the responsibility of BOTAŞ (on behalf of the BTC Co.). BOTAŞ will also be responsible for the appointment of independent environmental auditors and inspectors to monitor, and report on, the environmental performance of the Contractor (see Section 4 below).

3 ENVIRONMENTAL POLICIES AND STANDARDS

3.1 INTRODUCTION

Environmental management issues throughout the life of the BTC Project are governed or guided by a number of ‘standards’, including:

- those required by BOTAŞ and BTC Co.’s environmental policies;
- those contained in Turkish legislation;
- those specified in international standards and guidelines and by industry codes of practice (as required by the Host Government Agreement and Turnkey Agreement);
- those that are specific to the BTC Project including commitments made in the EIA and this EMMP;
- commitments made during consultation and measures set out in conditions or in other permits.

The BTC Project is being developed in accordance with International Financial Institution (IFI) policies and guidelines. In particular, the policies of the following institutions have been taken into consideration in the development of project standards and requirements.:

- International Finance Corporation (IFC) representing the World Bank Group;
- Export – Import Credit Agency of the United States (Ex-Im);
- Overseas Private Investment Corporation (OPIC);
- European Bank for Reconstruction and Development (EBRD).

3.2 BOTAŞ ENVIRONMENTAL POLICY

A set of policies has been established guiding the execution of all work performed by the BTC Project Directorate. The policy that underpins the environmental activities is included in the following Policy Statement:

- The BTC Pipeline is a project in which the protection of the environment will be given high priority.
- BOTAŞ and BTC Co recognise that it has a responsibility to ensure that through the implementation of good environmental management practices all the potential adverse impacts on the environment associated with the Project are either avoided or appropriately mitigated.

Accordingly, all work will be conducted in compliance with all applicable environmental laws and regulations as well as the standards and best practices generally prevailing in the international petroleum industry in a manner, which supports the protection, preservation and enhancement of the environment. To achieve this aim, BOTAŞ will:

- implement an Environmental Management System, in accordance with ISO 14001:1996, as an integral part of the Project Management System;
- perform top management reviews, at least annually, to ensure compliance with established policies, procedures and applicable environmental laws and regulations;
- maintain a commitment to waste minimisation and pollution prevention and will incorporate these principles when defining project specifications and conducting its activities;
- identify, assess and manage environmental risks and endeavour to set and review quantifiable objectives and targets, associated with its operations, to minimise the likelihood of adverse environmental impacts;
- be committed to building relationships with government, the scientific community, and the public to promote the development and communication of innovative, cost effective solutions to environmental problems;
- commission an ongoing, independent environmental auditing programme to track, and report on, the environmental performance of the Project;
- ensure a commitment to the continuous improvement of the Environmental Management System wherever possible and sustainable.

All BOTAŞ personnel will be individually and collectively responsible for adherence to, and effective application of the policies and principles contained in this environmental policy statement.

3.3 BP'S CORPORATE POLICY

In addition to BOTAŞ Environmental Policy and the standards detailed in the HGA and the Turnkey Agreement, BOTAŞ aims to comply with the relevant portions of the Project Operator BP's Corporate Policy. The BTC Co has endorsed BP's HSE policy for purposes of the BTC Project. Please refer to Appendix D.1.6.2 for details of BP's Corporate Policy.

3.4 TURKISH STANDARDS

The principal Turkish environmental legislation is the Environment Law of August 1983. The principal regulations associated with the Environment Law and which are relevant to the Project are listed below:

- Environmental Pollution Fund Regulation (17 May 1985);
- Regulation on Preservation of Air Quality (TRPAQ) (2 November 1986);
- Noise Control Regulation (11 December 1986);
- Water Pollution Control Regulation (WPCR) (4 September 1988);
- Regulation on Control of Solid Wastes (3 April 1991);
- Regulation on Control of Hazardous Wastes (revised 25 December 1996);
- Environmental Impact Assessment Regulation (revised 27 June 1997);
- Regulation on Control of Soil Pollution (10 December 2001).

In addition to the above regulations associated with the Environment Law, there are several other acts and regulations applicable to pipeline construction and operation, as follows:

- General Public Health Act (24 April 1930);
- Health-Hazard Establishments Regulation (26 October 1983);
- Aquatic Products Act (22 March 1971);
- Aquatic Products Regulation (10 March 1995);
- Law on Protection of Cultural and Natural Assets (23 July 1983);
- National Parks Law (11 August 1983);
- Shoreline Law (4 April 1990);
- Regulation on Hazardous Substances/Products Control (11 July 1993).

All regulations associated with Turkish Environment Law will be complied with, unless a derogation has been specifically sought under the provisions of the Host Government Agreement.

3.5 INTERNATIONAL GUIDELINES AND AGREEMENTS

A number of international guidelines and agreements apply to the Turkish section of the BTC Project. These include the following project specific agreements:

- Intergovernmental Agreement;
- Host Government Agreement;
- Turnkey Agreement.

In addition to specific requirements set out in the above agreements, the guidelines and standards set by the following organisations will also apply to the BTC Project:

- World Bank Operational Directives and Guidance;
- European Union Directives and Guidance.

3.6 TURKISH AND INTERNATIONAL STANDARDS

All aspects of the Project will be undertaken in accordance with Turkish Laws and Regulations, EC Directives, as well as the principles, criteria and standards generally accepted for use by Turnkey Contractors undertaking major international pipeline projects of the same or similar size and type.

In Article IV of the Inter-Governmental Agreement it states that the project technical, safety and environmental standards and practices shall in no event be less stringent than those generally applied within the member states of the European Union.

Both Turkish and World Bank standards will be applied to the BTC Project.

4 ROLES AND RESPONSIBILITIES

4.1 BTC COMPANY

BP, as the BTC Co representative, will maintain a monitoring, audit and review role to ensure the Project is undertaken in compliance with the Project Agreements and applicable health, safety, quality, social and environmental standards.

BTC Co will oversee all community relations activities (pipeline and marine terminal), supported by a minimum of six environmental and social inspectors.

4.2 BOTAŞ

4.2.1 General

BOTAŞ is the turnkey contractor for performing all the works and services required for the design, engineering, procurement, construction, inspection, start-up, demonstration and testing of the facilities within Turkey. BOTAŞ will have ultimate responsibility for implementing the provisions of the EMMP. This role will include the ongoing management of environmental impacts and the monitoring of contractor performance as well as the development of mechanisms for dealing with environmental problems. BOTAŞ will enhance the environmental performance of the Project through the following activities:

- Implementation of a programme of environmental inspection, monitoring and reporting.
- Ensuring that all staff and contractor staff undergo environmental awareness training focusing on the key environmental and socio-economic issues concerning this project.
- Development of guidelines and operating procedures for environmental protection, including emissions reduction, water resource protection and waste management.
- Implementation of a programme for follow-up and analysis of all environmental incidents or accidents.

These activities are presented in more detail in this EMMP.

4.2.2 Organisation overview

BOTAŞ will also ensure that the activities of its Contractors are conducted in accordance with 'good practice' measures, approved plans and permit conditions, the implementation of which will be required through contractual documentation. In order to facilitate this, and to demonstrate commitment to the EMMP, BOTAŞ will monitor and evaluate the Contractor's activities and performance through a team of dedicated inspectors/auditors. These inspections/audits will be carried out in conjunction with Contractor management in order to ensure that areas of concern are rapidly addressed and the results of all inspections/audits will be documented.

The BOTAŞ Environmental Manager will be based in Ankara. The Environmental Manager will coordinate and supervise the field monitoring and technical review functions. He/she will be assisted by an environmental engineer, an archeological supervisor and three environmental supervisors. The main responsibilities of the environmental engineer will be scheduling, authority liaison, GIS mapping and reporting. The archeological supervisor will be responsible for the coordination of the archeologists in the field and liaison with Ministry of Culture. The Environmental Supervisors' main responsibilities will be supervision of the field works and field data and trend analysis for EMS.

The principal on-site role of BOTAŞ will be the monitoring of both general construction activities and the implementation of mitigation measures. BOTAŞ on-site personnel will include a *Lead Environmental Monitor*, *Project Environmental Monitor* and *Project Archaeological Monitor* for each contractual section of the pipeline (termed a *Lot*). In addition, there will be a *Lead Environmental Monitor*, *Project Environmental Monitor* and *Project Archaeological Inspector* that are assigned to each pipeline lot will also cover the pump stations that are located within the lot section. During construction of the BTC Marine Terminal, BOTAŞ will employ a *Project Archaeological Monitor* covering both onshore and offshore construction, an *Onshore Project Environmental Monitor* and an *Offshore Project Environmental Monitor*. All roles will be filled by appropriately qualified and experienced personnel.

The organisational structure of both BOTAŞ and the Construction Contractors in terms of environmental management and supervision during the construction phase of the Project is summarised in Figure 4.1. Required Contractor environmental resources are described in Section 4.3 below.

In addition to the management structure established for the day-to-day overseeing of the Contractor's environmental performance, BOTAŞ will also commission an ongoing, independent environmental auditing programme to track, and report on, the environmental performance of the Project. The independent audit function will report directly to the BTC Co and will provide an appropriate interface for any external environmental auditing that may be undertaken by the IFIs.

4.2.3 Complaints procedure

BOTAŞ will maintain mechanisms to receive, and respond to, complaints and other issues of concern from local communities within the project area and from any other stakeholders. These mechanisms will address:

- dissemination of information regarding the Project;
- procedures for receiving complaints during all stages of the Project;
- procedures for the rapid response to complaints during all stages of the Project;
- coordination between BOTAŞ and its Contractors with regards to complaint receipt and response.

This procedure is further described in Section 5.3.

4.2.4 Pre-construction environmental monitoring

BOTAŞ will undertake pre-construction environmental surveys in order to establish environmental baselines against which to monitor and demonstrate any changes in environmental quality due to the activities of BOTAŞ and its Contractors. Such surveys will include, but not be limited to, the following:

- pre-construction monitoring of water quality at pipeline river crossings;
- existing water quality at the site of any temporary or permanent aqueous discharges including those from construction camps, above ground installations and the BTC Marine Terminal;
- existing air quality at above ground installations and the BTC Marine Terminal;
- existing noise levels at above ground installations and the BTC Marine Terminal.

Environmental monitoring requirements before, during and after construction are further specified in Section 7.

4.2.5 Implementation of the EMMP

The EMMP, and the supporting management plans, will be fully integrated into the BTC Project Environmental Management System. This will ensure:

- ownership of the EMMP at the highest level;
- appropriate resource allocation to the EMMP;
- effective implementation of the EMMP.

The BOTAŞ *Project Environmental Manager* will be responsible for ensuring the overall effective implementation of the EMMP.

BOTAŞ will designate an EMMP '*Co-ordinator*' to each aspect of the Project who will be responsible for ensuring implementation of the EMMP. Where the *EMMP Co-ordinator* does not have a management role, he/she will advise appropriate managers that are responsible for implementation of the different aspects of the EMMP. Designated *EMMP Co-ordinators* may be present permanently, or part time on site, or may have responsibility for more than one site, depending on the type of operations on site; the EMMP Co-ordinators will report to the *Project Environmental Manager*. During the construction phase, the on-site BOTAŞ *Project Environmental Inspectors* will monitor the role of the EMMP Coordinators and will be responsible for internal inspection and auditing of the Contractor implementation of the EMMP.

The *EMMP Co-ordinators* will meet on a regular basis with the *Project Environmental Manager*, to report on progress and to exchange issues and solutions. The independent Environmental auditors (see above) will report directly to the BTC Co, in addition to providing ongoing feedback to the Environmental Manager (and his/her team of Coordinators) and, via BOTAŞ, to the Contractor on the effectiveness of on-site environmental management.

4.3 CONTRACTORS

4.3.1 General

BOTAŞ management will be responsible for the performance of its Contractors and for ensuring that all BOTAŞ' commitments in the EIA and EMMP are translated into Contractors' requirements and that these requirements are implemented to the full intent and extent of BOTAŞ' original commitment.

BOTAŞ' Contractors will be responsible for implementation of, and adherence to, all the mitigation measures outlined in the EIA and EMMP. All contractors will be required to comply with the provisions of the EMMP and with any environmental and other codes of conduct

required by BOTAŞ. BOTAŞ will require all contractors to maintain records of regular environmental inspection to provide BOTAŞ with a ready means of monitoring their performance. It will be the Contractor's individual responsibility to ensure that no unnecessary disturbance is caused to local communities or the environment within the project area.

BOTAŞ contractors and sub-contractors will be required to adopt the provisions of the EMMP as if it were their own and to demonstrate to the satisfaction of BOTAŞ that the commitments made in the EIA and EMMP are being implemented.

The Contractor will be responsible for ensuring compliance with:

- all Turkish statutory requirements
- all applicable World Bank, European Union and industry best practice standards;
- the environmental controls and mitigation measures contained in the EIA, EMMP and supporting management plans;
- the CEMMP and supporting documentation submitted and approved as part of the contracting process;
- project environmental standards;
- any environmental or other codes of conduct required by BOTAŞ;
- all specifications in the engineering design documentation.

The Contractor will also be responsible for securing all additional applicable permits and licences not provided for through the EIA approval process.

The Contractor will be required to ensure that:

- reports on environmental incidents are provided to BOTAŞ immediately;
- daily activity reports are provided promptly;
- appropriate mechanisms are developed and implemented for dealing with unforeseen events;
- a programme of regular environmental self inspection and audit is developed and implemented and the results are reported to BOTAŞ on a regular basis;
- appropriately experienced and qualified personnel are employed in the roles of *Contractor's Environmental Manager* and *Contractor's Environmental Inspectors* subject to the approval of BOTAŞ;
- summary reports on compliance with environmental requirements are provided to BOTAŞ on a weekly basis and the attendance of the *Contractor's Environmental Manager* at progress meetings on a weekly basis.

Compliance and non-compliance (established during inspections and audits) with the EMMP will be recorded by BOTAŞ and copies sent to the Contractor. The BOTAŞ Representative will be empowered to stop the works if he/she is of the opinion that the requirements of the EMMP or commitments made in the EIA are not being met and/or an environmental incident is likely to occur. Costs of stoppage due to environmental non-compliance shall be borne by the Contractor.

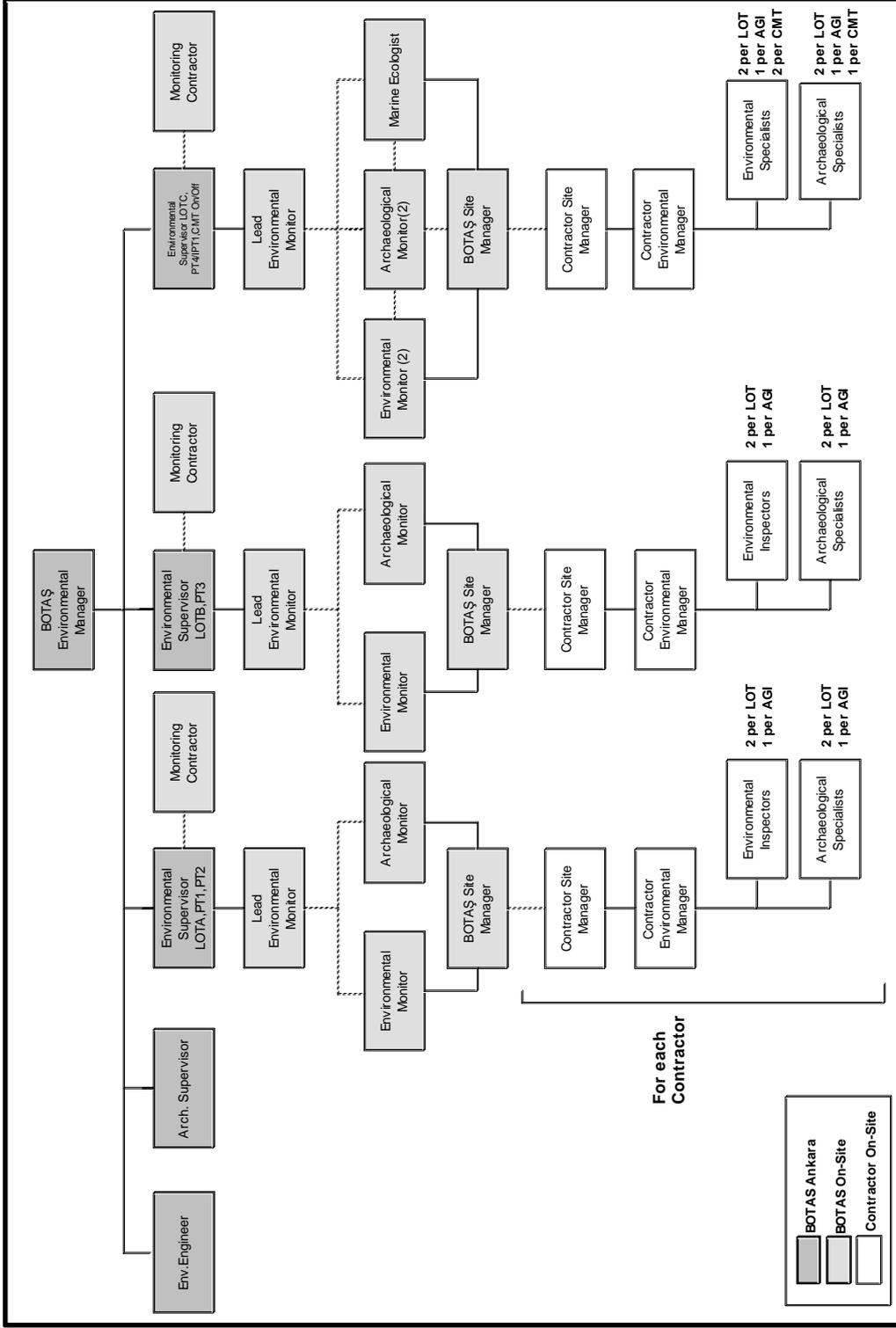
4.3.2 Contractor organisational structure

Contractors will also be expected to demonstrate commitment to the EMMP at all levels in the Contractor's management structure.

During the construction phase, the Contractor's management structure will include the dedicated role of *Contractor's Environmental Manager*. This role will be filled by an appropriately experienced and qualified person to the satisfaction of BOTAŞ and this person and role will not be altered without the prior approval of BOTAŞ. The *Contractor's Environmental Manager* will be adequately supported by a dedicated team of appropriately qualified and experienced *Contractor's Environmental Inspectors*.

Specifically, it is expected that during pipeline construction there will be no less than one *Contractor's Environmental Manager* and two *Contractor's Environmental Inspectors* per lot. There will be one *Contractor's Environmental Manager* responsible for construction of all pump stations who will be supported by one *Contractor's Environmental Inspector* for each pump station. During construction of the BTC Marine Terminal, the Contractor will provide two *Environmental Specialists* – one responsible for onshore construction and the other for offshore construction. The organisational structure of the Contractor's environmental management team will be subject to BOTAŞ approval. An outline of the anticipated Environmental Management Structure of Construction Contractors is presented in Figure 4.1. The Contractors will provide each Environmental Manager, Inspector or specialist with a vehicle and appropriate office and administrative support.

**BTC PROJECT EIA
TURKEY**



Appendix C1 Figure 4.1: Construction Environmental Management Overview

5 GENERAL PRINCIPLES

5.1 INTRODUCTION

This section sets out a number of project wide environmental management requirements and activities which will apply to all aspects of the BTC Project including the construction, commissioning, operation and decommissioning phases. Both BOTAŞ and its Contractors will be fully committed to implementing the following requirements.

5.2 MEDIA COMMUNICATIONS

BTC Co recognise and respects the level of public interest that the development of the BTC Pipeline Project is likely to arouse and the role of international and domestic press and broadcasting media in reporting project development and progress. BOTAŞ will develop and implement a procedure for dealing with the media. This procedure will set out lines of responsibility and mechanisms for media releases and interactions. It is considered inappropriate for Contractors, sub-contractors and their employees to make statements or disclose any information to the media without prior written consent of BOTAŞ and the BTC Co. The Contractor will be required to ensure that all media contact is passed to BOTAŞ; however, the Contractor may be required to attend media briefings or meetings at the invitation of BOTAŞ.

5.3 COMMUNITY COMPLAINTS PROCEDURE

BOTAŞ, in coordination with its various contractors, will set up a complaints procedure that will enable any complaints or enquiries to be made direct to a nominated individual (normally the *Community Liaison Officer*). BOTAŞ will distribute details of the telephone number, office address and complaints procedure to all communities, landowners and occupiers in the vicinity of the working area and construction camps and close to roads that will experience significant increases of traffic movements. Contact numbers for the BTC Co will be included in the event that the Contractor does not handle a complaint satisfactorily.

The complaint will be investigated by a *Community Liaison Officer* and action taken where necessary. All complaints received will be reported and logged. All complaints will be recorded on site and the status of response action recorded on a regular basis until corrective action has been adequately implemented. BOTAŞ will ensure that clear instructions are given to all contractors and BOTAŞ personnel regarding the procedure to be followed when a complaint is received and the responsibilities for ensuring appropriate response action is undertaken. Contractors will be required to make adequate resources available to undertake immediate and appropriate corrective action.

BOTAŞ will ensure that residents living near to construction activities are kept informed of the Contractors proposed working schedule and are advised of the expected time, duration and reason for the works.

5.4 DISTURBANCE OF HABITATS DURING CONSTRUCTION

The BTC Project has adopted the principle of full reinstatement of all areas affected by construction activities, excluding areas of permanent land take, in order to minimise any long term impacts on native flora and fauna. However, the increased traffic, noise and human activity associated with construction will result in the temporary disturbance of fauna and flora. In order to supplement the mitigation measures specified in the EIA document, a Mammals Species Dossier (see Appendix B1) has been produced for the Project; the Dossier provides one of the bases for the Seasonal Sensitivity Tables provided as Attachment 1 to this EMMP.

The Mammal Species Dossier provides details of species of mammals likely to be found along the pipeline route which are regarded as being globally at risk, or which fall under the protection conferred by the main international conventions on flora and fauna, whether or not acceded to by the Republic of Turkey, or which fall under the protection conferred by the legislation of the European Union, or which are protected directly by the domestic legislation of the Republic of Turkey. For each of these species, the dossier addresses the following topics:

- distribution and status;
- threats;
- legal protection;
- project action required.

For some species no specific project action is considered necessary. For other species a number of project requirements are identified that both Contractor and BOTAŞ personnel will be required to adopt. As an example, the project actions required in relation to Eurasian Brown Bear are contained in Box 5.1. Reference should be made to the Mammal Species Dossier for other actions required for other species.

Box 5.1 Extract from Mammals Species Dossier for Eurasian Brown Bear

Eurasian Brown Bear – Project Action Required

Negligible impacts expected. There may be some small temporary or permanent loss or fragmentation of bear habitat due to RoW clearance. Bears roam huge distances over large territories in search of food. Long lengths of open trench should not be left for any length of time to avoid disrupting the passage of animals or channelling them towards workers camps. Gaps in the RoW fencing (if used) at regular intervals to permit bear passage should be allowed. This reduces the potential for a bear to become 'trapped' within the fencing.

- There is potential for human-bear interactions during pipeline construction in areas of known bear occupation. Bears are unlikely to approach humans, although some may through curiosity; habituation to humans; defence of cubs; an animal kill, their home range; or if surprised by a human; and if asserting dominance. However, most interactions are likely to be connected with bears foraging for food around camps and vehicles. It is imperative that proper education is given to all workers working in areas where bears may occur. The over-riding aims are the protection of bear habitat, the safety of the bear and the safety of workers.

Key points include:

- Workers need to be aware of 'blind spots'. Workers will need to have a 'safe location' such as vehicles in close proximity.
- Workers should not wander alone in areas where bears may be present, especially at night.
- Construction staff in bear areas will need to work in pairs, use radios and carry a deterrent (not firearms) where possible (after consulting the appropriate authorities to establish what is allowed in the area). If a bear is sighted, security staff will need to be contacted and warning signals given.
- Workers need to be educated in the appropriate responses in the event of a bear interactions eg do not run.
- Humans should not approach bears under any circumstances, and especially not females with cubs.
- Good housekeeping and refuse management is essential. Site needs to be kept clean and food stores managed properly. Bear-proof waste containers (haul-all-bins) should be used. Food and rubbish should not be stored or left in or near vehicles.
- The hunting of bears or any other wildlife by BTC Project personnel or Contractors is strictly forbidden. Firearms are prohibited – not only is it illegal to shoot bears but wounded animals are the most dangerous.
- Limitation of speed while driving at night will reduce the chances of collisions with bears.

Both Contractor and BOTAŞ training programmes will include the relevant requirements of the Project Actions outlined in the Mammals Species Dossier, and the Attachment 1 to the EMMP, as they apply to their scope of work and geographical location.

Attachment 1 to the EMMP provides a table (and accompanying notes) of seasonal sensitivities along the route alignment. The specific actions and constraints that derive from Attachment 1 have been included in the contractual documentation for the construction phase and contractor compliance will be rigorously enforced by BOTAŞ. In addition, the Contractor and BOTAŞ training programmes will raise wider awareness regarding specific restrictions to construction timing in order to minimise disturbance impacts to sensitive species.

The hunting of any animals, including those not specifically protected under law, is strictly forbidden throughout the BTC Project and project personnel are strictly forbidden to carry firearms. These requirements will be stringently enforced by both Contractor management and BOTAŞ.

5.5 BOTAŞ GROUNDWATER PROTECTION STRATEGY

The development of the Groundwater Protection Strategy requires a systematic technical approach to the definition of groundwater sensitivity. The results will be used in the oil spill response planning (See Section C6). The following technical approach provides a summary of the core steps to be taken in realisation of the groundwater protection strategy:

- Step 1. The major individual well field production zones within the groundwater operational zones as listed by the relevant state authority (DSI) will be assessed in terms of their proximity and likely connectivity to the BTC Pipeline. Production zones within close proximity and/or in hydraulic connection with the BTC Pipeline, will be selected for review and a groundwater database will be compiled.

- Step 2 Based on the information provided in the literature reviews, the aquifer sensitivity will be assessed. This is likely to be guided by the importance and quality of the resource. Numerical risk values will be derived for the aquifer protection zones defined under Step 3.
- Step 3 Based on the complexity of the flow field, a suitable analytical or semi-analytical model will be chosen to delineate the 50 and 400-day capture zones and the Zone of Contribution (ZOC). USEPA Wellhead Protection Zone methodology can be used to delineate the protection zones.
- Step 4 The flow field and capture zones results will then be digitised and geo-referenced in the GIS database. The GIS will then be used to compute the level of sensitivity for each one kilometre section of pipeline. The results will be used to update the existing pipeline ERA and will provide valuable information with regard to Oil Spill Response Planning.

5.6 TRAINING

5.6.1 General

One of the most important mechanisms for the enhancement of the Project's environmental performance will be the continued implementation of a programme of environmental training for all project personnel including BOTAŞ, contractors and sub-contractors personnel. All personnel will be given environmental induction and awareness training aimed at achieving 'buy-in' by workers. Key project personnel whose management roles or job responsibilities/activities may have an impact on the environment will also receive specific issue training as appropriate (eg in waste management, fuel handling etc).

Environmental training will be provided at each stage of the Project, from initial establishment of logistical facilities through to construction and operation.

A key message in each of the training programmes will be the means, methods and mechanisms to be employed in the monitoring and audit of environmental management. The priority afforded environmental issues will be highlighted both through the content of the training courses and through the day-to-day scrutiny provided by the Environmental Manager, Coordinators and Inspectors.

5.6.2 Contractor training programme

Contractors will be responsible for ensuring that all personnel are aware of their environmental responsibilities.

Contractors will develop and implement an environmental training programme to the satisfaction of BOTAŞ. The training programme will be submitted to BOTAŞ for approval within six weeks of the award of a contract. The training programme will include an initial site induction programme for all site personnel prior to carrying out any work on site. The induction programme will be developed and tailored to meet the needs of the different personnel employed by the Contractor. Upon completion of the induction programme, all site personnel will be issued with an authorised training cards and hard hat stickers that must be carried by the person at all times and may be requested by BOTAŞ inspectors during site audits. The training programme documentation will be made available for review and approval by BOTAŞ prior to mobilisation. The Contractor will also attend training programmes organised by BOTAŞ when requested.

The environmental training programme will ensure that all site personnel:

- fully understand the environmental requirements of the Project and how they will be implemented and monitored on site
- fully understand the potential impacts of the Project, the mitigation measures that have been adopted to address those impacts and how and where to apply these measures;
- fully understand the environmental and social sensitivities of the areas through which the pipeline and other facilities will be constructed;
- fully understand the relevant requirements of the project actions specified in the Project Seasonal Sensitivity Tables and accompanying notes
- fully understand the procedures to be followed in the event of a non-compliance with the environmental requirements;
- fully understand the procedures for responding to the media, to unauthorised visitors to the site, and enquiries from the public;
- know how to deal with unforeseen environmental incidents;
- are aware of the roles of the contractor staff and the BOTAŞ representatives with respect to environmental issues.

The Contractor will keep auditable records of the training given to individual staff. Assessment of the effectiveness of the training programme will be included as part of BOTAŞ' environmental audit procedures.

In addition to the induction programme, the Contractor will ensure that all construction personnel attend regular site-specific 'tool-box' training sessions on environmental issues throughout the term of the contract. This will include updates on specific local issues such as seasonal constraints, valuable crops or archaeological sites.

5.6.3 BOTAŞ training programme

BOTAŞ will also implement a training programme for its own staff similar to that specified above with regards to contractors. This training programme will include environmental induction training for all project personnel and additional specific training for individuals involved in particular tasks or with particular responsibilities. Training records will be maintained and an assessment of the effectiveness of the training programme will be included as part of internal audit procedures. A formal environmental induction programme will be implemented for new personnel joining the Project and a refresher training programme will also be implemented to ensure continual improvement in environmental awareness for all project personnel. Regular toolbox training sessions will be given to on-site staff during both the construction and operational phases of the Project.

5.6.4 Maintaining Environmental Awareness

Contractors will be required to erect and maintain notices and signage on site to indicate the defined environmentally important and/or sensitive areas, such as archaeological sites, watercourses, ecologically sensitive and protected areas affected by construction or operational activities. This will add to the environmental awareness of the construction personnel.

5.7 INSPECTION AND MONITORING

Inspection and monitoring of the environmental effects of construction and operational activities will enable the effectiveness of environmental mitigation to be evaluated; it will also allow environmental problems to be identified and responded to at an early stage.

Construction Contractors will be responsible for the implementation of an appropriate inspection and monitoring programme to the satisfaction of BOTAŞ. This will enable both BOTAŞ and the Contractor to ensure that the works are being carried out in accordance with the requirements of the EMMP and EIA and to identify and implement any environmental improvements. Specific monitoring requirements during construction are further specified in Section 6 of the EMMP.

BOTAŞ will oversee and audit the implementation of Contractors' inspection and monitoring programmes.

Topics for environmental inspection and monitoring during and, where appropriate, following construction will include, but not be limited to, the following:

- sediment control and water quality at watercourse crossings;
- sewage/wastewater discharges;
- drainage – including the effectiveness of both temporary drainage systems during construction and restored permanent drainage systems;
- temporary and permanent erosion control;
- proper use of mud mats;
- marking of the RoW and demarcation of important ecological sites and archaeological sites;
- noise levels at sensitive receptors such as residential areas;
- air emissions;
- hydrotesting;
- condition of soil storage areas and dust generation and control;
- traffic movements and the condition of public highways and roads;
- waste management procedures;
- water consumption;
- fuel storage and handling;
- radioactive sources;
- the storage and handing of hazardous chemical substances and additives.

In addition to the independent, internal audit of the Environmental Inspectors, any monitoring requirements specified by regulatory authorities will be fully complied with.

Construction Contractors will be required to undertake appropriate pre-construction survey activities to ascertain the following:

- pre-construction quality of temporary and permanent access roads;
- the presence, status and extent of ecological resources (in line with the requirements stipulated in the EIA document and in Attachment 1 to the EMMP);
- location and suitability of existing licensed quarries;

- additional RoW or laydown area requirements;
- existing damage to property potentially affected by construction activities;
- pre-construction condition and existing property damage at pipe yards, camps and other staging areas.

5.8 AUDITING

Both BOTAŞ and its Contractors will be required to demonstrate how the requirements of the EMMP and EIA are being complied with. This will include a programme of inspections and audits by both Contractor staff and BOTAŞ.

BOTAŞ will reassure itself that the Contractor is complying with the requirements of the EMMP and EIA. To this end, site inspections and more formal audits by the BOTAŞ' Environmental Inspectors will be undertaken. Reporting to the BTC Co, the Inspectors will use pre-prepared audit protocols that reflect the requirements of the EMMP and EIA.

Where issues of non-compliance are identified by either the BOTAŞ representative or the Contractor, they will be immediately reported to BOTAŞ and corrective action will be identified by the BOTAŞ representative in conjunction with the Contractor. Following an audit conducted by BOTAŞ, the Contractor will prepare an Action Plan in accordance with the findings of the audit and the corrective actions and recommendations will be implemented by the Contractor accordingly. This could take the form of, for example, further direct mitigation, or changes to procedures or additional training.

An activity can be stopped by the BOTAŞ representative if he/she is of the opinion that the corrective action is not being appropriately or effectively implemented by the Contractor. In the case of continued or severe non-compliance, BOTAŞ will stop all works until necessary corrective actions are taken.

BOTAŞ will submit to a similar programme of independent, external audit with respect to all construction or operational activities directly undertaken by BOTAŞ personnel.

5.9 CONTINGENCY PLANNING FOR EMERGENCIES AND ENVIRONMENTAL INCIDENTS

The project-wide Pollution Prevention Plan (PPP) provides generic guidance on the measures that shall be implemented by construction Contractors in responding to pollution events. Construction Contractors will be required to develop their own Pollution Prevention Plans and procedures based on the project-wide PPP.

BOTAŞ procedures for emergency response are set out in the project Emergency Response Plan (BOT-PLN-HSM-GEN-002), which sets out the procedures to be followed in the event of an emergency, including actions, points of contact and reporting. In developing their own pollution response procedures, Contractors will be required to ensure consistency with the project Emergency Response Plan.

A preliminary Oil Spill Response Plan (See Appendix C6) has also been developed which addresses response procedures in the event of an oil spill during the operational phase of the Project. This plan will continue to be developed by BOTAŞ during the construction phase of the Project and will be consistent with the overall project emergency response procedures.

5.10 DOCUMENTATION

The environmental management activities will be documented and tracked to effectively manage the environmental performance of the Project. Non-compliance observations, decisions on identified issues, solutions, corrective and preventive actions taken and the results of these actions will be documented.

5.11 OPERATIONAL MANAGEMENT PLANS

This EMMP is primarily aimed at the construction and commissioning phases of the Project. However, the standards and requirements outlined in this document will also apply (in an appropriate form) throughout the operational phase of the Project.

Site-specific operational environmental management plans and procedures will be developed by BOTAŞ during the design and construction phase of the Project in conjunction with the development of operational procedures. These operational environmental management plans will ensure that all commitments made in the EIA relevant to the operational phase of the Project are fully implemented and monitored. BOTAŞ will also ensure that a process of continual improvement is implemented in accordance with the requirements of ISO 14001.

6 MONITORING PROGRAMME

6.1 SCOPE OF THE MONITORING PROGRAMME

This section describes an outline solid waste, water quality, air emissions and noise monitoring programme for the construction phase of the BTC Project. Construction Contractors will be required to further develop and implement a monitoring programme consistent with the requirements described in the following sections and which is specific to the particular tasks and activities involved in the scope of their contract.

Operational monitoring is only briefly addressed in the following sections. A separate operational monitoring programme will be developed, in association with the associated operational management plans, during the construction phase of the Project. Consultation with the Ministry of Environment and the appropriate authorities will also be undertaken to ensure their requirements are met. However, it is envisaged that the operational monitoring programme will build upon and make use of background monitoring data obtained during construction monitoring and will follow the general principles outlined below. An outline programme for operational monitoring is included in Section 6.7.

The scope of this construction monitoring programme includes solid waste, liquid waste and receiving watercourses (including increased sediment loading), air emissions and noise. This monitoring programme is not designed to detect long-term changes in ecosystems, but will serve as an early warning system whereby construction activities can be modified where necessary to remain within project environmental standards. Monitoring data will be used in the project quality assurance process and will be compared to project environmental standards.

6.2 MONITORING PHILOSOPHY

The goal in implementing an inspection and monitoring programme is to ensure complete compliance with the BTC Project commitments with regard to mitigation measures, approved plans and permit conditions and requirements. The methods and procedures presented in this document are intended to assure the completion of an effective monitoring programme, one consistent with the requirements of the State authorities and World Bank.

BOTAŞ' team is committed to the effective monitoring of mitigation measures and associated conditions under which construction Contractors will operate. In accordance with this philosophy, BOTAŞ is also committed to avoiding or minimising any impacts that could result from the monitoring activities themselves. In all instances, based on the monitoring requirements of each activity and location, BOTAŞ will comply with the same types of restrictions placed on construction Contractors to reduce the potential impacts that could result from the Project.

6.3 ELEMENTS OF THE CONSTRUCTION MONITORING PROGRAMME

It is neither necessary, nor practicable, to continuously monitor all potentially affected environmental parameters. Ultimately a monitoring programme is a compromise that can effectively serve to characterise existing environmental conditions and then continue through construction and into operation to detect unacceptable changes. The sampling programme will be designed in order to inform robust decision-making through the testing of the hypothesis that 'project construction activities have had no significant affect on environmental resources'.

The monitoring programme, by systematic sampling, will assess the quantity and quality of project discharges. In general, monitoring data derived for noise, solid waste and air will be compared to project environmental standards. Monitoring data for receiving waters will be compared not only to the established standards, but also with upstream samples collected at the same time as downstream samples. The regularly conducted sampling programme will include seasonal variation, first flush and storm/non-storm events.

The sampling plan will address, but not be limited to, the issues outlined in Table 6.1.

Table 6.1 Scope of Construction Sampling Plan

TYPE OF WASTE	SOURCE OF WASTE	RECEIVING MEDIA	LOCATION OF WASTE
Solid	Garbage (including domestic and housekeeping waste) Medical Excess construction material (including discarded formwork and materials packaging)	Landfills (if any) Off-site disposal	Construction sites / RoW Camps Logistics centres
Liquid	Sedimentation Trench dewatering Culinary water Domestic sewage water Washdown water Hydrotest water Marine vessels	Surface water courses Groundwater	Construction sites / RoW Camps Staging/logistics sites Marine construction area
Air Emissions	Dust Waste incineration	Air Soil Water	Construction sites / RoW Camps Staging / logistics sites
Noise Emissions	Construction equipment Marine vessels	Humans Wildlife	Construction sites / RoW Camps Quarries Logistics centres Marine construction areas

Contractors' construction monitoring programmes will clearly specify the following information for each element of the programme:

- issue;
- indicator (ie parameters to be measured);
- where, how often and when monitoring will take place;
- responsible person(s);
- collection standards;
- audit procedures;
- where data will be stored.

6.4 MONITORING METHODS

Persons will be designated and trained to monitor project construction activities. Contractors monitoring programmes will specify the exact types, location, and schedule of specific monitoring. In general, the following monitoring methods will be utilised.

6.4.1 Solid wastes

Solid waste will be measured by weight or volume of the material transported to and from construction areas. The type of waste, such as inert, non-hazardous, hazardous, will also be recorded. The disposal method of the waste (incineration, deposit in landfill, compost, re-use, other) will be recorded. Requirements for monitoring of solid waste are further specified in the Project WMP (See Appendix C3).

6.4.2 Liquid discharges

Receiving water potentially affected by construction will be sampled on a regular basis. The frequency of sampling will be dependent upon the particular construction activity. For waters near camps and areas with major concentrations of workers the sampling will include, dissolved oxygen, turbidity/total suspended solids, oil and grease, and coliforms and will be undertaken at least on a monthly basis at active construction sites.

For waters at pipeline stream crossings the sampling may consist of turbidity/total suspended solids, and oil and grease. Grab samples will be collected, where possible, at a depth of at least 15 cm in the thalweg (deepest mid-stream), from at least one point below (ie downstream) and at one point above (ie upstream) any construction activity that may affect a water body. Samples should be taken during the pipeline crossing and then one week following construction. If the downstream water quality values for suspended solids are found within 50-100% or less of the upstream values after one week, then monitoring will be repeated six months later. If the ratio is between 100 and 500%, the action will be to return in one week for a new monitoring study at the crossing and to take remedial action. If the ratio is greater than 500%, instant remedial action shall be taken.

Effluent discharges from the sewage treatment plant should also be measured for key water quality parameters (such as BOD, TDS, coliforms and chlorine) on a weekly basis. Both wastewater discharges and any receiving waters, upstream and downstream of the discharge, will be monitored by grab sample. More frequent monitoring of the wastewater discharge may be necessary during commissioning of the system to confirm it is operating effectively.

Analysis of water quality will use field test kits or qualified analytical laboratories.

6.4.3 Air emissions

The primary air quality issue during the construction phase of all project components (pipeline, AGIs and marine terminal) is dust. Dust monitoring will primarily be addressed through site inspection to ensure that good site practice with respect to dust control, as specified in the EIA, is being effectively implemented on site. Dust sampling is not considered to be an effective means of monitoring dust during construction due to the delay between sampling and the receipt of sampling results. A more immediate means of identifying unacceptable levels of dust is required so that remedial measures can be implemented immediately. BOTAŞ and Contractor *Environmental Inspectors* and construction managers will constantly assess the level of dust generation during construction activities and appropriate mitigation measures will be implemented as required.

Air emissions from the stacks at the pumping stations during the operational phase are classified as minor sources (ie based on national regulations such as the Turkish Regulation on Preservation of Air Quality and international standards such as EPA emission factors) in terms of air pollutant emissions and there is no regulatory requirement to undertake monitoring in the

vicinity of these stations. The pumping stations are also located in relatively remote locations away from residential receptors.

The release of hydrocarbons during operation of the facility is the main air quality issue at the BTC Marine Terminal. An operational monitoring programme will be implemented by BOTAS to monitor the impacts of the new facility on air quality at nearby receptors. This programme will consist of the use of passive BTEX diffusion tubes at a range of representative locations. The exact details of the monitoring programme are to be further developed but it is anticipated that a number of sites including sites representative of residential areas within the terminal site, sites at the terminal boundary and sites at nearby receptors outside the terminal site will be included in the programme. The programme will commence prior to construction and operation to obtain background measurements and to quantify the current level of emissions due to existing sources. The programme is expected to continue through the first couple of years of operation of the facility, however, the exact length of the monitoring programme will be determined by the results obtained.

6.4.4 Noise

Noise will be monitored during various phases of construction. Noise monitoring will focus on those activities that have the greatest potential to generate nuisance due to the type of activity undertaken or due to the duration or timing of the activity.

The majority of noise associated with pipeline construction will be relatively low level noise that will occur for brief periods of time at any one location. Exceptions to this may include noisy activities, such as piling or blasting, or construction activities that may require several days or weeks of work at a single location, such as road or river crossings. Noise monitoring during pipeline construction will focus on these types of activity and locations particularly when such activities occur close to receptors (eg within 1km of a residence) and when night-time working is involved. Noise monitoring at these locations will occur at the commencement of construction activities and when there is any change in construction activities that may result in an increase in noise levels. Monitoring will consist of 10-minute readings at the nearest noise sensitive receptors. In addition to human receptors, noise sensitive receptors may include areas known to be important for sensitive fauna (eg Ardahan Important Bird Area).

The results of the monitoring described above will then be immediately compared to the appropriate noise standard (Turkish or World Bank). If a standard is exceeded this will be communicated to the site manager and additional mitigation measures will be implemented. The monitoring will then be repeated to confirm the adequacy of the measures implemented.

It is not envisaged that monitoring of vibration associated with pipeline construction will be necessary. The exception to this may be if activities such as blasting and piling occur in close proximity to archaeological structures that are particularly sensitive to vibration. The advice of specialist archaeological advisors will be obtained in this situation to avoid and monitor such impacts if necessary.

Monitoring during construction of the AGIs and BTC Marine Terminal will follow a similar approach to that described above. Noise monitoring (10-minute readings) will be undertaken at the commencement of any potentially noisy activities at the site (eg piling, blasting) at the nearest noise sensitive receptor. The results of the monitoring will then be immediately compared to the appropriate standard and communicated to the site manager. The reading will be repeated if necessary following the adoption of additional mitigation measures. Such measures may include the use of noise barriers, a change in equipment or method of working. Monitoring will be repeated when there is a change in construction activity that may result in an

increase in noise levels or if any potentially noisy activities occur during night-time. Underwater noise monitoring will also be undertaken at the commencement of any potentially noisy activities associated with construction of the jetty at the BTC Marine Terminal.

Noise monitoring during the operational phase of the Project will be undertaken at the AGI sites and at the BTC Marine Terminal. The focus of operational noise monitoring will occur during the commissioning phase. 10-minute readings will be taken at the nearest noise sensitive receptors to confirm whether the plant will operate within the appropriate day and night-time standards. Underwater noise monitoring will also be undertaken at the jetty during tanker operations. Undertaking such monitoring at the commissioning phase allows any problems to be identified and addressed prior to full operation. Such monitoring will be repeated if necessary to determine the adequacy of remedial measures. Such monitoring will be undertaken during suitable weather conditions and a period of typical, full-duty operation. Both day and night-time measurements will be taken. Following commissioning it is anticipated that noise monitoring will be undertaken following any significant modifications to the facility or any changes to noisy items of plant or on an annual basis if no such changes occur.

All noise monitoring will be undertaken by suitably trained staff, using fully calibrated equipment.

6.4.5 Sample storage and analysis

Samples destined for off-site analysis will be properly labelled and a record of chain-of-custody maintained. Standard procedure/equipment checklists will also be developed for specific sampling events to ensure monitoring is consistent and efficient. A qualified analytical laboratory will perform chemical analysis of samples.

6.5 IMPLEMENTATION OF THE MONITORING PROGRAMME

Monitoring personnel shall be provided with access to each construction area. They will be trained in sample collection techniques, maintenance of equipment, sample labelling and transport, record keeping, tracking waste movements, and reporting procedures.

Appropriate equipment will be employed in the sampling programme, including sampling devices (such as containers, storage, instantaneous water quality, automatic air and noise monitoring devices, weight/volume devices, photography, geographic information system (GIS) units, data recorders). The services of contract analytical laboratories will be procured and a quality assurance programme developed to check on the performance of each laboratory.

Where direct on-site measurement is required, staff will be trained in the use of appropriate equipment to record data and undertake any interpretation that will be necessary to facilitate rapid response.

A record keeping system for monitoring data will be developed. The database will be available at the various construction headquarters, where construction managers can readily access the data. Also, all original field logbooks will be maintained in the data centre for audit and for future reference. BOTAŞ will also have access to the database.

Construction monitoring will begin at the commencement of construction activities. The schedule for regular monitoring events will be site specific based upon the actual construction activities occurring in an area (for example, water quality monitoring will only be performed in

rivers during periods when construction is taking place unless background or baseline data is required). Monitoring will continue throughout the construction activity at that location, and the timing and number of samples may be modified to best characterise any affected environmental resources. Periodic monitoring after completion of a construction activity may be performed if required to demonstrate the return to pre-construction conditions.

6.6 AUDIT AND REVIEW

Although primary responsibility for the day-to-day performance of the monitoring programme will reside with the Construction Contractors, BOTAŞ will maintain an oversight and audit role for all aspects of the monitoring programme. This will include independent monitoring at selected sites throughout construction to verify the results of contractors monitoring programmes. In addition, compliance monitoring and inspection programmes will be undertaken by independent auditors (on behalf of the BTC Co.), the Turkish authorities, and International Financial Institutions (IFIs). Contractors will provide access to all sites and all necessary assistance to facilitate monitoring by BOTAŞ or any other approved organisation.

In addition to the independent verification of contractors monitoring results, BOTAŞ will review all monitoring data in order to assess compliance with the various project standards. To facilitate this process, contractors will be required to supply all monitoring records and results to BOTAŞ on a regular basis and to make all monitoring records available for viewing at the centralised data recording centre. Where monitoring results indicate an area of concern or that project standards are not being met, a corrective course of action will be followed on site by the Contractor as advised by the BOTAŞ *Environmental Manager/Inspector*. The Contractor will be responsible for preparing an Action Plan in line with the findings of the monitoring and for the immediate implementation of corrective action and additional monitoring to confirm the success or failure of the corrective action.

6.7 INDICATIVE OVERALL MONITORING PROGRAMME

It will be the responsibility of the Construction Contractor to develop a detailed monitoring programme relevant to their activities and work subject and to submit the programme for the approval of BOTAŞ. However, there are a number of monitoring activities that will not fall within the scope of a particular Construction Contractor or that will be undertaken prior to construction or during the operation phase. Attachment 2 provides an indicative programme of the overall BTC Project monitoring programme. Attachment 3 provides a summary of the main survey and studies programme. It should be noted that these programmes will be further developed in consultation with regulatory authorities and consultees during the course of the EIA disclosure period.

7 REVIEW

The BOTAŞ *Environmental Manager* will work with the site Co-ordinators, and with Contractors where appropriate, to develop objectives and SMART (smart, measurable, achievable, realistic, trackable) targets aimed at achieving environmental improvement. The BOTAŞ *Environmental Manager* and site Co-ordinators, with Contractors where appropriate, will also develop key improvement indicators aimed at driving continued environmental performance.

Regular environmental audits and random spot checks will be undertaken by BOTAŞ throughout the BTC Project. The audit and inspection frequency will be established by the BOTAŞ *Environmental Manager*, audit frequency may be increased or decreased according to the findings and degree of confidence arising from the ongoing audit programme. All audit findings will be reviewed by Environmental Management and SMART action plans (with designated responsibility and timing) will be developed aimed at achieving improved environmental performance.

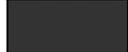
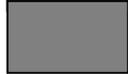
Incentive/reward schemes will be established by BOTAŞ encouraging initiatives that enhance environmental performance, and staff appraisals will include environmental criteria where appropriate.

Guided by the results of environmental audits and review, and in conjunction with the developing nature of the Project from design through to construction and operation, the EMMP will be subject to ongoing review and development to ensure that it remains appropriate and 'fit for purpose' throughout all aspects of the BTC Project.

Attachment 1 to the Environmental Management and Monitoring Plan

AREAS CONSTRAINED BY SEASONAL SENSITIVITY

The draft seasonal sensitivity tables (and accompanying notes) have been prepared on the basis of the results of the ecological surveys undertaken as part of the EIA process. The tables provide an indication of the constraints and required actions that will govern the construction of the BTC Pipeline; for the purposes of these table the following categories of response have been defined:

	Construction and Reinstatement Target – 3 weeks (see relevant note)
	Absolute Seasonal Constraint (see relevant note)
	Extent of Constraint and required response subject to findings of preconstruction survey (see relevant note)
	Seasonal Constraint but amenable to mitigation (see relevant note)

In each instance the response is qualified or expanded by accompanying notes, which seek to provide specific guidance relating to either the ecology of the species, the presence of which has determined the need for action, or the specific mix of species at a particular constrained location along the pipeline route. In addition, notes are provided to clarify the generic mitigation provisions that are to be applied along certain sections of the route, such as river crossings, Ecologically Sensitive Areas (ESAs) etc. In all cases, the responses, constraints and measures indicated in the tables and accompanying notes are requirements that seek to mitigate the specific sensitivities associated with ecological seasonality; as such these represent requirements that go above and beyond the ecological mitigation identified and defined within Section 6 and within the environmental impact tables presented in Supplement 1 to Volume 2 of the EIA Report.

In many cases, pre-construction ecological surveys will be required prior to the finalisation of the contractors work method statements and programmes. The surveys will be designed to improve understanding of the ecological resources and dynamics within, and in the vicinity of, the pipeline Right of Way (RoW) and to provide the basis for determining an appropriate course of action. In some cases, the surveys will establish the need to schedule construction activities outside key sensitive periods, in others, a range of options may be available, from narrowing of the RoW to the clearance of vegetation outside of the breeding season of species. There may also be instances in which the surveys indicate that seasonal sensitive activities are not occurring within the RoW; under such circumstances no further action would be required in respect to this specific issue.

It should be noted that the pre-construction surveys are, in themselves, constrained by seasonal considerations. Botanical surveys, for example, are generally most effective if undertaken during spring or early summer, when the flowering of plants facilitates species identification. In the notes to the Seasonal Sensitivity Tables, the seasonal requirements for the pre-construction surveys are, generally, not indicated as the range of topographic and climatic factors and the variety of flora and fauna species are such that the planning of the required surveys should be undertaken by the specialists appointed by the Contractor. However, each of the proposed survey programmes and scopes will be reviewed by BOTAŞ prior to the onset of the surveys.

In managing the ecological implications of the BTC Pipeline a number of key principles need to be accommodated.

Firstly, as Turkey is located at the juncture of a number of ecological and biogeographic regions, a significant proportion of the Country's ecological species are at the periphery of their distribution range. As a consequence, the country-specific ecology of individual species (including breeding seasons, hibernation patterns, etc) may not be fully understood and has not been the subject of significant ecological research. The management of this uncertainty will represent a key challenge during the pre-construction and construction stages of the Project.

Secondly, the ecological surveys undertaken as part of the EIA process have been designed to develop an understanding of the species and habitats that are encountered along the pipeline route and to develop a strategy for mitigating potential impacts to key resources. At key location, more detailed pre-construction surveys will supplement the high level surveys undertaken during the EIA. As such, the findings of the pre-construction surveys will inform a range of decisions that will need to be taken during the early phases of the construction programme roll out. It is critical, therefore, that appropriate expertise is mobilised by the Contractors in undertaking the surveys and developing effective and practicable mitigation and by BOTAŞ in overseeing and approving the process.

Thirdly, as ecological considerations are a key influence upon the construction of the pipeline, it is anticipated that ongoing ecological advice will be required during the construction phase, particularly within ecologically sensitive sections of the route. The Contractor will be required to ensure that the available advice informs on-site decision-making and issue resolution and to demonstrate that appropriate response have been pursued to mitigate impacts to ecological resources. The mechanisms by which ecological issues are integrated into the day-to-day management of the construction process shall be clearly defined within the Contractor's environmental management system, which will be subject to independent audit and monitoring.

Finally, a precautionary approach shall underpin the management of ecological issues during the construction period. This requires that all parties to the Project (BTC Co, BOTAŞ, the Contractor, the Regulatory Authorities, conservation organisations and interested individuals) seek to manage uncertainty in a manner that provides contingent flexibility in accommodating any new data that might emerge during the construction phase.

SEASONAL SENSITIVITY TABLES

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
1	1	Important flora (ESA 1, KP 10.25 – 15.32)												
	2	Breeding birds (Posof Wildlife Reserve and River)												
	3	Bears – hibernation period (Posof Wildlife Reserve)												
	4	Bears - peak spring feeding (Posof Wildlife Reserve)												
	8	Amphibians (Posof Wildlife Reserve)												
	5	Wild Goat (Posof Wildlife Reserve)												
	6	Bechstein's Bat (Posof Wildlife Reserve)												
	7	Mediterranean Horseshoe Bat (Posof Wildlife Reserve)												
2	34	Common Pipistrelle (Posof Wildlife Reserve)												
	1	Important flora (ESAs 2-4, KPs 19.03 – 19.43, 26.35 – 26.84 and 29.68 – 30.14 respectively)												
	3	Bears – hibernation period (Posof Wildlife Reserve)												
	4	Bears - peak spring feeding (Posof Wildlife Reserve)												
	2, 8	Amphibians (Posof Wildlife Reserve)												
	5	Wild Goat (Posof Wildlife Reserve)												
	6	Bechstein's Bat (Posof Wildlife Reserve)												

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	7	Mediterranean Horseshoe Bat (Posof Wildlife Reserve)												
	34	Common Pipistrelle (Posof Wildlife Reserve)												
3	9	No Seasonal Sensitivities												
4	1	Important flora (ESA 5, KP 60.27 – 65.49)												
	10, 11	Breeding birds (Cotsuyu River crossing)												
	11, 12	Breeding fish (Kura River)												
	3	Bears – hibernation period (Ardahan Forest Important Bird Area (IBA) and the surrounding meadow)												
	4	Bears - peak spring feeding activity (Ardahan Forest and the surrounding meadow)												
	35	Breeding birds – Booted Eagle												
	36	Breeding birds – Whinchat												
	5	Wild Goat (Ardahan Forest)												
	55	Meadow Viper (near Kura River crossing)												
5	9	No Seasonal Sensitivities												
6	9	No Seasonal Sensitivities												
7	1	Important flora (ESA 50, KP 113.91 – 114.62)												
	55	Meadow Viper (within ESA 50)												
8	13, 46	Breeding birds – Raptors												
	36	Breeding birds – Whinchat												
9	1	Important flora (ESAs 6 and 7, KPs 142.88 – 143.79 and 153 – 154.19 respectively)												
	36	Breeding birds – Whinchat												

BTC PROJECT EIA
TURKEY

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
10	1	Important flora (ESA 8 KP 167.05 – 173.05)												
	14	Breeding birds (gorge north and west of route in Sarikamis Forest)												
	3	Bears – hibernation period (Sarikamis Forest)												
	4	Bears - peak spring feeding (Sarikamis Forest)												
	7	Mediterranean Horseshoe Bat												
	34	Common Pipistrelle Bat												
	5	Wild Goat (Sarikamis Forest)												
	8	Amphibian – Southern Crested Newt												
11	15	Breeding birds – Griffon Vulture												
	36	Breeding birds – Whinchat												
12	9	No Seasonal Sensitivities												
13	1	Important flora (ESA 9, KP 223.02 – 223.50)												
	36	Breeding birds – Whinchat												
	51	Breeding birds – Barred Warbler												
14	1	Important flora (ESA 10, KP 239.24 – 255.12)												
	16	Schreiber's Long-Fingered Bat (KP 255.8)												
	37, 39	Breeding birds												
15	1	Important flora (ESA 11, KP 259.51 – 260.88)												
	11, 17	Breeding fish (Hasankale River)												
	18	European Marbled Polecat (KP 262.1)												
	36, 38, 39, 51	Breeding birds												
16	1	Important flora (ESA 12, KP 291.91 – 299.47)												

BTC PROJECT EIA
TURKEY

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	39	Breeding birds – Pale Rock Sparrow												
17	1	Important flora (ESA 12 (KP 291.91 – 299.47) and ESA 13, KP 301.34 – 302.71)												
	40, 50	Breeding birds – Erzurum Plain IBA												
18	9	No Seasonal Sensitivities												
19	11,19	Breeding birds (Karasu River crossing)												
	11,19	Breeding birds (Hoskadem River crossing)												
	11,20	Fish – breeding (Karasu River Crossing)												
	35	Breeding birds – Booted Eagle												
	45	Breeding birds – Black Kite												
	36, 51	Breeding birds												
20	1	Important flora (ESA 14, KP 359.85 – 360.42 and ESA 15, KP 380.43 – 402.02)												
	36	Breeding birds – Whinchat												
21	1	Important flora (continuing ESA 15)												
	39	Breeding birds – Pale Rock Sparrow												
22	1	Important flora (continuing ESA 15 and ESA 16, KP 419.80 – 420.48)												
	11,21	Breeding birds (Karasu River crossing)												
	11,20	Breeding fish (Karasu River)												
	34	Reptile Breeding – European Pond Turtle												
	8	Amphibian - Tree Frog												
23	1	Important flora (ESAs 17 and 18, KPs 424.10 – 424.60 and 430.81 – 431.29 respectively)												
	11,22	Breeding fish (Aksu River crossing)												

BTC PROJECT EIA
TURKEY

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	11, 41	Breeding birds – Aksu River Crossing												
	35	Breeding birds – Booted Eagle												
	19, 36, 51	Breeding birds												
24	1	Important flora (ESAs 19 and 20, KPs 445.47 – 447.92 and 451.70 – 458.42 respectively)												
	36	Breeding birds – Whinchat												
25	1	Important flora (ESAs 21 and 22, KPs 468.93 – 472.47 and 476.53 – 481.84 respectively)												
	11, 43	Eurasian Otter – watercourse crossings												
	42	Turkish Chamois (Guzyurdu Forest)												
	5	Wild Goat (Guzyurdu Forest)												
	3	Bears – hibernation period (Guzyurdu Forest)												
	4	Bears - peak spring feeding activity (Guzyurdu Forest)												
	44	Forest Dormouse (Guzyurdu Forest)												
26	1	Important flora (ESA 23 and ESA 24, KPs 484.97 – 485.49 and 487.14 – 511.23 respectively)												
	45	Breeding birds – Black Kite												
27	1	Important flora (continuing ESA 24; and ESAs 25 and 26 KPs 522.30 – 522.81 and 525.02 – 525.61 respectively)												
	10,11	Breeding birds – Dipper												
	46	Breeding birds – Imperial Eagle												
	19, 36, 51	Breeding birds												

BTC PROJECT EIA
TURKEY

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
28	1	Important flora (ESA 51 KP 528.19 – 529.18)												
	10, 11	Breeding birds – Dipper												
	36, 51	Breeding birds												
29	9	No Seasonal Sensitivities												
30	9	No Seasonal Sensitivities												
31	9	No Seasonal Sensitivities												
32	11,33	Fish – breeding (Acioz River crossing)												
	11,31	Reptile breeding – European Pond Turtle (Acioz River crossing)												
33	1	Important flora (ESA 27 KP 645.12 – 654.24)												
	47	Breeding birds – Wryneck												
34	1	Important flora (continuing ESA 27; and ESA 28 KP 659.50 – 664.44)												
	11, 43	Eurasian Otter – watercourse crossings												
	11, 48, 49	Breeding birds – Acisu River crossing												
	36	Breeding birds – Whinchat												
35	1	Important flora (ESAs 29 to 32, KPs 679.17 – 680.49, 685.59 – 686.24, 688.68 – 689.21 and 692.99 – 693.41 respectively)												
	49	Breeding birds – Black Stork												
	36, 50	Breeding birds												
36	9	No Seasonal Sensitivities												
37	1	Important flora (ESA 33, KP 727.99 – 739.92)												
	44	Forest Dormouse												

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
	50	Breeding birds – Common Crane												
38	1	Important flora (ESA 34, KP 735.86 – 739.39)												
	36, 51	Breeding birds												
39	1	Important flora (ESA 35 and 52, KP 756.23 – 757.50 and 761.91 – 762.49 respectively)												
	11, 56	Migratory Birds (Sekerpinar River crossing)												
	36	Breeding birds – Whinchat												
40	1	Important flora (ESA 53, KP 778.32 – 779.17)												
41	1	Important Flora (ESA 37, KP 797.84 – 798.38)												
	11, 23, 36, 50	Breeding birds (Zamanti Floodplain ESA 36, KP 796.36 – 797.02)												
	11,24	Breeding fish (Zamanti River)												
	11,26	Migrating fish – eel (Zamanti River crossing)												
	31	Reptile breeding – European Pond Turtle, (Zamanti River)												
42	9	No Seasonal Sensitivities												
43	9	No Seasonal Sensitivities												
44	1	Important flora (ESA 54 and 38, KP 836.05 – 841.94 and 841.95 – 847.58 respectively)												
45	1	Important flora (ESA 55, KP 862.09 – 862.68)												
46	9	No Seasonal Sensitivities												
47	1	Important flora (ESAs 39 and 40, KPs 886.81 – 887.33 and 894.88 – 896.83 respectively)												
	25	Breeding birds (lesser kestrels), Yesilkent Settlement												

BTC PROJECT EIA
TURKEY

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
48	1	Important flora (ESA 41, KP 901.90 – 909.69)												
	51	Breeding birds – Barred Warbler												
49	9	No Seasonal Sensitivities												
50	1	Important flora (ESAs 42 and 43, KPs 936.77 – 938.54 and 940.00 – 943.81 respectively)												
	26	Breeding birds – Northern Goshawk												
51	51	Breeding birds – Barred Warbler												
	1	Important flora (continuing ESA 43; and ESA 44 KPs 955.91 – 961.01)												
52	27	Mehely's Horseshoe Bat												
	10, 11	Breeding Bird – Dipper												
53	44	Forest Dormouse												
	1	Important flora (ESA 45, KP 962.09 – 964.27).												
54	28	Blasius' Horseshoe Bat (KP 965)												
	1	Important flora (ESA 46, KP 974.54 – 981.65)												
55	7	Mediterranean Horseshoe Bat												
	1	Important flora (ESA 47, KP 994.29 – 997.74)												
56	51, 52	Breeding birds												
	16	Schreiber's Long-fingered Bat at KP 1016.5												
57	27	Mehely's Horseshoe Bat at KP 1016.5												
	32	Reptile breeding – Common Tortoise at KP 995.8												
58	1	Important flora (ESA 48, KP 1026.47 – 1028.54)												
	52	Breeding birds – Black Francolin												

Map	Note	Sensitivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
56	11, 29	Breeding fish (Ceyhan River crossing)												
	11, 53	Breeding birds (Ceyhan River crossing)												
57	9	No Seasonal Sensitivities												
58	1	Important flora (ESA 49, KP 1060.59 – 1061.10)												
	11,30	Breeding fish (Karacay River crossing)												
	31	Reptile breeding - European Pond Turtle at KP 1054.9												
	54	Breeding birds – Watercourses												
59	27	Mehely's Horseshoe Bat												

Notes to the Table

1. General: 21 day Target for Construction and Reinstatement

Ecologically Sensitive Areas (ESAs) due to the presence of important flora species. Defined as *Special Areas* in Section 21 of the Reinstatement Plan (Appendix C2) for which:

Construction planning shall achieve a 21-day period from the time when a Special Area is entered to the completion of reinstatement (to a level specified in the BOTAS approved Special Area Reinstatement Method Statement) unless otherwise approved by BOTAS.

2. Map 1: Posof Wildlife Reserve

Globally threatened species: Caucasian Black Grouse (Data Deficient in the IUCN 2000 Red List and Restricted Range Species)

Nationally threatened species: Marsh Harrier and Dipper (Posof River crossing)

Others: Mountain Chiffchaff (restricted range)

Amphibians: Caucasian Salamander (*Maertensiella caucasica*) and the Caucasian Parsley Frog (*Pelodytes caucasica*) both of which are limited to the temperate mixed broadleaf forests of the northeast.

Seasonal Sensitivity: Breeding Period from April- July. Black Grouse breeding behaviour begins in April with male displays and the breeding period continues through to July when young may still be present on the ground.

Action: Pre-construction surveys of the Posof Wildlife Reserve to establish the location and population densities of sensitive bird, mammal and amphibian species. Construction scheduling to be determined on the basis of the results of survey. As a minimum, construction is to be avoided within the ESA between April and July.

3. Maps 1, 4, 10 and 25: Bear Hibernation Period

Specific requirements have been established in relation to human interaction with the Eurasian Brown Bear (*Ursus arctos*) – see Section 4.14 of Appendix B1.

In severe weather, bears hibernate in underground dens or caves. During this hibernation period, the females give birth to one or two cubs (rarely three) in January or February.

Action: In the late summer/early autumn, in areas from which bears have been recorded, ground surveys should be undertaken to establish the presence of potential hibernation places. If found, construction activity should be restricted to periods outside the hibernation season.

4. Maps 1, 4, 10 and 25: Bear Peak Spring Feeding Activity

Specific requirements have been established in relation to human interaction with the Eurasian Brown Bear (*Ursus arctos*) – see Section 4.14 of Appendix B1.

Following hibernation, bears enter a period of peak feeding in order to recover weight lost during the winter months. During such periods they are known to wander over wide areas and are most likely to come into conflict with human habitation, particularly in remote areas. Females with cubs are at their most aggressive at this time.

Action: In areas where the presence of bears has been confirmed by pre-construction surveys, the specific requirements outlined in Section 4.14.5 of Appendix B1 shall be implemented.

5. Maps 1, 4, 10 and 25: Wild Goat

Status: Classified as Vulnerable in the IUCN 2000 Red List. Considered Rare in the Black Sea and in Central East Anatolia, but locally common in the Mediterranean region.

Designations: Protected under the EU Habitat Directive and the Bern Convention. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Mountainous areas and temperate forests.

Seasonal Sensitivity: Breeding season is between October and December; the young are born in March and April.

Action: The pre-construction survey should establish the presence and local distribution of Wild Goats in the areas from which they have been recorded. Depending on the outcome of these surveys, actions may range from avoidance of construction activity during sensitive periods at specific locations to worker training regarding non-disturbance of nearby herds.

6. Maps 1: Bechstein's Bat (*Myotis bechsteini*)

Status: Classified as Vulnerable in the IUCN 2000 Red List. Considered Rare in Turkey.

Designations: Protected under the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Closely associated with mature woodland.

Seasonal Sensitivity: Breeds in late spring in mature woodland. Hibernates in either hollow trees or caves from September/October to spring.

Action: Pre-construction surveys during the summer months should aim to establish the presence and abundance of the species and seek to identify summer colonies and potential winter hibernation roosts. Hollow trees within the RoW of the pipeline route should be removed during the late summer months to prevent their use as winter roosting sites and to allow construction to continue during the autumn, winter and early spring periods. Caves, ruins or underground cavities, that have been identified as hibernation roosts (particularly those close to camps and works sites), should be secured to avoid their disturbance by workers.

7. Maps 1, 10 and 53: Mediterranean Horseshoe Bat (*Rhinolophus hipposideros*)

Status: Classified as Vulnerable in the IUCN 2000 Red List. Considered Abundant in Turkey.

Designations: Protected under the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Woodland, scrubland particularly on hillsides.

Seasonal Sensitivity: Breeds in late spring in mature woodland. Hibernates in underground cavities from September/October to spring.

Action: Pre-construction surveys during the summer months should aim to establish the presence and abundance of the species and seek to identify summer colonies and potential winter hibernation roosts. Hollow trees within the RoW of the pipeline route should be removed during the late summer months to prevent their use as winter roosting sites and to allow construction to continue during the autumn, winter and early spring periods. Caves, ruins or underground cavities, that have been identified as hibernation roosts (particularly those close to camps and works sites), should be secured and placed out of bounds to avoid their disturbance by workers.

8. General: Amphibians

A number of endemic and threatened amphibian species have been recorded along the route. In addition to the species listed in note 1, these include the Southern Crested Newt (*Triturus carelinii*), which spawns in small pools and ponds between May and June, and the Tree Frog (*Hyla arborea*), which spawns in pools and ponds within wooded and scrub areas between May – June (in the northern parts of its range) and between April – June (in southern parts of its range). These have been specifically noted as occurring at sites shown on Maps 1, 10 and 22.

Action: Preconstruction walkover surveys should establish the presence of appropriate spawning locations within the RoW of the route; translocation of species to be undertaken in those parts of the route where construction is scheduled to be undertaken between May and June (north of the Taurus Mountains) and between April and June (south of the Taurus Mountains).

9. General: No Seasonal Sensitivities

Whilst these sections of the route have not been identified as having any known seasonal sensitivities in relation to ecology, reference should be made to Section 6 for information on pre-construction survey requirements and other ecological mitigation measures.

10. Maps 4, 27, 28 and 51: Birds Breeding - Dipper

Nationally Threatened Species: Dipper (*Cinclus cinclus*) inhabits watercourses and nests in rocky crevices on the bank and behind waterfalls. Recorded at the Cotsuyu River crossing, the Ilgar and Aktas rivers, near the Karapinar Creek and elsewhere.

Seasonal Sensitivity: Breeding Period between April and July. July can remain sensitive for late and second broods.

Action: Pre-construction surveys should establish whether suitable nesting sites are available within 250m of the intended river crossing. If this is the case, construction activity is to be avoided between April and July.

11. General: Watercourse Crossings

Generic environmental mitigations measures have been developed for application during the construction and reinstatement of watercourse crossings (see Sections 4 and 6). These generic measures will be fully implemented for river crossing; in addition, location-specific measures are defined both within these seasonal sensitivity tables and within the Environmental Impact Tables presented in Supplement I of the EIA Report.

12. Maps 4: Fish Breeding - Kura River

The following fish species of commercial or conservation value have been recorded from the Kura River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
<i>Cyprinus carpio</i>	Common Carp	DD	High	April-June	Avoid: April-June
<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	Avoid: April-June
<i>Blicca bjoerkna</i>	White Bream	-	Medium	May-June	Avoid: May-June
<i>Chondrostoma regium</i>	Nose Carp	-	Medium	March-May	Avoid: March-May
<i>Aspius aspius</i>	Asp	-	Medium	April-June	Avoid: April-June
<i>Barbus plebejus</i>	Italian barbell	LR/nt		May-July	Avoid: May-July
<i>Barbus capita</i>	Bulatmai Barbel	-	High	May-July	Avoid: May-July
<i>Capoeta capoeta angorae</i>	Transcaucasian Barb	-	Medium	May-June	Avoid: May-June
<i>Salmo trutta labrax</i>	Black Sea Salmon	-		December-February	Avoid: December-February

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAŞ for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

13. Map 8: Birds Breeding

Globally threatened species: Cinereous Vulture (*Aegypius monachus*) and Imperial Eagle (*Aquila heliaca*) are resident raptors.

Nationally threatened species. Griffon Vulture (*Gyps fulvus*) breeds in colonies in large trees or on rock ledges.

Seasonal Sensitivity: Breeding Period from March/April to June. July can remain sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of mature trees and rock ledges within 500m of the pipeline route. If nesting sites are identified, avoidance of construction activity from March to July.

14. Map 10: Birds Breeding – gorge to north and west of the route.

Nationally threatened species: Lammergier (*Gypaetus barabatus*), Griffon Vulture (*Gyps fulvus*) and Saker Falcon (*Falco cherrug*)

Seasonal Sensitivity: Breeding Period from March/April, with July remaining sensitive for late and second broods.

Action: Construction activities should be avoided between March and July. The gorge should be made out of bounds for workers and fencing between the works and the gorge entrance should be secured.

15. Map 11: Birds Breeding

Nationally threatened species: Griffon Vulture (*Gyps fulvus*)

Seasonal Sensitivity: Breeding Period from March/April to June with July remaining sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of Vulture nesting sites within 500m of the pipeline route. If nesting sites are identified, avoidance of construction activity within 500m from March to July.

16. Maps 14 and 54: Schreiber's Long-fingered Bat (*Miniopterus schreibersi*)

Status: Classified as Lower Risk/near threatened (LR/nt) in the IUCN 2000 Red List. Considered widely distributed in Turkey; abundant in Black Sea, Mediterranean and Marmara regions, rare in Central, East and Southeast Anatolia.

Designations: Protected under the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Grasslands, woodland and scrubland, particularly on hillsides.

Seasonal Sensitivity: In Turkey, this species gives birth in October – November. Migrates up to 200km between summer and winter retreats. Hibernates in cold climates or curtails activity during cold weather in hollow trees, ruins or caves from September/October to spring.

Action: Pre-construction surveys during the summer months should aim to establish the presence and abundance of the species and seek to identify summer colonies and potential winter hibernation roosts. Hollow trees within the RoW of the pipeline route should be removed during the late summer months to prevent their use as winter roosting sites and to allow construction to continue during the autumn, winter and early spring periods. Caves, ruins or underground cavities, that have been identified as hibernation roosts (particularly those close to camps and works sites), should be secured and placed out of bounds to avoid their disturbance by workers.

17. Maps 15: Fish Breeding - Hasankale River

The following fish species of commercial or conservation value have been recorded from the Hasankale River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
<i>Salmo trutta labrax</i>	Black Sea Salmon	-	-	December-February	Avoid: December-February
<i>Cyprinus carpio</i>	Common Carp	DD	High	April-June	Avoid: April-June
<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	Avoid: April-June
<i>Chondrostoma regium</i>	Nose Carp	-	Medium	March-May	Avoid: March-May
<i>Aspius aspius</i>	Asp	-	Medium	April-June	Avoid: April-June
<i>Barbus plebejus</i>	Italian barbel	LR/nt	-	May-July	Avoid: May-July
<i>Barbus capita</i>	Bulatmai Barbel	-	High	May-July	Avoid: May-July
<i>Capoeta capoeta angorae</i>	Transcaucasian Barb	-	Medium	May-June	Avoid: May-June

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAS for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

18. Maps 15: European Marbled Polecat (*Vormela peregusna*)

Status: Classified as Vulnerable in the IUCN 2000 Red List. Considered Rare in Turkey and distribution limited to Thrace, Marmara, Black Sea and East Anatolia.

Designations: Protected under the Bern Convention. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Mainly open and dry terrain; steppe vegetation. Nocturnal and crepuscular.

Seasonal Sensitivity: Young are born from February to March.

Action: Pre-construction ecological surveys of the area within which the species has been recorded should establish whether the pipeline construction would impact upon burrows, cavities or dens that might be used for rearing young between February and May. If such sites are found, construction activities must avoid the area for those sensitive periods; in the absence of such sites, no further action would be required.

19. Maps 19, 23 and 27: Birds Breeding – Bluethroat

Nationally threatened species: Bluethroat (*Luscinia svecica*) breeds in thickets and dense vegetation in the vicinity of watercourses; recorded at the Buyuk River and elsewhere.

Seasonal Sensitivity: Breeding Period from April to June with July remaining sensitive for late and second broods.

Action: Clearance of riverside trees, shrubs and thickets in advance of the construction of watercourse crossings to be undertaken outside the April – July period.

20. Maps 19 and 22: Fish Breeding – Karasu River

The following fish species of commercial or conservation value have been recorded from the Karasu River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
<i>Acanthobrama marmid</i>	-	-	Medium	April-June	Avoid: April-June

<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	Avoid: April-June
<i>Chondrostoma regium</i>	Nose Carp	-	Medium	March-May	Avoid: March-May
<i>Capoeta capoeta angorae</i>	Transcaucasian Barb	-	Medium	May-June	Avoid: May-June

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAŞ for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

21. Map 22: Birds Breeding downstream of Karasu River crossing

Nationally threatened species: White-winged Black Tern (*Chlidonias leucopterus*), Great Egret (*Egretta alba*) and Oystercatcher (*Haematopus ostralegus*) all breed beside freshwater wetlands amongst reedbeds and other dense vegetation.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Clearance of riverside reedbeds and other dense vegetation in advance of the construction of watercourse crossings to be undertaken outside the April – July period. Areas of reeds and dense vegetation should be placed out of bounds for construction workers.

22. Map 23: Fish Breeding – Aksu River

The following fish species of commercial or conservation value have been recorded from the Aksu River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	Avoid: April-June

Action: For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAŞ for approval. Such measures might include, but not be limited to, the

following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

23. Map 41: Birds Breeding - Zamanti River Floodplain

The Zamanti River Plain has been identified an area of importance for a range of ornithological species with high numbers of birds as well as significant species diversity.

Nationally threatened species: Common Crane (*Grus grus*) inhabits scrub and woodland near marshland and watercourses; Icterine Warbler (*Hippolais icterina*) is probably a passing migrant, but may breed in thickets and dense vegetation.

Others: Little Egret, Grey Heron, White Stork, Ruddy Shelduck, Black-winged Stilt, Lapwing, Redshank, Wood Sandpiper, Ruff, Black-headed Wagtail, Yellow Wagtail and Sedge Warbler

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Construction to be avoided during the breeding season from April to July.

24. Map 41: Fish Breeding - Zamanti River

The following fish species of commercial or conservation value have been recorded from the Zamanti River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Migration Time	Recommended Construction time
<i>Esox lucius</i>	Northern Pike	-	Medium	March-April	-	Avoid: March-April
<i>Salmo trutta</i>	Brown Trout	-	High	December-February	-	Avoid: December-February
<i>Anguilla anguilla</i>	European eel	-	High	April-June	September -March	*
<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	-	Avoid: April-June

* Theoretical sensitivity but species not regarded as sensitive to construction disturbance

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial

value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAŞ for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

25. Map 47: Birds Breeding – Lesser Kestrel

Globally threatened species: Lesser Kestrel (*Falco naumanni*) breeds in rocky gorges and ruined buildings. Recorded from Yesilkent village in the Taurus Mountains.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of possible nesting sites within 500m of the pipeline route. If nesting sites are identified, avoidance of construction activity from April to July.

26. Map 50: Birds Breeding – Northern Goshawk

Nationally threatened species: Northern Goshawk (*Accipiter gentiles*) inhabits woodland and hunts of forest margins and grassland. Nests in mature woodland. Recorded from the route of the pipeline near Goksun.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of potential nest sites within the RoW. If nesting sites are identified, avoidance of construction activity from April to July.

27. Maps 51, 54 and 59: Mehely's Horseshoe Bat (*Rhinolophus mehelyi*)

Status: Classified as Vulnerable in the IUCN 2000 Red List. In Turkey, it is considered abundant in Central, East and West Anatolia.

Designations: Protected under the EU Habitats Directive, Bonn Convention and EUROBATS. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Wide range of habitats are utilised from grassland and woodland to scrubland and riparian areas.

Seasonal Sensitivity: In Turkey, this species gives birth in late spring. Can migrate up to 500km between summer colonies and winter hibernation retreats. Hibernates in hollow trees, ruins, tunnels, garrets or caves from September/October to spring.

Action: Pre-construction surveys during the summer months should aim to establish the presence and abundance of the species and seek to identify summer colonies and potential winter hibernation roosts. Hollow trees within the RoW of the pipeline should be removed during the late summer months to prevent their use as winter roosting sites and to allow construction to continue during the autumn, winter and early spring periods. Caves, ruins or underground cavities, which have been identified as hibernation roosts (particularly those close to camps and works sites), should be secured, and placed out of bounds, to avoid their disturbance by workers.

28. Map 52: Blasius' Horseshoe Bat (*Rhinolophus blasii*)

Status: Classified as Lower Risk/near threatened (LR/nt) in the IUCN 2000 Red List. Considered Very Rare in Turkey with isolated records from the Aegean coast, Southeast Anatolia and Thrace.

Designations: Protected under the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Wide range of habitats are utilised from grassland and woodland to scrubland and riparian areas.

Seasonal Sensitivity: In Turkey, this species gives birth in the spring. Hibernates in colonies of up to 300 individuals in ruins, caves or cavities from September/October to spring.

Action: Pre-construction surveys during the summer months should aim to establish the presence and abundance of the species and seek to identify summer colonies and potential winter hibernation roosts. Hollow trees within the RoW of the pipeline route should be removed during the late summer months to prevent their use as winter roosting sites and to allow construction to continue during the autumn, winter and early spring periods. Caves, ruins or underground cavities, that have been identified as hibernation roosts (particularly those close to camps and works sites), should be secured and placed out of bounds to avoid their disturbance by workers.

29. Map 56: Fish Breeding - Ceyhan River

The following fish species of commercial or conservation value have been recorded from the Ceyhan River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
---------	-------------	------	------------------	-----------------	-------------------------------

<i>Chondrostoma regium</i>	Nose Carp	-	Medium	March-May	Avoid: March-May
<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	Avoid: April-June
<i>Capoeta capoeta angorae</i>	Transcaucasian Barb	-	Medium	May-June	Avoid: May-June
<i>Cyprinus carpio</i>	Common Carp	DD	High	April-June	Avoid: April-June
<i>Orthrias tscheyysuensis</i>	Loach sp.	VU	-	May-July	Avoid: May-July
<i>Barbus plebejus lacerta</i>	Barbel sp.	-	Medium	May-July	Avoid: May-July
<i>Clarias lazera</i>	Sharptooth Catfish	-	High	May-June	Avoid: May-June

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAS for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

30. Map 58: Fish Breeding - Karacay River

The following fish species of commercial or conservation value have been recorded from the Karacay River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
<i>Cyprinus carpio</i>	Common Carp	DD	High	April-June	Avoid: April-June
<i>Capoeta capoeta angorae</i>	Transcaucasian Barb	-	Medium	May-June	Avoid: May-June
<i>Clarias lazera</i>	Sharptooth Catfish	-	High	May-June	Avoid: May-June
<i>Chondrostoma regium</i>	Nose Carp	-	Medium	March-May	Avoid: March-May

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAS for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

31. Map 22, 32, 41 and 58: Reptile Breeding – European Pond Turtle (*Emys orbicularis*)

Inhabit ponds, pools and slow moving watercourses. Typically mate in May, with eggs (up to 10 per clutch) laid amongst the roots of waterside vegetation in June. Incubation period is dependent upon variable by temperature, but is generally in the order of 70 days. Hatchlings emerge August – September.

Action: In advance of construction works associated with river crossings, riverside vegetation to be cleared between beginning of October and end of April.

32. Map 54: Reptile Breeding – Asia Minor Spur-thighed Tortoise (*Testudo graeco iberica*)

Also known as the Common Tortoise; inhabit wide variety of habits. Easiest to find in early sunny mornings, when they bask in sunny locations. Lay eggs in scoops and hollows in the earth. Eggs (up to 12 per clutch) are laid in May-June and hatchlings emerge in August to September. Hibernates between October/November and March/April.

Action: Pre-construction surveys to establish locations and population densities of tortoises. Mature individuals and hatchlings to be translocated to appropriate habitats in advance of construction. In areas of known concentrations, construction activities to be avoided during the May- September period.

33. Map 32: Fish Breeding - Acioz River

The following fish species of commercial or conservation value have been recorded from the Acioz River.

Species	Common Name	IUCN	Commercial Value	Breeding Season	Recommended Construction time
<i>Chondrostoma regium</i>	Nose Carp	-	Medium	March-May	Avoid: March-May
<i>Capoeta capoeta angorae</i>	Transcaucasian Barb	-	Medium	May-June	Avoid: May-June
<i>Leuciscus cephalus</i>	Chub	-	Medium	April-June	Avoid: April-June

Action: Construction activities at river crossings will not be permitted during the breeding season of fish species that are of high commercial value or that are designated as having conservation importance. For construction activity to be permitted during the breeding season of fish species with medium commercial value, the Contractor will be required to submit specific mitigation measures to avoid impacting breeding fish to BOTAS for approval. Such measures might include, but not be limited to, the following: pre-construction survey results indicating that spawning grounds are avoided, the provision of fish passages, etc, *in addition to* the generic mitigation measures that are required at all river crossings.

34. Maps 1 and 10: Common Pipistrelle (*Pipistrellus pipistrellus*)

Status: Common and abundant in all regions of Turkey.

Designations: Protected under the EU Habitats Directive, Bonn Convention, Bern Convention and EUROBATS. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Utilises a wide variety of habitats hunting over water, marshland, open woodland, woodland edge, farmland, along hedgerows, gardens and residential areas. Uses hollow trees, buildings, caves and cavities as maternity colonies and as hibernation, mating and summer roosts.

Seasonal Sensitivity: Hibernation and mating roosts are occupied from autumn through to spring, when separate, female-only maternity roosts are established and are occupied between May and August and sometimes through to September. Young are born from early June to mid-July, although births as late as August have been recorded.

Action: Pre-construction surveys of the RoW in the vicinity of river crossings should aim to identify the location and level of occupation of maternity colonies, summer roosts and potential mating/winter hibernation roosts. If roosts are discovered these may be cleared of bats in the late summer months under the close supervision of an ecologist approved by BOTAŞ.

35. Maps 4, 19 and 23: Birds Breeding – Booted Eagle

Nationally threatened species: Booted Eagle (*Hieraetus pennatus*) was recorded near the Kura River Crossing and elsewhere. Breeds in tall trees, often on southerly-facing hillsides.

Seasonal Sensitivity: Breeding Period from March/April, with July remaining sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of potential nesting sites within 500m of the pipeline route. If nesting sites are identified, avoidance of construction activity from March to July. Potential nesting sites within the RoW should be removed outside the breeding period.

36. Map 4, 8, 9, 11, 13, 15, 19, 20, 23, 24, 27, 28, 34, 35, 38, 39, 41 and 59: Birds Breeding – Whinchat

Nationally threatened species. Whinchat (*Saxicola rubetra*) has been recorded from a large number of locations along the pipeline alignment. Inhabits open heathland, steppe and grasslands, nesting in shrubs. Recorded within ESA 7, at the Cotsuyu River crossing, Hoskadem River crossing, Ilgar and Aktas Rivers, Zamanti Floodplain, the Sekerpinar, Buyuk and Acisu River crossing and elsewhere.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Shrubs and dense vegetation along the RoW should be cleared outside the breeding season.

37. Map 14: Birds Breeding – Red-necked Grebe

Nationally threatened species: Red-necked Grebe (*Podiceps grisegena*) was observed at the Temmuz Reservoir. Breeds alongside well vegetated freshwater waters, particularly lakes, reservoirs and flooded mineral workings.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Dense vegetation alongside lakes, reservoirs, etc to be cleared outside the breeding season.

38. Map 15: Birds Breeding

Nationally threatened species: Oystercatcher (*Haematopus ostralegus*) breeds beside freshwater wetlands amongst reedbeds and other dense vegetation. Long-eared Owl (*Asio otus*) was observed at the Kurdi River crossing and within the Erzurum Plain; inhabits and breeds in trees within shrub and woodland.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Clearance of riverine vegetation and shrub/woodland outside the breeding season.

39. Map 14, 15, 16 and 21: Birds Breeding – Pale Rock Sparrow

Nationally threatened species: Pale Rock Sparrow (*Petronia brachydactyla*) inhabits rocky hillsides and nests in shrubs and rock ledges.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Shrubs and dense vegetation along the RoW should be cleared outside the breeding season.

40. Map 17: Birds Breeding on Erzurum Plain Important Bird Area (IBA)

Nationally threatened species: Pintail (*Anas acuta*), Teal (*Anas crecca*), Garganey (*Anas querquedula*), Shoveler (*Anas clypeata*), Black Kite (*Mitivirus migrants*), Marsh Harrier (*Circus aeruginosus*), Common Crane (*Grus grus*), White-winged Black Tern (*Chlidonias leucopterus*), Long-eared Owl (*Asio otus*), Citrine Wagtail (*Motacilla citreola*) and Whinchat (*Saxicola rubetra*).

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: The nationally threatened species within the Erzurum Plain IBA utilise a wide variety of habitats from reedbeds (Pintail, Common Crane, etc) to Shrub (Whinchat, etc) to mature woodland (Long Eared Owl). As such, all vegetation clearance throughout this area should be undertaken between August and March, thereby avoiding the critical bird breeding season. Areas of reeds and dense vegetation should be placed out of bounds for construction workers.

41. Map 23: Birds Breeding – Aksu River Crossing

Nationally threatened species: Oystercatcher (*Haematopus ostralegus*) breeds beside freshwater wetlands amongst reedbeds and other dense vegetation. Honey Buzzard (*Pernis apivorus*) is a migrant in Turkey and is not thought to breed; inhabits woodland areas.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Clearance of riverside reedbeds and other dense vegetation in advance of the construction of watercourse crossing to be undertaken outside the April – July period. Areas of reeds and dense vegetation should be placed out of bounds for construction workers.

42. Map 25: Turkish Chamois (*Rupicapra rupicapra asiatica*)

Status: Classified as Data Deficient in the IUCN 2000 Red List. The Turkish Chamois is a sub-species of Chamois and is restricted to Turkey, inhabiting the northeastern parts up to 3,200m above sea level. Population densities are believed to be decreasing.

Designations: Protected under the EU Habitat Directive and the Bern Convention. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Mountain grasslands, temperate broad-leaved and mixed forests.

Seasonal Sensitivity: Breeding season is in the autumn and the young are born in March and April.

Action: The pre-construction survey should establish the presence and local distribution of Turkish Chamois in the areas from which they have been recorded. Depending on the outcome of these surveys, actions may range from avoidance of construction activity during sensitive periods at specific locations to worker training regarding non-disturbance of nearby herds.

43. Maps 25 and 34: Eurasian Otter (*Lutra lutra*)

Status: Rare, but widely distributed in all regions of Turkey.

Designations: Protected under the EU Habitats Directive, and Bern Convention. Hunting is prohibited by the Turkish Central Hunting Commission.

Habitat: Inhabits rivers, lakes, ponds and small streams. Occupies Holts in waterside banks.

Seasonal Sensitivity: Breeds year round in Turkey, with a tendency towards the Spring period in cooler regions.

Action: Pre-construction surveys of the RoW in the vicinity of river crossings should aim to identify the location and extent of otter Holts within the vicinity (250m) of intended river crossings. If discovered these may be cleared in the late summer months under the close supervision of an ecologist approved by BOTAŞ.

44. Maps 25, 37 and 51: Forest Dormouse (*Dryomys nitedula*)

Status: Classified as Lower Risk/near threatened (LR/nt) in the IUCN 2000 Red List. Present, but uncommon in all regions of Turkey.

Designations: Protected under the EU Habitats Directive and Bern Convention.

Habitat: Inhabits dense coniferous, deciduous and mixed forests at elevations up to 3,500 m. Arboreal, it nests in small groups in trees or groups of trees. May hibernate in cooler regions and at higher altitudes.

Seasonal Sensitivity: Breeding season is between May and August, but in warmer areas may extend beyond this period.

Action: Pre-construction surveys of dense woodland in the RoW; if present route clearance should be undertaken during the autumn or winter period.

45. Maps 19 and 26: Birds Breeding – Black Kite

Nationally threatened species: Black Kite (*Milvus migrans*) within ESA 24 and at Hoskadem and Karasu River Crossings. A migrant that may breed in Turkey. Nests in tall trees in open country.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Pre-construction survey for evidence of past nesting. If nesting sites are found within the RoW these should be removed prior to March and after July; those within 250m should be observed in April and if nesting is occurring then construction should be avoided until July.

46. Maps 8 and 27: Birds Breeding

Globally threatened species: Imperial Eagle (*Aquila heliaca*) is a resident raptor that nests in mature trees and rock ledges and cavities.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of mature trees and rock ledges within 500m of the pipeline route. If nesting sites are identified, avoidance of construction activity from April to July.

47. Map 33: Birds Breeding - Wryneck

Nationally threatened species: Wryneck (*Jynx torquilla*) is a migrant that may be locally resident in Turkey. Nests in hollow trees; recorded at the Nasir River crossing.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Pre-construction survey should establish the presence of mature trees along the RoW of the pipeline route. If present, these should be removed outside the breeding season.

48. Map 34: Birds Breeding - Acisu River crossing

Nationally threatened species: Marsh Harrier (*Circus aeruginosus*) inhabits wetland and watercourse areas and nests in reedbeds and dense waterside vegetation. A large Sand Martin (*Riparia riparia*) breeding colony was recorded from the bank of the Acisu River.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods. Sand Martin colony likely to be occupied from March to September.

Action: Pre-construction survey to establish location of Sand Martin colony in relation to river crossing; if within 100m of the centre line of works, construction to be undertaken between October and March. In addition, the clearance of riverside reedbeds and other dense vegetation in advance of the

construction of watercourse crossing to be undertaken outside the April – July period. The Sand Martin colony and areas of reeds and dense vegetation should be placed out of bounds for construction workers

49. Maps 34 and 35: Birds Breeding – Black Stork

Nationally threatened species: Black Stork (*Ciconia nigra*) was recorded from the Acisu River and from the Cuckrova Plain to the Tecer Mountains and is almost certainly a migrant through the area from February to March and from September to October. However, breeding cannot be ruled out; nests in large trees and cliff-faces.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: The presence of this species between April and July, probably indicates that breeding is occurring. If this is confirmed by pre-construction surveys during this period the location of nest sites within 100m of the RoW should be determined and construction within 500m of the nest site should be avoided between April and July.

50. Map 17, 35, 37 and 41: Birds Breeding – Common Crane

Nationally threatened species: Common Crane (*Grus grus*) inhabits scrub and woodland near marshland and watercourses.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Clearance of riverside vegetation to be avoided between April and July.

51. Map 13, 15, 19, 23, 27, 28, 38, 48, 50 and 54: Birds Breeding – Barred Warbler

Nationally threatened species: Barred Warbler (*Sylvia nisoria*) breeds in shrubs and trees along rivers and streams and is recorded from the Alakilise, Ilgar, Aktas, Hoskadem, Aksu and Buyuk Rivers and elsewhere.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Clearance of riverside trees, shrubs and thickets in advance of the construction of watercourse crossings to be undertaken outside the April – July period.

52. Map 54 and 55: Birds Breeding – Black Francolin

Nationally threatened species: Black Francolin (*Francolinus francolinus*) nests in dense vegetation and scrub and inhabits cropland, meadows and steppe.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Clearance of trees, shrubs and thickets in advance of the construction to be undertaken outside the April – July period.

53. Map 56: Birds Breeding at the Ceyhan River Crossing

Nationally threatened species: Pied Kingfisher (*Ceryle rudis*) and Common Kingfisher (*Alcedo atthis*) fish along watercourses and nest in holes in the banks of rivers, streams, canals, lakes and pools. Graceful Prinia (*Prinia gracilis*) inhabits and nests in scrub. A large Sand Martin (*Riparia riparia*) breeding colony was recorded from the bank of the Ceyhan River.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods. Sand Martin colony likely to be occupied from March to September.

Action: Bankside ground disturbance to take place between October and March. In addition, the clearance of riverside vegetation in advance of the construction of watercourse crossing to be undertaken outside the April – July period. The Sand Martin colony and areas of reeds and dense vegetation should be placed out of bounds for construction workers

54. Map 58: Birds Breeding along a slow-flowing irrigation canal

Nationally threatened species: White-breasted Kingfisher (*Halycon smyrnensis*) and Common Kingfisher (*Alcedo atthis*) fish along watercourses and nest in holes in the banks of rivers, streams, canals, lakes and pools.

Seasonal Sensitivity: Breeding Period from April, with July remaining sensitive for late and second broods.

Action: Bankside ground disturbance to take place between August and March.

55. Map 4 and 7: Meadow Viper

Globally threatened species: The Meadow Viper (*Vipera ursinii*) was observed on rocky hillsides near to the Kura River Crossing and in rocky outcrops within the meadows of ESA 50. The Viper prefers open meadows and is found to relatively high altitudes; this snake is venomous, although the small size of the species has ensured that the species is not considered dangerous and few humans have been bitten.

Seasonal Sensitivity: Females give birth to live young between August and October.

Action: Pre-construction surveys should seek to establish the abundance of the species. Thereafter, clear training should be provided to workers with regard to the conservation importance of the snake, its recognition and procedures for translocating individual specimens. Particular vigilance should be applied during the August to October period.

56. Map 39: Migratory Birds – Sekerpinar River Crossing

Globally threatened species: The Great Snipe (*Gallinago media*) was observed near to the crossing point of the Sekerpinar River. The Great Snipe is associated with woodland and often well drained sites, adjoining marshland and river valley wetlands. A migrant through Turkey on its Autumn passage. The Sekerpinar River also provides a range of other migrant birds with passage feeding areas.

Seasonal Sensitivity: Passage migrant mainly from Autumn to end of September, though known to occasional continue through to November.

Action: Pre-construction surveys should seek to establish the location of feeding resources utilised by Great Snipe. The findings of the survey, and the seasonal sensitivities outlined above, will determine the appropriate course of action to be taken with regard to the planning and execution of the works.

Attachment 2 to the Environmental Management and Monitoring Plan

Summary of BTC Monitoring Programme

RECEPTOR	TASK	TIMING	RESPONSIBILITY
General	<ul style="list-style-type: none"> Monitor reinstatement/remedial measures undertaken with respect to the existing NGP and record pre-construction condition where BTC route parallels the NGP route 	<ul style="list-style-type: none"> Pre-construction 	<ul style="list-style-type: none"> BOTAŞ
Marine Ecology	<ul style="list-style-type: none"> Marine turtle survey between Uzunkelli and Golovasi between June and September of 2002 Update marine ecological survey immediately following construction and approximately 2 years following construction to ascertain recovery Monitor turtle nest hatching success on a yearly basis Regular monitoring of beach in vicinity of jetty to identify any beach scour impacts or changes to beach profile 	<ul style="list-style-type: none"> Pre-construction Operation Operation Operation 	<ul style="list-style-type: none"> BOTAŞ BOTAŞ BOTAŞ BOTAŞ
Terrestrial Ecology	<ul style="list-style-type: none"> Identification of sensitive fauna on pipeline RoW and relocation outside of RoW Survey requirements of the seasonal sensitivity constraints presented in Attachment 1 to the EMMP Vegetation mapping of RoW in Ecologically Sensitive Areas (ESAs) to provide input to site-specific work-plans for reinstatement in ESAs 	<ul style="list-style-type: none"> Pre-construction/Construction Pre-construction Pre-construction 	<ul style="list-style-type: none"> Contractor Contractor Contractor

BTC PROJECT EIA
TURKEY

RECEPTOR	TASK	TIMING	RESPONSIBILITY
	<ul style="list-style-type: none"> Vegetation mapping at PT3 to provide input to site specific site clearance and reinstatement plan including the relocation of sensitive species Inspection and Audit to ensure satisfactory implementation of actions outlined above 	<ul style="list-style-type: none"> Pre-construction On-going 	<ul style="list-style-type: none"> Contractor BOTAŞ/Independent Auditor
Soil Quality	<ul style="list-style-type: none"> Phase 1 due diligence survey of pipeline RoW Due diligence sampling at PT2, PT3, PT4, IPT1 sites Due diligence soil sampling of BTC marine terminal tank farm site 	<ul style="list-style-type: none"> Pre-construction Pre-construction Pre-construction 	<ul style="list-style-type: none"> Contractor BOTAŞ/Independent Auditor BOTAŞ
Surface & Ground Waters	<ul style="list-style-type: none"> Undertake sustainability study for water abstractions to confirm there will be no impacts to existing users Monitor receiving water quality at construction camps for dissolved oxygen, 	<ul style="list-style-type: none"> Pre-construction Construction 	<ul style="list-style-type: none"> Contractor Contractor

BTC PROJECT EIA
TURKEY

RECEPTOR	TASK	TIMING	RESPONSIBILITY
	<p>turbidity/suspended solids, oil and grease, and coliforms on a monthly basis</p> <ul style="list-style-type: none"> • Monitor water quality at pipeline stream crossings for turbidity/total suspended solids, and oil and grease during crossing, one week after crossing and as required thereafter • Monitor wastewater treatment plant discharges (and receiving water if applicable) for BOD, TDS, coliforms and chlorine on a weekly basis • Monitor water quality at groundwater wells within the four major aquifers for dissolved oxygen, BOD, oil and grease and coliforms on a monthly basis during pipeline construction • Inspect and Audit to ensure satisfactory implementation of actions outlined above • Monitoring programme of surface water or groundwater quality in vicinity of operational wastewater discharges to be determined based on selected wastewater disposal method. 	<ul style="list-style-type: none"> • Construction • Construction • Construction • On-going • Operation 	<ul style="list-style-type: none"> • Contractor • Contractor • Contractor • BOTAŞ/Independent Auditor • BOTAŞ
Air Quality	<ul style="list-style-type: none"> • Total VOC monitoring by means of passive samplers be implemented in the environs of the proposed CMT site. It is necessary to make the observations when the intermediate and summer wind regimes are in effect. The monitoring could be extended into the winter 	<ul style="list-style-type: none"> • Pre-construction – Operation (continuous) • Will be planned to cover summer and winter wind regimes. Will start in Summer 2002. 	<ul style="list-style-type: none"> • BOTAŞ

BTC PROJECT EIA
TURKEY

RECEPTOR	TASK	TIMING	RESPONSIBILITY
	wind regime (October through March) to observe the ambient VOC levels under varying atmospheric conditions.	<ul style="list-style-type: none"> At certain locations the BTEX and total VOC samplers should be collocated to observe the relative contribution of the BTEX compounds to the total VOC levels. 	
Noise	<ul style="list-style-type: none"> 10-minute noise readings at sensitive noise receptors during potentially noisy pipeline construction activities eg piling, blasting, river/road crossings. Results to be immediately delivered to construction team 10-minute noise readings at the commencement of noisy construction activities at AGIs or CMT. Results to be immediately communicated to construction team. If standards are exceeded, monitoring to be repeated following implementation of remedial action 10-minute noise readings at sensitive noise receptors in vicinity of AGIs and CMT during typical, full duty operation. If standards are exceeded, monitoring to be repeated following implementation of remedial action. Inspection and Audit to ensure satisfactory implementation of actions outlined above 10-minute noise readings at sensitive noise receptors in vicinity of AGIs and CMT following any changes to noisy plant or significant changes to the facility or annually. 	<ul style="list-style-type: none"> Construction Construction Commissioning On-going Operation 	<ul style="list-style-type: none"> Contractor Contractor Contractor BOTAŞ/Independent Auditor BOTAŞ

BTC PROJECT EIA
TURKEY

RECEPTOR	TASK	TIMING	RESPONSIBILITY
Archaeology/Cultural Heritage	<ul style="list-style-type: none"> Further intensive investigation of the nature and extent of archaeological/cultural heritage features at identified archaeological sites (refer to the environmental impact tables) to determine safe route for pipeline. If site cannot be avoided carry out appropriate rescue/salvage excavations Visual archaeological survey at site of PT2 & PT3 to determine presence or potential presence of any archaeological remains. Monitoring/ supervision of construction activities at archaeological sites by the Ministry of Culture and throughout the Project by archaeological supervisors Record and report any chance finds during excavation Inspection and Audit to ensure satisfactory implementation of measures outlined above 	<ul style="list-style-type: none"> Pre-construction Pre-construction Construction Construction On-going 	<ul style="list-style-type: none"> BOTAŞ/AMC BOTAŞ/AMC Contractor/BOTA Ş/AMC Contractor/BOTA Ş/AMC BOTAŞ/AMC/Independent Auditor

**Attachment 3 to the
Environmental Management and Monitoring Plan**

Summary of Main Survey and Studies Programme

COMMITTED WORK	TASK	TIMING	RESPONSIBILITY
Air Quality Survey	For PT2, PT3, PT4 and IPT1, baseline air quality surveys similar to that carried out for PT1	<ul style="list-style-type: none"> July 2002 (the air quality survey will be carried out during dry season. The survey will continue for one week for each location) 	<ul style="list-style-type: none"> BOTAŞ
Noise Survey	For PT2, PT3, PT4 and IPT1, noise surveys similar to that carried out for PT1	<ul style="list-style-type: none"> July 2002 	<ul style="list-style-type: none"> BOTAŞ
Soil Quality Survey	For PT2, PT3, PT4 and IPT1, soil surveys similar to that carried out for PT1	<ul style="list-style-type: none"> July 2002 	<ul style="list-style-type: none"> BOTAŞ
Habitat Surveys	Pre-clearance surveys as detailed in EMMP Attachment 1 "Areas constrained by Seasonal Sensitivity": sensitivity criteria described as "Extent of Constraint and required response subject to finding of pre-construction"	<ul style="list-style-type: none"> Pre-construction and Construction with reference to the survey seasonality considerations highlighted in Attachment 1 	<ul style="list-style-type: none"> Contractor
Archaeology	Outstanding extensive surveys at camp locations, access roads, and PT2, PT3 and IPT1 and intensive surveys at identified locations. Salvage excavations will be carried out at locations defined as result of intensive surveys	<ul style="list-style-type: none"> June - September 2002 Will commence in October 2002 and will continue ahead of construction activities 	<ul style="list-style-type: none"> BOTAŞ BOTAŞ
Special Area Reinstatement Site Surveys and Method Statements	All contractors will be required to submit an outline Reinstatement Plan. This will include a schedule for carrying out site specific Special Area Reinstatement Surveys Project specific plans and procedures that specify how the requirements of Reinstatement Plan will be implemented will be required 12 weeks prior to Project commencement (Lot specific) in terms of clearance of	<ul style="list-style-type: none"> 30 days after Award of Contract 12 weeks prior to commencement of any site clearing activities 	<ul style="list-style-type: none"> Contractor Contractor

BTC PROJECT EIA
TURKEY

COMMITTED WORK	TASK	TIMING	RESPONSIBILITY
	the RoW or the breaking of ground at pumping stations or the BTC Marine Terminal. This will include a schedule for submittal of site specific Special Area Reinstatement Method Statements		
	All site specific surveys and Method Statements including Special Areas. This includes ESAs (including 10 BVS), slopes, karst and tuff and marls	<ul style="list-style-type: none"> • 60 days prior to site 	<ul style="list-style-type: none"> • Contractor
Soil sampling at BTC tank farm site	Due diligence soil sampling will be carried out at BTC tank farm site	<ul style="list-style-type: none"> • July 2002 	<ul style="list-style-type: none"> • BOTAŞ
Water sustainability studies for groundwater and surface water supplies (pump tests)	Water supply sustainability studies for groundwater (pump tests) and surface water supplies will be carried out at the water sources of pump stations and the BTC Marine Terminal Water supply sustainability studies for groundwater (pump tests) and surface water supplies will be carried out at the water sources of camp sites	<ul style="list-style-type: none"> • Prior to start of well operation • Prior to start of well operation 	<ul style="list-style-type: none"> • BOTAŞ • Contractor
Reinstatement Plan for NGP	Site surveys and method statements (RoW clean-ups Removal of surplus material; Repair of drainage and irrigation channels; settlements of open cut road crossings; protection of watercourse crossings) Site surveys and method statements for remaining outstanding works in accordance with BTC Reinstatement Plan 'Conditions' (including for example Slope Protection; Continuing relocation of surplus material from the NGL construction, etc)	<ul style="list-style-type: none"> • The tentative schedule aims begin during October 2002 	<ul style="list-style-type: none"> • Contractor • BOTAŞ
Karst Investigation Studies	Geophysical/drilling verification studies along route changes in the Sivas Gypsum Karst	<ul style="list-style-type: none"> • Planned to be finalised before the end of 2002. Details of the survey schedule will be identified by the Contractor after contract aware 	<ul style="list-style-type: none"> • Lot B Construction Contractor

BTC PROJECT EIA
TURKEY

COMMITTED WORK	TASK	TIMING	RESPONSIBILITY
Groundwater Protection Strategy	A Groundwater Protection Strategy will be developed applying the steps defined in EMMP	<ul style="list-style-type: none"> September – December 2002 	<ul style="list-style-type: none"> BOTAŞ
Landscape Plans for all AGIs and Marine Terminal	Landscape Plans for all AGIs and Marine Terminal will be prepared	<ul style="list-style-type: none"> Prior to the end of construction phase 	<ul style="list-style-type: none"> BOTAŞ
Geohazard issues	Geohazard Issues, for example, residual risk estimates for inclusion into pipeline ERA to be closed out	<ul style="list-style-type: none"> Will be finalised by mid-October 2002 	<ul style="list-style-type: none"> BOTAŞ
Shipping risk	This task comprises a hazard identification of events that can lead to spill of cargo or bunkers, a frequency assessment of the identified hazards, assessment of spill consequences (eg spill size, rate and duration)	<ul style="list-style-type: none"> September - October 2002 	<ul style="list-style-type: none"> BOTAŞ
Oil Spill Response Planning	The oil spill planning will be carried out as defined in the OSRP framework (Appendix C6 of EIA)	<ul style="list-style-type: none"> The schedule is given in OSRP Framework 	<ul style="list-style-type: none"> BOTAŞ
Environmental Appraisal of corridors not yet defined in Detailed Engineering	An Environmental Appraisal will be undertaken of the various utility and logistics corridors for which alignment is not yet adequately developed for assessment in the EIA (gas supply to pump stations, water supply to BTC Marine Terminal and AGIs, power supply to AGIs, certain access roads to BVs).	<ul style="list-style-type: none"> Upon completion of Detailed Engineering but prior to commencement of work on the corridors of concern. 	<ul style="list-style-type: none"> BOTAŞ

Appendix C10: Aggregates Management Plan (AMP)

1 BACKGROUND

1.1 INTRODUCTION

The Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC) Project aims to transport 50 MTA (approximately 1 000 000 barrels per day) of crude oil from Azerbaijan to Turkey, via Georgia. The proposed BTC will originate at the existing Sangachal Terminal near Baku in Azerbaijan and will be approximately 1760km in length (excluding the estimated 6km from the tank farm to the jetty at the BTC Marine Terminal) stretching from Turgozu on the Georgian-Turkish border to Ceyhan on the Gulf of Iskenderun. A number of associated facilities will be constructed along this pipeline route, including pumping stations, a pressure reduction station, control valves and stockyards.

The construction of the pipeline, the above ground installations (AGIs), the Marine Terminal and associated infrastructure will require a substantial amount of aggregate material.

For the purpose of this Plan, the term ‘aggregate’ is defined as *a mass or body of rock particles, mineral grains, or any of several hard, inert materials, such as sand, gravel, slag or crushed stone, used for mixing with a cementing or bituminous material to form concrete, mortar, or plaster, or used alone as in ballast or graded fill* (The American Geological Institute, 1984).

Typically, the extraction of these minerals is derived from the following sources:

- borrow pits (sand and gravel deposits);
- debris;
- quarries;
- riverbeds.

Mining aggregates from these sources may present a range of potential environmental risks. These include:

- impacts to surface water and groundwater from waste oils, etc;
- noise and vibration;
- impacts to air quality from dust;
- visual impacts;
- impacts to biodiversity and sensitive habitats;
- impacts to archaeological sites and cultural heritage.

The BTC Project is committed to ensuring that the mining of aggregates for the Project is undertaken in a manner that minimises environmental risks and which is open to managerial and technical scrutiny. This commitment will be realised through the identification, prior to Construction, of the location of aggregate sources, the quantities of aggregate material that will be required, and the measures that will be taken to effectively minimize the potential risks of aggregate extraction and transportation.

The management of this process will be implemented under the requirements of an Aggregates Management Plan or AMP prepared by the Contractor. The Contractor’s AMP will have to show full compliance with the requirements of this document, the BTC Project AMP.

1.2 SCOPE AND PURPOSE OF THE PLAN

This Aggregates Management Plan (AMP) identifies the BTC estimated requirements for aggregates; outlines the existing capacity in Turkey to provide aggregates for the Project; and identifies the potential impacts of aggregate sourcing and recommends appropriate measures to mitigate them.

The Contractor shall use the AMP as the basis for preparing a detailed AMP to identify the actual quantity of aggregates needed per Contract, and will comply with the specific measures that will be used to mitigate any predicted impacts.

The Contractor's AMP shall include detailed procedures for the management and mitigation of the potential impacts of aggregate extraction and transportation. The Contractor shall develop and submit:

- procedures within 30 days of the start of the construction phase; and
- detailed project-specific procedures that specify how the requirements of their AMP will be implemented to the satisfaction of BOTAŞ and the appropriate national authorities 12 weeks prior to the clearance of the RoW.

The Contractor shall regularly update their AMP as the construction method is developed and detailed aggregate requirements are identified.

The Contractor shall consult with the relevant government agencies to identify where project plans can optimise existing aggregate sources, ie licensed quarries and borrow pits. Where no aggregate extraction operations exist that meet the needs of the Contractor, the Contractor shall consult with the relevant government agencies to identify the procedures associated with the establishment of new aggregate extraction operations. Section 2.3.1 outlines the approval process for applying for a permit to open up new quarries.

As part of the AMP, the Contractor will:

- indicate the amount of aggregate materials needed and, prior to the onset of construction activities, identify potential sources of aggregates;
- identify those responsible for carrying out and managing the procedures;
- reference the procedures and activities the Contractor will develop and implement;
- identify the access routes that will be used with the estimated numbers of traffic movements, speeds and times of travel to transport aggregate materials to the site;
- justify where a route has to pass through residential areas and the measures that will be used to ensure the safety of the community and minimise the nuisance impact of traffic movements.

1.3 RELATIONSHIPS TO OTHER PLANS AND DOCUMENTS

This AMP has been prepared in compliance with the specific provisions contained within a number of management plans prepared for the BTC and attached within Appendix C of the EIA Report:

- Environmental Management and Monitoring Plan (EMMP);
- the Cultural Heritage Management Plan (CHMP);
- the Traffic Management Plan (TMP);
- the Waste Management Plan (WMP).

The provisions of the EMMP have been incorporated into the AMP with regard to mitigation and monitoring of environmental impacts associated with the extraction of aggregates and management of proposed quarries, restoration of the site and compliance with the requirements of the BTC Project Environmental Impact Assessment (EIA), World Bank best practices and Turkish environmental regulations.

The AMP has also incorporated provisions under the CHMP to consider the possible chance finds of archaeological ruins or artefacts from the extraction works associated with the establishment of a new quarry.

To address the risks associated with the movement of aggregates to and from the Project site, the AMP has incorporated provisions outlined in the TMP.

To address the predicted waste outputs associated with the extraction and transportation of the aggregates, the AMP has incorporated provisions outline in the WMP.

This AMP should be read in conjunction with the Environmental Specifications, (Section 6.4) ITT EPC Documentation.

1.4 STRUCTURE OF THE AMP

The remainder of this AMP identifies:

- relevant mining and quarry regulations and standards (Section 2);
- BTC aggregate requirements and existing capacity for aggregate sourcing in the country (Section 3);
- the potential impacts of aggregate sourcing and use (Section 4);
- the appropriate measures and procedures for mitigating the impacts (Section 5).

1.5 ABBREVIATIONS

Abbreviations used in this document are given below:

BOTAŞ	Boru Hatlari ile Petrol Tasima A.S.
BP	bp (formerly known as British Petroleum)
BTC	Baku-Tbilisi-Ceyhan Crude Oil Pipeline
BVS	Block Valve Station
CHMP	Cultural Heritage Management Plan
DSA	Designated State Authority
DSI	General Directorate of State Hydraulic Works
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EU	European Union

HGA	Host Government Agreement
HSE	Health, Safety and Environmental Protection
IPT1	Pressure Reduction Station
IVT	Isolation Valve Stations
PPP	Pollution Prevention Plan
PT1	the First Intermediate Pump Station
PT2	the Second Intermediate Pump Station
PT3	the Third Intermediate Pump Station
PT4	the Fourth Intermediate Pump Station
RoW	Right of Way (along pipeline route)
SSK	Social Insurance Organization
TEDAŞ	Turkish Electricity Distribution Corporation
TMP	Traffic Management Plan
WMP	Waste Management Plan

1.6 DEFINITIONS

Definitions and abbreviations used for this project in general are defined in the Specification for Product, Environment and Utility Data (ILF-SPC-ENG-GEN-001).

Definitions used in this document are given below.

<i>Emergency Plan</i>	A plan for dealing with any accident or emergency that documents on-site and off-site procedures to mitigate risk and damage.
<i>Pipeline Operator</i>	Means one or more Persons appointed or selected by the BTC Co or their Affiliates to implement, manage, coordinate and/or conduct for or on behalf of the BTC Co or their Affiliates all or any portion of the day-to-day Project activities including serving as an operator of all or any portion of the Facilities, whether as an agent for or independent contractor to the BTC Co or their Affiliates and any successors or permitted assignees of any such Person.
<i>Project</i>	Realisation of the Turkish Facilities of the BTC P/L.
<i>Turnkey Contractor</i>	BOTAŞ
<i>Aggregate</i>	Defined as a mass or body of rock particles, mineral grains, or any of several hard, inert materials, such as sand, gravel, slag or crushed stone, used for mixing with a cementing or bituminous material to form concrete, mortar, or plaster, or used alone as in railroad, ballast or graded fill.
<i>Aggregate Source</i>	Any licensed quarry, riverbed (excluding active riverbeds), or borrow pit that will be used as a source of aggregates during the construction of the BTC Pipeline and/or BTC Marine Terminal.

2 APPLICABLE POLICIES AND STANDARDS

2.1 GENERAL

The project is being developed in accordance with International Financial Institution policies and guidelines and Applicable Turkish Law. The policies of the following institutions are included in the requirements of the Project:

- International Finance Corporation (IFC), part of the World Bank Group;
- Export-Import Credit Agency of the United States (Ex-Im);
- Overseas Private Investment Corporation (OPIC);
- European Bank for Reconstruction and Development (EBRD).

2.2 BOTAŞ ENVIRONMENTAL POLICIES

A set of policies has also been established for the execution of all work undertaken by, on behalf of, the BTC Project Directorate. For details, Contractor shall refer to Sections 3.2 and 3.3 of the Environmental Management and Monitoring Plan (EIA Appendix C1).

- ensure a commitment to the continuous improvement of the Environmental Management System where possible.

All BOTAŞ BTC Project personnel and the Contractors' personnel shall be individually and collectively responsible for adhering to, and effective application of, the policies and principles in the environmental policy statement.

2.2.1 Environmental, health and safety requirements

The Contractor shall adhere to the Health and Safety requirements set out in the Host Government Agreement (HGA) Article 13.

2.3 MINING REGULATIONS

Contractors shall comply with Turkish, European Union (EU), and World Bank standards with regard to quarry establishment and operation. Where Turkish, EU, and World Bank standards differ, the stricter standard must be applied.

2.3.1 Turkish regulations and standards

The main Turkish legislative instrument relevant to the mining of aggregates is the 'Mine Law' which is numbered 3213 and dated 4th June 1985 (amended on 15th June 2001) and the 'Quarries Regulation' dated 6th June 1901, which an appendix dated 7th February 1914.

2.3.2 European Union legislation

With regard to European Union (EU) legislation, the activities of the mining industry are governed by EU Directives on waste, water, and air quality and the nature conservation Directives on Birds and Habitats, and land access. The Directive on Environmental Impact Assessment (EIA) covers open-pit mining and quarries, where the surface of the site exceeds 25 hectares.

Directive 75/442/EEC (dated June 15th, 1975) on waste as amended by Directive 91/156/EEC (dated March 18th, 1991) applies to waste resulting from prospecting, extraction, treatment and storage of mineral resources and the working of quarries, since the latter are so far not covered by other Community legislation.

In terms of Health and Safety, the Council Directive 92/104/EEC (dated December 3rd, 1992) is the directive which outlines the minimum requirements for improving the health and safety of workers in surface and underground mineral-extracting industries and lays down specific requirements of the industry.

2.3.3 World Bank and IFC guidelines

The World Bank *Pollution Prevention and Abatement Handbook* (1998) contains detailed guidelines regarding mine development, operation and closure phases.¹ The guidelines focus on the measures needed to ensure good environmental performance in mining. The Handbook's *Emissions Guidelines* are designed to protect human health, reduce discharge of pollutants into the environment, promote the use of commercially proven and cost-effective technologies, and promote good industrial and environmental management practices.

These guidelines should be followed except where they may conflict with EU or Turkish standards and legislation.

2.3.4 Quarry establishment and operation

The Quarries Regulation sets out the requirements for obtaining a licence to establish and use quarries in Turkey.

2.3.4.1 Application requirements

The Special Provincial Administration through Governorships is the authority responsible for licensing applications. In order to apply for the permit, the Contractor must submit an application with 1/5000 scale drawings of the quarry, including coordinates (seven copies) to the Directorate of National Estate in the province or the Directorate of Assets in the district for the allocation or rental of the quarry.

In addition, the Contractor will also be required to submit to the Special Provincial Administration proof either of:

- an *Environmental Impacts Assessment not Required* decision from the MoE if the preliminary EIA research for the proposed quarry indicated that no significant impacts were anticipated; or
- an *Environmental Impacts Assessment Required* decision from the MoE along with the approved EIA, if the preliminary EIA research for the proposed quarry indicated that significant impacts were anticipated.

Although the permitting process acknowledges the need to determine whether environmental impacts are significant or not, significance criteria have not been clearly defined within the quarry permitting procedures.

¹ World Bank. *Base Metal and Iron Ore Mining*. Pollution Prevention and Abatement Handbook. July 1998.

It should be noted that the application for the permit is likely to take up to 30 days to process. Section No. 7.3 of the HGA acknowledges that under extraordinary circumstances the granting of a permit may take up to 60 days.

2.3.4.2 Approval process

The approval process for a quarry licence involves several stages.

Stage 1: Applications are submitted to the Directorate of National Estate in the province or the Directorate of Assets in the district.

Stage 2: For allocation or obtaining the licence, an investigation is carried out for the quarry site.

Stage 3: Land will be rented from the relevant Directorate of National Estate or Directorate of Assets.

Stage 4: Preliminary EIA research will be conducted and the Environmental Impacts Assessment not Required decision from the MoE will be obtained.

Stage 5: If an Environmental Impacts Assessment Required decision is given by the MoE for preliminary EIA research, then an EIA report for the quarry will be prepared. The Ministry of Environment is the authority responsible for approving the EIA Report.

Stage 6: The licence application will be submitted to the governorship with the necessary application requirements. Once the application has been reviewed, the licence can then be approved.

In addition to the quarry licence, the following permits shall be obtained:

- permits and licences for Non-Hygienic Establishments (Determination of Health Protection Strip, Site Selection permit, Facility permit and Establishment permit from Ministry of Health, and Pre-emission/Emission permit from Ministry of Environment);
- storage permit from Ministry of Environment;
- if required, Land Use permit from General Directorate of Rural Affairs or Land owner, Approval of Ministry of Culture;
- Announcing Workplace to Social Insurance Organization (SSK), Ministry of Labour and Social Security and to Department of Tax;
- Building Construction permit from Ministry of Public Works and Settlement or Municipality, Electricity Licence from TEDAŞ;
- Permit for use of Water from DSİ or Municipality;
- Permit for Storage of Explosive Materials from Ministry of Interior and Ministry of Public Works and Settlement;
- Permit for Purchase and Usage of Explosive Materials from Ministry of Interior and other related permits would be necessary.

In addition to the permits and licensed indicated above, the Contractor shall comply with all other relevant permitting requirements that may be applicable or that are introduced prior to the establishment of the aggregate extraction operations.

3 BTC P/L AGGREGATE REQUIREMENTS

3.1 INTRODUCTION

The recently completed Detailed Engineering Designs estimate that the Project will require approximately 5.8 million m³ in aggregate materials for the construction of the:

- fault crossings;
- river protection barriers and erosion ditches;
- temporary and permanent access roads;
- foundation and access roads to the Pump Stations (PT1, PT2, PT3, PT4) and the Pressure Reduction Station (IPT1);
- sand bedding and fill around the pipe.

The breakdown of aggregate requirements is illustrated in Table 3.1.

3.2 IDENTIFICATION OF AGGREGATE SOURCES

Due to the substantial amount of aggregate material that will be required for the construction of the BTC Project, a review of the existing capacity for aggregate sourcing in Turkey was carried out.

The review indicates that there are a substantial number of licensed and active quarries around the country. It is also anticipated that aggregate material will be acquired from debris. Riverbeds will not be used as a source of aggregates. (See Note in Table 3.1)

Annex A of the AMP provides a list of the licensed quarries in the vicinity of the BTC P/L.

The existing capacity within the country is adequate to cater to the aggregate requirements of the BTC Project. However, there may be cases in which the Contractor(s) will decide not to use an existing quarry but to open up a new one. The application and approval procedures for acquiring a quarry license are outlined in the previous Section 2.3.1.

Table 3.1 Aggregate Requirements for BTC Pipeline

	Pipeline Facility	Type of Material	Source of Material	Quantity (m ³)
LOT A	Access Roads for BVSs	Gravel	BP, D, RD, SQ	5,100
	Temporary and Permanent Access Roads	Gravel	BP, D, RD, SQ	116,000
	Fault Crossing	Round sand/gravel mix (No broken material)	RD	
	River Protection & Erosion Ditches	Stones and Rip-Rap	D, SQ	20,000
	Sand Bedding & Fill around the pipe	Sand	RD, SQ	785,000
	TOTAL			926,100
LOT B	Access Roads for BVSs	Gravel	BP, D, RD, SQ	7,050

**BTC PROJECT EIA
TURKEY**

	Temporary and Permanent Access Roads	Gravel	BP, D, RD, SQ	306,500
	Fault Crossing	Round sand/gravel mix (No broken material)	RD	44,570
	River Protection & Erosion Ditches	Stones and Rip-Rap	D, SQ	40,300
	Sand Bedding & Fill around the pipe	Sand	RD, SQ	2,098,400
	TOTAL =			2,496,820
LOT C	Access Roads for BVSSs	Gravel	BP, D, RD, SQ	4,040
	Temporary and Permanent Access Roads	Gravel	BP, D, RD, SQ	169,400
	Fault Crossing	Round sand/gravel mix (No broken material)	RD	13,460
	River Protection & Erosion Ditches	Stones and Rip-Rap	D, SQ	30,620
	Sand Bedding & Fill around the pipe	Sand	RD, SQ	1,940,570
	TOTAL =			2,158,090
PT1	Foundation, access roads	Gravel	BP, D, RD, SQ	23,000
PT2	Foundation, access roads	Gravel	BP, D, RD, SQ	45,000
PT3	Foundation, access roads	Gravel	BP, D, RD, SQ	29,000
PT4	Foundation, access roads	Gravel	BP, D, RD, SQ	23,000
IPT1	Foundation, access roads	Gravel	BP, D, RD, SQ	8,670
CET	Foundation, access roads, jetty	Gravel	BP, D, RD, SQ	214,030

Abbreviations: BP: Borrow Pit D: Debris SQ: Stone Quarry (Crushed)
RD: River Deposit

Note: RD (River Deposit) in this context does not refer to material that is won through the excavation of existing river beds. RD is the material that has been carried and deposited over time in or adjacent to the river location. Some of the surplus subsoil or rock that cannot be returned to excavated areas during construction can also be considered as a source of aggregate.

4 POTENTIAL IMPACTS OF AGGREGATE SOURCING

4.1 BACKGROUND

Quarrying may give rise to a range of environmental impacts. In the long term, significant changes to landform and landscape are likely to occur, whilst in the shorter term significant impacts include the generation of dust and the impact of noise and vibrations on nearby communities due to excavation and blasting.

This section outlines the potential impacts to which aggregate sourcing can give rise. Potential impacts can be divided into short-term impacts (those which are limited to the construction period) and long-term impacts (those which occur as part of construction and continue on a long-term scale, even after closure of the quarry).

4.2 SHORT TERM IMPACTS

The potential short-term impacts of aggregate sourcing are anticipated mainly during the construction of the BTC Pipeline, terminal, and associated facilities. Short-term potential impacts include the following:

- noise disturbance (ground vibration and air overpressure);
- degradation of air quality due to airborne dust from road traffic, blasting, and excavation;
- visual intrusions (location of fixed plants and buildings) – smoke stacks may be visually intrusive;
- temporary increases in traffic flows on the road network during transportation of aggregate materials – this may lead to potential delays and congestion on the network;
- disruption of groundwater movement and of drainage systems and surface waters;
- water pollution from potential spills, from accumulated contaminants on site, and from stockpiles, spoil heaps or debris tailings;
- uncontrolled disposal of quarry waste;
- modification of local topography;
- disturbance of soil and vegetation;
- impacts to cultural heritage or archaeological and religious sites.

4.3 LONG TERM IMPACTS

The potential long-term impacts of aggregate sourcing during the construction and operation of the BTC and associated facilities include:

- visual impacts and landscape treatment (visual scars through bad landscape management);
- impacts to biodiversity (encroaching upon sensitive habitats, nature conservation or protected areas etc);

- the loss of vegetative cover due to the construction of access roads and pathways – this can lead to erosion;
- pollution to rivers, streams, and estuaries from run-off (sediment in run-off can create deposition, impact habitats, abrade flora and fauna, and lead to increased erosion of stream banks).

5 AGGREGATE MANAGEMENT MEASURES AND PROCEDURES

5.1 KEY ISSUES

5.1.1 Overview

Quarry working and reclamation, by its very nature, is site specific and there are no international standards applicable. However, there are a number of best practice procedures that will ensure good management while also ensuring optimum use of the aggregate resource.

The key potential issues that should be addressed in terms of mitigation include the following:

- noise disturbances;
- air quality;
- archaeology;
- impacts to biodiversity and environmentally sensitive areas;
- landscape planning to reduce visual impacts;
- water;
- waste management;
- temporary traffic control and management;
- erosion and sediment control;
- land ownership and land use;
- livelihood, infrastructure.

The following section provides the recommended best practice procedures needed to ensure adequate aggregate management for the BTC Project. The Contractor will apply these best practice procedures in preparing the Contract-specific AMP along with the mitigation measures outlined in Appendix C1 (EMMP) and in compliance with the standards outlined in Appendix C4 (PPP).

5.1.2 Noise disturbances

Noise from quarrying and mining can be a major cause of disturbance to the local communities. However, impacts of noise can be reduced at the outset through appropriate mitigation measures. These include:

- maintenance of an acceptable distance between the operation and noise sensitive land-uses;
- avoidance of severe gradients on haul roads;
- use of conveyors rather than trucks;
- use of acoustic fencing and baffle mounds;
- fitting of silencers on equipment and the use of rubber linings on certain sections of the plant and the maintenance of equipment;
- use of correct stemming and avoiding the use of surface detonating cord where possible to reduce noise impacts related to blasting;
- restrict blasting to permitted hours of operation.

5.1.3 Impacts to air quality

As with noise, dust emissions can be reduced and properly controlled by careful planning and quarry management. Mitigation measures to reduce impacts to the air quality include:

- locate features with dust creating potential, such as stockpiles, away from and downwind of residential properties and other sensitive land-uses;
- apply vehicle speed restrictions on and around the site;
- apply appropriate wheel cleaning facilities;
- dampen haul roads and stockpiles;
- enclose dust generating fixed plant and machinery;
- use fine water sprays and sheeting of lorries;
- prompt re-vegetation or application of sealants and dust suppressants to disturbed areas (including waste and topsoil piles);
- install pollution control devices to all diesel/gasoline powered equipment.

The potential for creating fly rock can also be reduced by avoiding secondary blasting and using screen nets.

The Contractor shall ensure that these mitigation measures are enforced through adequate monitoring on site and through regular supervision and reporting in line with the pollution prevention standards set out under Appendix C4 (PPP).

5.1.4 Archaeology

The likely presence of sites of potential archaeological interest should be identified at the earliest possible opportunity. Moreover, the Project's chance-find procedures should be applied during the excavation works. The Contractor will comply with the procedures set out in Appendix C7 (CHMP) as best practice procedures during the quarrying of aggregates.

5.1.5 Impacts to biodiversity and sensitive habitats

The main impact of surface mining operations on biodiversity is from disturbance to habitats, vegetation removal and land clearance. High dust levels generated in mining operations may affect both aquatic and terrestrial ecosystems, eg by smothering plants. Also, contamination of surface watercourses may occur from leaching. This can affect fish and other aquatic fauna and flora.

The impact of quarrying on biodiversity can be reduced by:

- minimising the amount of land uptake required to undertake the operation, and the amount of vegetation required to be removed;
- leaving a buffer zone between the workings and sensitive habitats and wildlife corridors;
- phased stages in operation to minimize the extent of disturbance at any given time and to optimise the opportunity for site rehabilitation;
- allowing for progressive restoration to minimize the risk of permanent change to the nature conservation interest;
- treatment and control of stormwater run-off prior to discharge into any surface watercourse.
- monitoring of the ecology of the site.

The Contractor shall ensure that mitigation measures are in place prior to the start of the Construction. These measures should be outlined in the Contract-specific AMP.

5.1.6 Visual impacts

Best practice in terms of landscape planning is to ensure that the visual amenity of the surrounding landscape is maintained, and that the site is not visually intrusive.

The most important mitigation in siting a quarry is to find a location that respects existing topography and features of importance such as ridgelines, woodlands, wetland areas, cultural property, and watercourses. This will reduce the potential for the site to later be a scar on the landscape. Siting of the quarry should also be supported by a restoration or reclamation plan. This should be prepared during the development phase of the quarry.

5.1.6.1 Visual intrusion of plants and buildings

In terms of visual intrusions, there are a number of measures that can reduce the visual impact of quarry operations. These include:

- employing a method, phasing and direction of working which takes account of views (local, medium and distant) into the site and is chosen as the least intrusive);
- phase working and progressive restoration to minimize the amount of land being worked at any one time;
- careful design and siting of plants and buildings, location and height of stockpiles and siting of internal haul roads/conveyors;
- screening measures (planting of hedgerows, trees, shrubs etc), constructing earth bunds etc.

5.1.7 Water pollution

Run-off has the potential to pollute surface waters and groundwater sources. Mitigation should ensure that control of run-off from the quarry yard and dewatering of the pit is regulated.

5.1.7.1 Surface water impacts

The primary surface water concerns associated with quarrying are the preservation of riparian vegetation and habitats of nearby streams and estuaries, control of sediment-laden run-off, and prevention of erosion. To address these issues, mitigation measures should include:

- storing fuel and oil in impervious bunds;
- prompt clean up of any spills (refer to Appendix C6, Oil Spill Response Plan);
- provision of secondary containment structures for aboveground tanks that store petroleum products and chemicals;
- implementation of sediment, erosion, and storm water flow control measures;
- schedule extraction operations so as to avoid periods of high rainfall;
- allowing internal drainage to settle in settlement lagoons prior to discharge;
- proper orientation and maintenance of the sedimentation ponds.

5.1.7.2 Groundwater impacts

Groundwater impacts are generally associated with the soils in the vicinity of the quarry, the underlying geology, the amount of rainfall, the depth of the pit, the proximity of the pit to wells in the area, and the blasting practices.

Mitigation measures to address these impacts should include:

- operation and maintenance of equipment in a manner that prevents fuels, lubricants, coolants, hydraulic fluid, or petroleum products from being discharged onto the ground or into surface waters;
- monthly monitoring of effluent and limitation of effluent constituents for the following: pH, turbidity, total suspended solids, floating solids or visible foam;
- maintenance of monitoring records and sampling data;
- regular checks of water protection facilities to ensure that they are functioning properly;
- water features survey and sustainability study.

5.1.8 Waste management

The uncontrolled disposal of quarry waste can have a major impact on the environment. Generally, tipping areas should be well screened from public view and should not pose a threat to surface or underground water supplies and should not provide a nuisance to local residents, or other sensitive receivers, by way of blown dust or grit.

Moreover, there should be provision of appropriate handling and storage of hazardous materials (ie chemicals and fuels). Collection of and recycling of waste oils and lubricants is recommended, and prevention measures for potential chemical spills (eg ammonium nitrate, if used in blasting operations) should be applied on-site.

The Contractor shall endorse best practice procedures for waste management as outlined in Appendix C3 (WMP).

5.1.9 Temporary traffic control and management

Quarry operations can lead to increased traffic due to the transporting of aggregate materials to and from the Project site. The Contractor shall comply with the mitigation measures outlined in Appendix C5 (TMP) and will be responsible for preparing their own TMP once the location of aggregate source(s) have been identified, and the vehicle movement requirements have been assessed.

The assessment of vehicle requirements for aggregate transportation should be included in the overall Contract-specific TMP to be submitted by the Contractor for BOTAS approval.

5.1.10 Erosion and sediment control

Quarry operations can lead to erosion if not properly mitigated. The main forms of erosion associated with quarrying are splash, sheet, rill, gully on-site, and stream and channel off-site.

Another issue related to quarrying is the production of sediment. Sediment, when transported through run-off, to nearby watercourses, can impact the water quality and act as a pollutant. High levels of sediment deposition can also lead to increased erosion of stream banks and can cause flooding.

The Contractor shall prepare an Erosion and Sediment Control Plan as outlined below. The plan should outline the mitigation measures needed to address the potential erosion and sediment deposition impacts related to quarrying.

The Plan should include measures or methods appropriate to the situation for intercepting, diverting, or otherwise reducing stormwater run-off from exposed soil surfaces, debris tailings, and waste rock dumps. Measures may include:

- ensuring that all disturbed areas of the site will be vegetated or otherwise permanently stabilized;
- structural measures such as silt fence, slope drains, etc will be removed from site;
- sediment control structures (eg detention and retention basins) should be provided to intercept and treat surface run-off prior to discharge;
- all permanent surface water facilities including catch basins, pipes etc will be cleaned;
- any off-site catch basins that required protection will also be cleaned;
- if only the infrastructure of the site has been developed such as short plats and subdivisions, with building construction to occur under a different permit, then the sensitive area buffers, tracts, and setbacks will be clearly marked.

The Erosion and Sediment Control Plan should include the following information.

- History of the site;
- Future of the quarry;
- A locality map;
- A site plan illustrating:
 - the extent of the quarrying;
 - type of potential erosion;
 - sediment control measures;
 - erosion control measures;
 - catchment boundaries;
 - off-site sources of runoff;
 - stockpile areas;
- Rehabilitation of worked out areas;
- Disposal of overburden;
- Treatment of contaminated runoff;
- Construction schedule/staged activities;
- Monitoring and maintenance schedules.

The Contractor shall gain approval from BOTAS for their Erosion and Sediment Control Plan and for their AMP. The Contractor's procedures shall be based on, but not limited to, the provisions of this AMP.

5.2 DECOMMISSIONING OF SITE

Quarrying is a relatively short-term activity that affects land for a temporary period.

Decommissioning of a quarry site would involve the reclamation and rehabilitation of the site through appropriate environmental planning. The term *reclamation* describes the general process whereby the land surface should be returned to either its original conditions or to some form of beneficial use.

The goal is to restore the site at the earliest opportunity to a state that is capable of supporting an acceptable after-use once extraction has ceased.

The reclamation plan should be defined for quarrying sites from the outset of exploitation activities and an integrated coordination should be established with all the quarrying activities.

The rehabilitation programme should reflect three main points:

- Environmental protection and all existing regulations applicable locally and internationally
- Safety
- The views of all stakeholders (eg neighbours, local authorities, and associations) to define the projects most appropriate use after closure, that way, meeting local needs

The reclamation plan must describe the rehabilitation activities that will take place on site before, during, and after quarrying operations. Overall, reclamation activities should positively enhance the site and respect the character and diversity of the landscape in which it is set. Quarry reclamation plans should incorporate the following issues.

- Reclamation of open pit areas and abandoned campsites.
- Return land to conditions of supporting prior land use, equivalent uses, or other acceptable uses.
- Elimination of significant adverse effects on adjacent water courses.
- Use of overburden for backfill and of topsoil for reclamation to the extent feasible.
- When local topography has been disturbed, the original contours should be restored, preferably to grades 2:1 or less. Contouring of slopes will minimize erosion and runoff.
- Erosion-prone areas may require re-vegetation to limit future problems. Until new growth is established, using a mulch to stabilize the bare ground can control erosion. One popular method is hydroseeding.
- Re-vegetation should consist of native species of vegetation and of other species that are environmentally acceptable.
- Reclamation activities should be monitored annually and updated to incorporate technical developments and new opportunities for final use. This will have the purpose of achieving a sustainable after-use.

Quarry sites can be developed into natural landscapes through creation of habitats and wetlands conducive to the development of specific flora and fauna, landscaping of workfaces; recultivation of soil in heavily farmed areas; reforestation with woodland or ornamental species; development of recreational areas; and infilling with inert and putrescible wastes.

The ultimate goal is to establish an acceptable long-term use or uses appropriate to the particular locality where the quarry is located.

BIBLIOGRAPHY

Bay of Plenty Regional Council. 2001. Land Use Consents: Quarry Guidelines. Bay of Plenty, New Zealand. <http://www.boprc.govt.nz/>

Commission of the European Communities. Promoting Sustainable Development in the EU Non-Energy Extractive Industry. Communication from the Commission. May 3, 2000.

Commission of the European Communities. Safe Operation of Mining Activities: A Follow Up to Recent Mining Accidents. Communication from the Commission. October 23, 2000.

EC Economic and Development Cooperation Procedures for Environmental Integration. Mineral Exploration, Extraction and Transport. Sector Guide. http://europa.eu.int/comm/development/sector/environment/env_integ/env_integration_manual/

Lancashire County Council. 2001. Lancashire Minerals and Waste Local Plan. Chapter 17: Ameliorating Impacts of Sites. Lancashire, England.

Virginia Division of Mineral Resources. 2002. Aggregate and Crushed Stone. Department of Mines, Minerals and Energy, Charlottesville. <http://www.mme.state.va.us/>

Warhurst, Alyson. 1994. Environmental Degradation from Mining and Mineral Processing in Developing Countries: Corporate Responses and National Policies. Paris Organization for Economic Co-operation and Development.

World Bank. 1999. Pollution Prevention and Abatement: Base Metal and Iron Ore Mining. Environment Department, Washington DC. <http://www.ifc.org/enviro/enviro/pollution/guidelines.htm>

World Bank. 1998. Pollution Prevention and Abatement Handbook. Environment Department, Washington DC. <http://www.ifc.org/enviro/enviro/pollution/guidelines.htm>

ANNEX A: IDENTIFICATION OF EXISTING QUARRIES ALONG THE BTC P/L ROUTE

QUARRIES IN ARDAHAN

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Ar-1	320450	4545100	ARDAHAN/Doseli	Stone Quarry		100,000	F49-c4	KGM 12.RD/Erzurum
Ar-2	320450	4540450	ARDAHAN/Haskoy	Stone Quarry		100,000	G49-b1	KGM 12.RD/Erzurum
Ar-3	290130	4548200	ARDAHAN/Yalnizcam	River Deposit		142,500	F49-d4	KGM 12.RD/Erzurum
Ar-4	358150	4548750	CILDIR/Dogruyol	Basalt		90,000	F50-c4	KGM 12.RD/Erzurum
Ar-5	321500	4579750	DAMAL/Obrucak	Stone Quarry		25,000	F49-b4	KGM 12.RD/Erzurum
Ar-6	315900	4585000	DAMAL/Seyitoren	Andesite		15,000	F49-b1	KGM 12.RD/Erzurum
Ar-7	299200	4530750	GOLE/Yayla Evleri	Basalt		392,200	G49-a1	KGM 12.RD/Erzurum
Ar-8	319900	4565950	HANAK District	Stone Quarry		35,000	F49-c1	KGM 12.RD/Erzurum
Ar-9	319750	4572300	HANAK/Avclar	Terrace		220,000	F49-b4	KGM 12.RD/Erzurum
Ar-10	305600	4590400	POSOF/Asikzulali	Debris		60,000	F49-a2	KGM 12.RD/Erzurum
Ar-11	309150	4595600	POSOF/Asmakonagi	Stone Quarry		40,000	F49-a2	KGM 12.RD/Erzurum
Ar-12			Tepeler Village	Stone Quarry		120,000		KGM 12.RD/Erzurum
			TOTAL :			1,339,700		

QUARRIES IN KARS

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Kr-1	379100	4510200	AKYAKA/Sahnalar	Ballast	8,000	8,000	G51-d1	TCDD 4.RD/Erzurum
Kr-2	360000	4447750	CILDIR/Dogruyol	Basalt	300,000	90,000	F50-c4	KGM 12.RD/Erzurum
Kr-3	364500	4472750	DIGOR/Karayokus	River Deposit	12,000	12,000	H50-b1	KGM 12.RD/Erzurum
Kr-4	353750	4440000	KAGIZMAN/Akcaay	Terrace	50,000	32,500	H50-c4	KGM 12.RD/Erzurum
Kr-5	353250	4441000	KAGIZMAN/Akcaay	River Deposit	15,000	15,000	H50-c4	KGM 12.RD/Erzurum
Kr-6	354750	4446000	KAGIZMAN/Akcaay	River Deposit	20,000	20,000	H50-c1	KGM 12.RD/Erzurum
Kr-7	353250	4435250	KAGIZMAN/Duranlar	Debris	135,000	40,000	H50-c4	KGM 12.RD/Erzurum
Kr-8	357700	4435300	KAGIZMAN/Karacaoren	Debris	28,500	28,500	H50-c4	KGM 12.RD/Erzurum
Kr-9	327250	4495500	KARS/Bozkale	Stone Quarry	30,000	30,000	G49-c3	KHGM City Dir./Kars
Kr-10	331500	4488000	KARS/Kumbetli	Stone Quarry	241,000	241,000	G50-d4	Cement Factory/Kars
TOTAL :					839,500	517,000		

QUARRIES IN ERZURUM

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Eu-1	631000	4430138	ASKALE/Kopdagi	Limestone	600,000	390,625	H45-d4	KGM 12.RD/Erzurum
Eu-2	700500	4426250	ERZURUM/Mudurge (Cayirtepe)	Volcanic Tuff	200,000	65,100	I46-b1	KGM 12.RD/Erzurum
Eu-3	700500	4425500	ERZURUM/Mudurge (Cayirtepe)	Borrow Pit	800,000	99,100	I46-b1	KGM 12.RD/Erzurum
Eu-4	696400	4406900	ERZURUM/Nihak Bridge	Basalt	4,000,000	37,000	I46-b4	KGM 12.RD/Erzurum
Eu-5	705600	4424600	ERZURUM/Sivisli-Laleli	Basalt	1,000,000	60,225	I46-b2	KGM 12.RD/Erzurum
Eu-6	746000	4363000	HINIS/Binpinar	Stone Quarry	500,000	146,000	J47-b1	KGM 12.RD/Erzurum
Eu-7	665500	4439000	ILICA/Eskipolat (Serceme)	Limestone	250,000	40,000	H45-c3	KGM 12.RD/Erzurum
Eu-8	667000	4453800	ILICA/Toprakkale	Limestone	200,000	37,800	H45-c2	KGM 12.RD/Erzurum
Eu-9	687100	4512200	SPİR/Camilikaya	Basalt	200,000	20,000	G46-d2	KGM 12.RD/Erzurum
Eu-10	652500	4470000	SPİR/Golyurt Dagi	Limestone	high	444,000	H45-b4	KGM 12.RD/Erzurum
Eu-11	657000	4466000	SPİR/Golyurt-Leylek Pass	Limestone	1,000,000	775,000	H45-b4	KGM 12.RD/Erzurum
Eu-12	656200	4466000	SPİR/Kirik-Golyurt	Limestone	50,000	106,875	H45-b4	KGM 12.RD/Erzurum
Eu-13	664500	4482300	SPİR/Yukarıkan	Borrow Pit	30,000	41,500	H45-b2	KGM 12.RD/Erzurum
Eu-14	756750	4361000	KARACOBAN/Kirimkaya-Guzelbaba	Stone Quarry	1,000,000	84,000	J47-b3	KGM 12.RD/Erzurum
Eu-15	754200	4387000	KARAYAZI/Cavuskoy	Borrow Pit	30,000	36,400	I47-c3	KGM 12.RD/Erzurum
Eu-16	752300	4391900	KARAYAZI/Incesu	Basalt	200,000	25,000	I47-c2	KGM 12.RD/Erzurum
Eu-17	752750	4403000	KARAYAZI/Teco	Limestone	50,000	275,000	I47-c2	KGM 12.RD/Erzurum
Eu-18	747500	4429500	KOPRUKOY/Cobandede	Andesit	500,000	45,000	I47-b2	KGM 12.RD/Erzurum
Eu-19	745200	4456000	NARMAN/Yazici	Basalt	200,000	50,000	H47-c2	KGM 12.RD/Erzurum
Eu-20	744200	4445250	PASINLER/Cermiksu-Hakkaya	Borrow Pit	50,000	50,000	H47-c1	KGM 12.RD/Erzurum
Eu-21	740800	4438200	PASINLER/Kiziloren (Kizilveren)	Basalt	200,000	75,000	H47-c4	KGM 12.RD/Erzurum
Eu-22	744500	4442800	PASINLER/Ziyaretler	Borrow Pit	50,000	50,000	H47-c4	KGM 12.RD/Erzurum
Eu-23	717156	4475573	TORTUM/Aksukapi-Ahpsor	Limestone	200,000	165,300	H47-a1	KGM 12.RD/Erzurum

BTC PROJECT EIA
TURKEY

Eu-24	712700	4483500	TORTUM/Bagbasi-Kirecli Bridge	Stone Quarry	100,000	60,000	H47-a1	KGM 12.RD/Erzurum
Eu-25	693000	4484000	TORTUM/Bagbasi-Konaklitas	Stone Quarry	500,000	20,000	H46-b1	KGM 12.RD/Erzurum
Eu-26	711000	4486000	TORTUM/Bagbasi-Pehivanli	Stone Quarry	200,000	30,000	H46-b2	KGM 12.RD/Erzurum
TOTAL :					12,110,000	3,228,925		

QUARRIES IN ERZINCAN

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Ei-1	485600	4455400	ALUCRA/Arda	Limestone	350,000	135,000	H41-c1	KGM 16.RD/Sivas
Ei-2	484200	4441600	CAMOLUK/Pinarli-Sucati	River Deposit	150,000		H41-c4	KGM 16.RD/Sivas
Ei-3	575200	4411500	CAYIRLI/Buyukdere	River Deposit	100,000		I43-b3	KGM 16.RD/Sivas
Ei-4	597600	4401800	CAYIRLI/Gozele	River Deposit	100,000		I44-a3	KGM 16.RD/Sivas
Ei-5	597300	4412000	CAYIRLI/Karasu	River Deposit	100,000		I44-a3	KGM 16.RD/Sivas
Ei-6	548600	4400000	ERZINCAN/B.cakirman	River Deposit	900,000	200,000	I43-d1	KGM 16.RD/Sivas
Ei-7	530200	4402000	ERZINCAN/Bahceli-Catalarmut	Limestone	2,500,000		I42-b4	KGM 16.RD/Sivas
Ei-8	546950	4403650	ERZINCAN/Bugdayli	River Deposit	1,000,000	250,000	I43-a4	KGM 16.RD/Sivas
Ei-9	529300	4408950	ERZINCAN/Cardakli	River Deposit	350,000		I42-b4	KGM 16.RD/Sivas
Ei-10	535800	4397650	ERZINCAN/Cardakli-1	River Deposit	1,500,000		I42-c2	KGM 16.RD/Sivas
Ei-11	535250	4395000	ERZINCAN/Cardakli-2	River Deposit	250,000		I42-c2	KGM 16.RD/Sivas
Ei-12	456950	4367200	ILIC/Dostal-Firat	River Deposit	30,000		J40-b2	Illic Municipality
Ei-13	459300	4367800	ILIC/Dostal-Karabudak	River Deposit	150,000	229,500	J41-a1	KGM 16.RD/Sivas
Ei-14	462900	4376000	ILIC/Kuruca	River Deposit	300,000	100,000	I41-d4	KGM 16.RD/Sivas
Ei-15	462400	4366700	ILIC-Ardiclitepe	Limestone	300,000	60,000	J41-a1	KGM 16.RD/Sivas
Ei-16	452350	4365900	ILIC-Kayacik-Firat	River Deposit	30,000		J40-b2	Illic Municipality
Ei-17	488500	4380300	KEMAH/Bogazici-Firat	River Deposit	100,000	150,000	I41-c4	KGM 16.RD/Sivas
Ei-18	503650	4384600	KEMAH/Komurler	River Deposit	500,000		I42-d4	KGM 16.RD/Sivas
Ei-19	503000	4382800	KEMAH-Hanyeri	Limestone	300,000		I42-d4	KGM 16.RD/Sivas
Ei-20	493000	4380900	KEMAH-Tuzla	Andesite	10,000		I41-c3	KGM 16.RD/Sivas
Ei-21	589400	4418200	OTLUKBELI/Bolukova	River Deposit	10,000		I44-a1	KGM 16.RD/Sivas
Ei-22	593000	4424900	OTLUKBELI/Karadivan	River Deposit	10,000		I44-a1	KGM 16.RD/Sivas
Ei-23	599300	4381400	PULUMUR/Ucdam	River Deposit	400,000	15,000	I44-d3	KGM 16.RD/Sivas

BTC PROJECT EIA
TURKEY

Ei-24	601900	4380500	PULUMUR/Ucdam	Limestone	1,000,000	80,000	I44-d3	KGM 16.RD/Sivas
Ei-25	575000	4383300	PULUMUR-Mutu Bridge-Karasu	River Deposit	40,000	100,000	I43-c4	KGM 16.RD/Sivas
Ei-26	481000	4429700	REFAHIYE/A.sutluce-Kizilcay	River Deposit	300,000		H41-c4	KGM 16.RD/Sivas
Ei-27	503200	4398150	REFAHIYE/Hinzoru	River Deposit	30,000		I42-d1	KGM 16.RD/Sivas
Ei-28	459000	4420000	REFAHIYE/Koroglu Pass	Limestone	500,000		I41-a1	KGM 16.RD/Sivas
Ei-29	477350	4408700	REFAHIYE/Sasilitepe	Limestone	2,000,000	60,000	I41-a3	KGM 16.RD/Sivas
Ei-30	495800	4416300	REFAHIYE/Yurtbasi-Ilgar Creek	River Deposit	300,000		I41-b2	KGM 16.RD/Sivas
Ei-31	601500	4388600	TERCAN/Buklumdere-Karasu	River Deposit	60,000	100,000	I44-d2	KGM 16.RD/Sivas
Ei-32	604000	4412000	TERCAN/Cadirakaya	Limestone	500,000	50,000	I44-a3	KGM 16.RD/Sivas
Ei-33	600000	4388250	TERCAN/Degirmendere	River Deposit	110,000	40,000	I44-d2	KGM 16.RD/Sivas
Ei-34	606700	4398500	TERCAN/Mercan	River Deposit	100,000	22,500	I44-d2	KGM 16.RD/Sivas
Ei-35	550500	4396700	UZUMLU/Bayirbag	River Deposit	250,000		I43-d1	KGM 16.RD/Sivas
Ei-36	570000	4385500	UZUMLU/Birastik-Avcilar	River Deposit	100,000	70,000	I43-c4	KGM 16.RD/Sivas
				TOTAL :	14,730,000			

QUARRIES IN GUMUSHANE

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Gm-1	548975	4469025	G.HANE/Dagteke	Stone Quarry		6,800	H43-a4	DSI 22.RD/Trabzon
Gm-2	557300	4470500	G.HANE/Kale-Hurderesi	Stone Quarry		150,000	H43-a2	KHGM City Dir./G.hane
Gm-3	545900	4430300	KELKIT/A.Ozluce	River Deposit		95,000	H43-d4	KGM 16.RD/Sivas
Gm-4	544800	4430400	KELKIT/A.Ozluce-Mantartasi	Limestone		100,000	H43-d4	KGM 16.RD/Sivas
Gm-5	541500	4441700	KELKIT/Ciftlik	River Deposit		512,500	H42-c3	KGM 16.RD/Sivas
Gm-6	535200	4424000	KELKIT/Orenbel	River Deposit		187,500	I42-b2	KGM 16.RD/Sivas
Gm-7	537300	4448250	KELKIT/Ozen	Stone Quarry		32,333	H42-c2	KGM 10.RD/Trabzon
Gm-8	543200	4433400	KELKIT/Tutenli	River Deposit		60,188	H43-d4	KGM 16.RD/Sivas
Gm-9	539900	4439300	KELKIT/Yenice	River Deposit		268,400	H42-c3	KGM 16.RD/Sivas
Gm-10	535700	4422500	KELKIT/Yeniyol	River Deposit		57,750	I42-b2	KGM 16.RD/Sivas
Gm-11	532400	4416250	KELKIT/Yeniyol	River Deposit		50,000	I42-b2	KGM 16.RD/Sivas
Gm-12	552500	4456900	KOSE/Kusyuvasi	River Deposit		150,607	H43-a4	DSI 22.RD/Trabzon
Gm-13	512650	4500325	KURTUN/Karacukur-Ozkurtun	Stone Quarry		24,920	G42-d2	KGM 10.RD/Trabzon
Gm-14	507301	4453735	SIRAN/Erenkaya-Cerkestarsitepesi	Stone Quarry		41,000	H42-d1	DSI 22.RD/Trabzon
Gm-15	497750	4443050	SIRAN/Pasapinari	Stone Quarry		500,000	H41-c2	KGM 16.RD/Sivas
Gm-16	534685	4485725	TORUL/Ikisu-Magara	Limestone		110,602	G42-c3	KGM 10.RD/Trabzon
Gm-17	530775	4501425	TORUL/Kostere-Savasli	Stone Quarry		37,500	G42-c1	Unye Cement Co.
TOTAL :						2,385,100		

QUARRIES IN SIVAS

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Sv-1	299000	4350700	ALTINYAYLA/Kale-Degirmendere	Stone Quarry		15,000	J37-a3	DSI 19.RD/Sivas
Sv-2	304500	4357500	ALTINYAYLA/Serinyayla-Boztepe	Stone Quarry		75,000	J37-a3	KGM 16.RD/Sivas
Sv-3	425000	4356600	DIVRIGI-Degirmetas	Stone Quarry		150,000	J40-a3	KGM 16.RD/Sivas
Sv-4	423100	4366500	DIVRIGI-Demirdag-Saytepe	Stone Quarry		37,500	J40-a1	KGM 16.RD/Sivas
Sv-5	431850	4340700	DIVRIGI/Bayirli-Kepeztepe	Stone Quarry		15,000	J40-d2	KGM 16.RD/Sivas
Sv-6	432800	4373700	DIVRIGI/Citmek-Karaardic	Stone Quarry		900,000	I40-d3	KGM 16.RD/Sivas
Sv-7	401100	4354900	DIVRIGI/Hobek	Stone Quarry		15,000	J39-b4	KGM 16.RD/Sivas
Sv-8	408300	4347500	DIVRIGI/Karasar-Ciftlik Yaylasi	Stone Quarry		12,000	J39-b3	KGM 16.RD/Sivas
Sv-9	426000	4351100	DIVRIGI/Uzunbag (Karsi)-Kizildag	Stone Quarry		21,000	J40-a3	KGM 16.RD/Sivas
Sv-10	261500	4339000	GEMEREK/Karaagil-Balkayasi	Stone Quarry		120,000	J36-d2	KGM 16.RD/Sivas
Sv-11	464300	4436100	GOLOVA/Dikkoy-Peles	Stone Quarry		40,000	H41-d4	KGM 16.RD/Sivas
Sv-12	480750	4435400	GOLOVA/Kaynar-Geben	Stone Quarry		40,000	H41-c4	KGM 16.RD/Sivas
Sv-13	339800	4288600	GURUN-Mazkirantepe	Stone Quarry		100,000	K38-d2	KGM 6.RD/Kayseri
Sv-14	350300	4313100	GURUN/Bogrudelik-Sakaltutan	Stone Quarry		492,500	K38-b1	KGM 16.RD/Sivas
Sv-15	368522	4313100	GURUN/Sarica-Kurtderesi	Stone Quarry		3,750	K38-b2	DSI 19.RD/Sivas
Sv-16	369250	4313200	GURUN/Sarica-Kuskayasi	Stone Quarry		7,750	K38-b2	DSI 19.RD/Sivas
Sv-17	356800	4286000	GURUN/Sucati-Karaagil	Stone Quarry		30,000	K38-c1	DSI 19.RD/Sivas
Sv-18	345600	4299700	GURUN/Y.sazcagiz-Akpinar	Stone Quarry		185,000	K38-a3	KGM 16.RD/Sivas
Sv-19	360250	4431500	HAFIK/Cakmak-Cakmakli	Stone Quarry		15,000	H38-c4	DSI 19.RD/Sivas
Sv-20	343800	4413400	HAFIK/Cukurbelen-Degirmenkaya	Stone Quarry		15,000	I38-a3	DSI 19.RD/Sivas
Sv-21	364200	4423700	HAFIK/Kosutdere-Kisikderesi	Stone Quarry		10,000	I38-b2	KGM 16.RD/Sivas
Sv-22	361400	4425500	HAFIK/Ozen-Tavsandere	Stone Quarry		26,100	I38-b2	KGM 16.RD/Sivas
Sv-23	363500	4436700	HAFIK/Sahin-Caltepe	Stone Quarry		21,875	H38-c3	DSI 19.RD/Sivas

BTC PROJECT EIA
TURKEY

Sv-24	372200	4435900	HAFIK/Yenikoy-Kertilkaya	Stone Quarry		20,000	H39-d4	KGM 16.RD/Sivas
Sv-25	374700	4435900	HAFIK/Yenikoy-Taslibogaz	Stone Quarry		5,000	H39-d4	KGM 16.RD/Sivas
Sv-26	424800	4415200	IMRANLI/A.culha-Kiyisderesi	Stone Quarry		15,000	I40-a1	DSI 19.RD/Sivas
Sv-27	434000	4424400	IMRANLI/Gokcebel-Celebi	Stone Quarry		200,000	I40-a2	KGM 16.RD/Sivas
Sv-28	439750	4412200	IMRANLI/Karatas-Bakacak	Stone Quarry		40,000	I40-b4	KGM 16.RD/Sivas
Sv-29	447000	4413500	IMRANLI/Ortakoy-Aktepe	Stone Quarry		180,000	I40-b3	KGM 16.RD/Sivas
Sv-30	386700	4324900	KANGAL/Alacahan-Kalata	Stone Quarry		180,000	J39-d3	KGM 16.RD/Sivas
Sv-31	367000	4335200	KANGAL/Arpali-Karatas	Stone Quarry		40,000	J38-c2	KGM 16.RD/Sivas
Sv-32	343700	4358200	KANGAL/Deliktas-Yagkayasi	Stone Quarry		11,250	J38-a3	KGM 16.RD/Sivas
Sv-33	337400	4340500	KANGAL/Havuz-Tuztasi	Stone Quarry		20,000	J38-d1	DSI 19.RD/Sivas
Sv-34	346750	4326500	KANGAL/Mancilik-Tavsancali	Stone Quarry		222,800	J38-d3	KGM 16.RD/Sivas
Sv-35	338800	4340600	KANGAL/Misiroren-Kecikalesi	Stone Quarry		15,000	J38-d2	DSI 19.RD/Sivas
Sv-36	352900	4357600	KANGAL/Sogukpinar-Yaycidagi	Stone Quarry		32,500	J38-b4	DSI 19.RD/Sivas
Sv-37	391600	4343200	KANGAL/Yellige-Tekagil	Stone Quarry		150,000	J39-d2	KGM 16.RD/Sivas
Sv-38	398200	4468600	KOYULHISAR/Egricimen	Stone Quarry		77,500	H39-b4	KGM 16.RD/Sivas
Sv-39	403400	4465500	KOYULHISAR/Kurtkuyusu	Stone Quarry		69,500	H39-b4	KGM 16.RD/Sivas
Sv-40	395200	4460600	KOYULHISAR/Ortaseki-Boztepe	Limestone		93,750	H39-b4	KGM 16.RD/Sivas
Sv-41	402700	4465750	KOYULHISAR/Taspinar-Bahcecik	Stone Quarry		120,000	H49-b4	KGM 16.RD/Sivas
Sv-42	266300	4373000	SARKISLA/Hardal-Sarikayasirti	Stone Quarry		15,000	J36-b1	DSI 19.RD/Sivas
Sv-43	285900	4361900	SARKISLA/Maksutilu-Hacialisirti	Stone Quarry		16,000	J37-a1	DSI 19.RD/Sivas
Sv-44	262900	4365900	SARKISLA/Ortakoy	Stone Quarry		83,000	J36-a2	KGM 16.RD/Sivas
Sv-45	331100	4424600	SIVAS/Celtek-Kocyatagi	Stone Quarry		15,000	I38-a1	DSI 19.RD/Sivas
Sv-46	332850	4423600	SIVAS/Celtek-Solak	Stone Quarry		15,000	I38-a1	DSI 19.RD/Sivas
Sv-47	331600	4417200	SIVAS/Gunoren-Bahceciktepe	Stone Quarry		46,000	I38-a1	DSI 19.RD/Sivas
Sv-48	322600	4447700	SIVAS/Kurtlapa-Akkaya	Stone Quarry		17,500	H37-c2	DSI 19.RD/Sivas
Sv-49	322750	4437600	SIVAS/Yildiz-Kuztepe	Stone Quarry		37,500	H37-c3	DSI 19.RD/Sivas
Sv-50	420300	4454500	SUSEHRI/Akcaagil-Camligoze	Stone Quarry		82,130	H40-d1	DSI 19.RD/Sivas
Sv-51	422500	4456950	SUSEHRI/Arpaci-Yarikkaya	Stone Quarry		10,000	H40-a4	KGM 16.RD/Sivas

BTC PROJECT EIA
TURKEY

Sv-52	434100	4448800	SUSEHRI/Arpayazi-Burmakaya	Stone Quarry		150,000	H40-d2	KGM 16.RD/Sivas
Sv-53	430600	4449600	SUSEHRI/Kayaici-Cakirli	Stone Quarry		30,000	H40-d2	KGM 16.RD/Sivas
Sv-54	324600	4367200	ULAS/Karacalar-Delikkayatepe	Stone Quarry		15,000	J37-b2	DSI 19.RD/Sivas
Sv-55	341700	4365600	ULAS/Kayapinar-Kaletepe	Stone Quarry		10,000	J38-a2	Sivas Munic.
Sv-56	321500	4368500	ULAS/Yapali-K.yamaci+Kibletepe	Stone Quarry		41,875	J37-b2	DSI 19.RD/Sivas
Sv-57	337350	4355650	ULAS/Yenikarahisar-Halilpinari	Stone Quarry		15,000	J38-a4	DSI 19.RD/Sivas

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Sv-59	293800	4415250	YILDIZELI-Caldagi	Stone Quarry		20,000	I37-a4	DSI 19.RD/Sivas
Sv-60	295000	4423000	YILDIZELI-Pamukpinar	Stone Quarry		32,400	I37-a1	KGM 16.RD/Sivas
Sv-61	253650	4407400	YILDIZELI/Esmebasi-Agmuyazi	Stone Quarry		25,000	H37-d3	KGM 16.RD/Sivas
Sv-62	304500	4431850	YILDIZELI/Isim-Suleymanoglugudami	Stone Quarry		20,000	H37-d3	DSI 19.RD/Sivas
Sv-63	270000	4405000	YILDIZELI/Kadikoy-Agilbasi	River Deposit		55,300	I36-b4	KGM 16.RD/Sivas
Sv-64	288400	4412500	YILDIZELI/Kumbet-Kuskayasisirti	Stone Quarry		100,000	I37-a4	KGM 16.RD/Sivas
Sv-65	276000	4407400	YILDIZELI/Sarikaya	Stone Quarry		205,000	I39-b3	KGM 16.RD/Sivas
Sv-66	306950	4433500	YILDIZELI/Yakup-Eskiköy	Stone Quarry		45,000	H37-d3	KGM 16.RD/Sivas
Sv-67	386000	4374500	ZARA/Beypinar-Kuskayasi	Stone Quarry		150,000	I39-d3	KGM 16.RD/Sivas
Sv-68	407500	4424500	ZARA/Deredam-Eregınburnu	Stone Quarry		40,000	I39-b2	KGM 16.RD/Sivas
Sv-69	403500	4421600	ZARA/Kaplan-Toptas	Stone Quarry		100,000	I39-b1	KGM 16.RD/Sivas
Sv-70	395600	4443000	ZARA/Keceyurdu-Baliklitepe	Stone Quarry		62,500	H39-c1	KGM 16.RD/Sivas
Sv-71	393500	4442600	ZARA/Serefiye-Y.kandilitepe	Stone Quarry		70,000	H39-c1	DSI 19.RD/Sivas
Sv-72	386800	4421400	ZARA/Utuk-Caltepesi (1)	Stone Quarry		70,000	I39-a2	KGM 16.RD/Sivas
Sv-73	384750	4422100	ZARA/Utuk-Caltepesi (2)	Stone Quarry		125,000	I39-a2	KGM 16.RD/Sivas
TOTAL :						5,558,980		

QUARRIES IN KAYSERI

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Ky-1	250000	4315000	AKKISLA/Girinci-Dikilitas	Rock Quarry	34,000		K36-a1	DSI 12.RD/Kayseri
Ky-2	748400	4318600	BUNYAN/B.tuzhisar-Kayacak	Stone Quarry	80,000	50,000	K35-b1	KGM 6.RD/Kayseri
Ky-3	279000	4288000	BUNYAN/Girveli-Korkuyu	Stone Quarry	1,400,000	1,400,000	K36-c2	KGM 6.RD/Kayseri
Ky-4	742000	4302000	BUNYAN/Koramaz	Limestone	70,000	10,000	K35-b4	Cimsa Cement Co.
Ky-5	229200	4291300	BUNYAN/Suksun	Stone Quarry	88,000	88,000	K35-c2	DSI 12.RD/Kayseri
Ky-6	732000	4237500	DEVELI/Gumusoren	River Deposit	100,000		L35-a3	DSI 12.RD/Kayseri
Ky-7	757600	4232200	DEVELI/Saraycik-Tasagil	Limestone	30,000	86,850	L35-c2	KGM 6.RD/Kayseri
Ky-8	721000	4322000	FELAHIYE/Aladayli	River Deposit	40,000		J35-d4	Private
Ky-9			FELAHIYE/Sakarya (Sarkarkaya)	Crushed stone	30,000		J35-d4	KGM 6.RD/Kayseri
Ky-10	706200	4284500	HACILAR/Karpuzsekisi-Kuyucakciftligi	Stone Quarry	30,000	30,000	K34-c1	KGM 6.RD/Kayseri
Ky-11	697500	4288900	INCESU/Saraycik-Kurtoglu	River Deposit	20,000		K34-c1	Private
Ky-12	694700	4300000	KOCASINAN/Beydegirmeni-Kizilirmak	River Deposit	49,000		K34-a3	DSI 12.RD/Kayseri
Ky-13	689000	4301000	KOCASINAN/Beydegirmeni-K.ibrachim	Stone Quarry	70,000		K34-a3	KGM 6.RD/Kayseri
Ky-14	683565	4307865	KOCASINAN/Golyeri	Stone Quarry	40,000		K34-a1	Yibitas Co.
Ky-15	707500	4313600	KOCASINAN/Hirka-Kalaba	River Deposit	50,000		K34-b2	Private
Ky-16	714000	4311300	KOCASINAN/Kuscu-Salli	River Deposit	60,000		K34-b2	Kuscu Mnc.
Ky-17	683500	4297000	KOCASINAN/Yuvaili-Syilonu	River Deposit	17,500		K34-a4	DSI 12.RD/Kayseri
Ky-18			MELIKGAZI/Agimas-Cakillik	River Deposit	2,500			Private
Ky-19			MELIKGAZI/Agimas-Kucukburunguz	Stone Quarry	60,000		K35-b4	Cimsa Cement Co.
Ky-20	728000	4298000	MELIKGAZI/Yesilyurt	Stone Quarry	10,000		K35-a3	Private
Ky-21	728800	4298000	MELIKGAZI/Yesilyurt-Golcukuru	Stone Quarry	10,000		K35-a3	Private
Ky-22	728800	4298200	MELIKGAZI/Yesilyurt-Isbidindagi	Stone Quarry	2,000		K35-a3	Private
Ky-23	728800	4298200	MELIKGAZI/Yesilyurt-Isbidindagi	Stone Quarry	2,000		K35-a3	Private

BTC PROJECT EIA
TURKEY

Ky-24	262800	4283200	PINARBASI/Bahcecik-Kalecik	Rock Quarry	100,000		K36-c1	DSI 12.RD/Kayseri
Ky-25	262000	4275750	PINARBASI/EImali-Kayiskiran	Stone Quarry	1,000		K36-c4	Private
Ky-26	279250	4284750	PINARBASI/Gumusgun-Korpinar	Stone Quarry	60,000	60,000	K36-c2	KGM 6.RD/Kayseri
Ky-27	252750	4265900	PINARBASI/Kaman-Kaledagi	Limestone	15,750	15,750	K36-d3	KGM 6.RD/Kayseri
Ky-28	279250	4308867	PINARBASI/Kaynar-Koyustu	Stone Quarry	90,000	40,000	K36-b2	KGM 6.RD/Kayseri
Ky-29	259600	4283500	PINARBASI/Kizilhan-Sirt	Tufa	20,000		K36-d2	Dedeman Mining Co.
Ky-30	306000	4304300	PINARBASI/Olukkaya-Aktepe	Stone Quarry	15,000	15,000	K37-b4	KGM 6.RD/Kayseri
Ky-31	300000	4302700	PINARBASI/Olukkaya-Kartalyuvasi	Stone Quarry	22,000	22,000	K37-a3	KGM 6.RD/Kayseri
Ky-32	750300	4334500	SARIOGLAN/Burunoren	River Deposit	100,000		J35-c3	Unal Petrol Co.
Ky-33	750300	4334500	SARIOGLAN/Burunoren-Koyici	River Deposit	100,000		J35-c3	Village Legal Entity
Ky-34	750300	4334500	SARIOGLAN/Burunoren-Pasaoglu	River Deposit	100,000	10,000	J35-c3	Sarioglan Mnc.
Ky-35	757500	4330200	SARIOGLAN/Palas-Sergen kaya	Ballast	114,000	3,500	J35-c3	TCDD GD
Ky-36	279000	4252500	SARIZ/Ayranlik	Stone Quarry	50,000	23,000	L36-b2	KGM 6.RD/Kayseri
Ky-37	742500	4280800	TALAS/Kamber-Bekliik	Stone Quarry	95,000	95,000	K35-c1	KGM 6.RD/Kayseri
Ky-38	741000	4280500	TALAS/Kamber-Pullu Dag	Stone Quarry	20,000		K35-c1	Basakpinar Mncp.
Ky-39	741000	4280500	TALAS/Kamber-Pullu Dag	Stone Quarry	5,000		K35-c1	Basakpinar Mncp.
Ky-40	741000	4280500	TALAS/Kamber-Pullu Dag	Stone Quarry	20,000		K35-c1	Talas Mncp.
Ky-41	748000	4283000	TALAS/Kocagiz	Stone Quarry	2,000		K35-c1	Private
Ky-42	748000	4283000	TALAS/Kocagiz	Stone Quarry	6,000		K35-c1	Private
Ky-43	746000	4284300	TALAS/Kocagiz-Donderic	Stone Quarry	5,000		K35-c1	Private
Ky-44	746000	4284300	TALAS/Yazili-Kaldirim	Stone Quarry	4,000		K35-c1	Private
Ky-45	749000	4272800	TOMARZA/Gulveren-Keldag	Stone Quarry	80,000		K35-c4	KGM 6.RD/Kayseri
Ky-46	750200	4272800	TOMARZA/Gulveren-Tasliburun	Stone Quarry	41,000	41,000	K35-c4	KGM 6.RD/Kayseri
Ky-47	696500	4230500	YAHYALI/Cubuklu-Sakizdagi	Stone Quarry	50,000		L34-d2	KGM 6.RD/Kayseri
Ky-48	723300	4208700	YAHYALI/Dikmen-Habib	Stone Quarry	30,000		M35-a1	KGM 6.RD/Kayseri
				TOTAL :	3,440,750			

QUARRIES IN KAHRAMANMARAS

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Kh-1	307725	4249975	AFSIN/Aritas	Stone Quarry		24,000	L37-b1	DSI 20.RD/K.maras
Kh-2	322650	4240500	AFSIN/Bakrac	Stone Quarry		3,000	L37-b3	Seda Cons.Co./Ankara
Kh-3	321500	4234600	AFSIN/Ercene	Stone Quarry		86,639	L37-c2	DSI 20.RD/K.maras
Kh-4	273350	4190800	ANDIRIN/Geben	Stone Quarry		87,500	M36-b3	KGM 5.RD/Mersin
Kh-5	265200	4153500	ANDIRIN/Kastal (Torun)	Stone Quarry		47,700	N36-b1	KGM 5.RD/Mersin
Kh-6	264090	4149250	ANDIRIN/Tokmakli	Stone Quarry		100,000	N36-b1	KGM 5.RD/Mersin
Kh-7	268300	4164740	ANDIRIN/Tufanpasa	Stone Quarry		66,600	M36-c4	KGM 5.RD/Mersin
Kh-8	361300	4175340	CAGLAYANCERIT/Bozlar	Limestone		80,000	M38-c2	KGM 5.RD/Mersin
Kh-9	349740	4225028	ELBISTAN/Akbayir	Stone Quarry		84,500	L38-c1	Imecem Cons.Co./Elbistan
Kh-10	353900	4254500	ELBISTAN/B.yapalak	Stone Quarry		28,249	L38-b1	KHGM City Dir./K.maras
Kh-11	331200	4230500	ELBISTAN/Izgin-Asartepesi	Stone Quarry	300,000	167,062	L38-d1	DSI 20.RD/K.maras
Kh-12	333300	4226500	ELBISTAN/Kalealti	Stone Quarry		60,000	L38-d1	KGM 5.RD/Mersin
Kh-13	363950	4263950	ELBISTAN/Ozbek	Stone Quarry		165,000	L38-c2	KGM 5.RD/Mersin
Kh-14	282000	4203750	GOKSUN/Golpinar	Stone Quarry		50,000	M37-a1	KGM 5.RD/Mersin
Kh-15	333500	4160400	K.MARAS/Bulanik	Stone Quarry		62,413	M38-d4	DSI 20.RD/K.maras
Kh-16	343300	4168000	K.MARAS/Kucuknacar	Stone Quarry		90,000	M38-d2	KGM 5.RD/Mersin
Kh-17	305200	4149750	K.MARAS/Onsen	Stone Quarry	160,000	78,400	N37-b1	DSI 20.RD/K.maras
Kh-18	284530	4160620	K.MARAS/Yaylaustu	Stone Quarry		49,800	M37-d4	KGM 5.RD/Mersin
Kh-19	335430	4152500	PAZARCIK/Asagibagdin	Stone Quarry		75,000	M38-d3	KGM 5.RD/Mersin
Kh-20	359600	4151200	PAZARCIK/Ganidag	Limestone		80,000	N38-b2	KGM 5.RD/Mersin
Kh-21	337400	4133750	PAZARCIK/Karabiyikli	Stone Quarry		97,000	N38-a3	KGM 5.RD/Mersin
Kh-22	324800	4135250	PAZARCIK/K.agzidemirciler	Stone Quarry		97,400	N38-a4	DSI 20.RD/K.maras
Kh-23	366500	4146700	PAZARCIK/Y ukarimulk	Stone Quarry		90,000	N38-b2	KGM 5.RD/Mersin

Kh-24	311750	4145750	TURKOKGLU/Cakallicullu	Stone Quarry	80,000	37,127	N37-b1	DSI 20.RD/K.maras
Kh-25	311900	4145500	TURKOKGLU/Cakallicullu	Stone Quarry		17,032	N37-b1	K.maras Municipality
Kh-26	308000	4139500	TURKOKGLU/Cevlikkaya	Stone Quarry		98,000	N37-b1	KGM 5.RD/Mersin
TOTAL :						1,922,423		

QUARRIES IN ADANA

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Ad-1	745000	4098000	CEYHAN/Sirkenli	Stone Quarry		18,500	O35-b1	Unlu Cons. Co.
Ad-2	742300	4100200	CEYHAN/K.burhaniye-K.tepe	Stone Quarry		10,700	N35-c4	Hamidi Cons. Co.
TOTAL :						29,200		

QUARRIES IN OSMANIYE

ID	Easting	Northing	DISTRICT/Village	Type	Capacity (m ³)	Total Area (m ²)	25000 Map No	Licence Holder
Os-1	245750	4102600	T.KALE/Yagankas	Basalt		411,225	N36-d4	KGM 5.RD/Mersin

Appendix C2 – Reinstatement Plan (RP)

1 GENERAL

1.1 OBJECTIVES

This document is the Reinstatement Plan (RP) for the Turkish Section of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC P/L) Project. The objective of the RP is to re-establish a vegetative cover that is compatible with the surrounding environment within the time constraints dictated by specified erosion performance criteria and biorestitution requirements.

From an erosion prevention perspective, establishing a vegetative cover is the most effective means to combat erosion. This is a fundamental aim of the RP and will be achieved through implementation of engineering and bioengineering methods as prescribed in this plan.

1.2 BACKGROUND

This RP establishes the minimum technical requirements for topographical replacement, erosion control and biorestitution for the BTC P/L Project. This RP is applicable to the stabilisation of the terrain during and after construction of the BTC P/L Project Right of Way (RoW) and into Operations. The RP is also applicable to permanent and temporary facilities such as access roads/tracks, above ground installations (AGIs), staging areas and additional areas utilised during construction of the BOTAŞ Pipeline Project. This document supplements other Project Codes and Standards and applies to those sections of the pipeline system whose limits are defined in the Scopes of Works documentation in the Contract.

This RP shall be read in conjunction with the appropriate Project Drawings including special point crossings and standard installation drawings (see Appendix A). The Contractor is to refer to the Environmental Impact Assessment Report (EIA) Impact Tables for site-specific details. The Contractor shall further develop reinstatement procedures using the mitigation requirements of the EIA. These procedures are to be submitted to BOTAŞ within twelve (12) weeks prior to scheduled ROW clearing activity – for the specific area being considered.

The Contractor shall maintain the integrity of the RoW during the maintenance term defined in the Contract. All temporary and permanent erosion measures will be maintained by the Contractor in addition to the reinstated RoW.

Upon handover to Operations from the Contractor, the ROW is to be maintained by Operations. The Operations maintenance will follow the same project specifications and documentation as appropriate.

The Contractor shall operate a Quality Management System in accordance with the requirements defined within the Contract.

2 SCOPE

2.1 GENERAL

This RP describes the reinstatement of areas disturbed by construction works that are not required permanently by the project. The RP covers the BTC-RoW and all other project areas that are used to support construction, including (but not limited to) construction camps, pipe lay down areas, maintenance areas, roads and other transport facilities; and waste management and disposal sites. The RP also describes the temporary and permanent erosion control and installation requirements for said features.

The RP describes the methods to be used for removing, storing, and replacing excavated topsoil, subsoil and rock; and for disposing of any of those materials that are surplus to reinstatement requirements. The RP also describes the process for selection of the methods to be used for excavation and blasting. The choice of methods has significant influence on the quantity and character of subsoil/rock to be reinstated or disposed of.

This RP establishes the minimum technical requirements for topographical replacement, erosion control and biorestitution. This RP is applicable to the stabilisation of the terrain during and after construction of the BTC-ROW and into Operations.

2.2 RELATIONSHIP OF OTHER PLANS AND RELATED DOCUMENTS

This RP should be read in conjunction with the project Environmental Management and Monitoring Plan (EMMP) that specifies project wide requirements for environmental management including training, inspection, monitoring, reporting and review.

The requirements and mitigation measures related to the collection, re-use, recycling, storage, treatment and disposal of waste produced by the project are outlined in the project Waste Management Plan (WMP).

The Pollution Prevention Plan (PPP) documents the project-wide measures that are required to avoid and minimise pollution during project activities and to respond to any pollution incidents that occur.

Measures associated with the control of pollution and nuisance associated with traffic management during construction are addressed in the project Traffic Management Plan (TMP).

The RP should also be read in conjunction with the following project design specifications and drawings that provide additional specifications and design details relevant to reinstatement activities:

- Slope Breaker Typical Drawing (ILF-DRG-EPL-PLG-855);
- Outlet of Slope Breaker Typical Drawing (ILF_DRG-EPL-PLG-856);
- Slope Breaker Cross-section Typical Drawing (ILF-DRG-EPL-PLG-857);
- Vegetated/Lined Chutes Typical Drawing (ILF-DRG-EPL-PLG-858);
- Trench Water Disposal Typical Drawing (ILF-DRG-EPL-PLG-859);
- Silt Fence and Straw Bale Typical Drawing (ILF-DRG-EPL-PLG-861);
- Wooden Retainer Fence Typical Drawing (ILF-DRG-EPL-PLG-862);
- Erosion Mat Installation Typical Drawing (ILF-DRG-EPL-PLG-863);

- Gabion Layout Typical Drawing (ILF-DRG-EPL-PLG-864);
- Ditch Breakers Typical Drawing (ILF-DRG-EPL-PLG-885);
- Ditch Breakers Typical Drawing (ILF-DRG-EPL-PLG-886);
- Crossing List (ILF-LST-LAS-PLG-001);
- Crossing List (ILF-LST-LAS-PLG-002);
- Crossing List (ILF-LST-LAS-PLG-003);
- Construction Specification (ILF-SPC-EPL-PLG-001).

The above Project Drawings are available in the BOTAŞ Office.

2.3 EAST ANATOLIAN NATURAL GAS PIPELINE (NGP)

The BTC pipeline follows the existing East Anatolian Natural Gas Pipeline (NGP) from approximately pipeline KP 260 to pipeline KP 690. Reinstatement in this area requires special attention and shall conform to the requirements defined in Section 8 of this document.

2.4 CONTRACTOR BID PHASE

The Contractor shall demonstrate a complete understanding of the reinstatement issues defined in this RP. Bid deliverables such as overall action plan, outline procedures and preliminary method statements may accompany the Contractor's bid. Reinstatement material quantities will be submitted for evaluation during the bid phase. In-country specialist support may assist the Contractor in this preparatory work.

Additionally the Contractor's bid will be supported with deliverables as defined in the tender documentation, reinstatement submittal shall be a stand-alone volume. Contractor's standard reinstatement plans may be supplemented with project specific details as defined above.

Contractor is to submit outline, area-specific methodologies based on specialist advice for reinstatement of Special Areas (see Section 21). Minimum requirements are an outline of intended engineering and bio-engineering measures that will be installed in these areas including information on likely species and quantities to be planted; a statement on the outline scope of work ie pre-construction surveys and production of area specific plans; and a schedule for implementation of the strategy for Special Areas.

2.5 ROLES AND RESPONSIBILITIES

The general roles and responsibilities with respect to environmental management and environmental performance of the BTC P/L Project are described in the Environmental Management and Monitoring Plan (EMMP). This includes the role of the MEP Participants, BOTAŞ and Contractors with respect to:

- implementation of environmental requirements;
- environmental personnel and training;
- inspection and monitoring;
- reporting and audit;
- responding to complaints;
- dealing with problems;
- compliance with legislation and standards.

The roles and responsibilities outlined in the EMMP shall apply to all reinstatement activities undertaken during the BTC P/L Project. In addition, the following roles and responsibilities are particularly relevant to reinstatement and restoration activities.

BOTAŞ will be responsible for:

- Contractor management and compliance with the requirements of this Plan;
- consultation with government departments and authorities, non-governmental organisations, landowners and other interested and affected parties during preparation, disclosure and approval of the EIA;
- ongoing dissemination of information about the project to interested and affected parties during construction and operation, including landowners, government authorities, and non-governmental organisations;
- communication to Contractors of requirements and commitments made during consultation;
- on-site communication and confirmation of specific reinstatement requirements;
- inspection, monitoring and audit of Contractors performance with respect to reinstatement including the final approval and acceptance of Contractor reinstatement works;
- ongoing monitoring and maintenance of reinstatement works following final acceptance of Contractor reinstatement works;
- all training needs of BOTAŞ Staff in relation to this RP.

The Contractor will be responsible for:

- implementation of all reinstatement works in accordance with the requirements of this Plan, Contractors project specific plans and procedures, commitments stated in the EIA and to the satisfaction of on-site BOTAŞ Environmental Inspectors;
- the provision of an experienced project manager supported by project personnel who can demonstrate full knowledge of reinstatement and the contents of this RP;
- further development of this RP as it pertains to the Contractors scope of work;
- development and implementation of site-specific method statements;
- development and implementation of site-specific method statements for the reinstatement of all Special Areas (see Section 21);
- performance of all appropriate pre-construction surveys to facilitate the development of site-specific reinstatement method statements for all Special Areas (see Section 21);
- consultation with local experts, specialist organisations and government authorities in order to ensure the reinstatement works are appropriate to the local, site-specific conditions;
- consultation (in association with BOTAŞ) with each landowner regarding specific reinstatement requirements and fulfilment of these requirements to the satisfaction of the landowner;

- ensuring compliance of Contractor appointed sub-contractors;
- all training needs of Contractor Staff in relation to this Reinstatement Plan.

2.6 SUBMISSION AND APPROVAL OF CONTRACTOR DOCUMENTATION

Contractor shall be required to adopt and implement the requirements outlined in this Plan as they pertain to their Scope of Work. Contractor will submit documentation according to the following schedule:

- All Contractors will be required to submit an outline RP 30 days after Award of Contract. This will include a schedule for carrying out site specific Special Area Reinstatement Surveys.
- Project specific plans and procedures that specify how the requirements of this Plan will be implemented will be required 12 weeks prior to Project commencement (Lot Specific) in terms of clearance of the Right of Way or the breaking of ground at pumping stations or the BTC Marine Terminal. This will include a schedule for submittal of site specific Special Area Reinstatement Method Statements.
- All site specific Method Statements including Special Areas as defined in Section 21, will be required 60 days prior to site clearance at the respective site.

These plans, procedures and method statements (see Section 5 and 21 for details) will be subject to the approval of BOTAŞ, who will ensure that Contractor plans, procedures and method statements fully meet the requirements of this Plan and the commitments contained in the EIA.

2.7 PERFORMANCE

Soil erosion class 3 or better (Section 10) is the reinstated ROW project requirement that the Contractor shall achieve (the Contractor shall also note the biorestitution requirements set out in Section 20.3). In Special Areas (Section 21), soil erosion class 2 shall apply, however this requirement may be considered jointly between the Contractor and BOTAŞ in areas where a class 2 requirement is considered to be excessive in terms of site specific conditions. The latter will be defined through further ecological studies.

During assessment of completed reinstatement and for section sign-off, the standards outlined in this document will be utilised to assess the performance of the erosion control measures. Any area that does not perform as defined will require re-evaluation and implementation of increased erosion control measures by the Contractor.

3 CODES AND STANDARDS

The Contractor shall equip itself with copies of all listed reference documents (and those referenced therein) and shall make them readily available to all of his personnel involved in the Works.

When an edition date for a Code or Standard is not indicated, the latest edition in force at the time of Contract award shall apply.

The Contractor may propose alternative equivalent standards that meet or exceed those listed provided approval is received from BOTAŞ prior to implementation of the alternative standard.

Canadian Association of Petroleum Producers

Guidelines for the Reclamation of Pipeline Rights Of Way. ID: 1990-0015

Guidelines for the Reclamation of Linear Disturbances. ID: 1985-0002

Soil Handling Procedures for Problem Soils During Pipeline Construction: Interim Guidelines. ID: 1991-0022

American Society of Mechanical Engineers

ASME B31.8: Gas Transmission and Distribution Piping Systems

ASME B31.4: Liquid Transportation Systems for Hydrocarbons, Liquid Petroleum Gas, Anhydrous Ammonia and Alcohols

American Petroleum Institute

API 5L: Specification for Linepipe.

API 1102: Recommended Practice for Liquid Petroleum Pipeline Crossings of Railways and Highways.

British Standards

BS6031: Code of Practice for Earthworks.

American Gas Association

AGA PR-237-9428: Water-Crossing Design and Installation Manual.

4 PROJECT DOCUMENTATION, DEFINITIONS AND ABBREVIATIONS

4.1 DOCUMENTS

The Project Design Documents listed in the Contract shall be read in conjunction with this RP.

4.2 DEFINITIONS

Aggregate stability: Wet strength of a soil particle. Synonymous to soil consistence. Resistance to slaking.

BOTAŞ Representative: Construction Manager.

BOTAŞ: BOTAŞ or BOTAŞ Representative.

Boulders: Coarse stone larger than 10-inches (25.4cm) diameter.

Cohesion: Holding together; force holding a solid or liquid together, owing to attraction between like molecules. In hydraulics - particles in the silt or clay size range (<0.06mm in diameter) where there is an electrostatic attraction between particles (c.f. sands and gravels, where the force is absent).

Contract: Governing this scope of work.

Contractor: Construction Contractor.

Floodplain: Nearly level land on either side of a channel subject to flooding.

Freeboard: Vertical distance between the maximum water surface elevation anticipated in design and the top of retaining banks or structures provided to prevent overtopping because of unforeseen conditions.

Gypsic: More than 40% by weight of carbonates (expressed as CaCO₃) plus gypsum, and the gypsum is >35% of the sum of carbonates and gypsum.

Operations: BOTAŞ pipeline operations.

Reynolds number: erosive Reynolds number is calculated by the following formula:

$$Re \equiv \frac{V \cdot d}{\nu}$$
, where V is mean velocity in profile, d is median diameter of bed sediment, and ν is kinematic viscosity of water.

Riparian: Land or vegetation along the banks of a stream or other body of water.

Soil consistence: The resistance of a material to deformation or rupture. The degree of cohesion or adhesion of the soil mass at various soil moisture contents and degrees of cementation.

Soil consistence: The degree of cohesion or adhesion of the soil mass. Terms used for describing consistence of dry soil materials and degrees of cementation include loose, soft, slightly hard, hard, very hard, and extremely hard; terms used for describing cementation include weakly cemented, strongly cemented, and indurated.

Soil erosion class: Classification of soils according to the magnitude of soil erosion that has occurred. Class 4 soil erosion means the topsoil is largely truncated and the surface is covered by rills and gullying.

Soil structure: The combination or arrangement of primary soil particles into secondary particles, units or peds; secondary units are characterised and classified on the basis of size, shape, and degree of distinctness into classes, types and grades, respectively.

Soil texture: The relative proportions of the various soil separates (particle sizes) as described by the classes of soil texture: sand, loamy sand etc.

Thalweg: The line following the deepest part of the channel.

Topsoil: The top, fertile layer of material on the land surface, which is capable of supporting plant growth.

Tractive shear (boundary shear stress): The shear stress (the force acting on a unit area) of water at the channel's bed.

Turbidity: The capacity of a liquid to convey light.

Wetland: Seasonally flooded basins or flats. To be classed as a wetland, it must have one or more of the following attributes: (a) the land supports predominantly hydrophytes; (b) the substrate is predominantly undrained hydric soil; and (c) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

4.3 ABBREVIATIONS

AGI:	Above Ground Installation
BTC:	Baku-Tbilisi-Ceyhan
EIA:	Environmental Impact Assessment
EMMP:	Environmental Management and Monitoring Plan
NGP:	East Anatolian Natural Gas Pipeline
PCP:	Pollution Control Plan
RoW:	Right of Way
RP:	Reinstatement Plan
WMP:	Waste Management Plan

5 CONTRACTOR DOCUMENTATION

Project specific plans and procedures for erosion control and reinstatement works shall be produced by the Contractor for BOTAS approval within the time limits specified in Section 2.6. Contractor documentation shall comply with BOTAS procedures, EIA requirements, and any other Authorities' requirements.

In addition, Contractor shall develop, and submit to BOTAS for approval, site-specific Method Statements and schedules for reinstatement of Special Areas defined in Section 21 of this document. Contractor will carry out survey work and produce Special Area Reinstatement Method Statements, which will include (but not be limited to) the following information:

- Scope of Work, QA/QC Plan and HSE Plan, to be submitted prior to commencement of field work and which will be subject to BOTAS approval.
- Field sampling exercise to include: botanical survey, physical description of the landscape, slope geometry, evidence of existing erosion, photographic survey, verification of geology and soil type, PSDs, nutrient sampling etc.
- Identification of adequate sources of all necessary resources including nurseries holding sufficient capacity of required species, seeds, fertiliser, and other reinstatement material.
- The report will contain a detailed engineering and bioengineering plan to be submitted to BOTAS for approval prior to commencement of works.

Contractor is to carry out these surveys using specialist sub-contractors who are to provide expert advice, particularly for erosion and sediment control and seeding and planting of indigenous shrubs and trees. This work will be carried out during the pre-construction period as detailed in Section 2.6.

Special Area Reinstatement Method Statements will be provided for each area identified under the following Special Area categories: side slopes, steep slopes, ecologically sensitive areas, karst areas, volcanic tuffs and AGI sites.

If Contractor intends to conduct reinstatement operations during periods when the ambient temperature is likely to be less than 0°C, then method statements shall include special measures for such cold conditions.

6 HEALTH SAFETY AND ENVIRONMENT

Contractor shall fully comply with the requirements of the Contract Health and Safety Plan. All requirements for the protection of health, safety and the environment shall apply to all reinstatement and biorestoration work, in particular in relation to trench entry and working on steep slopes.

Contractor to produce a risk analysis and definition of preventative measures in relation to the pipe laying operations when work is very close to lines under operation. This assessment should included, but not be limited to:

- revision of as-built information;
- pipeline detection;
- sign-posting;
- isolated areas (especially during excavation works);
- excavation requirements; and
- minimum existing pipe cover.

7 CONSTRUCTION

For general Construction requirements reference should be made to the Pipeline Construction Specification (Project Document ILF-SPC-EPL-PLG-001). This RP supplements the information contained in the Pipeline Construction Specification.

8 JOINT REINSTATEMENT

8.1 BACKGROUND

The BTC pipeline will be constructed parallel to the recently constructed East Anatolian Natural Gas Pipeline (NGP) for a substantial part of its length (approximately 400km). Separation distances between the two laid pipes will be typically around 12-18m. Sometimes they will be less and sometimes the two corridors will diverge entirely. However, for most of the parallel length, the separation will be such that the BTC working width will overlap with the area that has been affected by the construction of the NGP.

In a number of areas the existing NGP has caused major impacts in terms of land degradation (erosion, productivity and visual appearance) and at river crossings. In addition there are features outside the BTC working width caused by the gas pipeline construction that could have a negative effect on the BTC pipeline – these include areas of rill and gully formation, water crossings with bank erosion and others.

It is a BTC Project requirement that the BTC Pipeline will not inherit reputation and soil erosion problems caused by poor reinstatement of the NGP. In order to achieve this, a two-phase approach to reinstatement in the vicinity of the NGP will be adopted. The first phase will involve the NGP construction contractor undertaking remedial reinstatement measures prior to BTC construction to resolve existing problems related to poor reinstatement of the NGP. The second phase will require the BTC Contractor to undertake any additional mitigation measures necessary to ensure the integrity of the BTC corridor in areas impacted, or potentially impacted, by the presence and/or proximity of the NGP pipeline. This second phase will require the BTC Construction Contractor to implement reinstatement measures across the two parallel corridors in areas as defined in this Section (eg hill slopes, river crossings etc).

A number of conditions that will require specific reinstatement measures to be undertaken prior to or during reinstatement of the BTC Pipeline due to the presence of the NGP pipeline have been identified as follows:

- Condition 1: General Reinstatement;
- Condition 2: Adjacent Agricultural Land;
- Condition 3: Hill Slope Reinstatement;
- Condition 4: Erosion;
- Condition 5: River Crossings.

The anticipated reinstatement measures required and the division of responsibility between the NGP construction contractor and BTC construction contractor for each of these conditions are described below.

8.2 CONDITION 1: GENERAL REINSTATEMENT

The responsibility of the BTC Contractor will be to reinstate the areas defined as ‘BTC only’ and ‘Overlap’ to Pre-Existing Condition A as outlined in Figure 8.1. The specifications for this reinstatement will be as outlined in this RP.

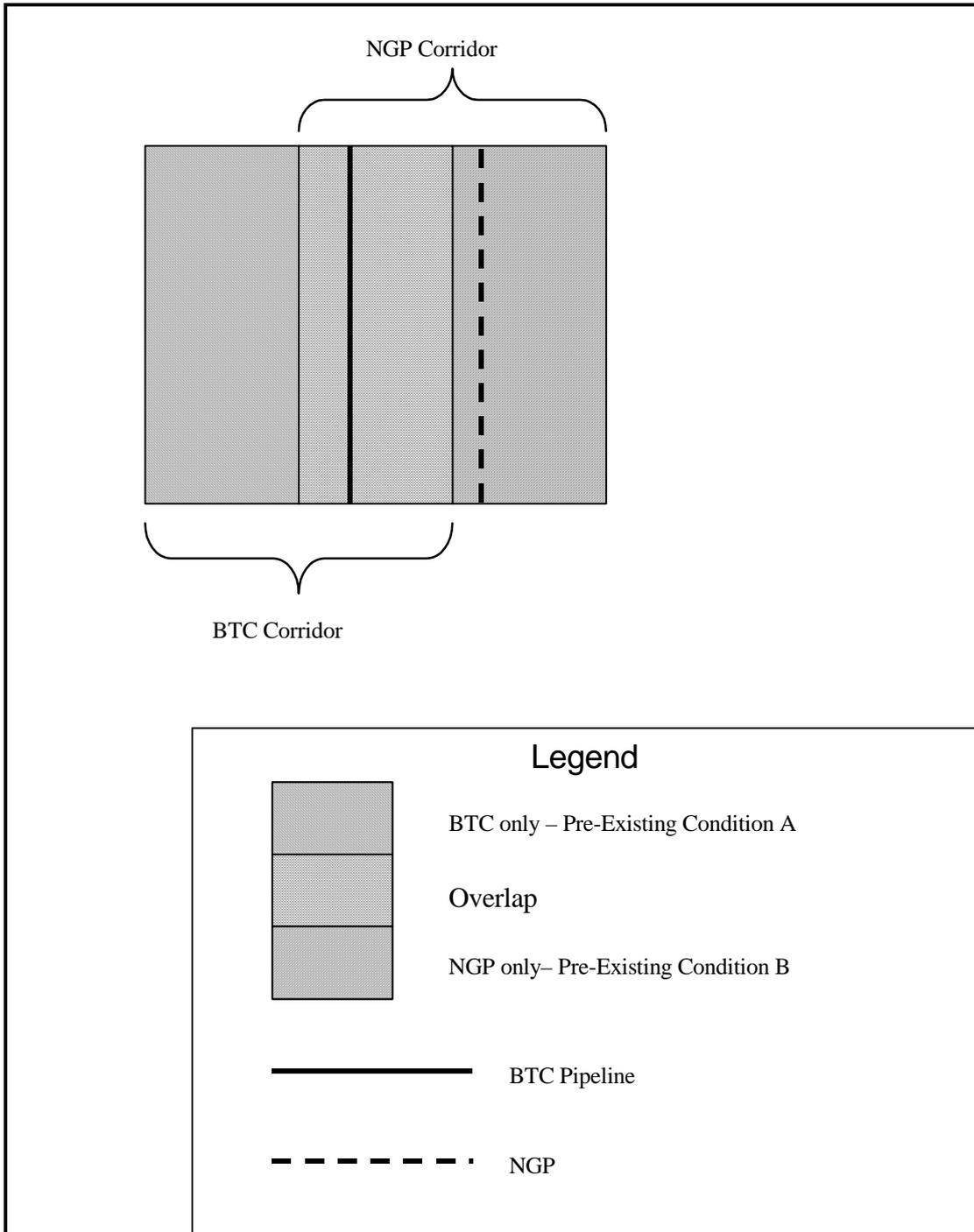


Figure 8.1 General Reinstatement in Vicinity of NGP

8.3 CONDITION 2: ADJACENT AGRICULTURAL LAND

In areas where poor reinstatement and damage caused to roads, water supply, arable land, nurseries, pastures, and village infrastructure practices have lead to reputational issues with disaffected landowners, it shall be the responsibility of the NGP Contractor to reinstate these areas prior to BTC construction commencing. If such problems persist into the BTC construction phase, it will be the responsibility of the BTC Contractor to apply corrective action (see Figure 8.2).

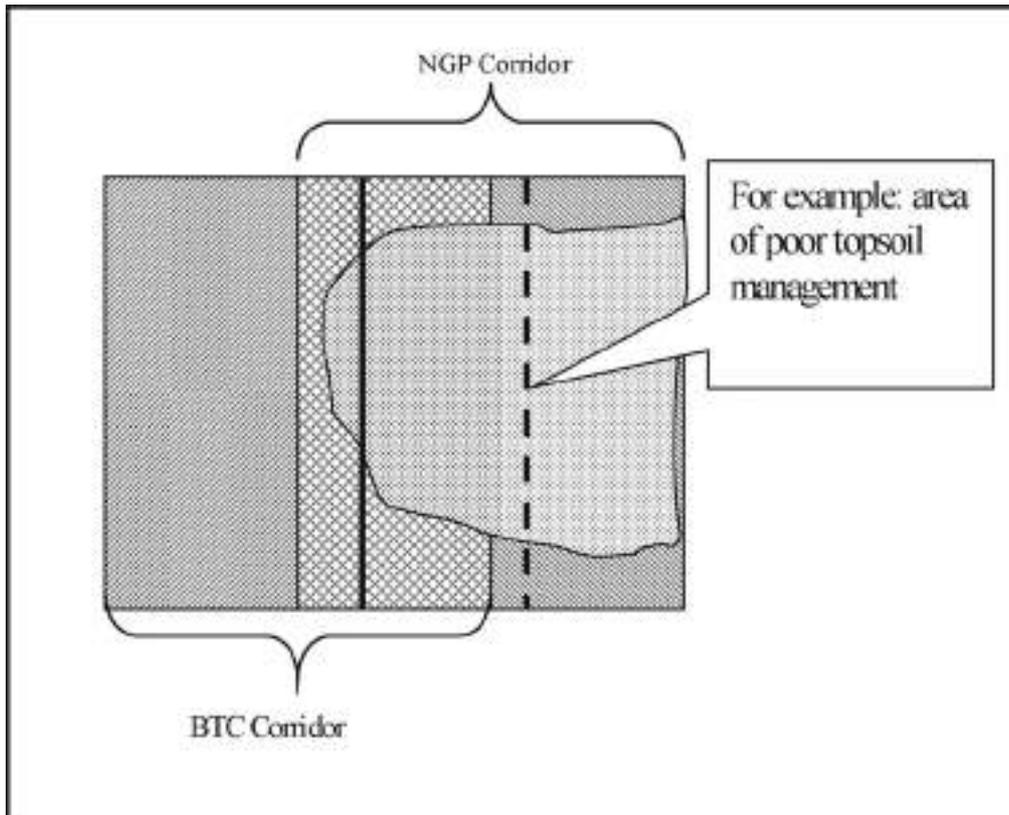


Figure 8.2 Reinstatement Where Damage has Occurred to Adjacent Land

8.4 CONDITION 3: HILL SLOPE REINSTATEMENT

In areas where both parallel corridors are on a hill slope, both parallel corridors will require appropriate mitigation measures (ie slope breakers). Interim measures (Pre-BTC Construction) will be the responsibility of the NGP Contractor. Final reinstatement measures will be the responsibility of the BTC Contractor (see Figure 8.3).

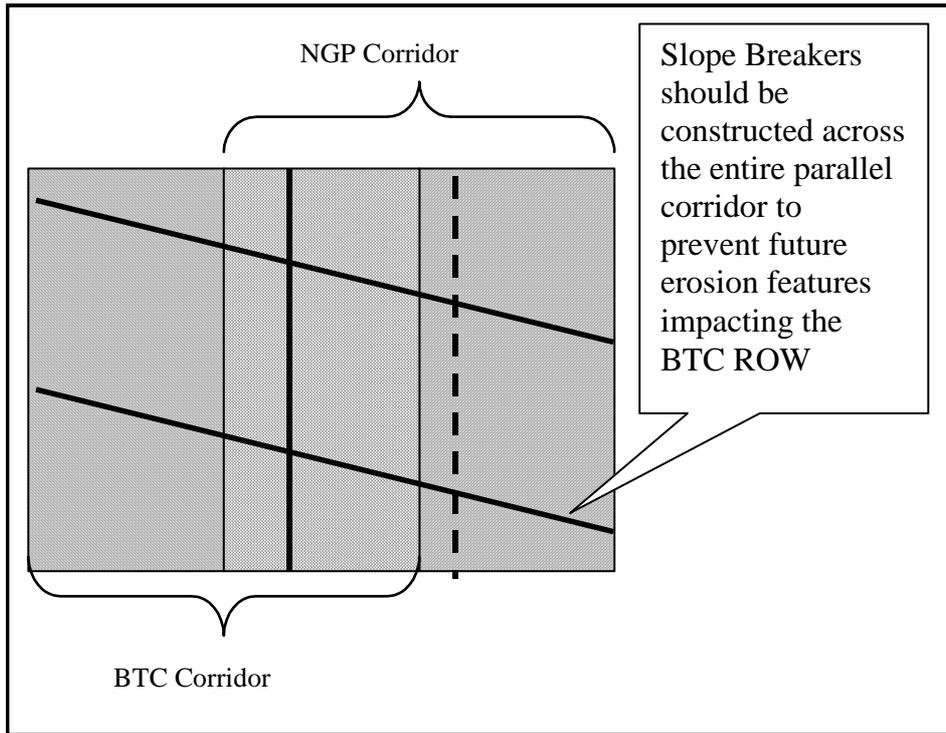


Figure 8.3 Hill Slope Reinstatement

8.5 CONDITION 4: EROSION

In areas where erosion has lead to, or could potentially impact the integrity of the BTC Pipeline corridor, it will be the responsibility of the NGP Contractor to reinstate such areas prior to BTC construction. If such problems persist into the BTC construction phase, it shall be the responsibility of the BTC Contractor to apply corrective action (see Figure 8.4).

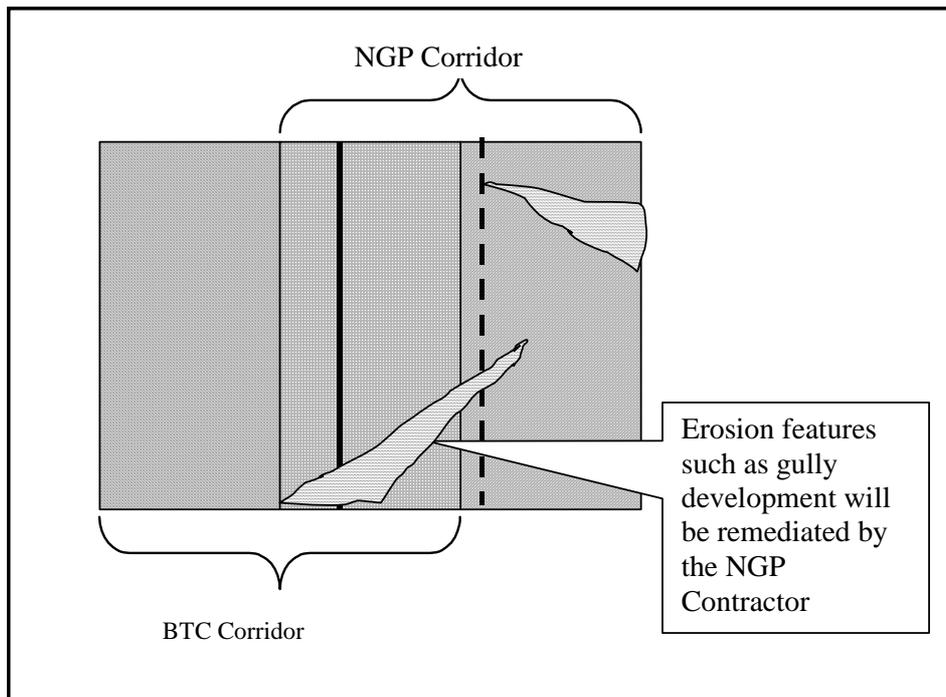


Figure 8.4 Reinstatement in Erosion Prone Areas

8.6 CONDITION 5: RIVER CROSSINGS

In areas where river erosion has lead to, or could potentially impact the integrity of the BTC Pipeline corridor, it will be the responsibility of the NGP Contractor to reinstate such areas prior to BTC construction. If such problems persist into the BTC construction phase, it shall be the responsibility of the BTC Contractor to apply corrective action (see Figure 8.5).

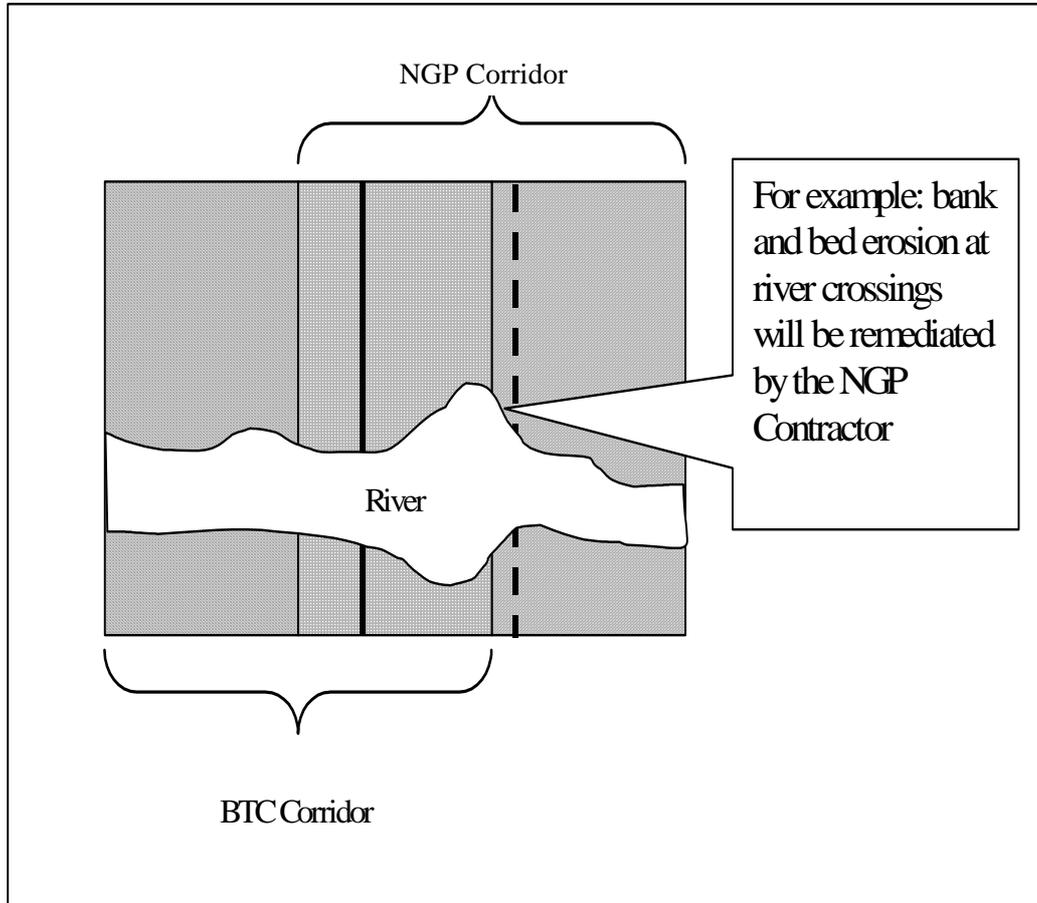


Figure 8.5 Reinstatement at River Crossings

9 REINSTATEMENT EXTENT OF THIRD PARTY ROW, CROSSINGS ETC

9.1 THIRD PARTY ACTIVITIES

The Contractor shall fully reinstate any land disturbance due to third party assets/activities where that disturbance is:

- (1) within the BTC-RoW ; or
- (2) so close to the BTC-RoW or project area that reinstatement is necessary in order secure the effective reinstatement of the project area.

The above principle applies to third party pipelines, railways, roads and buildings but is not limited to these examples. Reinstatement in the vicinity of the NGP will be undertaken in accordance with the strategy outlined in Section 8 of this RRP

9.2 CLEAN-UP OF SITES

Contractor shall, after backfilling and before replacement of soil, clean-up all areas affected by construction operations. That will include removal of all plant, equipment and materials not required for replacement of soil and subsequent biorestitution.

In pre-developed areas (either for agriculture or industry) the cleaned condition shall be reinstated in accordance with this plan. However, the remediation of contaminated land is not be covered by this RP and reference should be made to Contract Documentation.

Clean-up shall be accomplished to the satisfaction of BOTAŞ.

9.3 THIRD PARTY PROPERTIES

Following completion of backfill and initial reinstatement activities Contractor shall reinstate any damaged or relocated third party properties. This shall be in accordance with the access to site agreements and be to satisfaction of the appropriate regulatory authority and BOTAŞ.

9.4 ECOLOGICALLY SENSITIVE AREAS

Ecologically sensitive areas (ESAs) are defined and described in the EIA Impact Tables and Maps and a summary of these sites is included in Section 21.4.

In those areas and along water courses and in locations prone to erosion, Contractor shall backfill and re-instate immediately after installation of the pipeline. Also in these areas, Contractor shall fully re-instate in accordance with this plan. This applies to, but is not limited to: new/upgraded roads and tracks, including bridges, helicopter pads, construction camps, maintenance bases, borrow pits and waste disposal sites.

10 EROSION DEFINITIONS

10.1 EROSION CLASSES

Table 10.1 below gives the definition of erosion classes. Erosion class 3 or better shall be achieved for both temporary and permanent reinstatement along the pipeline BTC-RoW. This represents moderate erosion, <10 t/ha for a 1-hour 10-year return period storm.

Where there is a risk of sediment contaminating water bodies, sediment interception devices shall be installed (see Section 16 and Section 17).

As a minimum the following standards shall be achieved:

- no risk of the depth of cover above the pipeline being reduced;
- very low risk of off-site pollution and sedimentation;
- low risk of damage to biorestoration by washing-out of seeds and plants;
- continuous networks of channels over the slopes prevented, ensuring that the depth of material above the pipe is not reduced.

Table 10.1 Erosion Severity Classes

Erosion Class		Erosion rate (t/ha/y)	Visual assessment
1	Very slight	< 2	No evidence of compaction or crusting of the soil. No wash marks or scour features. No splash pedestals or exposed roots or channels.
2	Slight	2-5	Some crusting of soil surface. Localised wash but no or minor scouring. Rills (channels < 1m ² in cross-sectional area and < 30cm deep) every 50-100m. Small splash pedestals where stones or exposed roots protect underlying soil.
3	Moderate	5-10	Wash marks. Discontinuous rills spaced every 20-50m. Splash pedestals and exposed roots mark level of former surface. Slight risk of pollution problems downstream.
4	High	10-50	Connected and continuous network of rills every 5-10m or gullies (> 1m ² in cross-sectional area and > 30cm deep) spaced every 50-100m. Washing out of seeds and young plants. Reseeding may be required. Danger of pollution and sedimentation problems downstream.
5	Severe	50-100	Continuous network of rills every 2-5m or gullies every 20m. Access to site becomes difficult. Revegetation work impaired and remedial measures required. Damage to roads by erosion and sedimentation. Siltation of water bodies.
6	Very severe	100-500	Continuous network of channels with gullies every 5-10m. Surrounding soil heavily crusted. Integrity of the pipeline threatened by exposure. Severe siltation, pollution and eutrophication problems.
7	Catastrophic	> 500	Extensive network of rills and gullies; large gullies (> 10m ² in cross-sectional area) every 20m. Most of original surface washed away exposing pipeline. Severe damage from erosion and sedimentation on-site and downstream.

11 REINSTATEMENT OF LAND OTHER THAN BTC-ROW

11.1 LAND AT CONSTRUCTION SUPPORT FACILITIES

The following requirements apply to all construction support facilities such as construction camps, pipe dumps etc. They do not apply to permanent facilities such as AGIs. The fate of construction support facilities is to be agreed with BOTAŞ before starting any activity connected with reinstatement.

Reinstatement of the land shall commence immediately on removal of each individual facility. The reinstated condition shall be to a condition at least as good as that prevailing before establishment of the facilities.

Construction support facilities will be avoided in Special Areas (see Section 21). Should this become unavoidable prior approval of BOTAŞ is required. The Contractor shall prepare all necessary procedures and plans to achieve such approval and obtain permits as required by any affected authority.

Contractor shall permanently reinstate the area to the satisfaction of BOTAŞ, the regulatory authority or landowner and shall obtain written approval from BOTAŞ, the appropriate regulatory authority or the landowner of the level of reinstatement. Notwithstanding such approval, all reinstatement shall be to the satisfaction of BOTAŞ. Contractor's photographs of the condition of the area prior to construction may be referred to.

There shall be no waste remaining after removal of the facility and upon return of the site to the landowner. Except for new roads, facilities shall be removed and the land restored so that it is suitable for its original function. New roads shall be handed over as part of the completed project with shoulders finished in keeping with local environment. Erosion control and drainage features may remain visible.

11.2 PERMANENT ABOVE-GROUND INSTALLATIONS (AGIS)

All permanent installations to be reinstated in accordance with the Project Drawings and specifications.

Contractor shall permanently reinstate the area surrounding AGIs to the satisfaction of BOTAŞ and the appropriate authority or landowner and shall obtain written approval from BOTAŞ and the appropriate regulatory authority or the landowner of the level of reinstatement. Notwithstanding other such approvals, all reinstatement shall be to the satisfaction of BOTAŞ. Contractor's photographs of the condition of the area prior to construction may be referred to.

11.3 SPOIL AND WASTE DISPOSAL SITES

Contractor shall close, cap, and landscape all (except as otherwise agreed with BOTAŞ) waste disposal sites by the completion of the Contract. Sites shall be dealt with in accordance with the relevant project requirements. Contractor shall develop site-specific plans that are to be approved by BOTAŞ. Biorestitution, where appropriate shall be carried out in accordance

with requirements defined in Section 20 and BOTAŞ approved Special Area Reinstatement Method Statements.

Spoil and waste disposal sites will be avoided in ecologically sensitive areas. Should this become unavoidable, prior approval of BOTAŞ is required. The Contractor shall prepare all necessary procedures and plans to achieve such approval and obtain permits as required by any affected authority.

The waste material shall be compacted to a minimum of 75% of the Proctor value; the surface shall be landscaped to resemble local conditions and shall not extend more than 2m in height above the natural contour; the slopes of the surface shall not exceed 60°. The site shall be covered with soil and an erosion mat and planted with either seeds or shrubs using native species.

11.4 EXISTING ROADS AND ACCESS

Contractor shall exercise care when using both public and private roads for travelling to and from the BTC-RoW and shall upgrade and maintain roads during the works as necessary for safe operations, and reinstate them to their original upgraded condition or better following completion of construction activities.

Contractor shall provide for such work all hard-core, tarmac, asphalt and other materials as required.

11.5 QUARRIES

Contractor will ensure that all borrow material will only be sourced from (both existing and new) licensed and authorised sites or sources. BOTAŞ is in the process of identifying suitable existing quarries in the proximity of the pipeline route. Where new quarries need to be opened the contractor will obtain the necessary permits and licences and conduct any necessary EIAs.

Reinstatement of the quarries will be carried out to the satisfaction of the respective landowners and local authorities.

12 TOPSOIL REMOVAL AND STORAGE

12.1 OBJECTIVE

Topsoil is defined here as the top, fertile layer of material on the land surface which is capable of supporting plant growth. It contains the seed bank and is therefore an essential component of the revegetation programme. Maintenance of topsoil quality, particularly its structure and the integrity of its seed bank, is vital to both bio restoration work and erosion control.

The BTC RoW shall be reinstated to a sufficient extent in order to allow the affected area to be returned to its pre-project use and productivity. Appropriate maintenance and handling of topsoil is essential to achieving this objective.

12.2 TOPSOIL STRIPPING

Along the BTC RoW the depth of the topsoil shall be established by the Contractor. Procedures shall be developed by the Contractor for topsoil stripping in advance of all work fronts. Work shall not commence until approval of BOTAŞ is received. Typically, this will be done to a depth of between 150mm and up to a maximum of 300mm.

The topsoil shall be carefully stripped to its full depth and stored separately. Topsoil shall not be stripped from areas that will only be used for storing topsoil. Topsoil shall be stored where it will not be compacted by vehicles or contaminated and shall be stored in a manner that will minimise its loss and/or degradation. Topsoil shall not be mixed with subsoil and shall be stored on the opposite side of the BTC-RoW to subsoil; other than in restricted areas where mixing will be prevented by physical means, eg geotextile sheeting.

Contractor shall strip the topsoil over the working width required for the BTC pipeline RoW. Areas with a topsoil depth less than 15cm will be identified in the approved soil stripping procedure and the appropriate measures taken (as defined in the approved procedure). Topsoil will not be stripped in the area that will be used to store topsoil or subsoil or as stated in the pre-entry agreement.

Stripped topsoil shall be kept free from the passage of vehicles and plant. Topsoil and subsoil stacks shall be placed to ensure that they are free draining. Gaps shall be left in the topsoil stack to permit reasonable access across the BTC-RoW and at low areas where surface water may be held against the stack.

Topsoil shall be stored in a stockpile not more than 2m high with side slopes $<45^\circ$, drained with open ditches. The surface of the stockpile shall be lightly compacted to reduce rainfall penetration but not enough to promote anaerobic conditions. Where necessary, the stockpile shall be protected from flooding by placing berms around the outside. Under no circumstances shall topsoil be used as padding material.

During handling, damage to soil structure shall be avoided. Soil handling under wet conditions is to be avoided other than in areas having obviously sandy soils (river banks and possibly locations containing tuff - see Box 12.1). Construction is to be delayed 24 hours following a 24-hour rainfall of 10mm or more during the preceding day, after which soil conditions will be reassessed.

Soils that are plastic when wet should not be worked until their dry consistence increases to slightly hard or harder or until their moist consistence increases to firm or harder. See Box 12.1.

Box 12.1 Field Guide for Determining Soil Characteristics

Field Guide for Determining Soil Characteristics

- A. To decide if the soil is sandy, hold a portion of soil between the fingers. If it is gritty, will form a weak thread but not a ring when rolled, or if sand grains can be seen or heard when moulded near the ear, then it is one of the sandy grades that lie outside the range of soils that become non-workable when wet.
- B. To decide if a non-sandy wet soil can be worked:
 - 1. If wet, is it sticky or non-sticky, ie after release of pressure, does practically no soil adhere to the thumb or forefinger? If sticky, then postpone construction.
 - 2. If wet, is it plastic or non-plastic? ie roll the material between the thumb and finger and observe whether or not a thin rod of soil can be formed. If plastic, then a wire is formable. If only moderate pressure deforms the soil mass, then postpone construction.
 - 3. If moist, does the soil material cohere without resistance when pressed together? If yes, then postpone construction.

13 SUBSOIL REMOVAL AND STORAGE

13.1 OBJECTIVE

The objective is to manage the subsoil so that it is not subjected to, nor is the cause of, excessive erosion.

The BTC-RoW shall be reinstated to a sufficient extent in order to allow the affected area to be returned to its pre-project use and productivity. Appropriate maintenance and handling of subsoil is essential to achieving this objective.

13.2 REQUIREMENTS

The subsoil will be excavated from the pipe trench and, in some cases, from ridge-top widening or cutting of benches on sides of slopes. In general, subsoil shall be returned to the excavated area. However, in Special Areas (refer to Section 21) subsoil may be required to be removed.

13.3 MANAGEMENT OF SUBSOIL

Subsoil which will be reused, (ie returned to the trench or corridor BTC-RoW) shall be placed in stockpiles as shown on the Project Drawings.

Removed subsoil shall be kept free from the passage of vehicles and plant. Subsoil stacks shall be placed to ensure that they are free draining. Gaps shall be left in the stack to permit reasonable access across the BTC-RoW and at low areas where surface water may be held against the stack.

The surface of the stockpile shall be lightly compacted to reduce rainfall penetration but not enough to promote anaerobic conditions. Where necessary, the stockpile shall be protected from flooding by placing berms around the outside.

Contractor to maintain the integrity of the stockpile during the storage period to the satisfaction of BOTAŞ. The Contractor is responsible for the placement of suitable drainage and erosion control measures as necessary.

14 TRENCH EXCAVATION AND PIPELINE PADDING

14.1 EXCAVATED MATERIAL

The creation of surplus excavated material shall be minimised as far as practicable, for example by use of rock-trenching machines. All material that is excavated shall be re-used to the maximum extent practicable. Contractor shall produce a waste minimisation statement justifying the extent to which surplus material will be minimised and reuse maximised.

14.2 BLASTING

Blasting will only be used where other excavation methods are considered technically infeasible or uneconomic, and it shall be demonstrated to, and approved by, BOTAŞ, that the blasting will minimise over-break of ground and minimise the generation of spoil material.

14.3 FILL AND PADDING

Padding and fill materials shall not be imported unless demonstrated to, and approved by, BOTAŞ that such fill is technically necessary and/or on-line processing is technically infeasible or uneconomic and that suitable backfill cannot be provided by excavation techniques (eg crushing).

Padding material placement, quality and quantity shall comply with the requirement as defined in the Construction Specification and Project Drawings. The Contractor shall import suitable padding material where local excavated material does not meet the Specification or as requested by BOTAŞ.

14.4 MANAGEMENT OF WASTE SOIL AND ROCK

Generally, all soil and rock shall be returned to the excavated areas. In some locations, however, there will be surplus subsoil or rock that cannot be returned, and this must be disposed of both safely and in line with the environmental requirements of the Contract and in accordance with the requirements of the project Waste Management Plan.

Material remaining surplus after final reinstatement shall be removed from the BTC-RoW as inert waste. Contractor retains the same responsibilities for excess soil and rock as for any other waste material as specified in the project documentation and Waste Management Plan.

14.5 PRIORITIES FOR MANAGING EXCESS SOIL AND ROCK

In developing a plan to dispose of excess material the Contractor shall follow the priorities for disposal as follows:

1st priority: BTC-RoW Reuse

Where generated spoil is suitable for use as a construction material it will be first considered for reuse on the BTC-RoW for:

- Project infrastructure works materials; stability, erosion control, construction camps, AGIs, etc.

2nd priority: On BTC-RoW Disposal

- For restoration purposes eg simulation of rock streams/glaciers in adjacent areas ¹, hillside contour blending.
- Localised increase in finished surface height of BTC-RoW where approved by BOTAŞ.

Note the special requirements for disposing of material on side-slopes specified in Section 21.2.

3rd priority Off BTC-RoW Reuse

- Transfer to third Party for re-use purposes as raw or semi-finished materials, eg crushed andecites that may be suitable for road construction materials or for rail ballast.

The Contractor shall enter into negotiations and agreements with third parties regarding the feasibility, material specifications, terms and conditions for supplying spoil materials off the BTC-RoW as materials acceptable for reuse. Notification of such agreements shall be duly noted and reported to BOTAŞ. The requirements of the project Waste Management Plan regarding waste transfer shall apply.

4th priority: Off BTC-RoW Disposal (permanent soil and rock)

- All off RoW disposal sites are to be agreed prior to use with BOTAŞ and are to be in accordance with the project Waste Management Plan.

Spoil shall not be deposited:

- in valley bottoms, creeks, gully crossings, or sink holes;
- where they will potentially interrupt concentrated overland flow;

Earth works management shall be engineered particularly in contour restoration.

¹ Detailed specifications and engineering design for such areas should be included in the site-specific Reinstatement Plans produced by the Contractor.

15 REINSTATEMENT OF SOILS

15.1 GENERAL

The BTC RoW shall be reinstated to a sufficient extent in order to allow the affected area to be returned to its pre-project use and productivity. Appropriate maintenance and handling of all soil is essential to achieving this objective.

General reinstatement shall achieve:

- Final surface up to 100mm above level of undisturbed adjacent ground and blended to the existing contours (excluding trench berm).
- Final re-planting in accordance with this plan. Planting within pipeline final RoW to be approved by BOTAŞ.
- In barren areas, a semi- natural appearance is required: rocks or processed rock may be distributed over the final surface provided the particle size distribution is similar to that of adjacent undisturbed rocks.
- Erosion control measures (if any) may remain visible.

Upon completion of reinstatement, disturbed areas shall be inspected jointly by Contractor and BOTAŞ for slope stability, relief, topographic diversity, acceptable surface water drainage capabilities, and compaction.

15.2 REINSTATEMENT OF SUBSOIL

Two situations are considered: standard reinstatement and special re-instatement.

15.2.1 Standard reinstatement

On return of the subsoil to the trench the subsoil shall be compacted to a similar compaction to that in the adjacent undisturbed area. The depth of subsoil after settlement shall not be above the level of the surrounding ground. After the subsoil has been returned and the land levelled, the subsoil shall be rendered to a loose and workable condition to a depth of 350 – 400mm and contoured in keeping with the adjacent undisturbed ground. Both the Contractor and BOTAŞ Environmental Inspectors shall regularly monitor subsoil replacement, compaction and contouring.

15.2.2 Special reinstatement

Special reinstatement is applied where it has been necessary to cut a bench into the hillside in order to lay the pipe and the intention is to restore the original slope by filling-in the bench, thereby removing any scar in the landscape (See Section 17).

Side cut topsoil shall be stripped and removed from the area and stockpiled. Both the topsoil and subsoil shall be stored separately. The side slope cut shall be restored, as far as practicable, to the original contours, so that the cut surface blends with the original contours (see Section 21.2). The subsoil layers shall be arranged so that the outer edges effectively restore the slope to its original (ground) level; on no account should subsoil extend beyond the original line of slope or a new slope be created which is steeper than the original slope. Following compaction of the subsoil, the topsoil shall be spread over the site, harrowed and reseeded.

15.3 REINSTATEMENT OF TOPSOIL

Topsoil shall be segregated and shall not be mixed with spoil material before or during replacement. Only topsoil shall be segregated and re-spread over the surface. Topsoil shall not be used for bedding material in the trench, and topsoil from unstripped/undisturbed areas shall not be used to cover adjacent disturbances. Topsoil shall not be handled during excessively wet conditions or at times when the ground or topsoil is frozen.

Once the disturbed areas have been re-contoured and compacted, topsoil shall be re-distributed over the entire disturbed areas from which it was stored.

All disturbed areas shall be subject to final grading as specified in Section 17; however, measures shall be taken prior to seeding to ensure disturbed areas remain in rough condition to help protect the stability of topsoil after its re-distribution. On sites where harrowing etc is not practical (eg steep slopes, rocky areas etc), the sites should be dozer-tracked perpendicular to the slope or otherwise left with adequate roughness following topsoil placement.

When the topsoil is replaced over the BTC-RoW, a slightly rough, loosely consolidated texture shall be achieved in order to promote vegetation growth.

16 TEMPORARY EROSION CONTROL

16.1 GENERAL

The Contractor shall be responsible for employing, to the satisfaction of BOTAŞ, any temporary erosion and sediment control measures in order to protect the BTC-RoW and adjacent areas during construction activities. In the event that the pipeline ditch remains open for an extended period, the Contractor shall ensure trench integrity and employ such measures as temporary ditch breakers, silt fences, straw bales etc as deemed necessary.

Temporary ditch breakers are installed in the open trench and are removed before lowering the pipe. Temporary ditch breakers have the purpose of arresting flows inside the trench during construction.

The following temporary erosion control measures shall be incorporated along the BTC-RoW in order to protect the environment and to achieve the performance standards as set out in Section 10.

- On longitudinal slopes with open trenches, plugs of unexcavated material shall be left in the trench to interrupt surface flow and prevent scouring of the trench bottom.
- Stumps should be left in place wherever possible to provide soil stabilisation.
- Drainage channels shall be installed on all longitudinal and transverse slopes as required.
- Where slopes require cutting, flumes shall be installed across the BTC-RoW. These shall carry water from drainage sumps on the upslope.
- Final grading of all cut or filled soil slopes shall be restricted to a maximum gradient in accordance with BOTAŞ approved site specific designs.
- The BTC-RoW shall be monitored to prevent:
 - subsidence of the pipeline trench (below natural grade);
 - breaching of diversion berms;
 - slope wash from improperly placed berms;
 - slumping and soil movements from cut and fill slopes;
 - loss of stored topsoil, subsoil or cuttings.

16.2 SEDIMENT INTERCEPTION

Where the BTC-RoW intersects or is parallel to a watercourse sediment interception shall be provided to prevent sediment entering the water. Sediment interception shall be provided for runoff that may occur during construction and reinstatement activities until the establishment of sufficient vegetation to meet the requirements of Section 10.

Sediment interception devices may take the form of a Silt Fence or Straw Bale Barrier. Sediment filters and trapping devices are applicable to sites expected to remain bare during the rainy season. In Central Anatolia, rainfall is lowest during July through September; south of Goksun the low rainfall period begins in June and lasts through early October; on plains and hills south of the Taurus Mountains, it lasts between mid-May and mid-October.

16.2.1 Silt fence

Silt fences shall be installed in areas of low sheet flow and are installed to intercept runoff on eroding slopes. For typical details see Project Drawing ILF-DRG-EPL-PLG-861.

The filter cloth is draped over the fence and secured in a 15-cm-deep trench dug one metre uphill. Filter fences installed across the working width should follow a slight gradient towards a natural outlet, waterway, or lined chute, into which they drain.

The following requirements shall be satisfied:

- ponding shall not be allowed behind a silt fence;
- drainage area shall not exceed 0.1 hectares per 30m of fence length;
- for slopes between 2% and 20%, the maximum allowable upstream flow path length shall be 30m; for slopes and steeper, the maximum shall be 6m;
- maximum upslope grade perpendicular to the fence line shall not exceed 100%;
- silt fences shall be used for sheet flow only.

Filter fabric shall meet the following criteria contained in Table 16.1 as a minimum:

Table 16.1 Filter Fabric Criteria

Physical Property	Minimum Requirements
Filtering efficiency	75% - 80%
Tensile strength at 20% (maximum) elongation	90Kg/ linear metre minimum
Slurry flow rate	0.11 litres/m ³ /min

Synthetic fibre shall contain ultraviolet inhibitors and stabilisers and meet the performance criteria for the entire length of installation and the environments encountered.

Filter fabric shall be installed in continuous lengths.

Silt fences shall be inspected daily during periods of prolonged rainfall, immediately after each rain event, and weekly during periods of no rainfall. Any repairs required shall be made immediately.

Sediment shall be removed prior to the sediment reaching 1/3 of the height of the silt fence. Care shall be taken during sediment removal to ensure integrity of the fence is maintained. Sediment collected shall be disposed of in an approved manner.

The silt fence shall not be removed until the upslope area has met the requirements of Section 10 and has been permanently stabilised. Any sediment deposits remaining in place after the fence has been removed shall be dressed to conform to the existing grade, prepared and re-vegetated.

16.2.2 Straw bale barrier

Straw bale barriers shall be installed in areas where small amounts of temporary sediment interception are required. For typical details see Project Drawing ILF-DRG-EPL-PLG-861.

Straw bale barriers shall not be installed where sediment control is required for periods greater than three months. Where they are installed on the working width, they should follow a slight gradient towards a natural channel, waterway, or lined chute.

The requirement for locations of straw bale barriers along the RoW are to be established during the work jointly between the Contractor and BOTAŞ representative. Generally these sediment control areas with slopes >20% will include:

- areas of protection for longitudinal down slope to water bodies and roads;
- edge of RoW with adjacent down slope water bodies or roads;
- edge of RoW with adjacent down slope to defined environmentally sensitive areas.

Straw bales shall be bedded into the ground and anchored with reinforcing rods. Anchors are driven at an angle towards the neighbouring bale so as to tie them firmly together.

The drainage area shall be no greater than 0.1 hectares for each 30m of fence. Straw bale barriers shall not be used in areas of rock or other hard areas, where full and uniform anchoring is prevented.

Straw bale barriers shall be inspected daily during periods of rainfall, immediately after each rain event, and bi-weekly during periods of no rainfall. Any repairs required shall be made immediately. While the life expectancy of bales is not more than 3–6 months, deteriorated bales can be broken up and used as straw mulch.

16.3 WOODEN FENCES

Wooden fences shall be installed in areas of side slope and ridge construction and shall be installed to retain cuttings during construction and reinstatement of the BTC-RoW. The requirement for locations of wood fences are to be established during the work jointly between the Contractor and BOTAŞ representative. For typical details see Project Drawing ILF-DRG-EPL-PLG-862.

Contractor shall ensure fences are capable of safely supporting the loads imposed. Fences shall be regularly inspected to ensure safe operation and structural integrity. The Contractor shall be aware that the use of wooden fences may pose localised problems. In certain areas, firewood is a valuable commodity therefore, the fence material will be attractive to locals for firewood.

Fences shall be removed, unless directed otherwise by BOTAŞ, during reinstatement of the BTC-RoW.

16.4 WATER DISPOSAL

Pipeline trenches commonly collect water during construction. Because it is turbid and often sediment laden, trench water requires filtering before it can be discharged to an unpolluted location. For typical details see Project Drawing ILF-DRG-EPL-PLG-859.

Trench water is commonly removed using a pump connected to a 7–10cm diameter flexible hose. Disposal of trench water shall be in accordance with the requirements of the project Pollution Prevention Plan.

Appropriate measures to prevent erosion during the disposal of hydrotest water shall be adopted. Such measures are specified in the project Pollution Prevention Plan and all water discharges shall be undertaken in accordance with the requirements of that plan.

17 PERMANENT EROSION CONTROL DEVICES

17.1 GENERAL

Soil erosion can be particularly active on sites laid bare by construction, where it reduces land productivity and damages rural economies. The sediment it creates makes its way to streams, where it reduces water quality and invades infrastructure such as reservoirs and irrigation works.

Careful construction and reinstatement can reduce soil erosion and sedimentation to within manageable limits. Utilising mechanical (hydraulic) methods of controlling soil erosion and sedimentation, planting and fencing further protect the land surface. Both methods, hydraulic and biological through the use of vegetation, complement each other and are essential to controlling soil erosion and sediment from construction areas.

Stabilisation practices are essential on all sloping lands disturbed by construction. The methods used to control runoff comprise of different kinds of graded channels constructed across and down slopes. Graded slope breakers (interceptor cross drains), contain and remove runoff from the working width and other disturbed areas. They discharge into natural channels, vegetated waterways or lined chutes, depending on the situation. Dissipation of the energy anticipated from the flow is necessary.

Slope breakers acting alone are inadequate on all but the shallowest slopes in the absence of complementary vegetation. They are important to the success of the project, in part because they simplify the task of introducing vegetation to disturbed lands and, in large part, because they safely dispose of runoff that might otherwise erode pipeline cover and eventually damage the pipeline.

Little damage to the landscape occurs when soil erosion is in balance with the rate of soil formation. Due to its moderate rainfall and generally mesic soil climate, the annual rate of soil formation in the project area is about seven tonnes per hectare ($T\ ha^{-1}\ y^{-1}$); soil erosion from soil laid bare by construction, on the other hand, can easily approach several hundred tonnes per hectare. By the use of graded channels and vegetation to segment the working strip, soil erosion becomes equal to or less than the rate of soil formation.

17.2 SLOPE BREAKERS (INTERCEPTOR CROSS DRAINS)

17.2.1 General

Slope breakers (interceptor cross drains or water bars) are graded channels constructed across the working width. Their purpose is to remove surface runoff and, acting with vegetation, to protect against soil erosion. Slope breakers can be temporary or permanent. BOTAŞ may require temporary or permanent slope breakers to meet situations previously not anticipated. For typical details and spacing requirements see Project drawing ILF-DRG-EPL-PLG-855. This has been determined taking into consideration factors including slope angle and length, rainfall intensity and soil erosivity. Anticipated spacing requirements for slope breakers are summarised in Table 17.1.

Table 17.1 Slope Breaker Spacing Requirements

Slope (%) ⁽¹⁾	Soil Class 1-2	Soil Class 3-5	Soil Class 6-7
<i>KP 0 to 300 & KP 900 to Ceyhan</i>			
5-18	100	80	60
18-30	80	60	40
30-40	60	40	20
>40	40	20	10
<i>KP 300 to KP 900</i>			
120	120	100	80
100	100	80	60
80	80	60	40
60	60	40	20

(1) Project Drawing ILF-DRG-EPL-PLG-855 should be referred to for type details and most up to date spacing requirements.

Slope breakers discharge runoff into energy dissipaters, vegetated waterways or lined chutes. They have a longitudinal gradient towards their outlet (not to be in excess of 2%). Slope breakers are typically stabilised by vegetation. Where soil erosion potential is predicted to be high or vegetation cannot be established, erosion control matting or crushed gravel will be applied as determined by the USLE calculation in Section 21.3. Erosion control matting will be fastened to the ground using corrosion resistant wire staples having a length of at least 15cm on 50cm centres (see Section 17.5). The up-slope and down-slope ends of erosion cloth are to be anchored into 15cm deep trenches cut 0.5m upslope and down slope of the cut portion of the channel.

17.2.2 Slope breaker outlets

Water outlets shall provide disposal of runoff generated along the BTC-RoW. The runoff shall not cause soil erosion or sediment transportation. For typical details see Project Drawings ILF-DRG-EPL-PLG-856 and ILF-DRG-EPL-PLG-858.

Outlets shall be installed at the end of each slope breaker. Outlets shall effectively dissipate the energy of run off from the BTC-RoW and take the water to a disposal point that is safe and avoids environmental impact. The local conditions will dictate the style and location of outlet and shall be approved by BOTAŞ.

At outlet locations where stable vegetation is not present, the outlet will be lined with rock or erosion control matting will be positioned at the slope breaker outlet.

Soakaways may be formed by extending the trench breaker beyond the BTC-RoW into surrounding vegetated land. At these type of outlets the slope breakers shall be extended into the surrounding land by:

- 2m in low erodible conditions (cohesive soils) – Type I outlet;
- 6m in erodible conditions (non-cohesive soils) – Type II outlet.

Lined channels may be placed on the BTC-RoW to take runoff at a safe velocity down slope to a suitable disposal point. Outlets from the channel shall run along the inside of the BTC-RoW slope.

For the duration of the RoW maintenance period, the Contractor shall monitor the condition of the outlets at two week intervals and any breaches or damage reported to BOTAŞ. Repair work should be carried out within 14 days or less, depending on the severity of the breach.

The local conditions will dictate final installation requirements. The Contractor shall provide proposals for all slope breaker outlets to the BOTAŞ for approval prior to installation.

17.3 GABIONS

Gabions and gabion mattresses shall be used where necessary to form flexible, permeable, monolithic structures such as retaining walls, revetments and weirs for earth retention. For typical details see Project Drawing ILF-DRG-EPL-PLG-864.

Gabion walls shall be constructed and utilised for permanent recovery of the right of way and prevention or stabilisation of landslides that endanger stability of the land. Gabions structures shall be designed and constructed in accordance with the manufacturer's specifications and BOTAŞ approved Contractor method statements.

17.4 DITCH (TRENCH) BREAKERS

Ditch breakers or trench breakers shall be installed within the pipeline ditch at locations along the pipeline route where the natural profile, drainage pattern and backfill materials may cause the trench to act as a drain. For typical details see Project Drawings ILF-DRG-EPL-PLG-885 and ILF-DRG-EPL-PLG-886. Anticipated spacing requirements for slope breakers are summarised in Table 17.2.

Table 17.2 Ditch Breaker Spacing Requirements⁽¹⁾

Slope (%)⁽²⁾	Soil Class 1-4	Soil Class 5-7
<30	n/a	n/a
30-60	50 - 35	45 - 30
60-80	35 - 25	30 - 20
80-100	25 - 20	20 - 15
>100	15 - 20	10 - 15

(1) Project Drawings ILF-DRG-EPL-PLG-885 and ILF-DRG-EPL-PLG-886 should be referred to for type details and most recent spacing requirements.
(2) Requirement to be adjusted to local conditions.

Contractor shall install the ditch breakers per design. The final installation shall require approval of the BOTAŞ representative. Allowance for water movement through the ditch breaker shall be made by installing pipes through the ditch breaker or a perforated pipe along side the pipeline along the entire section of steep slope.

Additionally, ditch breakers are required at bases of slopes adjacent to wetlands and where needed to avoid draining of wetlands. The materials of construction shall be polyurethane bags filled with sand and cement 10:1 as detailed in the referenced Project Drawings, or polyurethane foam (subject to BOTAŞ approval).

Ditch breakers are generally installed slightly upslope of slope breakers. This causes flow along the line of the trench to emerge onto the surface, where it is intercepted and removed by the slope breaker a short distance down slope. As with slope breakers, ditch breakers can be temporary or permanent.

17.5 EROSION (JUTE) MATTING

Erosion matting shall be installed to provide an immediate protection to the slope against erosion, prevent washing-out of seeds and enhance the micro-climatic conditions in the soil for plant growth. Erosion mats shall be installed as shown on the Project Drawing ILF-DRG-EPL-PLG-863.

Erosion matting shall provide temporary protection to the soil surface until sufficient vegetation cover has been established to control erosion and meet the performance criteria as set out in Section 10.

The erosion matting shall be Geojute or similar. The mat shall be biodegradable, open weave 11mm x 18mm mesh size and 2mm thick fibres with a mass/area ratio of 500g/m². The mat shall absorb water to 500% of its dry weight on saturation. The mat should rot in approximately two years. Contractor shall submit data sheets and samples of the proposed erosion matting for BOTAŞ approval.

Where revegetation is taking place topsoil preparation and grass seeding work shall be undertaken prior to laying erosion matting.

The erosion mat shall be unrolled from the top of the slope, allowing it to lay naturally on the soil surface over all the local undulations. On no account shall the material be taught so that it forms 'bridges' over local soil mounds and stones.

The mat shall be secured to the slope using wooden or metal pegs as recommended by the manufacturer. Wooden pegs will be required where metal pegs pose a hazard to animals. In no case shall the spacing of the pegs exceed 1m intervals on slopes <32% and 0.6m intervals on steeper slopes, refer to manufacturers recommendations.

Unless properly anchored, mats are liable to slip. Uphill ends are to be buried in a 15cm deep slot and stapled as shown at 30cm centres across the width of the mat. At joints, the downhill end should be overlapped shingle-fashion for 30cm. The uphill end of the new roll is inserted into a 15cm trench and stapled as before. On slopes steeper than 25% check slots should be used every 30m. These are 15cm deep trenches into which a tight fold of matting is inserted. The slot is filled and tamped, and staples are punched as before.

Following installation, mats should be rolled with a smooth roller to bring them into close contact with the soil and to consolidate the seedbed.

Where shrub planting is required, holes shall be made in the mat at each planting point as required in Section 20.

Erosion mats, once installed shall be regularly inspected for degradation and installation integrity. Where matting has remained in place for longer than 12 months, Contractor shall be responsible for maintaining and replacing matting as required through the construction and maintenance period.

17.6 CRUSHED ROCK

Crushed rock may be required as a permanent erosion control measure at locations where it is impossible to establish vegetation and with prior approval of BOTAŞ. As a temporary measure it serves to reduce muddy conditions and sediment production during construction.

Crushed rock is applicable to locations where vegetation cannot be established and where erosion poses a risk to the pipeline or sediment threatens nearby streams. This also applies to stone dressings outside of the working width: eg camps, temporary roads, pipe storage locations, and crew quarters.

As required by local conditions and as agreed with the BOTAŞ representative, two cases apply: (1) for temporary roadways, turning areas, and other locations from where sediment discharge poses a problem, and (2) for slopes where soil erosion and sediment can be controlled only by means of a stone mulch. Examples of the latter include deposits of soft rock at high elevations.

Following project completion, temporary areas dressed with crushed rock will be ripped, fertilised and seeded or planted. These areas will be subject to the acceptance of BOTAŞ.

17.7 LINED CHUTES AND VEGETATED WATERWAYS

Lined chutes and vegetated waterways are specially designed channels created to collect and convey runoff to where it can be safely disposed of without erosion. Chutes or waterways serve to receive and concentrate runoff from slope breakers, from small gullies that cross the pipeline right-of-way, and from other areas that require water disposal. Their design is such that channel velocities remain non-erosive, even on steep slopes. The discharge point is to be designed and installed sufficiently to dissipate discharge energy and avoid erosion at the discharge point. For typical details and spacing requirements see Project Drawing ILF-DRG-EPL-PLG-858.

Commonly, lined chutes are designed to convey water from where springs emerge in the vicinity of the pipeline RoW. They are inappropriate on most agricultural landscapes, where natural channels or grass-lined waterways may offer a preferred alternative.

Vegetated waterway serve to collect and dispose of runoff from slope breakers. They rely on their shallow depth and vegetated cover to reduce velocity of runoff water to within non-erosive limits. Where nearby natural channels offer a safe alternative to a vegetated waterway – these are preferred.

Waterways require fertilising and seeding with a grass mixture suited to the specific location. This seeding must be protected by suitable mulch, mats or netting to allow establishment of the seeded area.

17.8 GULLY REMEDIATION

The objective of gully remediation is to prevent existing gullies from increasing in size and extend through continued erosion. This is particularly relevant to the problems associated with the NGP.

The structures described in this specification reduces the velocity of concentrated stormwater flows and thus reduces erosion of the swale or ditch. They also trap small amounts of sediment flowing in the gully.

Four approaches are recommended, depending on the depth of the gully and the use of existing control measures:

- Compacted fill: for use on gullies < 0.5m deep.
- Sand bags as check dams: for use in gullies between 0.5m and 1.5m deep where the channel is undermining existing control measures, eg wicker fences, which are not going to be removed.
- Double-wicker fence check dams: for use on gullies between 0.5m and 1.5m deep where any existing erosion control measures have either failed or are not going to remain in place.
- Gabion check dams: for use on gullies > 1.5m deep.

The spacing requirements for such measures will be designed as such to achieve the following relationship: the top of the lower structure will be of equal height to the bottom of the structure immediately up slope.

18 MARKING OF EROSION CONTROL WORKS

Contractor and BOTAŞ are to walk the pipeline RoW to jointly stake the route with the agreed upon measures immediately prior to clearing and grading of the RoW. Due to the length of the BTC pipeline and the lot allocation, multiple teams will be required to perform this function.

The geotechnical works are to be marked, taking into account the topographical alignment of the right of way, the cutting to be performed, and the type of land. If the amount of material to be removed is considerable the locations of temporary storage areas shall be marked and agreed with BOTAŞ.

The marking of preliminary geotechnical works shall be approved by BOTAŞ and recorded by Contractor prior to beginning the works.

19 RIVERS

19.1 GENERAL

The design and bank/river bed restoration shall be in accordance with Project Drawings.

Method statements shall be produced by the Contractor for all river crossings for BOTAŞ approval. The BOTAŞ approved method statement shall detail all construction and restoration procedures and take account of the requirements of AGA PR-237-9428.

The disturbed portion of the river bed shall be returned to pre-construction contours where possible and in compliance with Project Drawings. Any deviations shall be subject to BOTAŞ approval. The backfill over the pipe shall be at least as scour-resistant as the original bed material. For gravel bed rivers the armoured bed (the sediment forming the surface layer that is coarser than the underlying sediment) shall be recovered during construction and replaced on the bed during reinstatement.

River banks shall be restored to their original condition and contours. Where this is not possible Contractor shall propose site specific solutions with engineering justification, this shall be included in the BOTAŞ approved method statement.

Erosion and sediment control devices (including settlement ponds) shall be installed and maintained until revegetation is sufficiently established to meet the requirements of Section 10. Contractor shall detail erosion and sediment control measures to be used in the BOTAŞ approved method statement and these shall be compliant with the project Special Crossing Design Drawings.

Where any unstable channels exist downstream from the pipeline crossing and erosion might extend upstream along the valley floor encroaching on the pipeline Contractor shall design bed stabilisation works and submit to BOTAŞ for approval.

20 BIORESTORATION

20.1 GENERAL

Vegetation, by intercepting rainfall and binding the soil, reduces soil erosion and sediment. Revegetation in the project area means returning the land to its use prior to construction of the BTC pipeline. This could mean planting grasses in grazing areas or on highly erodible landscapes, such as those belonging to moderately steep and steeper slopes; or planting alpine plants where the land is unsuited to grass. Privately owned land will normally be replanted in accordance with the wishes of the landowner. Areas that are to be planted will comply with the requirements given in the impact tables of the EIA (Section 6). Trees will not be planted within an 8 m wide strip over the pipe. However, trees will be planted in areas suitable for reforestation, such as the verge of the right-of-way. In addition to the BTC's working width, its temporary roads and other disturbed areas shall be reinstated by the Contractor to the satisfaction of the Landowner and BOTAŞ.

All bio restoration programs shall be approved by BOTAŞ. Landowners shall be consulted by the Contractor to assist in developing these programs. Where Landowners requirements cannot be achieved, the Contractor shall consult with BOTAŞ to agree final resolution of the issue.

20.2 OBJECTIVES

The objectives are: (1) to reinstate the variety and distribution pattern of the original plant species with the long term objective of reinstating the local ecology; and (2) to establish sufficient vegetation cover to reduce erosion to meet the performance requirement of Erosion Class 3 or better through restoration of the local plant community.

The long-term cover shall be the native flora with the exception of areas that were planted with crops or other non-native species prior to construction. The bio restoration strategy is based on supplementing the seed bank of local species that will remain in the topsoil when it is replaced. All bio restoration materials including seeds and plants are to be supplied by the Contractor.

20.3 REQUIREMENTS

20.3.1 Agricultural/developed areas

In agricultural (defined as arable land) and other developed areas the Contractor shall leave the land in the condition specified in the pre-entry agreements. Except where agreed otherwise, the Contractor shall assume that the land is to be made ready for re-planting with crops: the land shall be graded and tined to remove compaction. Application of fertiliser etc., and planting of seeds etc. on permanent growing areas will be carried out by the landowner or tenant. The Contractor shall, however, seed and maintain all topsoil storage areas as required by Section 15, and irrigate all areas to the extent required to suppress dust formation.

20.3.2 Undeveloped areas

A minimum of 70% cover of ground vegetation established within one year of planting shall be set. This will minimise surface erosion and provide a sustainable, self-generating plant community under virtually all conditions.

Rates of vegetation growth depend on soil, slope and climatic conditions. Table 20.1 briefly summarises the various soils along the route as described in Section 5 of the EIA, highlighting those factors which can impact a particular soil and the management measures that will be required. If below-average rainfall is experienced, or where soil is lacking in nutrient, or where there are slopes of 25% or greater, a minimum of 50% cover (50% of the original cover where original cover <70%) shall be achieved in the first year with 70% occurring after the end of the following year. In areas adversely affected by construction of the NGP, or in other areas where third party activities have affected the level of vegetative cover, the original cover shall be determined by reference to adjacent, unaffected areas of similar topography and soil type.

Original percentage cover shall be estimated from the Contractor's photographic record of the route, or, in case of doubt, by reference to adjacent undisturbed areas.

The vegetation cover shall be composed of either:

- the species originally found in each route section or project area; or
- other species (for example, fast growth types) which are suited to the local environment and indigenous to the region; or
- an ecologically compatible mixture of those two groups.

Further requirements are given in the following sections.

The biorestitution maintenance shall be the Contractor's responsibility for a period defined within the Contract. BOTAŞ shall assume responsibility for continued maintenance of the biorestitution into operations.

Table 20.1 The Different Soils in the Project Area and some of the Issues they Raise

SOIL NAME	SIMPLIFIED MEANING OF SOIL NAME	PRINCIPAL SOIL VALUE	SOIL CONSTRAINTS/ IMPACTS	SOIL MANAGEMENT
Thermic Sandy Orthic Quartzipsammments	Warm sandy soils, little horizon differentiation	Irrigated agriculture	Rapid drainage requires high frequency of irrigation	Minimise disturbance. Replace soil sequence. Avoid dust on neighbouring fields. Avoid construction on saturated soils.
Thermic Orthic Calcixerolls	Warm calcareous soils having a dark brown surface	Rainfed agriculture, natural vegetation	Soil erosion. Deep-seated landslides on slopes >30°.	Avoid mixing topsoil and subsoil. Avoid actions increase soil humidity on steep slopes. Avoid saturated soils.
Thermic Typic Xerofluvents	Flood-plain soils having little horizon differentiation	Agriculture, often for irrigated row crops. Flood plain channel storage.	Bank erosion, soil drought	Replace soil sequence. Avoid construction on saturated soils. Strengthen banks at crossings.
Mesic Calcixerolls	Calcareous soils that are dry during the summer and have a dark brown surface	Rainfed agriculture, often for cereals	Soil erosion	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.
Mesic Entic Dystrandeps	Infertile soils formed over tuff and having a pale brown surface. Low summer rainfall.	Watershed, light grazing, conservation forestry, habitat	Soil productivity, despite its low value, is difficult to maintain.	Avoid mixing surface with underlying tuff.
Mesic Xerorthents	Depositional soil having little horizon differentiation. Low summer rainfall. Brown surface.	Rainfed agriculture, usually for cereals.	Soil erosion	Avoid construction between autumn and late spring. Avoid mixing surface with subsoil. Replace soil sequence.
Mesic Xerochrepts	Soils in areas on slopes with little horizon development. Low summer rainfall.	Watershed, light grazing, habitat	Soil erosion	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Mesic Xerofluvents	Flood-plain soils having little horizon differentiation. Low summer rainfall.	Agriculture, grazing, flood-plain channel storage, habitat	Often saturated throughout much of summer	Use equipment mats where appropriate. Replace soil sequence. Replant disturbed surfaces.
Typic Haploxeralfs	Soils on shallow slopes with strong soil horizon development	Agriculture, grazing, forestry, habitat, watershed	Soil erosion.	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Typic Rhodoxeralfs	Reddish-coloured soils on shallow slopes with strong soil horizon development	Agriculture, grazing, forestry, habitat, watershed	Soil erosion	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Cryochrepts	Cold soils formed on slopes, often with a pale brown surface	Grazing, conservation forestry, habitat, watershed	Soil erosion, shallow landslides, frost heaving.	Control runoff. Replace soil sequence. Replant disturbed surfaces.
Andeptic Cryorthents	Cold, meadow soils	Hay, habitat, grazing	Often saturated throughout summer. Frost heaving.	Control soil moisture in construction zone, possibly by diverting irrigation. Use construction mats. Replace soil sequence. Replant.
Typic Cryandeps	Cold pale-brown soils on flat and undulating lands over tuff, other volcanic rocks	Habitat, low-productivity forestry, grazing, watershed	Soil productivity	Control runoff. Replace soil sequence. Replant.
Andic Cryochrepts	Cold, thin, pale-brown soils on sloping lands over tuff, other volcanic rocks.	Habitat, low-productivity forestry, grazing, watershed	Soil productivity. May be thin	Control runoff. Replace soil sequence. Replant.

20.4 SCHEDULING

Contractor shall carry out bio restoration work in the appropriate growing seasons. Sowing or planting must take place in moist ground and be followed by sufficient rainfall to promote germination and establishment. Contractor shall identify from historical meteorological data suitable weather 'windows' for each area of the route. Bio restoration schedule to be approved by BOTAŞ.

Contractor will produce a Bio restoration Schedule including pre-construction transplanting or cultivation in addition to post-construction soil preparation, planting and aftercare.

20.5 SELECTION OF PLANT SPECIES

This section refers to the species and form of materials (seed, seed-mix, bulb, or plant etc) chosen to supplement the seed bank of the topsoil. This section does not apply to agricultural or other developed areas.

- The selection of species shall be designed to achieve the objectives defined in Section 20.2.
- Contractor shall be responsible for the choice of species and form of materials for each project area and section of BTC-RoW; the choice shall be based on the objectives and pre-construction survey records referred to in Section 5. Contractor will refer to specialist advice provided by Specialist Contractor (see Section 21.1) on existing species and their distributions.
- Contractor shall produce Site Specific Special Area Reinstatement Plans and Generic Reinstatement Plans describing the species, number and material forms to be planted for approval by BTC Co.

20.5.1 Rare plants

Rare plants will be dealt with in accordance with the mitigation measures detailed in the EIA.

20.5.2 Species selection

Where rapid growth is necessary for erosion control or other reasons, the species selected for initial planting shall have the following properties:

- dense, fibrous horizontal root structure close to the surface;
- dense uniform ground cover, particularly during the season of the most intense rainfalls;
- resistant to damage by high-velocity run-off;
- resistant to damage from trampling by people and animals;
- not persistent – will allow the original species to re-colonise the area;
- if possible, not clumpy or tussocky as this may lead to concentration of run-off between the plants.

The species selected for long-term growth shall reflect the variety and distribution pattern of the pre-construction flora.

20.6 FERTILISER

Fertiliser will be applied to disturbed surfaces, as necessary, where vegetation is to be seeded or planted. If topsoil has been restored, the rate of application will generally be 1.1 T ha^{-1} of 10-10-10 (N-P-K); if topsoil has not been restored, the application rate will generally be 2.0 T ha^{-1} of 10-10-10. In some circumstances, basal doses may be substituted. Local advice (universities and landowners) and advice from the Ministries of Agriculture or Forestry should be obtained to confirm or revise the stated fertiliser application rates at specific locations. The Contractor will perform field trials where recommended by the Specialist Subcontractor to determine the optimum ratio of NPK.

Fertiliser varies chemically and physically, with its greatest variability occurring among nitrogen fertilisers. Fertilisers having high solubility and motility are unsuited to highly mobile construction as practised by the pipeline industry. The project requires fertiliser that can be applied during reinstatement and that remains active during periods of maximum plant requirements, especially during periods of rapid vegetative growth. Fertiliser broadcast as a top dressing during seeding is generally unsuited for the following reasons:

1. Seedlings during their growth establishment period have low soil nutrient requirements.
2. Autumn-sown wheat does not enter rapid vegetative growth until spring following snowmelt, about 100 days following sowing.
3. Urea, an amide-type fertiliser, may volatilise if applied to the surface. (Biuret, an impurity occasionally found in urea, may be toxic to some plants.)
4. Fertilisers not adsorbed by soil colloids will leach. Fertiliser types particular prone to leaching include nitrate types (sodium nitrate, calcium nitrate) and urea. Ammoniacal types (ammonium sulphate and ammonium chloride) adsorb onto soil colloids but have low nitrogen content and high production costs compared to other forms.

The BTC project is best suited to combination fertiliser types, such as ammonium sulphate nitrate or calcium ammonium nitrate. Market conditions and local advice is crucial to selecting the type of fertiliser to be applied. Landowner requirements must also be taken into consideration. Reinstatement practices may require adjustment if fertiliser application is to be effective.

20.6.1 Timing of fertiliser

Fertiliser is generally not required during seedling establishment or during plant post-vegetative phases. For spring-sown plants, this would follow about 10–20 days after germination and end about 40 days later. For autumn-sown wheat, this would follow snowmelt and last about 50 days. Local advice should be sought.

20.6.2 Placement of fertiliser

Problems can be avoided if fertiliser is broadcast before topsoil replacement or is mixed into the topsoil. This effect would be similar to injecting fertiliser into the soil, albeit its depth if broadcast would be deeper than injection as it is currently practised. Indeed, in-depth placement or mixing may be the only practical way of applying urea if that is the only fertiliser available to the project. Advice from the Ministry of Agriculture should be sought.

20.7 PROCEDURES TO BE FOLLOWED BY CONTRACTOR

Depending on local soils, slope and climate and the nature of the local plant communities, one or more of the following procedures for re-vegetation can be adopted:

- sowing of grass seeds - procedure 'G1';
- planting of shrubs / tree whips at 1m centres - procedure 'P1';
- planting shrubs/tree whips at 2m centres in a lunette (micro basin) - procedure 'P2'.

The procedure for each of the above is described below.

20.7.1 Procedure G1 for grass seeding

For vegetation to protect adequately against soil erosion, it needs to be seeded at adequate densities and using methods that insure a dense growth. Seeding methods and species to be used shall be specified in the project specific Reinstatement Plans and Procedures and in Special Area Reinstatement Method Statements (see Section 5). Species utilised for re-seeding and the seed-mix shall be in sympathy with the pre-existing vegetative cover.

The Contractor is to provide and transport grass seeds from reputable suppliers. If temporary storage is necessary, cool and dry conditions shall be provided. The delivery by the supplier will include a datasheet identifying the type of seed and the 'use by' date. Seed shall be purchased in accordance with the Pure Live Seed specifications (or its Turkish equivalent) for seed mixes and used within 12 months of testing. Legume seed will be treated with a species-specific inoculant. Other alternative seed mixes specifically requested by the landowner or land managing agency may be used. Data sheet to be provided to BOTAŞ for approval prior to use.

Chisel harrow the topsoil to a depth of not more than 100mm. On slopes up to 20%, harrowing can be carried out mechanically up-and-down slope; the narrow width of the BTC-RoW will prevent contour cultivation. Use hand tillage on steeper slopes.

In general, broadcast grass seeds at a rate of not less than 70 kg/ha. If the supply of any particular species is limited, BOTAŞ may adjust this specification down to a value of 50kg/ha and will advise Contractor accordingly in advance of biorestitution commencing in the area affected. Certain species/mixtures of seed may require different densities and details will be advised by BOTAŞ.

Lightly harrow (chain harrow or similar) the soil to a depth of 25-50mm to bury the seed in a loose tilth.

In locations where erosion mat is not specified, mulch or windrowed vegetation from clearance operations shall be re-distributed over the seeded ground.

In sections where livestock may be present a stock-proof fence shall be erected along the boundaries of the seeded area. Along the BTC-RoW, in long seeded sections, cross fences shall be erected at intervals of approximately 30m, but stopped short of the full width to allow for access.

Seeding (Table 20.2 below) should be done either with a seed drill or by broadcasting. If broadcast, seeding should be done within 10 days of topsoil replacement. Broadcast seed should be lightly harrowed or disked. If sowing is seasonally out of phase, then an application of mulch is required on moderately high and highly erodible soils on slopes steeper than 16%, where seed should be applied in combination with mulch, chemical stabiliser (for some types of mulches), and fertiliser.

Table 20.2 Indicative Seeding Rates and Depths

Species (use certified seed when available)	Seeding rate, kg ha ⁻¹	Seeding depth, cm
Wheat	170	2.5–5.0
Italian or perennial rye grass	70	0.6–1.2
Other	Local advice	Local advice

Note: The above is indicative only. Advice should be sought on local conditions that might result in variances to the above.

On extreme slopes, such as cut faces of right-of-ways and roads, and excluding slopes steeper than 1/4:1 (h:v), seed and fertiliser are to be broadcast followed by power mulching using straw and a suitable tackifier such as bitumen.

Vegetated waterways should be planted with species that offer good channel roughness such as alfalfa or a grass-legume mixture incorporating Italian rye grass and common lespedeza; low-growing grasses such as Bermuda are unsuited to waterways above 3% slope.

20.7.2 Procedure P1 for shrub planting

A requirement of a minimum of 70% of the pre-existing shrub cover (based on number of individuals) established within one year of planting shall be set. If below-average rainfall is experienced, or where soil is lacking in nutrient, or where there are slopes of 25% or greater, a minimum of 50% cover (50% of the original cover where original cover <70%) shall be achieved in the first year with 70% occurring after the end of the following year. In areas adversely affected by construction of the NGP, or in other areas where third party activities have affected the level of vegetative cover, the original cover shall be determined by reference to adjacent, unaffected areas of similar topography and soil type.

The Contractor shall provide and transport plants and fertiliser from reputable suppliers. The delivery by the supplier will include a datasheet identifying the type of shrub and the 'use by' date. The roots shall be kept moist. Avoid excessive handling of the stems and roots since this will cause damage. Data sheet to be provided to BOTAŞ for approval prior to use.

Plant shrubs on a 1 m x 1 m spacing (or as advised by the Specialist Contractor), arranged en echelon, in the following steps:

- clear the land of any vegetation around each planting position;
- dig a hole large enough to take the roots of the plant when spread out;
- place fertiliser as supplied in the hole;
- place the shrub in the hole and backfill with soil;
- if necessary to keep upright, support the shrub by tying to a stake;
- water the plant.

In locations where erosion mat is not specified, mulch or windrowed vegetation from clearance operations shall be re-distributed around the shrubs.

Arrange for repeated watering of plants during summer and other dry periods during the first year of planting.

20.7.3 Procedure P2 for shrub planting (Option - BOTAŞ approval required)

In semi-desert areas the shrub spacing shall be 2m x 2m. Excavate the soil around the plant to form a crescentic berm (maximum height of 300mm, diameter approximately 2m) on the down slope side, horns pointing upslope, to create a basin (lunette) in which runoff can be trapped (see Figure 20.1).

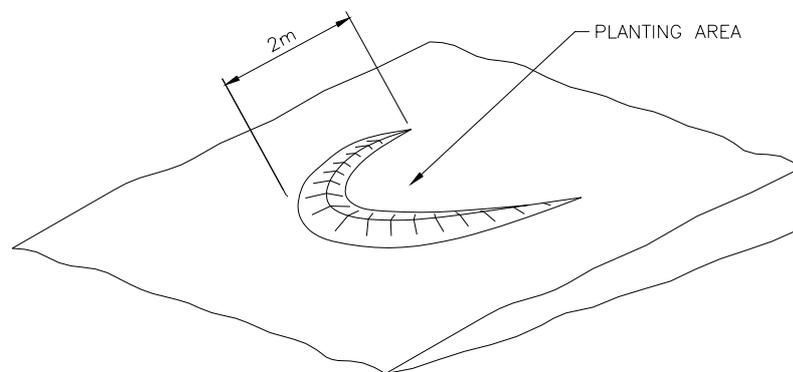


Figure 20.1 Micro-basins or Lunette to Trap Runoff Water

20.7.4 Jute matting and mulch

Jute matting is described in Section 17.5.

Mulch is used to insulate the soil surface from evaporation and high temperatures, to protect young seedlings from desiccation, and to lessen soil erosion by intercepting rainfall. Its application varies with site condition, seeding practices, and phase according to the agricultural calendar. Mulch can comprise organic or synthetic materials, and is not to be confused with erosion cloth used to line chutes and interceptor cross drains. Conclude grading the site and installation of erosion control features. Prior to seeding, use a chisel harrow to cultivate to a depth of 7–10cm, producing a surface free from excessive stones, clods, or trash. Broadcast seed onto the uncompacted seedbed, apply fertiliser (if required) and mulch.

A layer of mulch to protect seeded areas will be applied. The type of mulch will vary with the time of seeding, the slope, and the amount of relief. In interior plains and plateaux, temporary mulches using straw fibre or its equivalent are to be applied on undulating and rolling lands seeded in advance of the rainy season; mulch mesh or mats are to be applied on hilly and steeper lands regardless of the situation. In the Taurus Mountains and foothills, mulch mesh or mats are to be applied on rolling and steeper landscape classes that have been seeded to grass. Planted areas are to be temporarily fenced until such time as their vegetation reaches a condition appropriate to the zone. In most cases this will be judged by its ability to resist soil erosion.

20.7.5 Interior plains and plateaux

In general, cereals on slopes less than 16% would not be mulched following seeding. An exception applies to cereals planted out of phase with the agricultural calendar, when a light straw mulch is to be applied. Slopes steeper than 16% and vegetated waterways require a heavy mulch when seeded to grass, regardless of the situation.

20.7.6 Taurus mountains and foothills

Vegetated waterways and slopes steeper than 8% require a heavy mulch, regardless of the situation; slopes less than 8% require a light mulch if they are seeded out of phase with the agricultural calendar. An exception is areas to be reforested in conglomerate-derived soils, where planting basins or terraces following regional forestry practices replace the mulch requirement.

20.7.7 Design criteria and outline specifications

Conclude grading the site and install slope breakers. Prior to seeding, use a disk harrow to cultivate to a depth of 7–10cm, producing an even surface free from excessive stones, clods, or trash. Broadcast seed onto the uncompacted seedbed and apply fertiliser (Section 20.5).

Apply mulches according to recommendations in Table 20.3 and Table 20.4.

Table 20.3 Types of Mulches and Jute Matting and Application Details

Mulch	Quality standards	Application rate (T ha ⁻¹)	Application Constraints		Remarks
			Interior Plains & Plateaux	Taurus Mountains & Foothills	
Light mulch Compost or straw manure	Well shredded, free from excessive coarse material	6–8	Unsuited	Unsuited to slopes steeper than 8%	Excellent moisture conservation. Resistant to wind blow.
Hay or straw	Air dried, shredded into 20–30cm lengths	4	Unsuited to slopes steeper than 16%	Unsuited to slopes steeper than 8%	Effective for more than three months. Requires anchoring (use stapled netting)
Heavy mulch Straw power mulch with emulsion tackifier	Air dried straw Bitumen emulsion	3–7 0.25L/m ²	16% < suited < 50%	8% < suited < 50%	Does not withstand traffic. Breaks down in one season or less.
Jute mat	Undyed and unbleached, plain weave jute fabric	See Section 17.5	No hillslope limitation. Avoid channels bearing fully turbulent flow (ie erosive Reynolds number >70)	No hillslope limitation. Avoid channels bearing fully turbulent flow. (ie erosive Reynolds number >70)	Decomposes within 1 yr; bonds with soil
Excelsior mat	Wood excelsior, 6–12mm thickness Straw, hay, other	Manufacturer's recommendations	In addition to the above, avoid locations subject to fire risk (eg near rail lines).	In addition to the above, avoid locations subject to fire risk (eg near rail lines)	Requires fire resistance. Mats thicker than 12mm inhibit seedling emergence
Hydro-mulching using mix of seed, fertiliser, and fibre mulch in suspension			No hillslope limitation. Avoid channels bearing fully turbulent flow (ie erosive Reynolds number >70)	No hillslope limitation. Avoid channels bearing fully turbulent flow (ie erosive Reynolds number >70)	Apply organic mulches (hay, straw) separately using a blower after hydro-seeding.

Table 20.4 Anchoring Methods

Anchoring method	Material / technique	Mulch technique	How to apply
Manual	Peg and twine	Hay, straw	After mulching, drive 4–6 stakes per square metre to within 5cm of the ground. Secure criss-cross of twine taking two turns around each peg.
Manual stapler	Mulch netting	Hay, straw	Staple paper, jute, wood fibre, or plastic netting to soil surface using manufacturer's instructions.
Power puncher		Hay, straw	Cut mulch into the surface using a square-edge space in contour rows 0.5m apart
Tractor tracks		Hay, straw	Use tracks of tractor run up-and-down the slope to punch-in straw chopped to 20–30 cm lengths.
Specially constructed roller		Hay, straw	Weld steel cleats on section of steel pipe roller. Cleats should not be sharp but have slightly rounded edges. Straw specifications same as above.

20.8 REFORESTATION

Forests reduce runoff because of their interception of rain and their beneficial effect on soil infiltration. They reduce erosion by the effects of plant roots binding soil particles together and of humus protecting the surface. Reforestation of the RoW will occur wherever a forest existed before construction of the pipeline. For the purposes of this RP a forest is defined in accordance with Article 1 of the Forest Law that states 'trees and small trees, naturally or artificially grown, together with their surrounding area are considered as forest areas'. The reforestation strategy will be to successfully replace every tree felled during RoW clearance. However, not all trees will be able to be replaced in the same location from which they were removed as trees will not be able to be replanted along an 8m wide strip above the pipeline. It is noted that the revegetation strategy in all sections of the RoW will be to reinstate the pre-construction vegetation in terms of both composition and density.

A 22m working width is adopted in forest locations. A strip 8m wide above the pipeline is to remain fallow. Beyond this a 3m strip on either side is to be planted with shrubs; the outermost 4m on either side is reforested with trees.

Two planting methods will be adopted:

1. When trees from the RoW are less than 1m high, they are to be carefully excavated, including roots, by an excavator. The earth and trees are then removed to a storage place where they are supplied with water. During reinstatement the same trees are replanted.
2. When trees on the RoW are higher than one metre and cannot be replanted, 3 year to 5 year old plants from plantations are afforested. Bailed or container plants are to be used and planted in a spacing of 2x2m for softwoods and 1.5 x 1.5m for hardwoods. In poor soils (as on tuff or sandstone) a dressing of fertiliser is to be placed in the planting hole.

Table 20.5 gives recommended forest species according to the region. The northern region lies between the Georgian boarder and Sivas; the southern region lies between Sivas and Çeyhan. Natural plants are to be used and be matched to site requirements including elevation and soil conditions - seek advice from the Ministry of Forestry.

Rhododendron has a runoff coefficient nearly equal to forests. Therefore the existing rhododendron is to be treated like trees <1m. It is excavated and replanted on the shrub strip.

Table 20.5 Forest Species for the Northern and the Southern Region

Northern region		Southern region	
Hardwood	Softwood	Hardwood	Softwood
alder (<i>alnus viridis</i> , <i>alnus incana</i>)	red pine (<i>pinus silvestris</i>)	alder (<i>alnus viridis</i> , <i>alnus incana</i>)	red pine (<i>pinus silvestris</i>)
hazelnut (<i>corylus avellana</i>)		hazelnut (<i>corylus avellana</i>)	black pine (<i>pinus nigra</i>)
birch (<i>betula pendula</i>)		birch (<i>betula pendula</i>)	
poplar (<i>populus tremulus</i>)		poplar (<i>populus tremulus</i>)	
willow <i>salix</i> sp. (with tree growth)		willow <i>salix</i> sp. (with tree growth)	

Hardwood is to be preferred over softwood. The above listed hardwood species are pioneers: their growth is fast and their mulch accelerates the formation of humus. Reforestation with softwood requires an admixture with hardwood.

The shrub strip is afforested with hazelnut, juniper, *crategus* sp., alder, and willow (with shrubby growth) and as advised by the specialist contractor.

The Contractor shall provide a detailed reforestation strategy as a component of the Project specific plans and procedures that specify how the requirements of this Plan will be implemented and which will be submitted to BOTAŞ for approval 12 weeks prior to clearance of the Right of Way. The following information should be included in the reforestation strategy:

- species to be used and where;
- specific planting methods;
- detailed requirements for fertiliser use;
- detailed requirements for aftercare and monitoring; and
- supervision of reforestation activities.

20.9 PROTECTION OF PLANTED MATERIALS

In sections where livestock or wild animals may be present, precautions shall be taken to protect the seeds and plants from damage. Some or all of the following techniques should be employed:

- security patrols and procedures;
- liaison and agreements with livestock managers;
- erection of stock-proof fencing (designed/installed to discourage theft), along the project area boundaries;
- supplement boundary fencing by internal area fencing to give double protection to particular areas;

20.10 AFTERCARE, MONITORING AND CORRECTIVE ACTION

Contractor shall carry out the necessary aftercare (watering, further application of fertiliser etc) during the Contract maintenance period in order to meet the re-vegetation requirements.

Where necessary, Contractor will provide appropriate fencing to prevent access by grazing animals and vehicles. Fences will be fitted with signs in Turkish indicating the purpose, ie the enclosure is a BTC biorestorement project area and fencing is required for protection.

Appropriate levels of irrigation/watering shall be provided for revegetated areas. The quantity and timing will be dependant on local climatic conditions, soil type and species requirements. Local advice should be sought.

Contractor shall examine the biorestorement process of each section every three months after planting and report against the performance criteria specified below. Where the criteria are not met, or it appears that they will not be met within the specified time, Contractor shall take corrective action as specified in the Table 20.6.

Table 20.6 Biorestorement Performance Criteria Guide

Plant type	Performance criteria and corrective actions
Grasses	The performance of the new growth shall be compared with the requirement described earlier in this section. Growth from both the existing seed bank and reseeded are combined when determining the percentage cover. Corrective action shall include over seeding and/or watering.
Shrubs & trees	Failures of planted trees must not exceed 30% of the total numbers planted. Contractor shall replace failed trees and take further corrective action (watering, application of fertiliser etc) if appropriate.

21 SPECIAL AREAS

21.1 GENERAL

The Turkish section of the BTC pipeline project contains topographical, geological and ecological features, which are characterised on the project as Special Areas, these require particular attention throughout construction and reinstatement. A Class II erosion category shall apply to these Special Areas, therefore suitable erosion control to meet this criteria is critical.

Methodology statements for these areas shall demonstrate sufficient awareness and intent to minimise construction impact. A high level of importance is attached to the satisfactory reinstatement of these areas, therefore an increased level of BOTAŞ inspection, prior to acceptance, is planned. These Special Areas are as follows:

- side slopes;
- steep slopes;
- ecological sensitive areas;
- karstic areas;
- volcanic tuff; and
- above ground installation sites.

In addition to specialised construction techniques and increased levels of inspection, these areas are to be specifically considered by the Contractor during planning and project control. Special Areas will be identified uniquely on schedules and reports. Consideration of schedule constraints within these areas (weather, planting seasons, animal breeding periods etc) will be clearly identified by the Contractor on associated documents. Construction planning shall achieve a 21-day period from the time when a Special Area is entered to the completion of reinstatement (to a level specified in the BOTAŞ approved Special Area Reinstatement Method Statement) unless otherwise approved by BOTAŞ.

The general construction philosophy shall address completion of these identified Special Areas with minimum delay. The back-end of the spread shall follow directly behind the lowering-in crew. The Contractor will minimise the exposure of these areas to inclement weather.

The Contractor shall provide suitably qualified and experienced specialists to assist in the reinstatement engineering and re-vegetation procedures and method statements for the entire route and with particular consideration of these Special Areas. Such specialists shall include ecological specialists in relation to the reinstatement of ecologically sensitive areas (as specified in the EIA), who work for in-country specialist organisations such as, but are not limited to, TEMA (Turkiye Erozyonla Mucadele, Agaclandirma ve Dogal Varliklari Koruma Vakfi), DHKD (Dogal Hayati Koruma Dernegi), Ataturk University, Erzurum–The Faculty of Agriculture, Cumhuriyet University, Sivas–The Department of Environmental Engineering, Cukurova University, Adana–The Faculty of Agriculture). BOTAŞ will also provide specialists to oversee and audit these activities.

The Contractor shall produce detailed Method Statements for reinstatement of all Special Areas in accordance with the requirements of Section 2.5. The content of these detailed Method Statements shall address the requirements outlined in Section 5. Contractors shall ensure that specialist subcontractors are appointed to provide both advice and specialist skills for reinstatement planning and execution in Special Areas.

21.2 SIDE SLOPES AND SPOILS

The contour restoration strategy is to 'contour blend'. The side slope cut shall be restored, as far as practicable, to the original contours, so that the cut surface blends with the original contours through the implementation of engineered spoil management. The subsoil layers shall be arranged so that the outer edges effectively restore the slope to its original (ground) level; on no account should subsoil extend beyond the original line of slope or a new slope be created which is steeper than the original slope.

Topsoil shall be stripped from the area and stockpiled. Both the topsoil and subsoil shall be stored separately. Both stockpiles shall be consolidated and adequately drained. Drainage from the spoils shall be provided and a safe outlet established. (Refer to Project Drawing ILF-DRG-EPL-PLG-801).

On completion of all pipe installation, the subsoil shall be replaced in layers. The thickness of the layers, conditions of the soil and number of passes of the compactor shall be sufficient to produce a density of 95%-105% of the highest compaction measured in the adjacent undisturbed area.

Following compaction of the subsoil, the topsoil shall be spread over the site, harrowed and reseeded (refer to Section 20). Erosion mats shall then be laid (refer to Section 17).

In the event that side cuts are to remain as a permanent restoration feature, rock catchment benches (1m wide minimum) are required at slopes greater than 5m high. After scaling of the slopes to remove loose rock, rock netting shall be applied by the Contractor as required. Adequate drainage shall be applied to assure stability and controlled water runoff. In cases where these requirements apply, BOTAS pre-approval of the detailed construction drawings is required.

21.3 STEEP SLOPES

Steep slopes are those slopes that are predicted to exceed soil loss tolerance rates as defined in this Reinstatement Plan. The following factors should be considered when assessing the erosion potential of slopes:

- **Rainfall Intensity.** This parameter is a measure of the erosive force and intensity of the rain in a normal year. The rainfall intensity is based on rainfall records and probability statistics for risk evaluation. For the purpose of this study, the parameter is determined using a 1 hour 10 year return period storm. .
- **Soil Erodibility.** This parameter is a measure of the susceptibility of a soil particle becoming detached and transported by rainfall runoff. Soil parameters, which control soil erodibility are soil texture, structure soil space, organic content and hydraulic conductivity. Information from a particle size analysis (PSD) is used to estimate the soil erodibility using nomograms and correction factors.
- **Slope Angle and Length.** Erosion potential increases proportionally to increases in the length and angle of slope, simply because runoff flow rates increase with increasing gradient and slope length.
- **Vegetation Cover.** The effect of vegetative cover on soil loss is well researched. Bare soil represents high erodibility potential, whilst native vegetation will give maximum

protection. Vegetation cover can be directly related to management options ie mulch, erosion control matting etc.

- **Erosion Control Practice.** Further practices that influence erosion potential are roughening of the soil surface by tractor treads, or by rough grading, raking or disking.
- **Soil Temperature.** Temperature is another climatic factor affecting the potential for erosion to occur. Consolidation by freezing of exposed soils during winter months and accumulation of precipitation (snow) until periods of thaw, result in rapid melting and high levels of runoff. This situation exists in Central and Eastern Anatolia.

One such method for calculating potential soil loss from slopes is the Universal Soil Loss Equation (USLE). This predicts the long-term average annual rate of erosion on a field slope based on rainfall pattern, soil type, topography, crop-system and management practices. USLE only predicts the amount of soil loss that results from sheet or rill erosion on a single slope and does not account for additional soil losses that might occur from gully, wind or tillage erosion. This erosion model was created for use in selected cropping and management systems, but is also applicable to non-agricultural conditions such as construction sites. The USLE can be used to compare soil losses from a particular site with a specific management system to 'tolerable soil loss' rates (see Section 2.6 and Section 10). Alternative management may also be evaluated to determine the adequacy of conservation measures in planning.

Five major factors are used to calculate the soil loss for a given site. Each factor is the numerical estimate of a specific condition that affects the severity of soil erosion at a particular location. The erosion values reflected by these factors can vary considerably due to varying weather conditions. Therefore, the values obtained from the USLE more accurately represent long-term averages. The equation is written as follows:

$$A = R \times K \times LS \times C \times P$$

Where:

- A** potential long-term average annual soil loss in tons per acre per year
R rainfall and runoff factor by geographic location
K soil erodibility factor
LS slope length-gradient factor
C vegetation and management factor
P support practice factor

For further information, refer to Website Address:

<http://www.gov.on.ca/OMAFRA/english/engineer/facts/00-001.htm#tab3b>

This methodology will be used to determine the estimated removal rates and recommend appropriate mitigation measures required to meet the soil loss tolerance rates given in Section 2.7 and Section 10 of this Plan. Contractor will demonstrate that this work has been completed in the Special Area Reinstatement Method Statements.

Table 21.1 is indicative of the slopes >30%. This table is provided for guidance and shall not be considered a definitive list. The Contractor shall establish steep slope areas and provide procedures and methodology statements as part of the site-specific Special Area Reinstatement Method Statements for BOTAŞ approval. The procedure shall establish all planned temporary and permanent erosion measures in line with this RP and Project Drawings.

Table 21.1 Slopes

Reference No.	from km	to km	Inclination		Horizontal Length [m]	Slope Length [m]
			Average Inclination	Steepest Parts		
			[%]	[%]		
8	11.250	11.590	42	48	340	369
9	13.800	14.320	42	55	520	564
11	15.160	15.350	44	52	190	208
12	16.500	16.725	44	60	225	246
34	289.625	289.915	34	51	290	306
47	445.355	445.435	45	55	80	88
48	446.310	446.440	35	55	130	138
52	451.200	451.445	57	70	245	282
57	453.180	453.420	60	60	240	280
58	453.480	453.735	58	60	255	295
62	464.460	464.605	52	60	145	163
63	465.825	465.935	36	52	110	117
64	466.260	466.500	40	50	240	258
65	467.100	467.225	48	52	125	139
67	468.000	468.125	36	55	125	133
69	474.855	475.580	38	45	725	776
93	563.850	563.980	38	52	130	139
107	617.610	618.165	37	45	555	592
116	652.830	652.930	45	51	100	110
117	653.860	653.990	48	60	130	144
118	667.895	668.115	36	51	220	234
123	788.400	788.565	40	51	165	178
126	827.315	827.615	37	48	300	320
142	946.080	946.410	32	45	330	346
144	946.535	946.865	38	53	330	353
145	947.075	947.435	36	48	360	383
146	947.475	947.715	47	52	240	265
149	950.680	951.180	42	55	500	542
153	969.865	970.245	38	55	380	407
154	976.105	976.525	37	45	420	448
159	984.330	984.580	50	60	250	280
160	984.580	984.710	43	52	130	142

Construction in steep slope areas requires an increased awareness of safety and stability issues. The Contractor shall utilise proven construction techniques specific to such areas. The Contractor shall demonstrate that increased safety measures are planned and these measures are to be followed on site. An increased level of Safety Engineer presence will be required at these locations.

The requirement for temporary RoW erosion/stabilisation techniques will be dependant upon the season. However the Contractor shall be prepared to provide all resources necessary to avoid

incipient slope erosion and stabilisation issues, regardless of season, in order to be prepared for unforeseen inclement weather.

21.4 ECOLOGICALLY SENSITIVE AREAS (ESA)

The Environmental Impact Assessment (EIA) process has identified a number of Ecologically Sensitive Areas (ESAs). These areas have been identified due to the presence of endangered or threatened plants and animals or their habitats. The location of these areas are summarised in Table 21.2. The EIA Impact Tables identify a number of outline site-specific mitigation measures that will be carried out in each of these ecologically sensitive areas. These measures include, but are not limited to, the following types of technique:

- pre-construction surveys to accurately map the location of endangered or threatened species of plants and animals within ESAs;
- translocation of species (plants and animals) to appropriate habitat outside of the RoW or construction area prior to construction;
- removal, nurture and replacement/reinstatement of turfs of endangered or threatened plant species within the RoW or at temporary construction areas;
- care in the use of fertiliser during reinstatement (as specified in the environmental impact tables in Supplement 1, Volume 2 of the EIA Report);
- provision of 'points of passage' across the RoW for mammal species (as specified in the EIA);
- seasonal limitations for particular construction activities (as specified in Attachment 1 of the EMMP and the environmental impact tables in Supplement1, Volume 2 of the EIA Report);
- minimisation of tree felling and scrub clearance;
- measures to minimise the impacts of heavy machinery eg moveable equipment mats or plates;
- supervision by ecological advisors throughout construction and reinstatement.

Table 21.2 Ecologically Sensitive Areas

Site Code	Type of Area	Location (Approximate 3D KP)
ESA 1	Posof Wildlife Preservation Area, Important Plant Species, Habitat of <i>Caucasian Black Grouse</i> , <i>Gypsophila simulatrix</i> , <i>Lathyrus karsianus</i> , <i>Allium sosnowskyanum</i> , <i>Acer divergens</i>	10.25 – 15.32
ESA 2	Important Plant Species: <i>Allium sosnowskyanum</i> , <i>Scrophularia versicolor</i>	19.03 – 19.43
ESA 3	Important Plant Species: <i>Allium sosnowskyanum</i> , <i>Scrophularia versicolor</i>	26.35 – 26.84
ESA 4	Important Plant Species: <i>Allium sosnowskyanum</i> , <i>Scrophularia versicolor</i>	29.68 – 30.14
ESA 5	Important Plant Species: <i>Saponaria picta</i> , <i>Draba bruniifolia</i> ssp. <i>armeniaca</i> , <i>Elymus sosnowskyi</i> , <i>Scrophularia versicolor</i> , <i>Bupleurum brachiatum</i>	60.27 – 65.49
ESA 50	Important Plant Species: <i>Lathyrus cf. karsianus</i> , <i>Draba brunifolia</i>	113.92- 114.63
ESA 6	Important Plant Species: <i>Saponaria picta</i> , <i>Necranthus orobanchioides</i> , <i>Alchemilla procerrima</i>	142.88 – 143.79
ESA 7	Important Agricultural Area and Plant Species (<i>Ruderal Vegetation</i>): <i>Saponaria picta</i> , <i>Necranthus orobanchioides</i> , <i>Alchemilla procerrima</i>	153 – 154.19
ESA 8	Important Plant Species, Sarikamis Forest (<i>Designated Natural Site</i>): <i>Onosma nigricaule</i> , <i>Cirsium woronowii</i> , <i>Senecio integrifolius</i> ssp. <i>karsianus</i> , <i>Lathyrus karsianus</i> , <i>Onobrychis stenostachya</i> ssp. <i>sosnowskyi</i> , <i>Necranthus orobanchioides</i> , <i>Rumex gracilescens</i> , <i>Senecio integrifolius</i>	167.05 – 173.05
ESA 9	Important Plant Species: <i>Onobrychis stenostachya</i> ssp. <i>Sosnowskyi</i>	223.02 – 223.50
ESA 10	Important Plant Species: <i>Onosma arcuatum</i> , <i>Campanula ledebouriana</i> , <i>Centaurea hedgei</i> , <i>Isatis candolleana</i> , <i>Iris taochia</i> , <i>Thymus canoviridis</i> , <i>Onobrychis huetiana</i> , <i>Reseda armena</i> , <i>Ferula huber-morathii</i>	239.24 – 255.12
ESA 11	Important Plant Species: <i>Lathyrus layardii</i> , <i>Onobrychis araxina</i>	259.51 – 260.88
ESA 12	Important Plant Species: <i>Centaurea schischkinii</i> , <i>Thlaspi cilicicum</i> , <i>Elymus sosnowskyi</i> , <i>Ballota rotundifolia</i> , <i>Thymus pectinatus</i> var. <i>pectinatus</i> , <i>Thymus canoviridis</i> , <i>Onobrychis araxina</i> , <i>Fritillaria alburyana</i> , <i>Consolida cornuta</i> , <i>Scrophularia versicolor</i> , <i>Pimpinella anisetum</i> .	291.91 – 299.47
ESA 13	Important Plant Species and Erzurum Important Bird Area: <i>Pulicaria armena</i> , <i>Hesperis schischkinii</i> , <i>Onobrychis araxina</i>	301.34 – 302.71
ESA 14	Important Plant Species: <i>Tchihatchewia isatidea</i>	359.85 – 360.42
ESA 15	Important Plant Species: <i>Gypsophila tuberculosa</i> , <i>Carduus acanthoides</i> ssp. <i>sintensisii</i> , <i>Cousinia sintensisii</i> , <i>Tanacetum albipannosum</i> , <i>Hesperis berriscapa</i> , <i>Isatis erzurumica</i> , <i>Stachys subnuda</i> , <i>Astragalus trachytricus</i> , <i>Glaucium cappadocicum</i> , <i>Acantholimon spirizianum</i> var. <i>multiflorum</i> , <i>Thesium stellerioides</i> , <i>Verbascum heterodontum</i> , <i>Achillea sintensisii</i> , <i>Helichrysum arenarium</i> var. <i>erzincanicum</i> , <i>Alyssum anatolicum</i> , <i>Tchihatchewia isatidea</i> , <i>Acantholimon kotschyi</i> ssp. <i>laxispicatum</i> .	380.43 – 402.02

**BTC PROJECT EIA
TURKEY**

Site Code	Type of Area	Location (Approximate 3D KP)
ESA 16	Important Plant Species: <i>Cousiana sintenisii</i>	419.80 – 420.48
ESA 17	Important Plant Species: <i>Cousinia sintenisii</i> , <i>Trigonosciadium intermedium</i>	424.10 – 424.60
ESA 18	Important Plant Species: <i>Cousinia sintenisii</i> , <i>Trigonosciadium intermedium</i>	430.81 – 431.29
ESA 19	Important Plant Species: <i>Onosma liparioides</i> , <i>Campanula hedgei</i> , <i>Isatis cappadocica</i> ssp. <i>alyssifolia</i> , <i>Astragalus elbistanicus</i> and <i>Haplophyllum cappadocicum</i> , <i>Onosma liparioides</i> , <i>Jurinea brevicaulis</i> , <i>Alyssum lepidoto-stellatum</i> , <i>Galium hypoxylon</i> , <i>Galium papilliferum</i> , <i>Thesium aureum</i> , <i>Acer divergens</i> var. <i>trilobium</i>	445.47 – 447.92
ESA 20	Important Plant Species: <i>Onosma liparioides</i> , <i>Campanula hedgei</i> , <i>Isatis cappadocica</i> ssp. <i>alyssifolia</i> , <i>Astragalus elbistanicus</i> and <i>Haplophyllum cappadocicum</i> , <i>Onosma liparioides</i> , <i>Jurinea brevicaulis</i> , <i>Alyssum lepidoto-stellatum</i> , <i>Galium hypoxylon</i> , <i>Galium papilliferum</i> , <i>Thesium aureum</i> , <i>Acer divergens</i> var. <i>trilobium</i>	451.70 – 458.42
ESA 21	Important Plant Species: <i>Hypericum scabroides</i> , <i>Astragalus crinitus</i> , <i>Alchemilla ciminensis</i> , <i>Alchemilla erzincanensis</i> , <i>Bupleurum eginense</i> , <i>Acer divergens</i> var. <i>trilobium</i> , <i>Onosma sintenisii</i> , <i>Paracaryum lithospermifolium</i> var. <i>erectum</i> , <i>Veronica montbretii</i> , <i>Campanula ptarmicifolia</i> var. <i>ptarmicifolia</i>	468.93 – 472.47
ESA 22	Important Plant Species: <i>Hypericum scabroides</i> , <i>Astragalus crinitus</i> , <i>Alchemilla ciminensis</i> , <i>Alchemilla erzincanensis</i> , <i>Bupleurum eginense</i> , <i>Acer divergens</i> var. <i>trilobium</i> , <i>Onosma sintenisii</i> , <i>Paracaryum lithospermifolium</i> var. <i>erectum</i> , <i>Veronica montbretii</i> , <i>Campanula ptarmicifolia</i> var. <i>ptarmicifolia</i>	476.53 – 481.84
ESA 23	Important Plant Species: <i>Bupleurum brachiatum</i>	484.97 – 485.49
ESA 24	Important Plant Species: <i>Gypsophila aucheri</i> , <i>Arenaria pseudacantholimon</i> , <i>Festuca anatolica</i> var. <i>borealis</i> , <i>Paracaryum corymbiforme</i> , <i>Ranunculus sintenisii</i> , <i>Dianthus zederbaueri</i> , <i>Consolida olopetala</i> , <i>Minuartia anatolica</i> var. <i>scleranthoides</i>	487.14 – 511.23
ESA 25	Important Plant Species: <i>Barbarea auriculata</i> var. <i>paludosa</i> , <i>Gypsophila aucheri</i> (potentially <i>Acer divergens</i> var. <i>trilobium</i>)	522.81 – 522.30
ESA 51	Important Plant Species: <i>Dianthus zederbaueri</i> , <i>Helichrysum arenarium</i> ssp. <i>erzincanicum</i>	528.20 - 529.20
ESA 26	Important Plant Species: <i>Barbarea auriculata</i> var. <i>paludosa</i> , <i>Gypsophila aucheri</i> (potentially <i>Acer divergens</i> var. <i>trilobium</i>)	525.02 – 525.61
ESA 27	Important Plant Species: <i>Isatis sivasica</i> , <i>Minuartia anatolica</i> var. <i>scleranthoides</i> , <i>Onobrychis stenostachya</i> ssp. <i>Krausei</i> , <i>Lepidium caespitosum</i> , <i>Tchihatchewia isatidea</i>	645.12 – 654.24
ESA 28	Important Plant Species: <i>Cousinia sivasica</i> , <i>Isatis sivasica</i> , <i>Tchihatchewia isatidea</i> (potentially <i>Minuartia anatolica</i> var. <i>lanuginosa</i> and <i>Aethionema lepidioides</i>)	659.50 – 664.44
ESA 29	Important Plant Species: <i>Alyssum caespitosum</i> , <i>Galium cornigerum</i> , <i>Minuartia anatolica</i> var. <i>lanuginose</i> , <i>Cousinia sivasica</i> , <i>Cousinia sivasica</i> (potentially <i>Minuartia rimarum</i> var. <i>multiflora</i>)	679.17 – 680.49
ESA 30	Important Plant Species: <i>Alyssum caespitosum</i> , <i>Galium cornigerum</i> , <i>Minuartia anatolica</i> var. <i>lanuginose</i> , <i>Cousinia</i>	685.59 – 686.24

**BTC PROJECT EIA
TURKEY**

Site Code	Type of Area	Location (Approximate 3D KP)
	<i>sivasica</i> , <i>Cousinia sivasica</i> (potentially <i>Minuartia rimarum</i> var. <i>multiflora</i>)	
ESA 31	Important Plant Species: <i>Alyssum caespitosum</i> , <i>Galium cornigerum</i> , <i>Minuartia anatolica</i> var. <i>lanuginose</i> , <i>Cousinia sivasica</i> , <i>Cousinia sivasica</i> (potentially <i>Minuartia rimarum</i> var. <i>multiflora</i>)	688.68 – 689.21
ESA 32	Important Plant Species: <i>Alyssum caespitosum</i> , <i>Galium cornigerum</i> , <i>Minuartia anatolica</i> var. <i>lanuginose</i> , <i>Cousinia sivasica</i> , <i>Cousinia sivasica</i> (potentially <i>Minuartia rimarum</i> var. <i>multiflora</i>)	692.99 – 693.41
ESA 33	Important Plant Species: <i>Dianthus zederbaueri</i> , <i>Achillea gonioccephala</i> , <i>Astragalus listoniae</i> , <i>Astragalus cymbibracteatus</i> , <i>Astragalus ulashensis</i> , <i>Glaucium acutidentatum</i> , <i>Centaurea sivasica</i> and <i>Cerastium saccardoanum</i> , <i>Campanula strigillosa</i> , <i>Onobrychis argyrea</i> ssp. <i>Argyrea</i>	727.99 – 739.92
ESA 34	Important Plant Species: <i>Dianthus zederbaueri</i> , <i>Physoptychis haussknechtii</i> , <i>Alyssum lepidoto-stellatum</i> , <i>Campanula strigillosa</i> , <i>Salvia vermifolia</i> , <i>Hypericum thymbrifolium</i> , <i>Centaurea sivasica</i> , <i>Astragalus karputanus</i> (potentially <i>Astragalus cymbibracteatus</i> , <i>Achillea gonioccephala</i> , <i>Astragalus listoniae</i> , <i>Crocus kotschyanus</i> ssp. <i>Cappadocicus</i> , <i>Campanula strigillosa</i>)	735.86 – 739.39
ESA 35	Important Plant Species: <i>Bornmuellera cappadocica</i> , <i>Crocus kotschyanus</i> ssp. <i>Cappadocicus</i> (potentially <i>Campanula strigillosa</i> and <i>Astragalus cymbibracteatus</i>)	756.23 – 757.50
ESA 52	Important Plant Species: <i>Dianthus zederbaueri</i>	761.91 – 762.47
ESA 53	Important Plant Species: <i>Paronychia cataonica</i> and <i>Campanula strigillosa</i>	778.22 - 779.17
ESA 36	Zamanti River Crossing + Important Plant Species: <i>Orchis palustris</i>	796.36 – 797.02
ESA 37	Important Plant Species: <i>Campanula strigillosa</i>	797.84 – 798.38
ESA 54	Important Plant Species: <i>Allium tauricola</i> , <i>Pimpinella anisetum</i>	836.02 – 841.92
ESA 38	Important Plant Species: <i>Asyneuma linifolium</i> ssp. <i>eximium</i> , <i>Phryna ortegioides</i> , <i>Silene caryophylloides</i> ssp. <i>stentoria</i> , <i>Cerastium saccardoanum</i> , <i>Minuartia rimarum</i> var. <i>multiflora</i> , <i>Minuartia dianthifolia</i> ssp. <i>cataonica</i> , <i>Senecio jurineifolius</i> , <i>Centaurea derderiifolia</i> , <i>Doronicum haussknechtii</i> , <i>Isatis huber-morathii</i> , <i>Salvia eriophora</i> , <i>Isatis aucheri</i> , <i>Crocus kotschyanus</i> ssp. <i>cappadocicus</i> , <i>Thlaspi densiflorum</i> , <i>Graellsia davisiana</i> , <i>Muscari microstomum</i> , <i>Hyacinthella acutiloba</i> and <i>Fritillaria aurea</i> (potentially <i>Achillea gonioccephala</i> , <i>Astragalus sparsipilis</i> , <i>Astragalus cymbibracteatus</i> and <i>Ferula longipedunculata</i>)	841.95 – 847.58
ESA 55	Important Plant Species: <i>Pimpinella anisetum</i>	862.09 – 862.67
ESA 39	Important Plant Species: <i>Verbascum melitenense</i>	886.81 – 887.33
ESA 40	Important Plant Species: <i>Thlaspi densiflorum</i> , <i>Allium glumaceum</i> , <i>Arabis aubrietoides</i> , <i>Paracaryum reuteri</i> , <i>Onobrychis sulphurea</i> var. <i>sulphurea</i> (probably <i>Galium cornigerum</i>)	894.88 – 896.83
ESA 41	Important Plant Species: <i>Hedysarum candidissimum</i> , <i>Astragalus elbistanicus</i> , <i>Dactylorhiza osmanica</i> var. <i>anatolica</i> , <i>Arabis aubrietoides</i> , <i>Allium tauricola</i> , <i>Centaurea holtzii</i> , <i>Verbascum leianthoides</i> , <i>Paracaryum reuteri</i> , <i>Achillea magnifica</i> ,	901.90 – 909.69

**BTC PROJECT EIA
TURKEY**

Site Code	Type of Area	Location (Approximate 3D KP)
	<i>Phlomis brunneogaleata, Onobrychis sulphurea var. sulphurea</i>	
ESA 42	Important Plant Species: <i>Gentiana boissieri</i>	936.77 – 938.54
ESA 43	Important Plant Species: <i>Verbascum luridifolium, Alkanna cappadocia, Tanacetum haradjanii, Allium tauricola, Gentiana boissieri, Helianthemum antitauricum, Erodium micropetalutum</i> and <i>Galium antitaurica</i>	940.00 – 943.81
ESA 44	Important Plant Species: <i>Thlaspi cilicicum, Centaurea antitauri, Cephalanthera kotschyana, Corydalis solida ssp. tauricola, Johrenia silenoides, Cyclamen pseudo-ibericum, Chionodoxa forbesii</i> and <i>Bupleurum zoharii</i> (potentially <i>Verbascum luridifolium</i>)	955.91 – 961.01
ESA 45	Important Plant Species: <i>Grammosciadium confertum</i> (potentially <i>Helianthemum antitauricum, Tanacetum haradjanii</i>)	962.09 – 964.27
ESA 46	Important Plant Species: <i>Lamium garganicum ssp. nepetifolium, Verbascum hadschinense, Kundmannia syriaca, Corydalis solida ssp. tauricola, Sideritis cilicica, Chionodoxa forbesii, Bupleurum zoharii, Trifolium rousseanum, Silene inclinata, Cephalanthera kotschyana, Micromeria cremnophila ssp. Amana, Allium tchihatschewii</i>	974.54 – 981.65
ESA 47	Important Plant Species: <i>Ophrys reinholdii ssp. leucotaenia</i>	994.29 – 997.74
ESA 48	Important Plant Species: <i>Ophrys transhyrcana ssp. amanensis, Centaurea calcitrapa ssp. cilicica, Centaurea lycopifolia, Anthemis pungens</i>	1026.47 – 1028.54
ESA 49	Important Plant Species: <i>Ophrys transhyrcana ssp. amanensis</i>	1060.59 – 1061.10

Special Area Reinstatement Method Statements shall further develop the mitigation measures that are specified in the EIA. Contractors are required to provide site specific Method Statements that will further develop and clearly specify the means by which the measures committed to in the EIA and in this RP will be implemented in relation to their scope of work. The planning and implementation of these Special Area Method Statements, will include, but not be limited to, the activities outlined below.

21.4.1 Provision of specialist advice

Specialist advice and input will be required in relation to a number of aspects of the planning and implementation of reinstatement activities including but not limited to: pre-construction surveys (see below); selection of appropriate species for revegetation; planting methods; translocation of plants and animal; removal and replacement of turfs; use of fertiliser; and species identification.

21.4.2 Pre-construction surveys

The EIA has identified ESAs in which particular species of plants and animals have been recorded. However, detailed mapping of the presence of such species will be required prior to construction to facilitate the reinstatement of a similar plant community to that existing prior to construction and to confirm the presence of animal species that may require translocation prior to construction.

21.4.3 Development of a reinstatement method statement for each ESA

Based upon the information contained in the EIA and this document, specialist advice and the results of pre-construction surveys, a site-specific Special Area Reinstatement Method Statement will be produced for each ESA which will clearly specify the measures to be adopted in each ESA and the means by which these measures will be implemented.

21.4.4 On-site supervision

In addition to specialist input to the planning of reinstatement activities, ecological expertise will be present on site during all relevant activities within ESAs (eg route clearance, re-vegetation) to provide advice and supervision. Contractors will be expected to provide appropriately qualified personnel to undertake the day-to-day supervision of such activities and BOTAŞ will also provide specialists to advise and supervise the reinstatement works.

21.5 KARSTIC AREAS

The karstic area extends nominally between pipeline KP 600 to pipeline KP 690. The BTC pipeline route shares the majority of this distance with the existing East Anatolian Natural Gas Pipeline (NGP) (see Section 8).

Karst is the topography that develops in soluble rocks in which fissures may be enlarged (ultimately to form caves) by flowing groundwater. Gypsum is more soluble than limestone, therefore karstic areas develop relatively rapidly in areas of gypsum (see Section 5 of the EIA for further information).

Restoration in the karstic areas shall proceed as follows:

- soils from the dolines shall be stockpiled separately;
- mixing of the doline soil and the ridge material is prohibited;
- continuous environmental inspection will follow construction;
- excess rock material from ridges will be disposed off in accordance with the project Waste Management Plan;
- spreading of rock is prohibited;
- discovery of subsurface voids during construction shall be immediately reported to the BOTAŞ.

Temporary and permanent erosion measures shall be employed in accordance with the requirements of this RP and Project Drawings. The Contractor shall employ trench drainage measures as necessary to ensure that the gypsum rock in this area is not dissolved as a result of water within the trench. A Special Area Reinstatement Method Statement will be submitted for Gypsum Karst located east of Sivas. Special attention will be given to drainage in this Method Statement.

Drainage plans will maximise the use of existing natural drainage i.e., sink holes. Subsurface drainage in the Model 2 Karst (refer to Section 5 of the EIA Report for description) is thought to be controlled by the structural geology of the gypsum. For example, the karst in the vicinity of KP 606-607 subsurface drainage is thought to be to the south of the east-west trending pipeline. It is recommended therefore, that drainage from the RoW maximises the use of existing natural drainage ie, sink holes to the south of the pipeline RoW.

21.6 VOLCANIC TUFF AND MARLS

21.6.1 Volcanic tuff

Pipeline construction on tuff derived soils will potentially give rise to major impacts between:

- KPs 0 – 10,
- KPs 16 – 45,
- KPs 85 – 137,
- KPs 156 – 171 and
- KPs 192 - 238.

Topsoil layers are typically thin, <10cm, in areas of volcanic tuff. The EIA has identified the creation of a long-term white scar on the landscape as a potentially major visual impact in areas of volcanic tuff. Consequently, special care is necessary in such areas to ensure the preservation of topsoil and successful establishment of a natural vegetative cover. In areas of volcanic tuff, or other thin topsoils, Contractor Method Statements will clearly state the methods that will be adopted to avoid such adverse impacts.

Special Area Reinstatement Method Statements will be drawn up by the Contractor for reinstatement in areas underlain by volcanic tuff.

The Special Area Reinstatement Method Statements shall include the provision of a Soils Specialist, in addition to the required Environmental Inspection personnel, who will provide expert advice and supervision in areas of volcanic tuff. The Soils Specialist may also provide input in other vulnerable soil areas. The role of the soils specialist will include the following tasks in such areas:

- consultation with landowners and local experts to determine the most appropriate construction and reinstatement methods;
- establishing the depth of topsoil to be removed on a site specific basis;
- supervision and advice regarding topsoil and subsoil removal, storage and replacement;
- supervision and advice regarding soil erosion control measures during and after construction; and
- supervision and advice regarding re-vegetation.

The Soils Specialist shall be responsible, in cooperation with the Community Liaison Officers and Ecological Specialist, for ensuring that landowners and local specialists/regulators are fully consulted in determining the most appropriate methods of topsoil removal, storage and replacement, and methods of re-vegetation in areas of volcanic tuff in accordance with local conditions. The following mitigations are to be used:

- The RoW should be narrowed to that necessary for safe and effective working. This is feasible in such areas as the topsoil is so thin that it occupies little space when reserved to one side of the RoW. Contractor methodologies shall include a provision that where soil storage areas are reduced due to thin topsoil, the RoW will be reduced accordingly in order to minimise the area impacted.
- Although the topsoil layer in areas of volcanic tuff is thin, it is essential that this topsoil be reserved as the topsoil is the sole reservoir of fertility in tuffaceous soils and is also an important store of seeds. Since the topsoil is thin and variable in depth, it is inappropriate at this stage to specify a prescriptive thickness to be removed during RoW clearance. Consequently, the Contractor Soils Specialist shall establish the topsoil

thickness for removal and separate storage at regular intervals prior to topsoil clearance. The distance of such intervals will vary and will be determined by the Soils Specialist in consultation with BOTAŞ specialists. The Soils Specialist will also determine the most appropriate removal technique in consultation with the construction supervisor. The Contractor shall provide appropriately skilled and experienced operators to undertake topsoil removal in such areas.

- Contractor Method Statements shall provide for pre-existing shrubs and turfs of coarse grasses to be set aside and replanted on the RoW in areas of tuffaceous soils. If possible, and in order to minimise the time period between site clearance and replanting, they can be removed from one location and replanted at another where reinstatement is nearing its end provided the soil and soil climate are effectively identical to the area from where they were taken. Both the Soils Specialist and Ecological Specialists shall provide input to the planning and implementation of such activities. The Soils and Ecological Specialists shall also provide advice on the use of fertiliser in areas of tuffaceous soils. It is anticipated that the use of additional micro-nutrients will be required in such areas. Local expert advice, including landowners and the Ministry of Forestry and Agriculture, shall also be sought regarding fertiliser usage appropriate to the local conditions.
- Temporary soil erosion control measures will be established while constructing the pipeline. These will include temporary water bars, ditch breakers, and runoff barriers such as filter fences or straw bales.
- The land will be returned to as close to its natural contours as practicable. The infilled subsoil will be returned in layers following the same sequences as its removal. A crown no higher than 0.3m high will be left to allow for eventual settling of the soil. The resulting surface will then be profiled to conform to slope breaker and other specifications. Slope breakers will drain into a cuvette sculpted into the soil at each slope breaker outlet. Only then will the topsoil be replaced. If the growing season is nearing its end, the on-site soils expert may require the topsoil berm to be seeded with a fast growing cover crop, when it will be stored for spreading the following spring.
- Vegetation will be replanted accompanied by a basal dose of fertiliser mix. On tuff the usual 10-10-10 application of NPK will require additional micro-nutrients. Local expert advice will be sought from the Ministries of Forestry and Agriculture. Plants in addition to those recovered during topsoil stripping will likely be required if reinstatement is to succeed. Again, expert local advice will be sought in identifying seed or plant sources.
- Of critical importance alongside the above list of essential actions will be establishing communication links among the project's management, its contractors, authorities responsible for the management of public land, and owners and operators of private land. The wishes of land management authorities and land owners shall determine, in large part, the actions that will be taken to mitigate environmental impacts of the pipeline. Importantly, these same individuals and institutions will have a signatory role in determining the adequacy of environmental mitigations enacted by BOTAŞ and its contractors.
- The Contractor shall give particular attention to erosion control measures in areas of volcanic tuff and shall ensure a high level of inspection during construction, reinstatement and aftercare.

21.6.2 Marl

Marl is calcareous clay that is classified as a soft rock. Marl occurs as hills, plateaux and plateau scarps, and plains. This section treats marl soils that are too steep to play a role in rain fed agriculture, although they may support grazing, generally present between KP 617 - 647. Adverse impacts affecting marls include the following:

- visual impact: the marl leaves a whitish trace across the landscape where the subsoil has been exposed;
- soil erosion: marl erodes easily – in areas near Turkey’s coast marl can rotate as deep landslides;
- loss of soil productivity.

As with tuffaceous lands, an important mitigation will be to decrease the construction corridor to as narrow a width as possible. This is possible because marl topsoil on sloping lands is typically thin and requires little area when set aside for reinstatement. Existing shrubs will be set aside for later replanting. Temporary soil erosion control measures (water bars, ditch breakers and runoff barriers) will be installed. Temporary ditch breakers will be particularly important as marls typically contain springs that are likely to drain into the trench from the middle two-thirds of most slopes. When drained, trench water will be pumped either into a filter bag or constructed barrier made of based hay and filter cloth; in no instance will it drain onto unprotected soil. In some instances, emerging springs may require lined chutes to convey water from the RoW to a safe disposal location.

The specifications for returning tuff to its natural contour and condition also apply to marl and similar considerations to tuff will be applied as regards use of a soils expert and tailoring topsoil removal to the actual thickness present rather than a pre-prescribed specification.

The potential for replanting will be determined by the frequency of natural vegetation prior to construction. If this is low or absent, then replanting is unlikely to succeed – the onsite environmental inspector/soils expert will give a judgement. If the site is incapable of supporting sown grass or other vegetation, downslope agricultural lands will be provided with protection from eroded sediment; eg through a diversion or sediment settling pond. Again, the onsite environmental inspector/soils expert will give a judgement to be fulfilled by the construction contractor. If replanting is to be done, it will follow project specifications using a grass mix recommended by local agricultural and forestry expertise. If the season is too late for replanting, the topsoil berm will be protected over winter by seeding it with a fast growing cover crop. It will then be reinstated during the following spring.

21.7 ABOVE GROUND INSTALLATION SITES

Measures that will be adopted to minimise the visual impacts of the permanent buildings and facilities at AGI sites include the following:

- landscape planting within the site boundary where appropriate;
- opportunities to retain existing landform screening will be maximised, ie site levelling will be avoided, if possible, if existing hollows or mounds may be used to integrate built features within the landform;
- new landform screening (eg bunds and mounds) will be introduced where this might compliment the existing landform character;

- the use of appropriate colour schemes to minimise the visual impact of buildings;
- external lighting will be minimised to that necessary for safety and operational purposes and downward facing lighting and lighting of the same colour will be used to minimise spill and offsite impacts.

Contractors site-specific Reinstatement Method Statements for AGI sites shall address the following:

- maximising opportunities to retain existing landform screening, ie site levelling will be avoided, if possible, if existing hollows or mounds may be used to integrate built features within the landform;
- new landform screening (eg bunds and mounds) will be introduced where this might compliment the existing landform character.

Prior to construction, BOTAŞ will develop a site-specific landscape plan for each site that will identify specific measures to reduce landscape and visual impact. This plan will address architectural measures such as colour schemes, opportunities for landform screening and landscape planting. At this stage it is envisaged that landscape planting will be undertaken at PT1, IPT1 and at the Ceyhan Marine Terminal. Landscape planting will be undertaken by BOTAŞ. Construction Contractors will be required to ensure that site clearance and reinstatement activities and building colour schemes are consistent with the requirements of the site specific landscape plans as advised by BOTAŞ.

22 RESTRICTING ACCESS

In order to prevent rutting, subsequent erosion problems, and damage to riparian areas, measures should be taken to prevent unauthorised use of the BTC-RoW as a roadway. Access should be blocked, at locations specified by BOTAŞ representatives, through the construction of barrier berms of sufficient height (minimum 1.5m high) to provide a barrier to vehicles. Where possible, the berms should be tied to vegetation or rocks adjacent to the RoW to prevent traffic from circumventing the barrier. Rocks excavated during construction, 0.3m in diameter or larger, may be used instead of the earthen berms. Timber cleared during the construction may also be staggered across the RoW so as to deter off-road vehicle use.

23 HANDBOOK AND POST-CONSTRUCTION MAINTENANCE

Contractor shall obtain sign-off of the pre-entry form from the landowner agreeing on the standard of reinstatement. Contractor shall notify BOTAŞ prior to such meetings and allow for BOTAŞ attendance/monitoring. Contractor shall not attend such meetings without BOTAŞ presence unless agreed in writing by BOTAŞ.

Contractor, upon completion of reinstatement, shall accompany BOTAŞ on an inspection of all project areas, before demobilising from site. BOTAŞ will notify the Contractor of any insufficiencies in the reinstatement of the BTC-RoW / project areas. The Contractor shall carry out any further reinstatement to the approval of BOTAŞ.

During the contract maintenance period, Contractor shall be responsible for maintaining the standard of reinstatement and for ensuring that the stated erosion class and biorestitution requirements are met.

24 BIBLIOGRAPHY

Chow, Ven Te. 1959. Open-Channel Hydraulics. McGraw Hill. 906pp.

Schwab, G. et al. 1981. Soil and Water Conservation Engineering. Wiley. 525 pp.

Tourbier, T and R Westmacott. 1981. A Handbook of Measures to Protect Water Resources in Land Development. The Urban Land Institute. Wa.D.C. 176pp.

Tourbier, J. and Westmacott. 1981. Water Resources Protection Technology. The Urban Land Institute. Wa DC. 178 pp.

Wischmeier, WH and DD Smith. 1978. Predicting Rainfall Erosion Losses: A Guide to Conservation Planning. US Department of Agriculture. Agriculture Handbook No 537.

**Attachment 1 to the
Reinstatement Plan –
EROSION PERFORMANCE CRITERIA**

(PIPELINES)

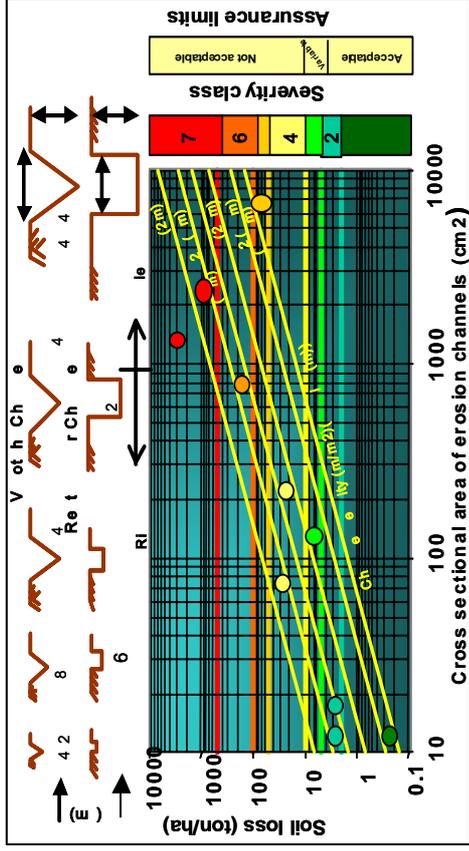
PERFORMANCE
Defining the level of performance required from erosion-control work demands making decisions on:

- The target erosion class, based on what level of erosion damage is considered acceptable.
- The choice of design storm, taking account of the likely consequences of erosion.
- The likely damage that will arise should the design storm occur in the period between pipeline installation and erosion-control measures becoming effective, and
- The local natural rate of erosion.



DAMAGE LEVELS
Local-natural erosion rates should be included as an indicator of what might be feasible to achieve as a task.
Erosion classes 4, 5 and 6 are unacceptable due to the high level of erosion rates induced by construction.
Erosion class 3 may be an appropriate target of any restoration design where sedimentation problems on nearby streams are not at issue; otherwise erosion class 2 will be the target.
In regions where the natural erosion rates are below 5 ton/ha it should be possible to establish Erosion class 2 as a target (i.e. UK).

EROSION CLASS	VERBAL ASSESSMENT	EROSION RATE (TON/HA)	VISUAL ASSESSMENT
7	Catastrophic	> 600	Extensive network of rills and gullies; large gullies (>10,000 m ²) every 20 m. Most of original surface washed away exposing pipeline. Severe damage from erosion and sedimentation on site and downstream.
6	Very severe	100 - 500	Continuous network of channels with gullies every 5 - 10 m. Surrounding soil heavily crusted. Integrity of the pipeline threatened by exposure. Severe siltation, pollution and eutrophication problems.
5	Severe	50 - 100	Continuous network of rills every 2 - 5m or gullies every 20 m. Access to site becomes difficult. Revegetation work impaired by erosion and sedimentation. Siltation of water bodies.
4	High	10 - 50	Connected and continuous network of rills every 5 - 10 m (if not spaced out to avoid rills). Yrags plants. Revegetation may be required. Danger of pollution and sedimentation problems downstream.
3	Moderate	5 - 10	Wash marks. Discontinuous rills spaced every 20 - 50 m. Splash pedestals and exposed roots mark level of former surface. Danger of pollution problems downstream.
2	Slight	2-5	Some crusting of soil surface. Localised wash but no or minor siltation. Crusts are thin. Some splash pedestals where stones or exposed roots protect underlying soil.
1	Very slight	<2	No evidence of compaction or crusting of the soil. No wash marks or splash pedestals. No splash pedestals or exposed roots or channels.



Appendix C3 – Waste Management Plan (WMP)

1 INTRODUCTION

1.1 INTRODUCTION

This Waste Management Plan (WMP) has been compiled on the basis of project information available up to January 2002 during the Detailed Engineering phase of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC P/L) Project.

1.2 SCOPE AND PURPOSE OF THE PLAN

This WMP identifies wastes that are likely to be generated during the construction of the BTC P/L Project and documents the 'cradle to grave' waste management practices to be employed for their collection, storage, treatment and/or disposal. The WMP covers wastes generated by construction and related activities.

Specifically, the waste covered by this WMP includes the following sources.

- construction and commissioning of all facilities;
- accommodation both temporary and permanent (used during construction);
- subsidiary operations, such as equipment maintenance, road construction, etc;
- infrastructure such as transport and airstrips/helicopter pads.

A WMP for operational waste will be prepared in early 2005 prior to the operation of the BTC Pipeline Project.

The WMP is a generic plan and is intended to serve as a guideline for the Contractor(s) to prepare his (their) own more detailed plan(s) and procedures for implementation. The Contractor shall submit an outline WMP 30 days after the construction phase starts and site specific WMP and Waste Management Procedures demonstrating how the requirements of the outline WMP will be implemented 12 weeks prior to the clearance of RoW, or the breaking of ground at other construction sites, for the approval of BOTAS.

This WMP describes how waste will be managed during the construction phase of the Project and how the Project will:

- minimise the potential to cause harm to human health and the environment;
- achieve and maintain compliance with Turkish regulations, World Bank and European Union standards, and BOTAS environmental goals;
- reduce operational costs and reduce any potential liabilities that may arise from waste handling operations.

This plan also ensures that every waste stream and solid waste materials from all sites will be managed appropriately.

1.3 RELATIONSHIP TO OTHER PLANS AND DOCUMENTS

There will be an Emergency Response Plan, which will need to inter-link with the WMP particularly with respect to hazardous materials and hazardous wastes in temporary storage.

The Environmental Management and Monitoring Plan (EMMP) will need to consider the monitoring requirements with respect to the waste storage and waste management facilities.

The Traffic Management Plan (TMP) needs to consider the movement of wastes to and from temporary storage and to and from longer term storage facilities.

The Oil Spill Response Plan (OSRP) and Pollution Prevention Plan (PPP) need to link to the WMP in terms of the management of wastes, which may result from, oil spills and pollution control.

This WMP should be read in conjunction with the Environmental Specifications, (Section 6.4) ITT EPC Documentation.

1.4 STRUCTURE OF THE WASTE MANAGEMENT PLAN

In addition to this introductory section that also includes definitions and a glossary of terms, this WMP has the following contents:

- Section 2 – Applicable Policies and Standards;
- Section 3 – Approved Waste Management Facilities;
- Section 4 – Waste Disposal Sites Along the Route ;
- Section 5 – Waste Sources and Streams;
- Section 6 – Waste Management Measures and Procedures;
- Section 7 – Waste Management During BTC Terminal Construction .

1.5 DEFINITIONS

Definitions and abbreviations used for this project in general are defined in the Specification for Product, Environment and Utility Data (ILF-SPC-ENG-GEN-001).

Definitions used in this document are given below.

BTC P/L	The Baku-Tbilisi-Ceyhan Crude Oil Pipeline System
Emergency Plan	A plan for dealing with any accident or emergency that documents on-site and off-site procedures to mitigate risk and damage.
Hazardous Waste	Means any substance or object as defined in Turkish legislation (The Hazardous Waste Control Regulation of 27 August 1995) or any waste which is covered by Article 1(4) of Council Directive 91/689/EEC of 12 December 1991 on hazardous waste as amended by Decision 2000/532/EC of 3 May 2000 and further amended by Commission Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC amending list of wastes.
Inert Waste	Means any waste as defined in Article 2 of the Landfill Directive 1999/31/EEC and includes non-degradable, non-leaching and non-reactive material such as stone, gravel, glass,

	bricks, etc. For the purposes of this project it will also include cured cement
Infected / Infectious Waste	Meaning defined in the Turkish 'Regulations on the Control of Medical Wastes' eg wastes potentially containing bacteria or viruses or contaminated with faeces.
Medical Waste	Meaning defined in the Turkish 'Regulations on the Control of Medical Wastes', for example dressings, swabs, needles etc.
Non-Hazardous Waste	'Non-hazardous' waste is waste that is neither inert, nor 'hazardous'; hazardous waste is defined above. For the purposes of this project, non-hazardous waste includes 'municipal waste' as defined in Article 2 of the Landfill Directive 1999/31/EEC. This includes 'domestic' dry waste, such as paper, packaging, plastics, etc. It also includes: uncured cement; fully digested sewage sludge, preferably dried to 20wt% solids.
Pathogenic Waste	Meaning defined in the Turkish 'Regulations on the Control of Medical Wastes'.
Pathological Waste	Meaning defined in the Turkish 'Regulations on the Control of Medical Wastes', eg organs, body parts, animal carcasses etc.
Pipeline Operator	Means one or more Persons appointed or selected by the BTC Co or their Affiliates to implement, manage, coordinate and/or conduct for or on behalf of the BTC Co or their Affiliates all or any portion of the day-to-day Project activities including serving as an operator of all or any portion of the Facilities, whether as an agent for or independent contractor to the BTC Co or their Affiliates and any successors or permitted assignees of any such Person.
Producer (Waste)	Means real persons and legal entities producing waste as defined in the Turkish Hazardous Waste Control Regulation of 27 August 1995.
Project	Realisation of the Turkish Facilities of the BTC P/L.
Project wastes	Wastes which are generated as a result of the construction and commissioning of the Turkish Facilities of the BTC P/L (hereinafter referred to as 'the pipeline') and includes wastes arising from subsidiary operations such as equipment maintenance, road construction etc and wastes from associated infrastructure including transport infrastructure.
Turnkey Contractor	BOTAŞ
Waste	Any substance or object as defined in Turkish legislation (The Solid Waste Regulation of 3 April 1991) or any substance or object as defined in European Community Directive 75/442/EEC on waste as amended by the framework Directive

on waste (91/156/EEC) as further amended by Decision 2000/532/EC of 3 May 2000 and further amended by Commission Decisions 2001/118/EC, 2001/119/EC and 2001/573/EC amending list of wastes. It includes any substance or object that the Contractor disposes of, or intends to dispose of, or is required to dispose of.

Waste Management	The procedures of separation (segregation), collection, temporary storage, recovery, handling, elimination and post eliminative process control of the waste at source based on the respective characteristics, and similar activities.
Waste Management Facility	An installation for the temporary or permanent storage or processing of waste.
Wastes (Medical) of Domestic Nature	Meaning defined in the Turkish 'Regulations on the Control of Medical Wastes' eg office waste, packaging waste etc from first aid rooms & clinics.

1.6 ABBREVIATIONS

Abbreviations used in this document are given below:

BATNEEC	Best Available Technology Not Entailing Excessive Cost
BOTAŞ	Boru Hatlari ile Petrol Tasima A.S.
BP	bp (formerly known as British Petroleum)
BTC	Baku-Tbilisi-Ceyhan
BVS	Block Valve Station
CCR	Ceyhan Control Room
CoMW	The Control of Medical Waste Regulations
CSC	Construction Site Camp
CWAA	Central Waste Accumulation Area
DSA	Designated State Authority
ECC	Environmental Consultancy Contractor
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement, Construction
ERS	Emergency Release System
ESD	Emergency Shutdown
HAZID	Hazard Identification
HDPE	High Density Polyethylene
HSE	Health, Safety and Environmental Protection
HWR	The Turkish 'Control of Hazardous Waste Regulations'
IDDR	Interim Detailed Design Report
IPT1	Intermediate Pigging Station
IVT	Isolation Valve Stations
KP	Kilometre Point

LDS	Leak Detection System
MCC	Main Construction Camp
MEP	Main Export Pipeline
MoE	Ministry of Environment
MWF	Mobile Welfare Facilities
PCB	Poly-chlorinated Biphenyls
P/CT	Physical / Chemical Treatment
PE	Polyethylene
PPE	Personal Protection Equipment
PT1	the First Intermediate Pump Station in Turkey
PT2	the Second Intermediate Pump Station in Turkey
PT3	the Third Intermediate Pumping Station in Turkey
PT4	the Fourth Intermediate Pumping Station in Turkey
RC	Reinforced Concrete
RoW	Right of Way (along pipeline route)
SWR	The Turkish Solid Waste Regulations
VOC	Volatile Organic Compound
WCP	Waste Collection Point
WMOP	Waste Management Operating Plan
WMP	Waste Management Plan
WWT	Wastewater Treatment

2 APPLICABLE POLICIES AND STANDARDS

2.1 BOTAŞ ENVIRONMENTAL POLICY

A set of policies has been established guiding the execution of all work performed at the BTC P/L Project Directorate. The policy that underpins the Environmental activities is included in the following Policy Statement:

The BTC P/L Project is a project in which the protection of the environment shall be given high priority.

BOTAŞ BTC P/L Project Directorate recognises that it has a responsibility to ensure that through the implementation of good environmental management practices all the potential adverse impacts on the environment associated with the Project are either avoided or appropriately mitigated.

Accordingly, all work shall be conducted in compliance with all applicable environmental laws and regulations as well as the standards and best-practices generally prevailing in the international petroleum industry in a manner, which supports the protection, preservation and enhancement of the environment. To achieve this aim, the BOTAŞ BTC P/L Project Directorate shall:

- establish and implement an Environmental Management System, in accordance with ISO 14001:1996, which shall be an integral part of the Project Quality Management System;
- perform top management reviews, at least annually, to ensure compliance with established policies, procedures and applicable environmental laws and regulations;
- maintain a commitment to waste minimisation and pollution prevention and shall incorporate these principles when defining project specifications and conducting its activities;
- identify, assess and manage environmental risks and endeavour to set and review quantifiable objectives and targets, associated with its operations, to minimise the likelihood of adverse environmental impacts;
- be committed to building relationships with government, the scientific community, and the public to promote the development and communication of innovative, cost effective solutions to environmental problems;
- ensure a commitment to the continuous improvement of the Environmental Management System wherever possible and sustainable.

All BOTAŞ BTC P/L Project personnel shall be individually and collectively responsible for adherence to, and effective application of the policies and principles contained in this environmental policy statement.

2.2 WASTE MANAGEMENT POLICIES AND PRINCIPLES

In accordance with BOTAŞ policies outlined above the Project shall be implemented with due regard to the following waste management principles.

- Waste Management Hierarchy;
- Proximity Principle;
- Duty of Care;
- Use of Best Available Technology Not Entailing Excessive Cost (BATNEEC);
- Polluter Pays Principle.

Each is discussed below in the following sub-sections.

2.2.1 Waste Management Hierarchy

The Waste Management Hierarchy, illustrated in Figure 2.1, ranks different types of waste management activity in order of desirability.

It basically states that waste avoidance is the most preferable option, followed by minimisation of quantities and hazards of waste generated. Next, it indicates that reuse, recovery and recycling shall be preferred over treatment of waste and that disposal shall be considered as a last resort.

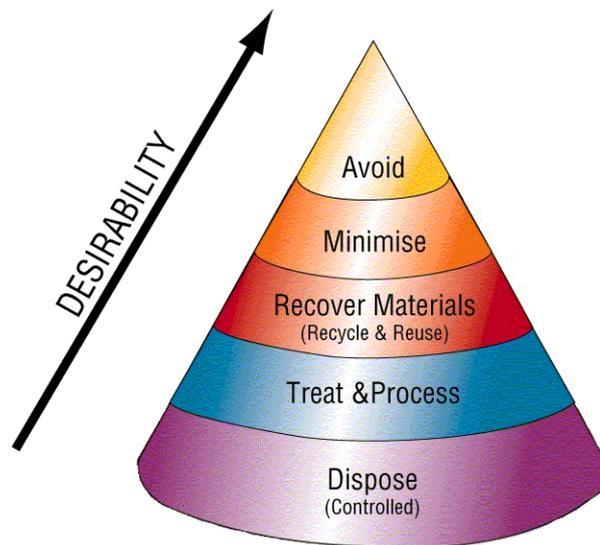


Figure 2.1 Waste Management Hierarchy

2.2.2 Proximity Principle

The Proximity Principle simply states that wastes shall be managed as close to source of generation as practicable (and taking due account of the waste management policies and principles). In particular it says that countries and preferably regions shall be self sufficient in terms of waste management.

2.2.3 Duty of Care

The Duty of Care principle says that a waste producer (for either hazardous or non-hazardous wastes) has a duty to ensure that a waste is properly managed even after that waste has been transferred to a third party. It essentially requires waste producers to select any third party waste handlers with care, assessing their capabilities, and to monitor their activities with respect to the management of the producer's waste.

2.2.4 BATNEEC

The BATNEEC principle states that wastes shall be managed by the Best Available Technology that does Not Entail Excessive Cost, in other words the costs of moving from one technology to a better performing one are not disproportionate to the overall waste management benefit achieved.

2.2.5 Polluter Pays Principle

This basically states that any party causing pollution shall pay the cost of mitigating that pollution.

2.3 WASTE MANAGEMENT LEGISLATION

The following Turkish legislative instruments are highly relevant to the management of wastes generated during pipeline construction and must be complied with:

- Solid Waste Regulation dated 14th March 1991 (as Amended 3rd April 1991);
- Regulations Regarding the Control of Hazardous Waste dated 25th April, 2002;
- Regulations on the Control of Medical Wastes dated 20th May 1993;
- Environmental Audit Regulation (EAR) dated 5th January 2002

2.3.1 Solid waste regulation

The Solid Waste Regulation (hereinafter referred to as the SWR) states that the low waste technologies must be used and that waste management must be undertaken in such a way as to avoid harm to humans, the environment or buildings. The hierarchy preference for reuse, recycling and recovery over treatment and disposal is also embodied in the SWR.

Certain specific provisions shall be noted:

- clinical wastes must be kept segregated from refuse type solid wastes and disposed of separately,
- consumers must not dispose of batteries or unused medicines/pharmaceuticals with refuse type solid wastes,
- manufacturers of liquid containers and thermoplastic packaging are held responsible for their management when they become wastes,
- refuse (domestic wastes, food wastes) type wastes must be stored and transported in such a way as to avoid emission of dust and smells and to avoid causing harm to human health or the environment,

- landfill disposal of liquids and fluid-sludges, explosives, clinical wastes, animal carcasses, radioactive materials, materials which are likely to cause emission of dust or smells and dangerous materials are prohibited,
- excavated earth may only be deposited in places agreed with the authorities,
- permits for waste management facilities must be obtained from relevant regional or municipal authorities,
- in the case of incineration plant both a construction permit and an operation licence are required.

The SWR favours composting or incineration as management methods for solid wastes. It specifies general requirements for composting plants. It also specifies certain technical requirements for waste incinerators including operating temperature (800°C), excess oxygen (17% for units operating at less than 0.75 tonnes per hour – otherwise 11%) and the need for a separate burner system operating with fuel to automatically maintain required combustion chamber temperature.

The SWR defines general principles for landfill site selection and facility design.

Facility operators must allow authorised inspectors access to the facilities, documentation and must pay costs of any testing and measurement necessary during permit application or renewal. Operating permits for waste management facilities can be suspended or revoked.

The SWR makes provision of certain interim arrangements for existing waste management facilities, all of these were short term, between six months and one and a half years from gazetting the SWR and therefore no longer applicable.

2.3.2 The control of hazardous waste regulations

The Control of Hazardous Waste Regulations (hereinafter referred to as the HWR) implements Articles 8, 11 and 12 of the Environment Law of 9/8/1993 and Article 3 of the Basel Convention to which Turkey is a Party.

The HWR define hazardous wastes and principles regarding their management including a duty of care and the ‘polluter pays’ principle.

The HWR assigns the duties of planning, approval of site selection, licensing and ensuring inspection and fulfilling the obligations of the Basel Convention to the Ministry of the Environment. Powers and Duties are also assigned to Governorships and Municipalities.

With respect to waste producers, in addition to the general requirements to minimise waste and to ensure its safe temporary storage a requirement for waste identification and record keeping is introduced.

There is a general requirement “to comply with the current international standards regarding waste handling”. Treatment and disposal facilities must initially have a Preliminary Licence during design and development and a Licence during operation.

Waste management facility operators must have licences to operate facilities and to prepare a Waste Management Operating Plan (WMOP) for each ‘department’ of each facility. The HWR introduces a requirement for documenting hazardous waste transfer and movement.

The HWR specifies basic principles regarding hazardous waste treatment and specifies treatment residue standards for disposal (Annex-11A of the HWR).

With respect to incineration of hazardous wastes, which are specified in Annex-6 of the HWR, it specifies that the requirements of Article 26 of the Regulations Regarding the Control of Medical Wastes (Gazetted 20-5-1993 issue number 21586) are met.

The HWR specifies basic standards for facility design, construction operation, closure and aftercare.

Part 8 of the HWR implements the standard provisions of the Basel Convention on the Transboundary Movement of Waste.

2.3.3 Control of medical waste regulations

The Medical Waste Control Regulation (MWCR) (dated 20th May 1993) states that:

- medical wastes should be collected, transported and removed separately from the domestic wastes (Article 9);
- pathogenic wastes should be first sterilized and then collected, together with other infectious wastes, in red plastic bags described in Article 14 (Article 10);
- disposal of radioactive wastes should be made in accordance with the Law on Turkish Atomic Energy Authority (Law No. 2690, dated 13.07.1982);
- waste collection points should be licensed according to Article 19.

Wastes from clinical type sources, eg first-aid rooms, clinics, and surgeries at main construction camps will be managed in accordance with the Control of Medical Waste Regulations. Such waste will be segregated, packaged and disposed of in accordance with the said regulations.

Medical Waste and Infectious Waste will be segregated from wastes of domestic nature.

2.3.4 Environmental audit regulation

This regulation gives the procedures of environmental audits to be performed by the MoE at various different stages (construction, operation etc) of a facility.

- A Facility Information Form must be prepared and submitted to the MoE after obtaining the Operation License; continuous environmental monitoring activities should be undertaken and the results should be documented and filed. The analysis must be carried out at accredited laboratories (Article 6).
- Annual audits are carried out by the MoE. However, in case of accident or complaint, or if the MoE deems necessary, the audits could be undertaken without notice and independent of the annual audit programme (Article 10).
- If, during the audit, it is determined that the activities of the pipeline are violating the prohibitions of the Environmental Legislation, or the requirements related to the solid waste management are not fulfilled:
 - a permission of 30 days is granted for corrective actions if direct or indirect discharge, storage, transportation, removal etc of various wastes are determined to be in violation of the standards and methods defined in the relevant regulations;

- a permission of 10 days is granted to perform measures for environmentally-sound treatment, removal, etc of wastes;
- a permission of 10 days is granted if information regarding the fuel utilised and the characteristics/quantity of wastes produced are not continuously documented and reported to the MoE.

2.3.5 International agreements/regulations

Any transboundary movement of waste must comply with the requirements of the Basel Convention on Transboundary Movement of Waste. These requirements are integrated into the Turkish HWR (Part 8).

Contractors shall comply with EU standards with regard to waste management. Where Turkish and EU standards differ the stricter standard must be applied.

2.4 WASTE MANAGEMENT GUIDELINES

The World Bank Pollution Prevention and Abatement Handbook 1998 contains detailed guidelines regarding minimisation of the use of resources as well as reduction of the quantity of wastes requiring treatment and disposal. They are designed to protect human health, reduce discharge of pollutants into the environment, use commercially proven and cost-effective technologies, follow regulatory trends, and promote good industrial and environmental management practices.

These guidelines should be followed except where they may conflict with EU or Turkish standards, legislation.

3 APPROVED WASTE MANAGEMENT FACILITIES

3.1 INTRODUCTION

Integral to waste management is the assurance that approved waste management facilities exist and can accommodate the predicted waste output. Wastes should be disposed of in the country in which they were generated. Moreover, wastes are not to be transported across country borders unless in accordance with international conventions and with prior management approval.

This section outlines the process for solid waste and excavation debris disposal in Turkey, and describes the procedures for approving facilities for waste disposal.

3.2 PROCEDURE FOR APPROVING FACILITIES

Before a facility can become 'approved', the site has to be assessed, and a decision made as to whether the facility is compliant with the HGA Section 3.10, and the Turkish Regulation on Control of Solid Wastes (dated 14th March 1911), Article 22 and 23.

The responsibility for waste management in Turkey lies within the Governorships and municipalities. The type and amount of excavated materials as well as excavation plan and calculations shall be declared to the relevant municipality or Governorship with supporting documents.

Domestic Solid Wastes

Domestic solid wastes shall be disposed of at licensed solid waste disposal sites operated by the municipalities. Agreements shall be made with the municipalities before dumping is permitted. Accordingly, wastes shall be transported to the licensed municipality waste disposal sites.

Excavation Debris

Procedures for approving facilities to receive excavation debris involve a different process. An application has to be submitted to the appropriate municipality or Governorship in order to designate a site for the disposal of excavation debris. Once the application has been approved, a protocol is signed. The debris can then be transported and disposed of in the designated areas stated in the protocol.

3.2.1 Procedure for Use of Approved Facilities

Disposal of materials in Project controlled waste management sites is preferred over the use of third party facilities. However, where dictated by logistics or by the construction schedule, the Project and its Contractor(s) may use other approved waste treatment and disposal facilities as indicated in this Section. The wastes must be appropriate for the waste treatment and disposal facility, as defined in this Section.

4 WASTE DISPOSAL SITES ALONG THE ROUTE

4.1 DOMESTIC AND INERT WASTE DISPOSAL

The domestic wastes to be originated during the construction phase of the BTC Pipeline Project can be disposed of using the following choices:

- incineration;
- landfill;
- recovery/recycling;
- composting (putrescible portion).

Based on the information obtained from site visits, and through interviews made with the Municipalities and the MoE authorities, it is determined that there are no licensed waste disposal facilities in the vicinity of the BTC Pipeline route.

The domestic wastes of the municipalities along the route are generally disposed of on barren land in areas with suitable geomorphology (such as valleys etc). In some areas, the disposal of wastes is actively managed and wastes are periodically covered with earthen material. In other areas, uncontrolled dumping is practiced with no limitations placed on the capacity of the site for receiving waste.

Where it is intended that a disposal area owned by the municipality is to be used, an agreement should be made between the 'waste producer' and the municipality. In this regard, the municipality can collect the wastes either from waste collection points or from centralised waste accumulation areas.

The list of licensed landfill areas and composting facilities in Turkey is presented in Annex-A (as provided by the MoE).

For the establishment of new incineration, landfill or composting facilities for domestic wastes, it should be noted that these facilities together with the waste collection points and centralised waste accumulation areas (regardless of capacity) are subject to the "Preliminary EIA Approval Procedure" according to the Annex-II of the revised EIA Regulation, dated 6th March 6 2002. The permits and licences to be obtained will be instructed and determined upon completion of the EIA Procedure (those to be obtained from the MoE as stipulated in the SWCR as well as those of the other institutions).

4.2 HAZARDOUS WASTE DISPOSAL

There are no licensed hazardous waste disposal areas along the BTC Pipeline route. Izmit Waste and Residue Treatment, Incineration and Recycling Inc. (IZAYDAS), located in the province of Kocaeli, is one of the facilities in Turkey that processes hazardous wastes. According to the information given by IZAYDAS authorities, the transportation cost for the wastes is US\$7/km/ton (2001 prices). The disposal cost range in between 13-741 Euro/ton depending on the analyses results of the waste (2002 prices).

It is also possible to make an agreement with the licensed recycling facilities and waste trading companies. A list of these facilities/companies is presented in Appendix-A (as provided by the MoE).

For the establishment of new incineration, landfill or composting facilities for hazardous wastes, it should be noted that these facilities are subject to 'EIA Approval Procedure' according to the Annex-I of revised EIA Regulation. The permits and licences to be obtained will be instructed and determined upon completion of the EIA Approval Procedure (those to be obtained from the MoE as stipulated in the HWCR as well as those of the other institutions).

4.3 MEDICAL WASTE DISPOSAL

According to MWCR, medical wastes should be collected, transported and removed separately from domestic wastes. In addition, pathogenic wastes should be first sterilized and then collected together with other infectious wastes, in red plastic bags as described in MWCR, without compressing in any manner. After collection within the unit, pathogenic and infectious wastes should be sterilized according to their types.

There exists no licensed medical waste processing facility in the vicinity of the BTC Pipeline route. The list of licensed medical waste processing incinerators is presented below (as provided by the MoE):

- Kocaeli (IZAYDAS);
- Istanbul (Greater Municipality);
- Antalya (Antalya University Medical Faculty);
- Ankara (Ankara University Veterinarian Faculty);
- Sivas (Susehri State Hospital);
- Mugla (Fethiye State Hospital);
- Kirikkale (Regional Hospital with 250 Beds).

4.4 PROJECT MOBILE INCINERATORS

During the disclosure meetings with the State authorities, the Ministry of Environment stated that a licence was not required for mobile incinerators that could be used for specified hazardous and non-hazardous waste types (as listed in the Waste Inventory tables). However, it is a requirement of MoE that measurements shall be carried out and monitoring reports shall be submitted to MoE every six months. The residual ash arising after the incineration has to be temporarily stored and then sent to the licensed ZAYDA hazardous waste facility in Izmit, Turkey.

5 WASTE SOURCES AND STREAMS DURING CONSTRUCTION OF BTC PIPELINE

5.1 INTRODUCTION

In order to facilitate the development of this plan a preliminary waste inventory has been developed by using data supplied for construction of the sections of the BTC P/L in Azerbaijan and Georgia.

From this data, waste generation during the construction the Turkish sections of the pipeline has been estimated using the assumptions that the construction activities for Azerbaijan and Georgia sections of the BTC Project will be similar to those of Turkish section and therefore, the waste types will be the same and that the generation rate per kilometre of pipeline will be the same.

5.2 WASTES GENERATED DURING CONSTRUCTION OF THE PIPELINE AND ASSOCIATED FACILITIES

The BTC P/L, which will have a total length of approximately 1,076km will be constructed in three 'Lots' each of which will have a Main Construction Camp (MCC):

- 'Lot A' of the pipeline runs from the 'Point of Entry; at the Turkish-Georgian border to PT2 pumping station at kilometre point (KP) 276.4;
- 'Lot B' runs from PT2 to PT4 at KP 741.6 (ie 465.2km);
- 'Lot C' runs from PT4 to the BOTAŞ Marine Terminal at KP 1069.5 (ie 334km).

It is anticipated that each construction Lot will be let as a separate contract and may well be undertaken by separate contractors. Within each Lot it is anticipated that contractors may concurrently mobilise 2 spreads each of 15 to 25km length. It is anticipated that the Main Construction Camps (MCC) will accommodate 1000 workers (dependent on proximity to local labour sources). Each MCC may also have two or three satellite Construction Site Camps (CSCs) servicing the active spreads with up to 300 to 400 workers (dependent on proximity to local labour sources).

The construction period for each Lot is anticipated to be approximately 30 months.

Based upon the foregoing information and the assumptions detailed in 3.1, a preliminary waste inventory has been prepared and given in Table 3.1. As illustrated in Table 3.1, the total amount of construction waste will be approximately 1.3million tonnes per annum originating along a 1,076km pipeline including 52 block valve stations and five large AGIs. The management options (landfill, recycle, incinerate etc) proposed for each waste type are provisional at this stage. The ultimate course of action will be determined by applying the waste management hierarchy in combination with site-specific practicalities.

The identified wastes fall into the following main groups of waste types:

- refuse-type solid wastes generated by construction workers;
- sewage wastes generated by construction workers;

- inert construction wastes;
- medical type wastes;
- hazardous wastes.

Table 5.1 Provisional Waste Inventory for Pipeline Row

WASTE STREAMS	SOURCES	CLASSIFICATION (I, H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES) ***			
				LOT A	LOT B	LOT C	TOTAL
Construction							
Activated carbon	Spent fines from filtration systems	H/NH	Landfill	6	10	7	23
Aerosol cans	Empty containers, principally from personal use of deodorants and some chemical usage during construction	H	Pierce mechanically and recycle	2	3	2	7
Aluminium cans	Largely empty beverage cans	NH	Crush and recycle	55	2	67	124
Batteries Wet	Depleted cells used in vehicles and machinery	H	Recycle	3	5	4	12
Batteries Dry	Depleted cells used for personal stereos and other portable equipment, such as torches	H	Recycle	1	2	1	4
Bitumen	Residues from road making. Mostly reused at the sites in road making	H	Incinerate	82	136	99	317
Black water				37834	62878	45735	146447
Blasting rubble	From areas where the geology requires blasting	NH	Off-load at designated spoil disposal sites (locations to be provided); or where practical as a secondary option - crush and use as building aggregate	TBD	TBD	TBD	TBD
Bricks and building materials		I	Landfill	17	29	21	67
Cables / copper	Off-cuts from construction of the facilities and temporary camps, plus removal during decommissioning	H	Recycle	<1	<1	<1	>1
Cement dust		NH	Landfill	<1	2	1	3
Chemicals	Spent chemicals and residues from all project phases, such as pipe coating, bleaches	H	Physical/chemical treatment; evaporate in drums; residue to landfill	TBD	TBD	TBD	TBD
Acids			Physical/chemical treatment; residue to landfill	TBD	TBD	TBD	TBD
Adhesives			Incinerate	<1	<1	<1	>1
General Chemicals			Special treatment - disposal to a suitably licensed facility	11	18	13	42
Firefighting foam			Evaporate in drums; residue to landfill	<1	1	1	2
Glycols			Evaporate in drums; residue to landfill	5	8	6	19
Solvents			Evaporate in drums; residue to landfill	<1	1	1	2
Concrete / foundations	Deconstruction of facilities during reinstatement and site restoration	I	Crush and use as building aggregate	33	54	39	126
Containers (large size)	Empty steel drums	NH	Recycle	TBD	TBD	TBD	TBD
Containers (other)	Empty steel and plastic containers of varying sizes	NH	Landfill	TBD	TBD	TBD	TBD

BTC PROJECT EIA
TURKEY

WASTE STREAMS	SOURCES	CLASSIFICATION (I, H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES) ***			
				LOT A	LOT B	LOT C	TOTAL
Contaminated soils	Largely from spills and other accidental releases	H	Wash, fix and use as aggregate	TBD	TBD	TBD	TBD
Contaminated water	Rainwater accumulated in fuel tank storage bunds	H	Special treatment - disposal to a suitably licensed facility	TBD	TBD	TBD	TBD
Drum cleaning waste	From cleaning steel drums of residual materials so that they may be re-used for other applications	H	Special treatment - disposal to a suitably licensed facility	727	1208	879	2814
Electrical/electronic comps		NH	Landfill	<1	<1	<1	>1
Electrical (eg switchgear)		H/NH	Landfill	<1	<1	<1	>1
Exhaust catalysts			Landfill	<1	<1	<1	<1
Filters air/oil	Spent filters from machinery and vehicles	H	Incinerate	<1	2	1	3
Filters (water)		NH	Incinerate	2	3	3	8
Food	Scraps and other organic waste	NH	Incinerate	274	456	332	1062
Diesel, Fuel and Oil Wastes	Oil absorbers, grab packs and granules	H	Incinerate	TBD	TBD	TBD	TBD
Diesel		H	Incinerate	9	16	11	36
Diesel generator lube oil		H	Incinerate	24	40	29	93
Misc oils (incl hydraulic)		H	Incinerate	2	3	3	8
Vehicle & equip lube oil		H	Incinerate	12	20	15	47
Glass	Empty bottles, largely from domestic use	I	Recycle	329	547	398	1274
Glycol sludge		H	Incinerate	<1	<1	<1	1
Greases	Residues of lubricating products, plus some domestic greases	NH/H	Incinerate	TBD	TBD	TBD	TBD
Greywater				88279	146714	106714	341709
Hydrotest water	Discharges from hydrostatic testing of pipelines (may contain chemicals, such as biocides and oxygen scavengers)	NH	Tested prior to discharge at a controlled rate to a site agreed with the MoE	19916	33099	24075	77090
Incinerator ash		H/NH	Landfill	360	598	435	1393
Insulation	Offcuts from installation of insulation materials to piping and plant	H	Landfill	<1	2	1	3
Light bulbs	Spent incandescent and fluorescent bulbs	H	Recycle - (fluorescent bulbs if in v. large quantities may require special treatment)	<1	<1	<1	<1
Medical	Hazardous clinical waste, including sharps, needles, swabs, etc	H	Incinerate	<1	1	1	2
Packaging materials	Plastics, paper, cardboard, etc	NH	Recycle	TBD	TBD	TBD	TBD
Paint sludge		H	Incinerate	1	1	1	3
Paint and cans/brushes	Residues and discarded wastes from construction and maintenance activities, both oil and water based	H	Incinerate	<1	<1	<1	<1

BTC PROJECT EIA
TURKEY

WASTE STREAMS	SOURCES	CLASSIFICATION (L, H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES) ***		
				LOT A	LOT B	LOT C TOTAL
Paper and card	Wastes from office and domestic use	NH	Recycle/incinerate	277	460	334
Pipe-bands and end caps	Pipe-string and bending	NH	Recycle (metal and plastic)	12	20	15
Pipe dope	Residues from pipeline construction	H	Incinerate	TBD	TBD	TBD
Pipeline coating chemicals:	Spray residues from coating of pipeline during construction	H	Specific management options depending on chemical component	14	24	18
Dust and grit	Open abrasive grit blasting	NH	Waste material must be packed to avoid release of dust. Dispose at an appropriately licensed waste facility.	TBD	TBD	TBD
Solid tar-urethane	Automatic (machine) and manual spraying	NH/H	Mix small quantities of polyol and isocyanate together and allow to solidify. Dispose of solids as non-hazardous. Any liquid waste to be disposed of as hazardous.	TBD	TBD	TBD
Solid urethane	Manual application of liquid systems (by brush, pad or spatula)	NH/H	Mix small quantities of polyol and isocyanate together and allow to solidify. Dispose of solids as non-hazardous. Polyol waste to be disposed of as non-hazardous and isocyanate waste as hazardous.	TBD	TBD	TBD
Methylene chloride/ Dichloromethane	Automatic (machine) and manual spraying	H	Allow evaporation from empty drums before sealing them. Disposal of hazardous liquid waste to a suitably licensed facility.	TBD	TBD	TBD
Xylene	From cleaning oil and grease deposits from the substrate, particularly steel, prior to grit blasting	H	Allow evaporation from empty drums before sealing them. Disposal of hazardous liquid waste to a suitably licensed facility.	TBD	TBD	TBD
Plastic bottles	Mostly discarded water containers and other domestic supplies; some industrial supplies	NH	Recycle	276	459	334
Plastic 'epoxy' drums		H/NH	Incinerate	32	52	38
Polystyrene	Objects such as stem protective caps	NH	Incinerate	11	18	13
PPE and clothing	Discarded personnel protective clothing, overalls, boots, rags, etc	H/NH	Incinerate	9	15	11
Radioactive		H	Return to supplier	<1	<1	<1
Rags and oil absorbents		H	Incinerate	30	50	36
Refuse type wastes		NH	Incinerate	TBD	TBD	TBD
Sewage	Sewage from construction camps and temporary facilities	NH	Primary treatment of waste on site, then disposal of treated waste by appointed waste management contractor in agreement with local water authority	TBD	TBD	TBD
Sewage sludge	Hazardous residues from the sewage treatment facilities	H/NH	Special treatment - disposal to a suitably licensed	110	182	133
						425

BTC PROJECT EIA
TURKEY

WASTE STREAMS	SOURCES	CLASSIFICATION (I, H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES) ***			
				LOT A	LOT B	LOT C	TOTAL
			facility				
Site Drainage Water	Accumulation of rainwater and percolating groundwater in pipe trench.	NH	Pump into adjacent ditch using suitable filtration/settlement techniques in accordance with the requirements of MoE	TBD	TBD	TBD	TBD
Soil and gravel	Surplus excavated soils and imported fill	NH	Use as aggregate	TBD	TBD	TBD	TBD
Solvents	Residues from construction and maintenance activities	H	Evaporate in drums; residue to incineration	TBD	TBD	TBD	TBD
Steel	Offcuts from construction of pipelines and plants; removal of equipment during decommissioning	NH	Re-use - store useful components for future work and recycle remainder	499	830	603	1932
Stone / fencing / gates / troughs	Temporary stone roads; temporary fencing, gates, troughs etc.	I	Re-use elsewhere within landholding if possible	TBD	TBD	TBD	TBD
Surplus spoil and rock	Backfilling and grading	NH	Re-use if possible/take to licensed waste disposal site	286497	476147	346326	1108970
Tank sludge	Sediments from the bottom of tanks	H	Incinerate	TBD	TBD	TBD	TBD
Transformer oils	Spent oils from transformers	H	Incinerate	TBD	TBD	TBD	TBD
Tyres	Worn discarded tyres from vehicles	I	Recycle	12	20	15	47
Washdown water	Runoff from cleaning vehicles, plant and other washing activities	H	Special treatment - disposal to a suitably licensed facility	244962	407118	296118	948198
Welding materials	Spent welding rods, grinding wheels, visors, shot-blast	NH	Recycle	5	9	6	20
Wood:	Crates, pallets, sleepers, etc from supply of materials			TBD	TBD	TBD	TBD
Timber		NH	Re-use	162	269	195	626
Trees, shrubs, branches		NH	Use as fuel (domestic etc)	4500	7479	5440	17419
TOTAL							2652936

* I = Inert; H = Hazardous; NH = Non-Hazardous

**These waste streams are included where the pumping stations will be manned

*** TBD = To be determined

The management of each is considered in general in the following sub-sections and the waste management processes/activities covered in more detail in Section 6.

5.2.1 Refuse-type solid wastes generated by construction workers

The main waste management choices for these materials are:

- incineration;
- landfill;
- recovery / recycling;
- composting (putrescible portion).

The following wastes will be kept segregated from refuse type solid wastes in accordance with the SWR:

- used batteries;
- unused surplus pharmaceuticals;
- medical type wastes from site clinics/surgeries/first aid rooms.

These wastes will be disposed of at approved/permited facilities. It will be the responsibility of the Construction Contractor to identify disposal sites and recycling stations that have been approved by the relevant State Authorities. These sites shall be suitable in terms of the waste types generated and be able to sustainably accommodate the volumes generated without compromising existing capacity and without conflicting with other users.

Incineration

There are advantages to be obtained from the incineration of solid refuse type wastes. These include:

- significant reductions in the volume of waste requiring landfill (80% – 90%);
- reduction of risk of odour and vector borne diseases;
- easier management and control;
- less of a site aftercare problem;
- incinerators may also be used to manage other wastes, which may not be acceptable in landfill.

The main disadvantages with incineration are the increased initial capital cost and increased monitoring. In addition incinerators must be designed, operated and maintained to such a standard as to ensure acceptable air emissions. The incineration residues require landfilling.

- It is considered that the advantages significantly outweigh the disadvantages and therefore incineration of these wastes is the preferred option for the management of solid refuse type wastes.

Landfill

A certain landfill capacity will be required even if wastes are incinerated or composted as not all solid refuse type wastes can be composted and incineration gives rise to residues which must be properly disposed of.

Landfill disposals could either be in existing (third party) landfill facilities or facilities constructed along the pipeline route specifically for the waste from the construction project.

If dedicated solid waste disposal sites are to be constructed along the pipeline route then the sites for these will be selected in accordance with the SWR and World Bank guidelines and the sites designed in accordance with the aforementioned regulations and guidelines. An EIA must be prepared for any landfill facilities to be constructed.

Particular care shall be taken to minimise leachate generation and to ensure that leachate which is generated is collected, treated and disposed of in an environmentally sound manner.

Recovery/Recycling

Prime recyclables (eg paper, card, plastics, glass, metals) will, as far as is practicable, be segregated from domestic type solid wastes for recovery/recycling.

Composting

Composting may be used to manage putrescible wastes from construction camp canteens. If composting unit(s) are used they will be constructed and operated in accordance with the SWR.

5.2.2 Sewage wastes generated by construction workers

Where the MCC or CSCs are located within reasonable distance of a municipal sewage works sewage and greywater wastes may be tankered to the municipal facility if the relevant authorities so approve.

Otherwise, activated sludge biological treatment has been specified for the MCCs/CSCs, these will give rise to sewage sludge requiring subsequent disposal.

At temporary locations away from the MCC and the CSCs Mobile Welfare Facilities will be provided to serve workers needs. Sewage waste and greywater treatment will depend very much on site location. In general chemical toilets will be used. In locations where this is not possible, wastes will be transported to the nearest CSC or MCC for treatment in the sewage waste treatment plant there.

Wastes will be treated to Turkish effluent quality standards and World Bank effluent quality standards.

Depending on its content sewage sludge may be considered as non-hazardous or hazardous waste (Code T-Y1805). Sludges that are non-hazardous (ie fall within the limits specified in the SWR) may be disposed of in accordance with the requirements of the SWR. Sludges, which exceed these limits, will be classed as hazardous wastes and will be transported to hazardous waste landfill or incinerated. The incineration will be monitored (ie measurement of ambient air quality and stack emissions).

Treated (digested) sewage sludge may be used for agricultural purposes provided the technical standards for sludge and soil required by the Directive on the protection of the environment, and in particular the soil, when sewage sludge is used in agriculture, (1986/278/EEC) are complied with and the sludge meets the requirements of the SWR.

5.2.3 Inert construction wastes

It is anticipated that there will be very large quantities of excavated materials and that approximately 90% of these wastes will be utilised by the Project or will be transferred to third parties for re-use. Any residual materials requiring disposal will be disposed of at locations agreed with the relevant authorities. Such wastes can be disposed of to inert waste landfills.

Only sites approved by the municipal authorities will be used for disposal of these wastes as required by the SWR Article 23.

Landfills used for this purpose must meet the requirements for Inert Landfills specified in the Landfill Directive 1999/31/EEC. At an existing landfill site, only that part of the operation concerned with the disposal of project wastes need meet the requirements of the directive.

5.2.4 Medical type wastes

Medical type wastes from clinics, surgeries, first aid rooms etc. will be kept segregated from refuse type solid wastes and safely stored in dedicated containers pending disposal. Containers will colour-coded according to contents and made of a combustible material such as plastic or cardboard.

The wastes will be disposed of by high temperature incineration in accordance with the requirements of the Control of Medical Waste Regulations (CoMW), the containers will not be opened prior to disposal.

5.2.5 Trees and foliage

Felled trees and large branches will be removed to local compounds and put under the control of the local authority. Foliage and small trees will be cut-up or shredded and windrowed at suitable locations. The dried material shall be transferred to community representatives for use as firewood. Any residual quantities that obstruct operations shall be considered for composting or put into skips for disposal with other non-hazardous waste.

5.2.6 Hazardous wastes

As can be seen in Table 5.1, it is anticipated that small quantities of hazardous wastes are to be generated during pipeline construction (quantities are indicative only). These include:

- lead-acid batteries from vehicle maintenance (12 tonnes);
- dry cell batteries (5 tonnes);
- chemical wastes, eg acids, adhesives, glycols, solvents, paint sludge (75 tonnes);
- contaminated soils (unidentified quantities);
- contaminated water (unidentified quantities);
- drum washing waste (2800 tonnes);
- diesel / fuel wastes / oil wastes / oil filters (200 tonnes);
- fluorescent light tubes (1 tonnes);
- medical wastes (3 tonnes);
- sewage sludge (425 tonnes);
- transformer oils (unidentified quantities).

The Contractor will register as a Hazardous Waste Producer with the Ministry of the Environment and each year complete and forward a waste declaration form to the Ministry. In cases where recycling is not a feasible option, these wastes will be processed at the CWAA and by incineration and the incineration will be monitored (ie measurement of ambient air quality and stack emissions).

The lead acid batteries may be sent for recovery to third party. Dry cell batteries may also be sent for recovery by the third party.

Inorganic chemical wastes may either be treated at the Central Waste Accumulation Area (CWAA) or sent to third parties for recovery or treatment and disposal. Organic chemical wastes may either be incinerated at the CWAA or sent to third parties for recovery or treatment/disposal.

Contaminated soils will be disposed of to appropriately permitted/licensed landfill facilities after pre-treatment if necessary. The procedures for dealing with existing contamination are detailed in Section 3 of the Pollution Prevention Plan (Appendix C4).

Contaminated water and Drum Washing waste will be processed at the main construction camps via the wastewater treatment system after pre-treatment at the CWAA if necessary.

Diesel, fuel wastes, and oily wastes will be sent to third parties for recovery or treatment and disposal. In cases where recycling is not a feasible option, these wastes will be processed at the CWAA and by incineration.

Sewage sludges are discussed in sub-Section 5.2.2.

It is not anticipated that significant quantities of transformer oils will be generated. No PCB containing oils will be used. Small quantities of non-PCB containing oils that may arise may be incinerated or sent for recycling.

The following hazardous wastes may be generated in small quantities and will be subject to special handling and management procedures:

- *Asbestos Waste (Y-36 in Turkish HWR)*
Any asbestos waste discovered will be recovered and placed in sealed drums, by the Contractor or a third party sub-contracted by him, pending disposal to special landfill in accordance with HWR;
- *Explosives Waste*
Waste explosives procured for use during the Project will be stored in their original type of container, but marked as waste. They will be handled and disposed of as recommended by the manufacturer, and in accordance with Turkish requirements; Waste explosives discovered along the pipeline RoW will be identified for disposal by the Government;
- *Radioactive Waste*
Radioactive waste will be returned to suppliers for appropriate management.

6 WASTE MANAGEMENT MEASURES AND PROCEDURES

6.1 ROLES AND RESPONSIBILITIES

The pipeline and marine terminal Construction Contractor(s) will be deemed to be the 'Holder' of all wastes arising from the construction activities (inclusive of domestic and sanitary wastes) and will be responsible for the proper management of those wastes.

The Contractor must take all reasonable steps to avoid waste generation and to minimise both the quantities of waste generated and the hazards of waste generated.

The Contractor must ensure that all wastes generated are correctly identified, and stored pending collection/transfer for reuse, recovery, recycling, treatment and/or disposal in an environmentally sound manner.

Whilst the Contractor may employ third parties for waste collection, recovery, recycling, treatment and/or disposal, the Contractor has a duty of care to ensure that only appropriate permitted/licensed contractors are selected and to monitor their activities to ensure correct handling, treatment and disposal of waste.

If the Contractor provides and operates waste management facilities then the Contractor must ensure that the said facilities are appropriately permitted and/or licensed and that they are designed, constructed and operated in accordance with relevant Turkish legislation.

BOTAŞ will monitor the Contractor's waste management activities ensuring their compliance with the agreed detailed Waste Management Plan and the Project Contract. BOTAŞ will also undertake periodic compliance audits.

6.2 WASTE MANAGEMENT TRAINING

The contractor must provide sufficient training to all staff to ensure that they are aware of the relevant aspects of the WMP and are able to fulfil their waste management roles and functions.

Training of staff shall be recorded in personnel records.

6.3 WASTE GENERATION

All reasonable steps must be taken to avoid waste generation and minimise both quantities and hazards of waste generated. Particular attention shall be paid to the waste streams listed in Table 4.1. Only approved materials and chemicals will be used throughout the project life, non-approved materials and chemicals notified by BOTAŞ will not be used.

All wastes generated must be identified, classified and documented in accordance with the prevailing Turkish legislation and in accordance with international standards where these do not conflict with the requirements of the Turkish legislation.

Table 6.1 Avoidance and Minimisation Opportunities

Waste Stream	Use and Reasons	Measures	Benefits
Aerosol cans	Propellants in Aerosol cans can be both a safety hazard and an environmental hazard.	Promote use on non-aerosol alternatives	Hazard reduction
Polystyrene	Mostly used in its loose form in packaging. Much better environmentally friendly options exist.	Select suppliers using less polystyrene packaging	Reduced landfill volume / lower risk incineration
Cadmium	Sometimes used in plating bolts, cadmium produces cadmium oxide when burnt or welded. Causes illness if inhaled, and is a neurodisrupter if absorbed through the skin.	Alternatives, such as Teflon coated, may be used	Hazard reduction
Solvents	A variety of uses such as de-greasers, thinners, cleaners etc. They are very effective as a cleaning agent, but toxic to both health and the environment. De-fats skin and irritates respiratory tract.	Many environmentally sound alternatives exist such as citrus-based products.	Hazard reduction
Solvents (Halogenated)	A variety of uses such as de-greasers, thinners, cleaners etc. It is very effective as a cleaning agent, but toxic to both health and the environment. De-fats skin and irritates respiratory tract.	Many environmentally sound alternatives exist such as citrus-based products. Alternatively use non-halogenated.	Hazard reduction, enables lower temperature incineration
Paint	Many paints contain solvents producing VOCs.	Water based paints shall be considered.	Hazard reduction
Transformer oils	Synthetic/mineral oils in transformers may be very toxic (if PCB type)	Use dry transformers, if suitable for the conditions, otherwise use transformers without PCBs.	Hazard reduction
Chemicals	This is a wide subject and covers a range of chemicals from cleaning agents to drilling mixtures.,	Where a choice of chemicals exists, the lower hazard chemical shall be used. Similarly, chemicals giving rise to the least waste shall be used.	Hazard and volume reduction.
Packaging in general	Overpacking for transport is often carried out.	Environmentally friendly alternatives for packaging materials are available such as biodegradable wheat based products and recycled cardboard.	Waste reduction, use of recycled materials
PVC	PVC has components that are both dangerous from a safety and	Substitution with less toxic materials (for example by purchasing materials in non-	Hazard reduction

Waste Stream	Use and Reasons	Measures	Benefits
	environmental issues: release of toxic fumes when burnt and Phthalate production when landfilled.	PVC containing packaging, avoiding the use of PVC based coatings etc.).	

It shall be noted that the Turkish Solid Waste Regulation (SWR) of March 14, 1991 as amended on April 3, 1991 has specific requirements with respect to the minimisation of quantities of metal and plastic packaging sent for disposal.

6.4 SAMPLING AND CLASSIFYING WASTES

The contractor will identify all wastes generated, sampling and checking, testing or analysing as necessary in order to classify the waste in accordance with Turkish legislation and to determine:

- Whether the waste is hazardous, non-hazardous and if it is “inert” waste.
- How the waste will be managed.

6.5 WASTE COLLECTION AND STORAGE

Wastes will be collected and temporarily stored at the place of generation in a safe and environmentally sound manner at Waste Collection Points (WCPs) prior to collection and transfer to a Centralised Waste Accumulation Area (CWAA). Suitable waste containers will be provided at the places of waste generation to facilitate safe and environmentally sound temporary storage. All containers will be clearly marked according to contents.

WCPs will be located at each CSC and the CWAA will be located at the MCC.

6.5.1 Waste Collection Points

Figure 6.1 shows typical layout of a WCP. Each WCP will be clearly marked as such and the methods of construction and waste containerisation shall ensure that waste is effectively contained and is not accessible by vermin.

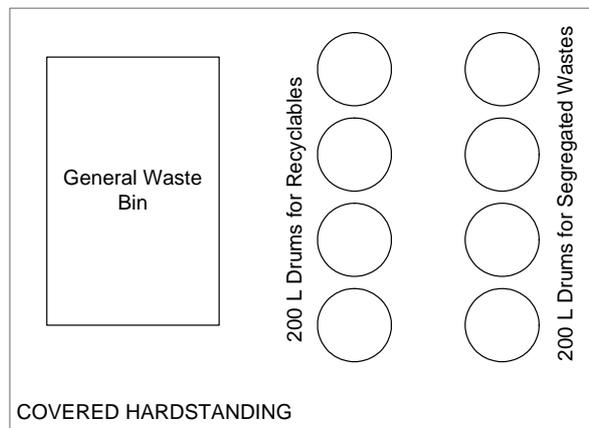


Figure 6.1 Waste Collection Point

WCPs will have separate storage containers for prime recyclables (plastics, glass, ferrous metals and non-ferrous metals) and separate containers for other wastes requiring segregation including oils, chemicals and batteries. Care will be taken to ensure that chemicals are kept in separate containers in order to avoid a chemical reaction.

CWAAs will be located near main construction camps. Wastes received at the CWAA may either be transferred for reuse, recovery, recycling, treatment and/or disposal or be stored in a safe and environmentally sound manner pending such transfer.

6.5.2 Centralised waste accumulation area

As its name suggests the CWAA is an area for the centralised accumulation of waste prior to treatment and/or disposal or transportation to third parties for recovery, treatment and/or disposal. CWAAs will also have capacity for treatment and disposal of wastes.

The CWAAs may have an incinerator for refuse type wastes (or refuse type wastes and hazardous wastes) and may have an associated landfill facility. A typical CWAA will comprise the following:

- a secure compound;
- vehicle access road, turning area and waste offloading area;
- containers for waste storage;
- skip laydown/storage area;
- drum washer, drum crusher;
- plastics / paper baler;
- bulb and can crusher;
- office and changing facilities;
- PPE store;
- eyewash and emergency shower;
- emergency equipment including fire fighting equipment;
- absorbents and overpack containers for dealing with leaking containers / spillages;
- fuel storage;
- incinerator.

A typical layout of the CWAA is shown in Figure 6.2.

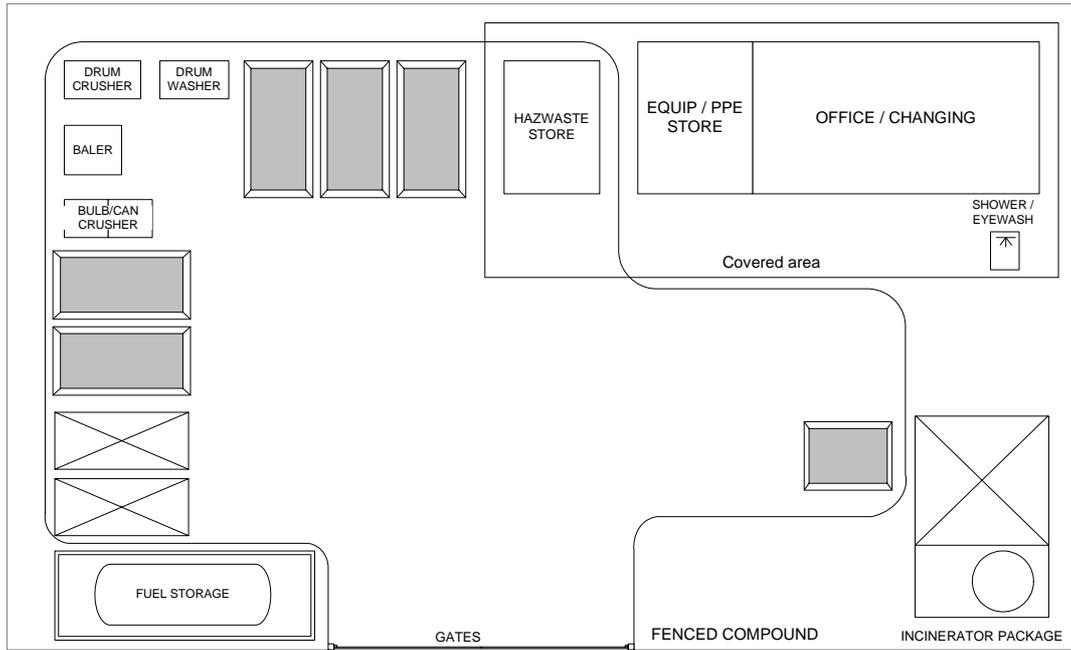


Figure 6.2 Central Waste Accumulation Area

The CWAs will be concrete lined, equipped separate drainage with spillage control kerbs and sump. The hazardous waste store will have it's own spillage control bund.

Proper waste segregation will be maintained at all times, separate storage areas/containers will be provided to ensure continued segregation of mutually incompatible wastes.

As the CWAs will be intermediate storage facilities for hazardous waste they will be subject to the HWR and require a permit to be issued by the relevant Governorship. If a CWAA is also to treat, process or dispose of any hazardous waste (eg by physical-chemical treatment or by incineration) then the CWAA will require licences to be issued by the Ministry of the Environment, licences include:

- Preliminary Licence for Elimination Facilities;
- Licence for Elimination Facilities;
- Construction Licence for Elimination Facilities.

Wastes will be further sampled and characterised at the CWAs in order to determine treatability and acceptability for management by available methods in order to select the most appropriate management method for any given waste.

6.6 WASTE TRANSPORTATION

Wastes will be transferred from the place of waste generation / temporary storage to the CWAA by the contractors own vehicles, which have been licensed by the MoE for this purpose (ie waste transportation). Collections shall be scheduled as frequently as necessary to prevent over-accumulation of wastes at the WCPs. For hazardous wastes, appropriately licensed companies will be used for transport.

6.7 WASTE RECYCLING PROGRAMS

In order to comply with the requirements of Turkish legislation and the Waste Management Hierarchy, the following recycling programmes will be implemented. Where it is practical to do so, material will be transferred directly from point of origin to recycler, especially when long transit distances to and from the CWAA are involved.

6.7.1 Paper and card recycling

Paper and card wastes from offices and domestic type sources at the main construction camps will as far as practicable be segregated and sent for recycling by third party contractor if practicable (particularly with respect to transportation). Separately collected waste paper and cardboard may be taken to the CWAA's and be baled for transfer to recyclers.

6.7.2 Plastics recycling

Plastic wastes will as far as practicable be segregated and for return to suppliers or for recycling by third parties. In order to facilitate this WCPs will have separate containers for storage of different plastic wastes for transfer to the CWAA where the wastes may be baled for transfer to recyclers.

6.7.3 Metals recycling

Metal wastes will as far as practicable be segregated for recycling. Separate containers will be provided at WCPs for interim storage of waste pending transfer to the CWAA's. Waste may be sent to recyclers from the CWAA's.

6.7.4 Oil wastes

Oil wastes may either be utilised as fuel in the waste incinerators or sent for recycling to suitably licensed third parties.

6.8 TREATMENT AND DISPOSAL

Other wastes will be treated and/or disposed of in a safe and environmentally sound manner. It is anticipated that the following waste management methods may be employed:

- physical/chemical treatment;
- incineration;
- landfill.

6.8.1 Physical/chemical Treatment (P/CT)

Limited P/CT may be undertaken at the CWAA's, for example to adjust the pH of drum washing water for transfer to the MCC wastewater treatment system. Small quantities of inorganic chemical waste may be processed in this way.

6.8.2 Incineration

Incinerators may be operated at the CWAA's. These may be used to incinerate the following hazardous and non-hazardous wastes listed in Table 6.2 (indicative quantities for construction period in Tonnes).

Table 6.2 Indicative Quantities of Waste for Incineration (Pipeline Construction)

WASTE STREAMS	CLASS (I, H or NH)*	INCINERATION *			
		LOT A	LOT B	LOT C	TOTAL
Construction					
Activated carbon	H/NH	6	10	7	23
Bitumen	NH	82	136	99	317
Chemicals	H				
Adhesives		0	0	0	0
General Chemicals		6	9	7	22
Filters air/oil	H	1	2	1	4
Filters (water)	NH	2	3	2	7
Food	NH	274	456	332	1062
Diesel, Fuel and Oil Wastes	H				
Diesel	H	9	15	11	35
Diesel generator lube oil	H	24	40	29	93
Misc oils (incl. hydraulic)	H	2	3	2	7
Vehicle & equip lube oil	H	12	20	15	47
Glycol sludge	H	0	0	0	0
Greases	NH/H	0	0	0	0
Medical	H	1	1	1	3
Paint sludge	H	1	1	1	3
Paint and cans/brushes	H	0	0	0	0
Paper and card	NH	138	230	167	535
Pipe dope	H	0	0	0	0
Pipeline coating chemicals:	H	5	8	6	19
Plastic bottles	NH	55	92	67	214
Plastic 'epoxy' drums	H/NH	32	52	38	122
Polystyrene	NH	11	18	13	42
PPE and clothing	H/NH	9	15	11	35
Radioactive	H				
Rags and oil absorbents	H	30	50	36	116
Refuse type wastes	NH	0	0	0	0
Tank sludge	H	0	0	0	0
Transformer oils	H	0	0	0	0
TOTALS		700	1161	845	2706

*Quantity in Tonnes

Incinerators will be designed, constructed and operated in accordance with the Turkish HWR, the EC Directive 2000/76/EC on Incineration of Waste and will be operated in such a manner as to meet Turkish, EC and World Bank emission standards.

Non-hazardous waste may be incinerated in a hazardous waste incinerator; however, when non-hazardous wastes are co-incinerated with hazardous wastes operating conditions for hazardous waste incineration will be maintained.

6.8.3 Landfill

Some wastes will be disposed of by landfill. These wastes include those listed in Table 6.3 (indicative quantities only in tonnes).

Table 6.3 Indicative Quantities of Waste for Landfill (Pipeline Construction)

WASTE STREAMS	CLASS (I, H or NH)*	LANDFILL				INERT LANDFILL			
		LOT A	LOT B	LOT C	TOTAL	LOT A	LOT B	LOT C	TOTAL
Construction									
Bricks and building materials	I					17	29	21	67
Cement dust	NH	1	1	1	3				
Containers (other)	NH	0	0	0	0				
Electrical / electronic comps	NH	0	1	0	1				
Electrical (e.g. switchgear)	H/NH	0	1	0	1				
Exhaust catalysts		0	0	0	0				
Incinerator ash	H/NH	140	232	169	541				
Insulation	H	1	1	1	3				
Pipeline coating chemicals:	H	5	8	6	19				
Surplus spoil and rock	NH								
TOTALS		147	244	177	568	28600	47600	34600	110800
		28617	47629	34621	110867				

If third party landfill sites are to be used, the specific sites must be identified in the detailed WMP(s) prepared by the Contractor(s).

Inert wastes may be disposed of to an inert waste landfill.

Non-hazardous waste may be disposed of to either non-hazardous waste landfill, providing it is designed, managed and licensed according to the requirements given in this Plan.

Hazardous wastes should either be pre-treated to render them non-hazardous (eg polymerisation of un-reacted polymer coatings) prior to disposal at non-hazardous waste landfills (as defined above) or disposed of to suitable hazardous waste landfills (designed, managed and licensed according to the requirements given in this plan).

6.8.4 Wastewater Treatment (WWT)

A WWT system will be operated at each MCC and CSC where these are located too far away from a municipal sewage works to tanker sewage and wastewaters. The WWTs will be activated sludge biological treatment systems and will process sewage wastes and wastewaters (pre-treated if necessary) from drum washing and treatment of aqueous wastes within the CWAAs.

Sludges resulting from WWT will either be landfilled or incinerated as indicated in sub-section 3.2.2 of this Plan.

6.9 OPERATION OF WASTE FACILITIES

A specific Waste Management Operating Plan (WMOP) will be developed for each of the facilities provided for the purposes of the Project. The WMOP will describe all normal operating procedures and emergency operating procedures for the facility in question.

The Contractor will operate a policy of 'due diligence' and will ensure that only fit and competent persons manage and operate landfill sites and incinerators. Facilities will be operated in compliance with Turkish and EC operating standards. A full 'Cradle to Grave' control system will be implemented to ensure the safe and environmentally sound management of project wastes.

The control system will include the documentation of waste collection, reception at CWAAs, waste processing and disposal and transfer of wastes to third parties. The control system will include monitoring and inspection activities.

6.10 USE OF APPROVED FACILITIES

Wastes may be transferred for utilisation, treatment and/or disposal to third parties. Wastes will only be transferred to third parties with appropriately permitted/licensed facilities capable of handling, utilising, recovering, recycling, treating and/or disposing of the waste in a safe and environmentally sound manner. Third parties facilities will be periodically audited to determine the suitability of the facilities and whether transferred wastes are being/have been managed appropriately.

Transfer of wastes to third parties must be fully documented on Waste Transfer Forms, as a minimum the following information will be recorded on each and every occasion:

- waste type(s) being transferred;
- description of waste(s) including chemical/physical properties and relative proportions;
- quantities of waste(s) including numbers of each type of containers;
- special waste handling procedures;
- name and address of organisation which is the current Holder of the waste;
- name and address of organisation to which waste is being transferred;
- location from which waste(s) are being transferred;
- location to which wastes are being transferred;
- date and time of transfer;
- name and signature of current holder's representative;
- name and signature of receiving parties representative.

6.11 MONITORING WASTE MANAGEMENT ACTIVITIES

Waste that is re-used on the same site on which it is produced does not need to be recorded or formally transferred; this includes waste produced on the Right of Way (RoW) and transferred along the RoW without use of a public road.

In all other cases waste management activities will be monitored, some activities being periodically monitored, others being continuously monitored.

The movement of waste from WCPs to CWAAs will be documented and monitored by the Contractor, the following information being recorded:

- identity of WCP;
- date of collection;
- time of collection;
- waste type(s);
- waste description including chemical/physical properties and relative proportions as necessary;
- quantity(ies);
- special waste handling procedures;
- vehicle check;
- load security check;
- name and Signature of supervisor of WCP;
- identity of destination CWAA;

- date of delivery;
- time of delivery;
- check for discrepancies in waste type(s), volume(s);
- name and signature of supervisor of CWAA;
- name and signature of vehicle driver.

Similar information will be recorded for transfer of wastes from CWAAAs to other waste management facilities provided and operated by the Contractor if these are not co-located eg dedicated landfill facilities. The transfer of wastes to third parties will be documented as described in sub-section 6.10.

Daily records will be kept by the Contractor, documenting the treatment and disposal of wastes at the CWAAAs and any other of the Contractor's facilities. Transfers of wastewater from the CWAAAs to camp WWT plants will also be recorded. Wastewaters will be sampled and analysed before transfer to ensure that they are suitable for treatment in the WWT plant.

Operating procedures for landfill facilities and incinerators will document specific monitoring programmes for these. These monitoring programmes will comply with Turkish and EU standards for such facilities.

For landfills and agricultural disposal, the Contractor will ensure that the requirements for long-term care and monitoring are put in place when the contract is completed. Where other users share facilities, only those sections or units utilised for the management of project wastes will benefit from such after-care and monitoring.

6.12 INSPECTION AND AUDITING

The CWPs, CWAAAs, dedicated landfills and any other facilities provided by the Contractor for waste management will be periodically inspected and audited for compliance with agreed operating procedures, regulatory requirements and project policies.

In addition, facilities provided and/or operated by third parties which are utilised for management of project wastes will also be periodically inspected and audited to ensure these wastes are being/have been managed appropriately.

Inspection and Audit forms will be developed for the purpose. Records of inspections and audits will be maintained and made available for inspection by Turkish regulatory authorities BOTAŞ and/or the BTC Co.

6.13 WASTE EXPORT

It is intended that all wastes produced will be managed in Turkey. In the event that some wastes cannot be managed in Turkey these wastes will be exported for recycling or recovery or for treatment and/or disposal by BATNEEC at an appropriate facility in another country.

Such exports will fully comply with the requirements of the BASEL Convention on Transboundary Movement of Wastes and the relevant legislation of the State of Import and any States of Transit. In particular the requirements of Part 8 of the HWR will be complied with.

Wastes pending export will be safely stored at the CWAA pending conclusion of arrangements for export.

7 WASTE MANAGEMENT DURING BTC TERMINAL CONSTRUCTION

7.1 INTRODUCTION

In addition to the pipeline a marine terminal will be constructed for storage of crude oil and loading onto marine bulk carriers.

During the construction, many similar wastes will be produced as for pipeline construction. A quantified waste inventory is not currently available but it is possible to specify generic provisions.

7.2 WASTES GENERATED

Table 7.1 lists the categories of waste anticipated to arise during construction of the BTC Marine Terminal. Actual quantities are not yet available, pending vendor selection and completion of detailed engineering. Once this information is available it will be incorporated into the Contractor's Waste Management Plan.

7.3 WASTE MANAGEMENT

The waste management activities for each type of waste are the same as for the pipeline construction activities.

It is anticipated that the BTC Marine Terminal construction will utilise third party landfill. Similarly, municipal sewage treatment services may be used. If municipal services are not used then a similar WWT system will be constructed and operated.

The terminal construction camp will have a CWAA, which will be similar in design to the CWAA's for pipeline construction camps and provide the same waste management operations. It is anticipated that there will be WCPs located at the tank farm construction area and at the jetty construction area.

The same monitoring, management and control and inspection and auditing activities will be undertaken.

Table 7.1 Provisional Waste Inventory for BTC Marine Terminal Construction **

WASTE STREAMS	SOURCES	CLASSIFICATION (H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES)
Construction **				
Activated carbon	Spent fines from filtration systems	H/NH	Landfill	2
Aerosol cans	Empty containers, principally from personal use of deodorants and some chemical usage during construction	H	Pierce and recycle	0.5
Aluminium cans	Largely empty beverage cans	NH	Crush and recycle	20
Batteries Wet	Depleted cells used in vehicles and machinery	H	Recycle	1
Batteries Dry	Depleted cells used for personal stereos and other portable equipment, such as torches	H	Recycle	<0.5
Bitumen	Residues from road making. Mostly reused at the sites in road making	H	Incinerate	25
Black water				12,000
Bricks and building materials		NH	Landfill	6
Cables / copper	Off-cuts from construction of the facilities and temporary camps, plus removal during decommissioning	H	Recycle	<0.2
Cement dust		NH	Landfill	0.25
Chemicals	Spent chemicals and residues from all project phases, such as pipe coating, bleaches	H	Physical/chemical treatment; evaporate in drums; residue to landfill	TBD
Acids			Physical/chemical treatment; residue to landfill	TBD
Adhesives			Incinerate	<0.2
General Chemicals			Special treatment - disposal to a suitably licensed facility	3.5
Firefighting foam			Evaporate in drums; residue to landfill	0.2
Glycols			Evaporate in drums; residue to landfill	2
Solvents			Evaporate in drums; residue to landfill	0.2
Concrete / foundations	Deconstruction of facilities during reinstatement and site restoration	NH	Crush and use as building aggregate	10
Containers (large size)	Empty steel drums	NH	Recycle	TBD
Containers (other)	Empty steel and plastic containers or varying sizes	NH	Landfill	TBD
Contaminated water	Rainwater accumulating tank farm facility (approximately 7 storage tanks); from the jetty loading arms	H	Special treatment then discharge to sea via outfall	TBD

BTC PROJECT EIA
TURKEY

WASTE STREAMS	SOURCES	CLASSIFICATION (H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES)
Contaminated wastes (waste oils etc)	Oil spillages and clean-up materials such as oil absorbers, grab packs and granules	H	Special treatment - disposal to a suitably licensed facility	TBD
Dredged material (largely sand with some mud and silt)	Generated during construction of marine facilities, eg export jetty, breakwater, construction dock	NH	Due to the lack of any current marine industrial activity at the proposed jetty location, it is anticipated that such material will be uncontaminated. It is assumed that all dredged material will be discharged to sea in a designated dumping area subject to appropriate licence conditions by the relevant Turkish authority.	TBD
Drum cleaning waste	From cleaning steel drums of residual materials so that they may be re-used for other applications	H	Special treatment - disposal to a licensed facility	240
Electrical/electronic comps		NH	Landfill	<0.2
Electrical (eg switchgear)		H/NH	Landfill	<0.2
Exhaust catalysts			Landfill	<0.2
Filters air/oil	Spent filters from machinery and vehicles	H	Incinerate	0.25
Filters (water)		NH	Incinerate	0.75
Food	Scraps and other organic waste	NH	Incinerate	90
Diesel, Fuel and Oil Wastes	Oil absorbers, grab packs and granules	H	Incinerate	TBD
Diesel		H	Incinerate	3
Diesel generator lube oil		H	Incinerate	8
Misc oils (incl hydraulic)		H	Incinerate	0.75
Vehicle & equip lube oil		H	Incinerate	4
Glass	Empty bottles, largely from domestic use	NH	Recycle	100
Greases	Residues of lubricating products, plus some domestic greases	NH/H	Incinerate	TBD
Greywater				30,000
Hydrotest water	Discharges from hydrostatic testing of tanks pipelines (may contain chemicals, such as biocides and oxygen scavengers)	NH	Tested prior to discharge at a controlled rate to a site agreed with the MoE	160,000
Incinerator ash		H/NH	Landfill	120
Insulation	Offcuts from installation of insulation materials to piping and plant	H	Landfill	0.25
Light bulbs	Spent incandescent and fluorescent bulbs	H	Recycle - (fluorescent bulbs if in v. large quantities may require special treatment)	<0.1
Medical	Hazardous clinical waste, including sharps, needles, swabs, etc	H	Incinerate	<0.5
Packaging materials	Plastics, paper, cardboard, etc	NH	Recycle	TBD
Paint sludge		H	Incinerate	<0.5

**BTC PROJECT EIA
TURKEY**

WASTE STREAMS	SOURCES	CLASSIFICATION (H or NH)*	MANAGEMENT OPTION	QUANTITY (TONNES)
Paint and cans/brushes	Residues and discarded wastes from construction and maintenance activities, both oil and water based	H	Incinerate	<0.1
Paper and card	Wastes from office and domestic use	NH	Recycle/incinerate	90
Plastic bottles	Mostly discarded water containers and other domestic supplies; some industrial supplies	NH	Recycle	90
PPE and clothing	Discarded personnel protective clothing, overalls, boots, rags, etc	H/NH	Incinerate	3
Rags and oil absorbents		H	Incinerate	10
Refuse type wastes		NH	Incinerate	TBD
Sewage	Sewage from construction camps and temporary facilities	NH	Primary treatment of waste on site, then disposal of treated waste by appointed waste management contractor in agreement with local water authority	TBD
Sewage sludge	Hazardous residues from the sewage treatment facilities	H/NH	Special treatment - disposal to a suitably licensed facility	35
Steel	Offcuts from construction of pipelines and plants; removal of equipment during decommissioning	NH	Re-use - store useful components for future work and recycle remainder	150
Tyres	Worn discarded tyres from vehicles	I	Recycle	<4
Washdown water	Runoff from cleaning vehicles, plant and other washing activities	H	Special treatment - disposal to a suitably licensed facility	80,000
Wood	Crates, pallets, sleepers, etc from supply of materials	NH	Re-use	TBD
Timber		NH	Re-use	TBD
Trees, shrubs, branches		NH	Use as fuel (domestic etc)	TBD

* H = Hazardous; NH = Non-Hazardous

**Construction: Many waste streams that arise during construction of the marine terminal will be similar to those during pipeline construction. Those additional waste streams that are specific only to the marine terminal have been included. Pipe-specific waste (eg pipe bands, coatings etc) generated for the short length of pipeline from Terminal to Jetty has not been included, but will be less than 1% of that generated for the pipeline as a whole (see Table 5.1).

TBD – To be determined during ongoing engineering and Contractor selection.

8 DEVELOPMENT OF SITE-SPECIFIC WASTE MANAGEMENT PLAN

This WMP is a generic model intended as guidance to the Contractor and to assist the Contractor in the development of the Site-Specific WMP and Waste Management Operating Procedures.

To develop the above mentioned Site Specific WMP the Contractor will need to:

- Finalise the waste inventory for the Contractor's construction activities, updating waste types and specifying waste quantities (See Table 5.2) depending on actual construction activities and methods to be employed.
- Identify how each of the category 'H' wastes (Hazardous or special waste) will be handled and disposed.
- Identify any actual third party waste management facilities (landfill, recycling, sewage treatment etc.), which will be used for project generated wastes, providing supporting documentation showing that the chosen facilities are acceptable for those wastes.
- Develop a programme for waste segregation and recycling/re-use of waste materials.
- Finalise designs of WCPs and CWAAs to include proposed site layouts and specifications of main items of plant and equipment.
- Develop Operating Procedures for waste collection, transportation, treatment and disposal for inclusion as annexes to the site-specific plan.
- Develop and include in the operating procedures the documentation to be used for documenting, monitoring and managing the waste management system.
- Identify Contractor's personnel responsible for key waste management functions (overall management responsibility, operation of CWAAs, waste transportation, auditing of third party facilities etc).
- Propose programme of audits for any proposed third party waste management facilities.
- Identify means by which the Contractor's obligation regarding aftercare of relevant waste management facilities will be discharged.

APPENDIX – A

The list of licensed landfill areas, composting facilities, waste recycling facilities and trading companies, as taken from the MoE, is presented below:

- Landfill Areas
 - Antalya (Patara Municipality)
 - Balikesir
 - Bursa
 - Gaziantep
 - Icel
 - Istanbul
 - Izmir
 - Izmir (Foca Municipality)
 - Kocaeli
 - Mugla (Gocek Municipality)
 - Mugla (Marmaris Municipality)
- Composting Facilities
 - Antalya (Kemer Municipality)
 - Icel
 - Istanbul
 - Izmir
- Recycling Facilities and Trading Companies
 - Adana (Goney Soap Co.)
 - Ankara (Beyoglu Painting Co., Engin Petroleum Co., Abak Industry and Trading Co.)
 - Bursa (Guvener Rubber Co., PPG Industries Inc., Aydın Paint and Chemical Industries Co.)
 - Canakkale (Meta Painting Co.)
 - Eskisehir (Kudret Metal Works Industry and Trading Co.)
 - Gaziantep (Sahinbey Petroleum Products Industry and Trading Co., Resit Sahin Soap Production Co.)
 - Hatay (Altekin Transportation Co.)
 - Icel (Mersin Harbour Administration)
 - Istanbul (Prometa Fodder and Industrial Oil Trading Co.)
 - Izmir (Cinkanlar Chemicals Trading and Industry Co., SATE Food and Chemical Industry and Trading Co., Eurogold Mining, Tetrapak, Grup Paint Chemical Industry Trading Co., Diper Chemical Industry and Trading Co., Mides Petroleum Products Co., Hasan Yavas Varisleri-Lead Production Co.)
 - Kocaeli (IZAYDAS, BSEC Marmara 1-Environment Boat, Atabek Industry and Trading Co.)
 - Tekirdag (MAYBI Inc., Diktas Oil and Soap Industry and Trading Co.)
 - Van (Durak Hydraulic Petroleum Products Industry and Trading Co.)

APPENDIX B - PROPOSED INCINERATOR SPECIFICATION

INCINERATOR SPECIFICATION

1	Equipment Type	Waste Incinerators
2	Equipment Location	Construction camps (number of units)
3	Status	
4	Part of Package	
5		
6	Authority Allocation	
7	Must comply with EU directives:	
8	- 75/439/EEC	
9	- 89/369/EEC	
10	- 91/689/EEC	
11	- 2000/76/EC (with Corrigendum)	
12		
13	PURPOSE:	
14	- Burning of hazardous and non-hazardous wastes	
15		
16	FUEL:	
17	- Diesel	
18		
19	WASTES:	
20	- See attached waste list	
21		
22	CAPACITIES:	
23	- Total waste	te/quarter
24	- % of hazardous waste	%
25	- % of liquid waste	%
26	- % of semi-solid waste	%
27	- % of solid waste	%
28		
29	POLLUTION PREVENTION	
30	- Incinerators must be equipped with gas cleaning equipment (dry system preferred)	
31	- emissions must meet the requirements of 2000/76/EC or Turkish emissions limits whichever	
32	is more stringent requirement, parameter by parameter	
33	- if wet system, then effluent treatment system must be supplied to treat effluents to water	
34	quality requirements of 2000/76/EC or Turkish discharge standards whichever	
35	is more stringent requirement, parameter by	

**BTC PROJECT EIA
TURKEY**

		parameter
	36	- gas monitoring systems must be provided in accordance with the requirements of 2000/76/EC
	37	- must be compliant with EC Directives listed above and any others that are relevant
	38	
	39	DELIVERY BASIS:
	40	- must be delivered pre-assembled either fully mobile on a trailer or skid-mounted
	41	- must be complete with generator power supply, control system and instrumentation
	42	
	43	
	44	
	45	
	46	
	47	
	48	
	49	
	50	

	1	SUPPLIER MUST PROVIDE FOLLOWING INFORMATION:
	2	
	3	- Estimated emissions - with and without operation of gas cleaning system
	4	- Volume and pollutant loadings of waste water discharge (if wet gas cleaning system proposed)
	5	- Fuel consumption (including power supply generator)
	6	- Recommended daily operating regime to meet throughput
	7	- Loading and unloading procedures for hazardous and non-hazardous wastes
	8	- Recommendations for handling and disposal of ash
	9	- Identification of waste materials which cannot be burned in the supplied unit(s)
	10	- Servicing requirements
	11	- Recommended spares inventory
	12	- Usage rate of reagents and disposal options
	13	- Criteria for determination of stack height
	14	- Plot space requirements
	15	- Requirements for conditioning/pre-treatment of feed materials
	16	- Mobility of units
	17	- Potential for use as permanent site equipment, running at lower throughputs
	18	- Potential for increasing throughputs

Appendix C4 – Pollution Prevention Plan (PPP)

1 INTRODUCTION

1.1 SCOPE

This Pollution Prevention Plan (PPP) sets out the requirements for management of environmental impacts, particularly with regard to the prevention of pollution to land, air and water during implementation of the Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC P/L) Project. In addition, outline requirements for emergency planning and response procedures are presented.

The measures outlined in this Plan are primarily aimed at the construction phase of the BTC P/L Project. However, the standards and requirements set out in this document will also be used to guide the development of appropriate plans and procedures that will be applied during the operational phase of the Project. These operational plans will be developed during the construction phase in parallel with the development of operational procedures.

Construction of the BTC P/L Project will be undertaken by a number of construction contractors who will be responsible for different aspects of the Project. The key construction components of the Project to which the requirements set out in this document will apply are as follows:

- construction of the pipeline and associated temporary and permanent infrastructure including, but not limited to, roads, camps, pipe dumps, lay-down and staging areas;
- construction of the above ground facilities (pumping stations, intermediate pigging station and block valves) and associated temporary and permanent infrastructure;
- onshore construction of the Ceyhan marine terminal facilities and associated permanent and temporary infrastructure;
- off-shore construction of the Ceyhan marine terminal jetty and associated permanent and temporary infrastructure.

All construction contractors will be required to adopt and implement the requirements outlined in this PPP as they pertain to their particular activities. Each contractor will be required to submit their outline PPP 30 days after the Construction phase starts, and project specific plans and procedures that specify how the requirements of this Plan will be implemented 12 weeks prior to the clearance of the ROW or the breaking of ground at other construction sites. These plans and procedures will be subject to the approval of BOTAŞ who will ensure that contractor plans and procedures fully meet the requirements of this Plan. BOTAŞ will also ensure that the commitments and procedures outlined in contractor plans and procedures are fully implemented and adhered to during construction activities.

1.2 RELATIONSHIP TO OTHER PLANS

This PPP should be read in conjunction with the Project Environmental Management and Monitoring Plan (EMMP), which specifies project wide requirements for environmental management including training, inspection, monitoring, reporting and review.

Emergency response procedures outlined in this plan only pertain to the construction phase of the Project. The Oil Spill Response Plan (OSRP) will apply during the operational phase of the Project.

Measures associated with the control of pollution and nuisance associated with traffic management during construction are addressed in the Project Traffic Management Plan (TMP).

The requirements and mitigation measures related to the collection, re-use, recycling, storage, treatment and disposal of waste produced by the Project are outlined in the Project Waste Management Plan (WMP).

Requirements for reinstatement and restoration of the BTC-RoW and other temporary construction areas are described in the Project Reinstatement Plan (RP).

1.3 LEGISLATION AND STANDARDS

1.3.1 International Standards

In addition to the requirements of Turkish legislation and regulations, the guidelines and standards set by the following organisations will also apply to the BTC P/L Project:

- World Bank guidance and standards; and
- European Union Directives, guidance and standards.

1.3.2 Turkish Legislation and Regulations

The principal Turkish environmental legislation is the Environment Law of August 1983. The principal regulations associated with the Environment Law and which are relevant to pollution prevention and control throughout the Project are listed below:

- Environmental Pollution Fund Regulation (17 May 1985);
- Regulation on Preservation of Air Quality (TRPAQ) (2 November 1986);
- Noise Control Regulation (11 December 1986);
- Water Pollution Control Regulation (WPCR) (4 September 1988);
- Regulation on Control of Soil Pollution (10 December 2001).

In addition to the above regulations associated with the Environment Law, there are several other acts and regulations applicable to project activities, as follows:

- General Public Health Act (24 April 1930);
- Health-Hazard Establishments Regulation (26 October 1983);
- Aquatic Products Act (22 March 1971);
- Aquatic Products Regulation (10 March 1995);
- Law on Protection of Cultural and Natural Assets (23 July 1983);
- National Parks Law (11 August 1983);
- Shoreline Law (4 April 1990);
- Regulation on Hazardous Substances/Products Control (11 July 1993).

All applicable Turkish acts and regulations, including but not limited to those listed above, will be complied with, unless there is an inconsistency with the Host-Government Agreement.

1.4 STRUCTURE OF THE POLLUTION CONTROL PLAN

The remainder of this Plan outlines the measures that will be applied to all project construction activities, as appropriate, under the following section headings:

- Section 2 – General Pollution Prevention and Control Measures and Procedures;
- Section 3 – Fuel Storage and Handling;
- Section 4 – Protection of Surface and Groundwaters;
- Section 5 – Pipeline Water Crossings;
- Section 6 – Prevention of Marine Pollution;
- Section 7 – Controlling Dust and other Emissions to Air;
- Section 8 – Controlling Noise;
- Section 9 – Spill Prevention and Control.

2 GENERAL POLLUTION PREVENTION AND CONTROL MEASURES AND PROCEDURES

2.1 ROLES AND RESPONSIBILITIES

The roles and responsibilities with respect to environmental managements of the BTC P/L Project are described in Section 4 of the EMMP. Specific roles and responsibilities with respect to pollution prevention and control are as follows:

BOTAŞ will be responsible for:

- ensuring the requirements outlined in this document as they pertain to the construction phase of the Project are fully reflected in Contractual requirements;
- implementation of a programme of environmental inspection, monitoring and reporting during all phases of the Project to assure itself that the commitments made in the EIA and this PPP are fully implemented throughout all aspects of the Project;
- development of this project-wide PPP into an operational PPP covering all aspects of the Project during the operations phase;
- implementation of the operational PPP and the requirements of this PPP as it pertains to the operations phase;
- development of guidelines and operating procedures for environmental protection, including emissions reduction, water resource protection and waste management;
- implementation of a programme for follow-up and analysis of all environmental incidents or accidents.

Contractors will be responsible for:

- development of a project specific PPP and procedures as required in Section 1.1;
- implementation of, and adherence to, all the requirements and mitigation measures outlined in this PPP and in their project specific PPP and procedures;
- the performance of all sub-contractors with respect to this PPP and Contractors project specific PPP and procedures;
- compliance with all relevant project standards, statutory requirements, permit and licence conditions;
- securing all applicable permits and licences.

2.2 POLLUTION PREVENTION AND CONTROL TRAINING

As part of the overall Environmental Training Programme outlined in Section 5.4 of the EMMP, Construction Contractors will provide training regarding the requirements of this PPP to all Contractor personnel involved in on-site activities. BOTAŞ will provide a similar training programme to all BOTAŞ personnel involved with onsite activities. These training programmes will ensure that all personnel involved in on-site activities:

- fully understand the pollution prevention and control requirements of the Project and how they will be implemented on site;
- fully understand the procedures to be followed and mitigation measures to be implemented in the event of a spill or other pollution event; and
- are aware of the respective roles of Contractor staff and the BOTAŞ representatives with respect to pollution prevention and control.

In addition to the general training requirements described above, Contractors and BOTAŞ will ensure that all their respective personnel receive training and instruction specific to the tasks they will be undertaking on site in line with project requirements. This will include, but not be limited to, the following areas:

- environmental inspection;
- fuel filling and refuelling procedures and handling of hazardous chemicals;
- pollution response management;
- use of pollution response equipment;
- air, noise, water, etc sampling procedures and use of sampling equipment;
- vehicles maintenance requirements;
- dust control;
- noise control;
- requirements during watercourse crossings; and
- measures for preventing siltation.

The above training may take the form of formal training sessions, on-site training and guidance or as part of the regular programme of tool-box talks. Contractors will be required to address the above requirements within their training programmes that will be submitted to BOTAŞ for approval. Appropriate refresher training will be given as the Project proceeds and all new personnel joining the Project will receive appropriate training prior to commencing work on-site.

2.3 MONITORING, INSPECTION AND AUDIT

Sections 5.6 and 5.7 of the EMMP outline the requirements for monitoring, inspection and audit which will apply to the BTC P/L Project. In addition, Section 6 of the EMMP outlines more detailed requirements for environmental monitoring.

BOTAŞ and all Construction Contractors will implement a programme of inspection, audit and monitoring in line with the requirements outlined in the EMMP to enable the effectiveness of environmental mitigation outlined in this PPP and in Contractor PPPs and procedures to be evaluated. This will also enable environmental problems to be identified and responded to at an early stage.

3 FUEL STORAGE AND HANDLING AND CONTAMINATED LAND

3.1 FUEL STORAGE AND HANDLING

In order to prevent pollution of soils, surface waters and groundwaters in the vicinity of fuel storage or handling sites, measures will be implemented for the safe storage and handling of all fuels and lubricant oils on site. In particular, the following requirements will be implemented.

- All centralised stores of fuel, lubricant oil and chemicals will be sited on an impervious base within an impervious secure bund. The bund will be of sufficient capacity to contain 110% of the volume of the largest tank.
- Any fuels, lubricant oil and chemicals not stored within the centralised, banded store, will be stored in such a way that they do not pose a risk to the environment. As a minimum, this will include the use of drip trays but may also include additional measures if considered necessary by BOTAŞ due to the nature of the substance or taking account of the sensitivity of the receiving environment.
- All vehicles, plant and equipment will be inspected for fuel and lubricant oil leaks before being accepted for use and thereafter regular maintenance inspections will be carried out to minimise the risk of contamination.
- Fuel storage and handling will not take place in areas where high level groundwater or unconfined aquifer conditions prevail (refer to environmental baseline maps of EIA for guidance).
- Filling and re-fuelling activities will be strictly controlled, and, together with any storage tanks, will be confined to a location remote from any environmentally sensitive receptors. In particular:
 - refuelling of fixed and mobile plant and vehicles will occur in a designated area at least 30m from drains, watercourses and wetlands (50m in the vicinity of Class I and Class II waters) and preferably on an impermeable surface;
 - a supply of suitable absorbent materials will be available at refuelling points for use in dealing with minor spillages;
 - vehicles will not be left unattended during refuelling or jam open a delivery valve;
 - hoses and valves will be regularly checked for signs of wear and to ensure they are turned off and securely locked when not in use.
- Drip trays will be installed to contain leakage from equipment such as generators and pumps. Drip trays will be maintained and kept drained of rainwater at all times.
- Oil separators will be installed in the drainage system for oil storage and handling areas.
- All crews on the Right of Way (RoW) and all construction sites will have spill cleanup kits with them at all times.

All equipment and storage facilities will be adequately protected by secure fences and locked access where possible to prevent pollution incidents occurring via vandalism and theft. Contaminated Land and Biological Hazards.

All necessary precautions will be taken by Construction Contractors to ensure that construction personnel are not exposed to hazardous substances including contaminated soils and groundwaters.

The Contractor will provide appropriate procedures, including emergency procedures, to detect and safely manage contaminated land and munitions. On discovery of any contaminated land, the BOTAŞ Site Manager will be informed immediately and all work shall cease at that particular worksite.

3.2 EXISTING CONTAMINATION

3.2.1 Contamination within the RoW.

All known pre-existing contamination within the RoW will be cleaned up by the responsible party to BOTAŞ's requirement prior to the BTC construction. Where new contamination is discovered within the RoW, BOTAŞ will be responsible for ensuring corrective action. The procedure to be followed in the field upon discovery of contaminated soil or water is presented in Box 3.1. Once encountered the methodology that will be followed to address the issue of contaminated land is summarised in Box 3.2. This largely follows the approach adopted in the UK, but is similar to approaches to the USA and elsewhere in Europe and constitutes accepted international best practice.

Box 3.1 Procedures Upon Discovery Of Pre-Existing Environmental Contamination

This form establishes the procedures to be followed in the field during the construction phase of the pipeline project upon the discovery of environmentally contaminated land. These procedures must be followed and are essential in our efforts to document and prove that the environmental condition in question actually existed prior to the construction phase.

1. Contact [the appropriate project company environmental and legal representative] at the following phone number _____.
2. Photograph the construction site. Be sure to include photographs of both the environmental contamination in question as well as any equipment that was being used when the discovery was made.
3. Take down the names of the people who were present during the discovery of the environmental contamination.
4. Take a statement from each person present. Determine what they were doing when the environmental contamination was discovered. Have them describe how the environmental contamination was uncovered. What did they see? What did they hear?
5. Be sure to take statements from anyone who might be considered an independent witness. Ask them the questions in item number 4.
6. Preserve the site as best as possible. Do not do anything to cover-up or change the physical terrain immediately surrounding the site where the environmental contamination was discovered. When in doubt ask for specific guidance from [the environmental/legal rep] listed under item number 1.
7. Immediately contact the government MEP representative and the government representative for the Ministry of the Environment. [Consider making the environmental/legal rep mentioned in item 1 responsible for this point.] Be sure to preserve the environmentally contaminated site until the government has had the ability to investigate the discovery.

Box 3.2 Methodology for DEALING WITH Contaminated Land Strategy

If in the event contaminated land is encountered during the construction phase of the pipeline and associated facilities, a risk-based approach will be adopted to address the issue. The methodology will follow the United Kingdom Environment Agency's approach (Publication Number 20 entitled *Methodology For The Derivation Of Remedial Targets For Soil And Groundwater To Protect Water Resources*, October 1999) which follows a Risk Based Corrective Action approach for both contaminated soil and groundwater. The assessment uses a Tiered approach as follows:

- Tier 1 assessment sets a remediation target concentration equal to the receptor target concentration.
- Tier 2 multiplies the receptor target concentration by a dilution factor
- Tier 3 multiplies the receptor target concentration by a dilution factor and an attenuation factor (derived by analytical means).
- Tier 4 multiplies the receptor target concentration by a dilution factor and an attenuation factor, derived by more complex numerical modelling techniques.

The method is similar to the USEPA approach, however, it differs in that the focus is on the protection of water resources. The tiered assessment involves a more detailed evaluation of contaminant migration and the associated risks to receptors. For those sites selected for Tier upgrade (from Tier 1), the data set for each site will be assessed as to whether it is suitably robust to apply to the Tier 2 and 3 approach to each site.

The technical approach to Tier 2 involves the following steps:

- Construct a conceptual hydrogeological model of the site and review the likely pathways that are complete and contribute to off-site exposure.
- Generate model simulations using site-specific data, varying assumed parameters (hydraulic conductivity).
- Assess target concentrations and determine level of corrective action required.

The fate and contaminant transport model used for Tier 3 analysis is a solution developed by Ogata and Banks. The model includes advective-dispersive transport in three dimensions with retardation and attenuation by degradation. The solution allows the modelling of breakthrough curves at the compliance point, which will be a specific x,y,z coordinate down-gradient from the source.

The model uses a continuous source, steady state approach. All model simulations used are worst-case scenario and thus, do not account for source decay.

4 PROTECTION OF SURFACE AND GROUND WATERS

4.1 INTRODUCTION

All necessary precautions will be taken to prevent the pollution of surface waters and groundwater resources along the length of the pipeline RoW and in the vicinity of all construction sites. In order to achieve this, Contractors will formulate specific method statements/procedures for the control of relevant construction activities, for approval by BOTAŞ, the Ministry of Environment and the State Hydraulic Works as appropriate.

The requirements listed in Section 2 regarding fuel storage and handling will contribute to the protection of surface and groundwaters. Additional measures aimed at the protection of surface and groundwaters that will be adopted throughout the Project are outlined in the following Sections 4.2-4.5.

4.2 GENERAL REQUIREMENTS

The following general measures will be adopted throughout all aspects of construction to minimise potential adverse impacts on surface and ground waters.

- Direct access of vehicles and mechanical plant to watercourses will be kept to a minimum and any vehicle/plant will be inspected before it enters a watercourse to avoid contamination from oil/fuel leakages.
- Mobile plant will be regularly maintained in accordance with the manufacturers' guidance, and all crews will be instructed in the use of clean up equipment and will carry absorbent pads within their vehicles.
- Fuelling, washing or maintenance of plant or machinery will not occur in, over or adjacent to a drain or watercourse or in areas where high level groundwater or unconfined aquifer conditions prevail (see Environmental Baseline Maps in Supplement 2, Volume 2 of the EIA Report for guidance).
- Vehicle wash facilities will be securely constructed, using a re-circulatory system with no overflow and the effluent will be contained for proper treatment and disposal.
- Site roads and approaches to watercourse crossings will be kept free from deposits in order to prevent silt, oil or other materials entering any drain or watercourse.
- Dewatering of the pipeline trench will be carried out in areas where there is a high water table. The discharge of this water will be in accordance with relevant Turkish water quality legislation and World Bank guidelines.
- The placing of wet concrete and cement in, or close to, any watercourse will be controlled to minimise the risk of discharge into the watercourse.

- The appropriate approvals will be obtained to discharge water from the site, including discharge of test water from pipeline hydrotesting, and adequate provision will be made, such as pre-discharge monitoring, settlement lagoons, grass plots or sediment filter systems to ensure that pollution does not occur.
- All discharges to surface and groundwaters, including effluents from wastewater treatment plants, will meet both World Bank and Turkish water discharge standards (see Table 4.1).
- For surface water abstraction (eg for line testing, use in camps and other construction activities), the Construction Contractor will follow the steps set out in Figure 4.1.

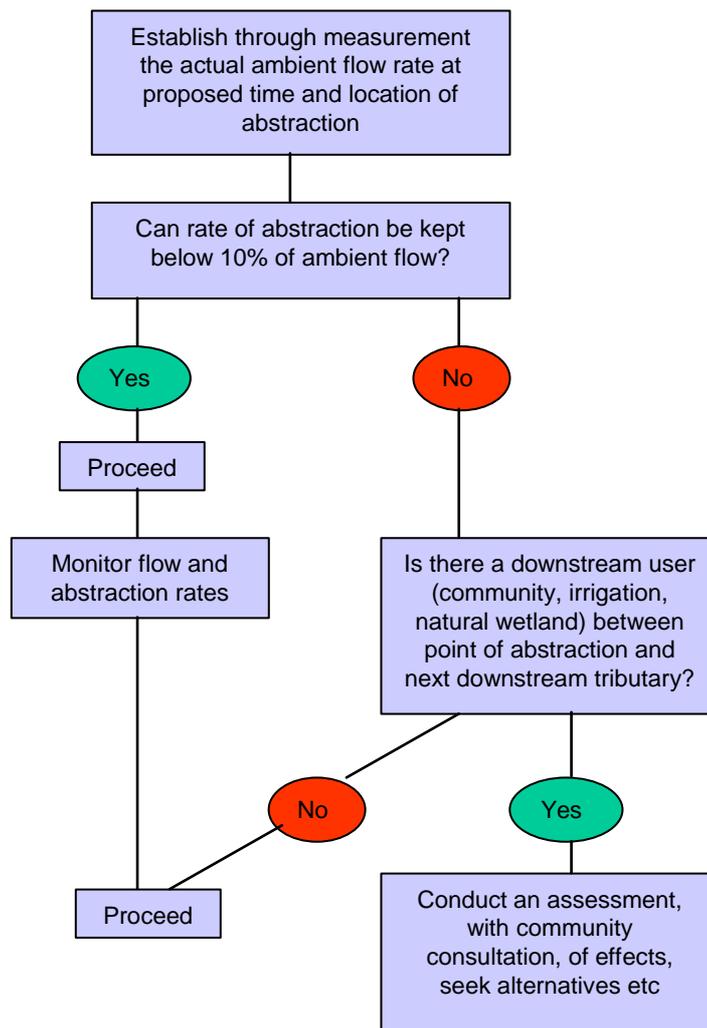


Figure 4.1. Guidelines for Surface Water Abstraction

4.3 PREVENTING SILTATION

4.3.1 Pumping

- No silt or turbid discharge water from trench or construction site dewatering operations will be allowed to enter any drain, waterbody or wetland. The only exception would be if the drain or waterbody is dry and vegetated.
- All dewatering intake hoses will be elevated off the bottom of the trench to avoid drawing bottom silt through pumping operations.
- Care will be taken with the discharge to any watercourse of water from dewatering operations.
- Pumped discharges will be made using a pump of suitable size for the situation and at a rate that does not cause riverbed disturbance.

4.3.2 Excavations

- The use of cut off ditches and well point dewatering or cut off walls for groundwater will be used to prevent surface water entering excavations.
- The corner of an excavation may be used as a pump sump, which will not be disturbed by either personnel or plant.
- When working in river channels, appropriate methods will be used to keep river water out of the working area as far as practical.
- All silty water will be disposed off in accordance with the requirements of local sewerage authorities.

4.3.3 Sediment Filters and Trapping Devices

Straw bales and filter fences will be installed to intercept run-off and remove sediment before it enters watercourses. Further details regarding the use of sediment filters and trapping devices are contained in the project *Reinstatement Plan*. Brief descriptions of these measures are presented below.

4.3.3.1 Straw bales

These will be installed along the contour of the land to form a sediment barrier, which will follow a slight gradient towards a natural channel, watercourse or lined chute, into which these will drain. Bales must be bedded into the ground and anchored with reinforcing rods to form a continuous barrier. Bales will be monitored and replaced as necessary. Used bales can then be broken up and used as straw mulch. Accumulated sediment can be spread back on the RoW if not contaminated. Accumulated sediment must be periodically removed and disposed of at an appropriately licensed waste facility in accordance with Turkish legislative requirements and the requirements for disposal of inert waste in the project *Waste Management Plan*.

4.3.3.2 Filter fences

These will be installed to intercept run-off on eroding slopes and comprise a filter cloth bound to wire fencing and anchored to the ground by stout posts. Filter fences will be installed similarly to straw bales, ie following a slight gradient towards a natural outlet into which they will drain. Sediment will be disposed of in the same way as for straw bales.

4.4 HYDROSTATIC TESTING

The pipeline and storage tanks will be hydrostatically pressure tested to ensure that there are no leaks. All hydrotest abstractions and discharges will be identified in advance of testing (timing to be advised by BOTAŞ) and will be licensed in accordance with the appropriate permitting requirements. In the very unlikely event that leaks occur, an appropriate clean up response will be put into place, in accordance with Section 8 of this document.

Environmental impacts associated with the abstraction and discharge of test water will be minimised by adoption of the following mitigation measures.

- Corrosion inhibition chemicals, oxygen scavengers or biocides will only be used in the hydrotest water with the prior permission of BOTAŞ and the appropriate Turkish regulatory authorities.
- 100 % ultrasonic or radiographic inspection of all welds and hydrostatic testing the pipeline sections before commissioning will be undertaken.
- All pipes at water crossings will be pretested.
- Test manifolds will be located outside of wetlands and riparian areas as far as reasonably practical.
- Abstraction and discharge of hydrotest water will comply with the appropriate Turkish regulatory requirements and World Bank discharge standards.
- Water samples (grab) of the discharged test water will be taken at the beginning and the end of the discharge period as a minimum. The following parameters will be monitored: flow, duration, suspended solids, oil and grease, iron, total residual chlorine (if chlorinated water is used), dissolved oxygen, and pH.
- Abstraction water intakes will be screened to avoid entrainment of fish.
- Any abstraction will be at a rate which ensures the maintenance of adequate downstream flow rates to protect aquatic life, provide for all water body uses, and downstream abstractions of water by existing users as advised by the State Authority.
- The discharge pipe will be anchored for safety.
- The discharge of test water will be to a suitable receiving body of water, across a well-vegetated area or filtered through a filter bag or erosion control barriers such as soakaways or sediment bunds.
- The discharge of test water will occur against a splash plate or other energy dissipating device in order to aerate, slow, and disperse the flow.

- The rate of discharge will be controlled to a level that prevents flooding or erosion.

The Construction Contractor will be required to prepare a comprehensive *Plan for the Implementation of Hydrostatic Testing*, which will include information regarding the quantity and quality of hydrostatic test water needed, the proposed use of any chemical additives, an evaluation of available water resources in the relevant and proposed abstraction points, as well as a discharge proposal in accordance with the HGA (see Section 4.8.4). This can be used as an outline for the criteria to be considered for the determination of the hydrotest water abstraction points and quantity, as well as the application procedure. In this regard, the following criteria were considered for the assessment of the major rivers (ie RVX-1) to be crossed by the pipeline.

- Legislative Framework
- Sensitivity
- Flow rates
- Socio-economic value (local usage)

Legislative Framework: An official opinion has to be received from the General Directorate of State Hydraulic Works (DSI) before any hydrostatic test activities can commence. Experts from the DSI evaluate the proposed water abstraction rate from rivers so as not to cause any disturbance of water abstractions downstream, such as major irrigation projects. In this respect, the maximum continuous abstraction rate shall not exceed the annual minimum flow rate of the river. As the hydrotest water abstraction is a temporary activity and over a short time period (ie a few days), this may not be a constraint for the BTC Project. However, any disturbance to downstream water abstraction is important. According to Turkish Environmental Legislation, as the hydrotest water abstraction is not a long-term continuous process it does not require a separate EIA study, however, compliance of discharge water limits in case of additive usage is required.

Sensitivity: The RVX-1 rivers, which were first considered for this purpose due to their high flow regime, were taken into account. In this respect, for the sensitivity evaluation, the fish study indicating the sensitive seasons for these major rivers in terms of aquatic life was considered [Ref 1]. According to the findings of this study, all the major rivers are sensitive between April and June. Therefore, in terms of an ecological point of view any of the major rivers to be considered for the hydrotest water abstraction shall be used in months other than those stated above.

Flow Rates: The volume of water required for hydrotesting a 50km section of pipe has been estimated as approximately 43,000m³. Water is likely to be passed along the test sections and 'topped up' where required to minimise the volume of water that needs to be abstracted and consequently to reduce the volume of discharge following test completion (see Section 4.8.4). As the total distance of the pipeline is approximately 1070km, the total amount of the water required for hydrotest can be estimated at 920,000m³, which is a significant volume. Therefore, carrying out hydrotesting for each lot (refer to Table 4.1) separately is suggested. The maximum water requirement will then be approximately 383,000m³ (ie for Lot B). The required amount for each lot can be abstracted from more than one location within each lot so as to minimise the amount to be abstracted from one river. At this point the most important factor is the flow rate of the river. The flow rates for major rivers, which can be considered for hydrotest water sources, were calculated in the context of "Verification of Hydrologic and Hydraulic Analysis of River Crossings Study", which was reported in ESE-REP-ENG-PLG-002. Those flow rate values (see Table 4.1) will be considered for the determination of water abstraction.

Socio-Economic Value: According to the results of the social surveys (eg questionnaire studies) conducted along the BTC route corridor of 4km (ie social survey area width), almost all of the rivers along the BTC route are used for fishing purposes at a level of household needs. There are no commercially important fishing areas in the rivers, therefore, there is no anticipated impact on the fishery activities as a result of water abstraction.

The rivers chosen as potential sources for hydrotest water abstraction are shown in Table 4.1.

Table 4.1 Potential Sources for Hydrotest Water Abstraction

Name of River	Section	Q (m³/s)	Water Depth (m)	V (m/s)
Kura river	Lot A	401.5	3.62	1.71
Hasankale river	Lot A	180.0	1.86	0.82
Karasu river	Lot B	317.0	2.43	1.76
Acisu river	Lot B	366.0	2.69	2.80
Tatli river	Lot B	262.4	2.83	3.36
Sariz river	Lot C	255.9	2.70	2.04
Kesis river	Lot C	698.0	5.81	4.87
Ceyhan river	Lot C	3224.0	10.18	1.02

These have relatively high flow rates that do not cause any disturbance to downstream water usage, and low ecological sensitivities among the major rivers that the BTC Pipeline will cross. Lot B will require more water abstraction than A and C due to the fact that it is longer. Therefore, the Sariz River, which is in Lot C of the pipeline route can be used as an abstraction point for Lot B. Other major rivers that are not listed in the above table do not seem to be appropriate in terms of an ecological point of view due to their low flow rates and the possibility of temporary complaints by locals utilising the rivers for irrigation, fishing etc.

4.5 DRAINAGE

A temporary drainage system will be installed during construction. This will be in addition to the normal reinstatement of existing drainage systems. Once reinstatement has been completed, the pipeline will have no significant effect on, or inhibit the movement of, surface waters or groundwater.

4.6 PROJECT STANDARDS FOR DISCHARGES TO WATER

Project standards for discharges to water are summarised in Table 4.2 below. All water discharge due to project construction activities will comply with these standards.

Table 4.2 Project Standards for Water Discharges

Parameter	Turkish Regulation on Fishery Products	Turkish Regulation on Water Pollution Control		WB Guidelines for Onshore Oil and Gas Production ⁽¹⁾ ₍₂₎
		Composite sample (2 hours)	Composite sample (24 hours)	
PH	5-9	6-9	6-9	6-9 ⁽¹⁾⁽²⁾
BOD, mg/L	50 (domestic) 75 (industrial)	100	50	BOD ₅ : 50 ⁽¹⁾⁽²⁾
COD, mg/L	170 (domestic) 255 (industrial)	160	100	250 ⁽¹⁾
Oil and Grease, mg/L	30 (domestic) 10 (industrial)	20	10	10 ⁽¹⁾ , 20 ⁽²⁾
TSS, mg/L	200	50	200	50 ⁽¹⁾⁽²⁾
Heavy metals, Total, mg/L		10	-	10 ⁽¹⁾
Total toxic metals				5 ⁽²⁾⁽⁴⁾
Hexavalent chromium, mg/L		0.5	0.5	0.1 ⁽¹⁾
Total chromium, mg/L	0.5	2	1	0.5 ⁽¹⁾
Lead, mg/L	0.5	2	1	0.1 ⁽¹⁾
Cyanide, mg/L	Total: 0.3 Free: 0.06	1	0.5	Total: 1 Free: 0.1 ⁽¹⁾
Cadmium, mg/L	0.05	0.1		0.1 ⁽¹⁾
Iron, mg/L		10		3.5 ⁽¹⁾
Fluoride, mg/L	20	15		20 ⁽¹⁾
Copper, mg/L	0.5	3		0.5 ⁽¹⁾
Zinc, mg/L	2.0	5		2.0 ⁽¹⁾
Mercury, mg/L	0.01		0.05	0.01 ⁽¹⁾
Nickel mg/L	0.5			0.5 ⁽¹⁾
Arsenic mg/L	0.5			0.1 ⁽¹⁾
Nitrate Nitrogen mg/L	5.0			
Ammonia Nitrogen mg/L	0.2			
Ammonia, mg/l				10 ⁽¹⁾
Chlorine, mg/L	0.5 (Free)			0.2 ⁽¹⁾
Total sulphur mg/L	1.0			
Total Phosphorus, mg/L	0.02			2 ⁽¹⁾
Phenols, mg/L	5.0			0.5 ⁽¹⁾ , 1 ⁽²⁾
Sulphide				1 ⁽¹⁾⁽²⁾
Coliform bacteria				≤400 MPN/100ml ⁽¹⁾
Faecal coliform	10 MPN/100ml ⁽⁵⁾			
Temperature increase, °C	<3			<3 ⁽³⁾
Fish Bioassay	20% mortality in 28 hours			

(1) Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production – General Environmental Guidelines, page 438

- (2) Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production – Oil and gas development (Onshore) page 359
- (3) The effluent should result in a temperature increase of no more than 3 °C at the edge of the zone where initial mixing and dilution take place (this is usually where the effluent reaches the surface in the case of a sub-surface discharge. Where the zone is not defined, use 100 m from the point of discharge.
- (4) Toxic metals include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium and zinc.
- (5) This value is for the most sensitive aquatic products and can be exceeded under certain circumstance which are specified in the Aquatic Products Regulation (10 March 95)

5 PIPELINE WATERCOURSE CROSSINGS

5.1 GENERAL CONSIDERATIONS

Site specific working method statements and construction drawings will be developed for each major (>30m width) and medium (5-30m width) water crossing. These documents will be prepared by the pipeline construction contractors for the approval of BOTAŞ and the DSI. These method statements will include procedures for protecting watercourses against pollution, minimising sedimentation, minimising impacts on bankside vegetation and ensuring reinstatement of watercourses to their pre-construction state. The construction drawings will include the contractor defined working areas required to perform the site specific construction method.

A general working method statement will be prepared for minor watercourse (less than 5m width) crossings. These method statements will include procedures for protecting watercourses against pollution, minimising sedimentation, minimising impacts on bankside vegetation and ensuring reinstatement of watercourses to their pre-construction state.

The design of the watercourse crossings will avoid affecting the stability and long-term performance of riverbanks and flood defences. The pipeline will be installed below the watercourse bed to a minimum depth of cover of 1.5m below the anticipated riverbed level, including allowance for scour, cleaning or straightening works.

Wherever practicable, periods of low flow will be chosen for the open cut watercourse crossings resulting in a quicker deposition from the water column of any sediment released. The pipeline construction contractors will take all reasonable steps at watercourse crossings to minimise the length of bank and bed that are directly affected - this will be achieved through fencing off such areas and any vulnerable banks that may be susceptible to damage.

Working within the river channel will be avoided where possible. However, where in-river work is unavoidable, measures such as the deployment of oil booms and straw bales downstream or temporary pumping or diversion of flow will be undertaken to mitigate the potential impacts and minimise any increase in sediment load on the river.

The potential impacts of watercourse crossings on fish species will be mitigated by careful scheduling of the construction works to avoid spawning seasons (as specified in Attachment 1 of the EMMP). If this period cannot be avoided, the prior approval of BOTAŞ must be obtained. Where there are downstream fisheries farmed or otherwise used by local communities particular attention to sediment control will be required and an increased level of inspection and monitoring will be implemented.

The construction contractor will protect and minimise potential adverse impacts during watercourse crossings by undertaking the following measures.

- Construction activities at watercourse crossings will occur over a limited period of time and with the minimum equipment required for safe and efficient working.
- Vegetation clearance along river/stream banks will be minimised and mature trees will be left in place wherever possible.

- Watercourse crossings will be constructed perpendicular to the axis of the river channel where engineering and routing conditions allow.
- Ambient downstream flow rates will be maintained.
- Raised sediment loadings in the river will be minimised. Where there are down-stream fisheries farmed or otherwise used by local communities, particular attention to sediment control will be required and an increased level of inspection and monitoring will be implemented.
- Appropriate diversion measures will be installed to ensure fish can pass up and downstream at all times.
- All construction material and structures will be removed from all watercourses once construction has been completed.
- River channels, river beds and banks will be restored to their original state and enhancement measures will be undertaken wherever appropriate.
- River banks and adjacent upland areas will be stabilised immediately after final grading.
- The right of way will be inspected on a regular basis during and after construction and any erosion control measures will be repaired and/or restored as needed.
- Where blasting is required within a watercourse, the explosives will be padded with blasting mats. No spoil material will be used for padding.

The construction contractor will ensure the following requirements are met in relation to diversion pipes and channels.

- Diversion pipes or channels will be sized to convey the mean annual flow rate.
- Diversion pipes and channels will be at the same gradient as the river.
- River water should enter and exit at the normal channel invert level ie the water should not cascade from the pipe or channel.

5.2 SCHEDULING

Contractors will prepare a detailed time schedule for crossings, which will be subject to the approval of BOTAŞ. Contractors will ensure that watercourse crossings are completed in the shortest amount of time practicable in order to minimise the duration of potential adverse impacts. Watercourse crossings will be undertaken during the low-water season.

5.3 ADDITIONAL WORK SPACE AREAS

Staging areas for watercourse crossings will be minimised, both in number and in area. Any additional temporary workspace will be located approximately 15m from riverbanks, where site-specific conditions allow. However, the Contractor will ensure that a minimum distance of 3.5m is maintained between working areas and the top of the stream bank (see Section 5.5).

5.4 EQUIPMENT CROSSINGS

Measures to facilitate equipment crossings will include timber mats laid adjacent to and across the river bed, flume pipes covered by fill material (clean gravel or crushed stone), flume pipes covered by fill material overlain with timber mats or portable bridges.

Flume pipes will conform to watercourse crossing dimensions and alignments. River channels will not be permanently straightened or permanently realigned, unless the appropriate permit or approval has been obtained from the DSI. Contractors will ensure that the size and number of flumes will be sufficient for the maximum anticipated flows. River channels may be temporarily altered to allow placement of flume pipe(s)/culvert(s) and to facilitate equipment crossings.

Where fill for equipment crossings comprises log rip rap or other erodible material, sandbags will be placed within the watercourse, and both upstream and downstream of the crossing point, to stabilise and seal the flume pipes. Sandbags will additionally be placed high enough along both sides of the bridging structure to contain the fill material and prevent erosion from occurring.

Clearing crews may construct temporary crossings with timber or log mats. However, these will not be used for equipment crossings and fit for purpose equipment crossings will be installed.

Temporary bridging structures will be installed prior to crossing any watercourse, including those with intermittent water flows. The Contractor will use one of the following methods:

- timber mats with or without flume pipe(s);
- clean rock fill and flume(s); or
- a portable bridge.

Bridges will be maintained to prevent soil from entering the watercourse.

5.5 CLEARING AND FINAL GRADING

Where a distance of 3.5m is unable to be left clear between the working areas and the top of the river banks, sediment barriers and water bars will be installed on either side of the watercourse crossing prior to grading.

Where necessary, the grade of the riverbanks will be reduced to form a gradual slope and soil will be stored at least 3.5m from the watercourse. Any grading of riverbanks will be carried out at the time of the watercourse crossing only. Where grading of the banks is required for equipment crossing, the exposed soils will be immediately stabilised.

5.6 REINSTATEMENT OF RIVER CROSSINGS

- All disturbed areas within the existing channel will be reinstated and stabilised prior to flow being redirected into it. Suitable protection from any disturbed areas that have not been stabilised will be provided for the channel.
- During reinstatement, flume pipes, sand bags and other material will be removed and the watercourse will be restored to its original state.
- Where practical, banks should be stabilised and permanent sediment barriers installed immediately upon completion of the crossing.

- Equipment crossings will be left in place where required for access during seeding operations. However, bridges will be removed if there is either a gap of more than one month between final cleanup/grading and the beginning of the initial permanent seeding; or if appropriate alternative access is available.
- Erosion control material will be used to stabilise banks as necessary. Materials with meshes that could entangle wildlife will not be used.
- Where slopes are >15% and within 30m of a watercourse, jute thatching or similar material will be used over seed and straw mulch as necessary.
- Rock riprap will be placed on the banks of watercourses where flow conditions prevent the establishment of vegetation.
- Bridges that are left in place after and before crossings will be maintained in a safe condition and soil and other material will not be allowed to accumulate on their surface.

5.7 REQUIREMENTS DURING DRILLING

During any drilling operations, the following measures will be adopted.

- Drilling fluids and cuttings will be disposed of in accordance with the requirements of Turkish legislation, the Project WMP and World Bank standards. The preferred method of disposal will be dependant on the composition of the drilling fluids used. The use of specific drilling fluids and the disposal method will be subject to the approval of BOTAŞ prior to use.
- Additional temporary workspace, including pipe staging areas and storage area for drilling mud and borehole cuttings, will be located in upland areas outside of wetland and riparian zones.
- Sediment barriers will be installed on the down gradient side of upland storage areas.

6 PREVENTION OF MARINE POLLUTION

The measures outlined in Sections 3 and 4 with regards to the prevention of pollution at fuel storage and handling sites and the protection of surface waters and the measures outlined in Sections 7 and 8 with regards to air emissions and the control of noise will also apply in relation to all works carried out in the vicinity of the marine environment. Additional measures that will be adopted in relation to onshore and offshore works at the BTC Marine Terminal site in order to avoid pollution of the marine environment are specified below.

- Untreated drainage to marine waters will be limited to rainwater from uncontaminated areas.
- Drainage from potentially contaminated areas (eg vehicle washing areas, fuelling areas, machinery areas, roads etc) will be routed to the oily water system for treatment and will not be discharged directly to sea.
- Wastes and discharges from vessels involved in construction will be managed according to Turkish and international regulations and standards (specifically MARPOL 73/78) and will not be discharged from vessels from within 12 nautical miles (22km) of the shoreline.
- Vessel sewage will be comminuted and disinfected prior to discharge, and this will not take place within 12 nautical miles from shore. These discharges will meet the following MARPOL criteria:
 - BOD < 40ppm;
 - Suspended solids < 50ppm;
 - coliforms < 200 per 100ml.
- Drainage, particularly that from ship machinery spaces, will be treated to ensure that oil in water discharges to sea do not exceed 15ppm as required by MARPOL.

Any discharges to the marine environment during construction of the Project, excluding those from vessels, will be designed to ensure that the most stringent of the limits in Table 6.1 will be achieved at the point of discharge of wastewaters to receiving water bodies.

Table 6.1 Limits at Marine Outfalls

Parameter	Turkish Regulation on Fishery Products	Turkish Regulation on Water Pollution Control	WB General Environmental Guidelines (1) and Onshore Oil and Gas Production (2)
PH	5-9	6-9	6-9 (1) (2)
BOD, mg/L	50 (domestic) 75 (industrial)	250	BOD5: 50 (1) (2)
COD, mg/L	170 (domestic) 255 (industrial)	400	250 (1)
Oil and Grease, mg/L	30 (domestic) 10 (industrial)	10	10 (1), 20 (2)
TSS, mg/L	200	350	50 (1) (2)
Floating matter		Not allowed	
Total Nitrogen, mg/L		40	
Nitrate nitrogen mg/L	5.0		
Ammonia nitrogen mg/L	0.02		
Ammonia, mg/L			10 (1)
Total Phosphorus, mg/L	0.02	10	2 (1)
Total sulphur mg/L	1.0		
Cyanide mg/L	Total: 0.3 Free: 0.06		Total: 1 Free: 0.1 (1)
Mercury mg/L	0.01		
Cadmium mg/L	0.05		
Lead mg/L	0.5		
Arsenic mg/L	0.5		
Total chromium mg/L	0.5		
Copper mg/L	0.5		
Nickel mg/L	0.5		
Zinc mg/L	2.0		
Fluoride mg/L	20		20 (1)
Chlorine mg/L	0.5 (Free)		0.2 (1)
Surfactants, mg/L		10 The discharge of materials which are identified as non-biodegradable by the Turkish Standards Institute is forbidden	
Phenol mg/L	5		0.5 (1), 1 (2)
Sulphide mg/L			1 (1) (2)
Coliform bacteria		<1000 TC/100 ml	400 MPN/100ml (1)
Faecal coliform bacteria	10 MPN/100 ml	<200 TC/100 ml	
Temperature increase, °C		<3	<3 (1) (2) (3)
Total toxic metals mg/L			5 (2) (4)

**BTC PROJECT EIA
TURKEY**

Parameter	Turkish Regulation on Fishery Products	Turkish Regulation on Water Pollution Control	WB General Environmental Guidelines (1) and Onshore Oil and Gas Production (2)
Others	Fish Bioassay: 20% mortality in 48 hours	The limits established in the Turkish Regulation on Dangerous and Hazardous Materials shall be complied with	

- 1 Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production
- 2 Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production – Oil and gas development (Onshore) page 359
- 3 The effluent should result in a temperature increase of no more than 3 °C at the edge of the zone where initial mixing and dilution take place (this is usually where the effluent reaches the surface in the case of a sub-surface discharge. Where the zone is not defined, use 100 m from the point of discharge.
- 4 Toxic metals include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium and zinc.

7 CONTROLLING DUST AND OTHER EMISSIONS TO AIR

7.1 INTRODUCTION

The use of Best Practicable Means to control dust and other emissions to air will be adopted in relation to all project activities and will include, but not be limited to, the following:

- measures for the control of site operations;
- measures for the avoidance of nuisance from exhaust emissions;
- measures for the control of vehicle movements on site.

In particular, all construction contractors will be required to implement the measures described in the following sections. Measures associated with the control of vehicle movements on site are addressed in Traffic Management Plan and will also be implemented by all construction contractors.

7.2 MEASURES FOR THE CONTROL OF SITE OPERATIONS

- Land transfers and stockpiles of material will be carefully managed (eg by use of a suitable sheet material) to minimise the risk of wind blown material and dust.
- Those sections of the working width or construction sites that are being trafficked over will be damped by controlled application of water sprays (eg, by water bowser) as conditions dictate. Any additives used for dust-control will be approved by the BOTAŞ representative prior to use.
- Particular attention will be paid to dust suppression on the working width or at construction sites when working within 500m of residential areas or individual dwellings during dry weather conditions.
- Hardstanding areas will be regularly inspected and kept clean of all mud and dusty materials.
- There will be no burning on-site of any waste arising from any construction activities with the exception of waste burnt in a suitably designed and operated incinerator as specified in the Project WMP. Where required by BOTAŞ, wind breaks, netting screens or semi-permeable fences will be used to reduce dust emissions from working areas in close proximity to sensitive locations eg residential areas.
- All vehicles delivering dusty construction materials to the site or removing spoil will be enclosed and covered to prevent escape of dust.
- In areas where the soils contain large quantities of silt and fine sand, which has a tendency to blow in dry conditions, particular attention will be paid to dust suppression.

7.3 MEASURES FOR THE AVOIDANCE OF NUISANCE FROM EXHAUST EMISSIONS

- Best control technology will be adopted to reduce emissions from fuel storage, combustion emissions from engines and mobile incinerators and any other temporary equipment.
- Engines will not be left running unnecessarily.
- All vehicle and equipment engines and exhaust systems will be maintained so that exhaust emissions do not breach Turkish statutory limits set for that vehicle/equipment type and mode of operation, and that all vehicles and equipment are maintained in accordance with manufacturers' guidance.
- Exhausts of engines on the construction site will be positioned at a sufficient height to ensure dispersal of exhaust emissions.
- All vehicles will be maintained so that their noise and exhaust emissions do not cause nuisance to workers or local people.
- Regular maintenance of vehicles will be undertaken to ensure that vehicles are safe and that emissions and noise are minimised eg by cleaning fuel injectors in diesel engines.

8 CONTROLLING NOISE

8.1 INTRODUCTION

The mitigation measures described in the following sections will be employed during all construction activities in the vicinity of noise-sensitive receptors, eg residential dwellings, schools and sensitive ecological areas, to ensure that adverse noise impacts are avoided.

8.2 HOURS OF WORK

- Construction working hours will be agreed with the relevant authorities and BOTAŞ prior to commencing work.
- In the event of night-time working, working hours will be discussed and agreed in advance with BOTAŞ and the relevant authorities.
- A limited number of construction activities will have to continue on a 24-hour basis. These will include the construction of open-cut crossing techniques, hydrostatic pressure testing, and other commissioning activities. Approval of the relevant authorities and BOTAŞ will be obtained prior to commencement of any night-time works. Noise-reduction techniques will be implemented in order to minimise the disturbance.

8.3 CONSTRUCTION PLANT

- Construction contractors will identify the noise levels expected from the agreed method of working and chosen plant and equipment, and indicate the steps that will be taken to minimise the impact of noise.
- All plants will be adequately maintained to minimise noise emissions and wherever practicable inherently quiet plants will be selected for use on site. Each item of powered machinery used on site will be properly maintained and serviced so as to prevent unnecessary noise emissions.
- Where plants have been designed to operate with engine covers to reduce noise, these will be used and remain closed at all times whilst the plant is in operation.
- All items of plants operating on the site in intermittent use will be shut down in the intervening periods between periods of use.
- Routine checks will be undertaken to identify equipment that is emitting unacceptably high noise levels or particular tonal characteristics which, through appropriate repair or general servicing, could be reduced.
- Construction contractors will be responsible for ensuring that noise emissions from the site do not result in Turkish or World Bank standards being exceeded at noise sensitive receptors.

- Any item of plant or equipment found to be emitting excessive noise levels due to a faulty silencer, broken or ill-fitting engine cover or other reason, will immediately be taken out of service and be adequately serviced, repaired or replaced.
- Plants will be sited in locations as far from inhabited buildings as practicable and all reasonable screening will be utilised where necessary to reduce noise levels at sensitive receptors. Noise barriers will be used where significant noise impacts are anticipated.
- Plants known to emit noise strongly in one direction will, whenever possible, be orientated so that the noise is directed away from noise sensitive areas.
- Where practical, the stockpiling of site materials, soil or spoil should be located where it can provide some additional screening provided that any plant associated with this does not in itself generate nuisance. The transport of materials on or off site by road should take place during the normal daytime working period and should also be routed away from particularly sensitive receptors in accordance with the Project TMP. In the event that the transport of materials will take place during night time working hours, these working hours will be discussed and agreed in advance with BOTAŞ and the relevant authorities.
- Site personnel will be trained in the proper use and maintenance of tools and equipment, and the positioning of machinery on site to reduce noise emissions to neighbouring communities.

8.4 PILING AND BLASTING

- Piling activities, if required, will be subject to rigid safety, noise and vibration control procedures including procedures to ensure adequate warning is given to anyone who may potentially be affected. Contractors will agree these procedures with the BOTAŞ representative prior to the commencement of piling activities.
- Blasting activities, if required, will be subject to rigid safety and noise and vibration control procedures including procedures to ensure adequate warning is given to anyone who may potentially be affected. Contractors will agree these procedures with the BOTAŞ representative prior to the commencement of blasting activities.
- Specific locations at which piling or blasting will be required have not yet been determined. Piling may be required at a limited number of river crossings and during AGI construction. Blasting is likely to be required at a number of locations along the pipeline RoW. The exact locations at which piling and blasting activities will be agreed with BOTAŞ prior to the commencement of the blasting or piling activities.
- It is considered that the above measures will adequately protect the majority of residential properties from noise and vibration, as routine construction activities will take place during the daytime. At a number of locations associated with the Project, the potential impacts will be greater due to factors such as their proximity to the works or the presence of night-time construction works, and specific noise controls may be necessary at these locations. Contractors will be advised of these locations and will be required to identify and implement specific mitigation measures, such as the use of noise barriers.

8.5 PROJECT STANDARDS FOR NOISE

Project standards for construction noise are summarised below.

Turkish Noise Control Regulation (NCR) (11 December 1986) specifies noise levels during construction which are applicable to the Project and these are presented in Table 8.1 below. When noise levels exceed the acceptable levels at a distance of 1m from noise sensitive structures in the environment, measures must be taken to reduce noise to acceptable levels.

Table 8.1 Ambient Noise Standards during Construction

Noise Source	L _{eq} 5 minute (dB(A) (Day 06:00-22:00)
Construction Site Noise	
Building construction (continuous)	70
Road construction (temporary)	75
Impact noise	100 (L _{max})

The maximum allowable noise emissions for various noise sources from the NCR are provided in Table 8.2.

Table 8.2 Maximum Permitted Noise Levels for Various Noise Sources

Noise Source	Noise Level (L _{eq} 5 minute) (dB(A))
Trucks (at a distance of 7.5 m)	85
Diesel powered scrapers and bulldozers (100-450 kW)	120
Diesel powered shovels with caterpillar treads (40-60 kW)	110
Diesel powered excavators (45-80 kW)	105
Diesel powered cranes with caterpillar treads	105
Diesel powered dump trucks (1.2-2.5 tons)	100
Diesel powered vibrating cylinders (2-75 kW)	110
Cement mixers	115
Cement pumps	115
Graders	120
Compressors (stationary)	115
Tractors	120
Loaders	115
Gears	95
Rock drilling guns	125
Pumps (300 hp)	120
Electric motors (300 hp)	105

9 SPILL PREVENTION AND CONTROL

9.1 INTRODUCTION

Spill response during the operational phase of the Project is addressed in the Project Oil Spill Response Plan. This plan will continue to be developed during the construction phase of the Project and will be fully operational prior to commissioning of the pipeline.

Construction Contractors will develop and implement project specific plans and procedures for spill prevention and control that will be subject to the approval of BOTAŞ 12 weeks prior to the commencement of RoW clearance or the breaking of ground at other construction sites. These spill prevention and control procedures will ensure that immediate action is taken to minimise the effect of any spill on the receiving environment and to prevent any reoccurrence of the event. The procedures and requirements outlined in the remainder of this section are intended to act as a guide to contractors in the development of their site/location specific emergency planning and response procedures. The details of emergency procedures will vary from contractor to contractor dependent on the nature of the activities undertaken, the geographical location of those activities and the supervisory/management structure adopted by the contractor.

The purpose of the spill prevention and control procedures will be to control and minimise the safety, health and environmental hazards due to spills of hazardous materials that are used or stored at the project site locations. Spills that may occur include the following:

- diesel and other fuels;
- lubricants and hydraulic fluids;
- solvents and chemicals;
- hazardous waste;
- contaminated water;
- drums and/or tanks of unknown contents although good management should ensure that no unlabelled substances are kept on any of the sites.

These substances could be spilled or released during site activities as a result of:

- transportation or refuelling accidents;
- improper packaging practices;
- rupturing of tanks, drums, or other storage containers;
- improper handling of hazardous materials during loading and/or off-loading;
- improper use;
- accidents during use.

9.2 PREVENTION

Ways of preventing or limiting spills and leaks include:

- use of storage tanks and vessels only for their intended purposes;
- install leak detection equipment (where appropriate) and train employees to use it;
- install spill containment equipment and train employees to use it;
- wipe up spills whenever possible rather than hosing down an area;
- maintain the integrity of tanks and containers and always store in bunded areas;

- control the loading, unloading, and transfer of all hazardous substances which should wherever practicable be undertaken in bunded areas;
- ensure that all hoses and gaskets are properly fitted prior to receiving and dispensing fuels and other liquids;
- install secondary containment around tanks or storage areas to limit spills;
- install and maintain drip pans beneath equipment connections that might leak;
- mobile or portable oil storage tanks will be positioned or located so as to prevent spills from reaching natural streams or lakes;
- secure hose connections, especially cam-lock levers.

These are all considered as practical methods of good practice and will be employed on all sites.

In the event of a spill, an investigation will be conducted and recommendations made and follow-up actions instituted to prevent future incidents.

It is the responsibility of every construction supervisor to identify potential hazardous material release situations. The Environmental Manager and Inspectors will support the supervisors in this duty. Typical warning signs of hazardous conditions include:

- poor container conditions such as excessive rust, dents, or puncture marks;
- non-segregated, incompatible materials stored in the same area;
- material storage areas without bunding;
- containers stored near moving or vibrating equipment;
- containers lacking or having insecure lids;
- materials placed in inappropriate containers (ie corrosives in metal);
- improperly labelled containers;
- inappropriate materials handling/transferring operations;
- leaking equipment (ie fuel, transmission, and hydraulic systems).

9.3 ASSESSMENT

All hazardous materials will be properly assessed before they are taken to site in order to implement effective spill prevention and control procedures. This process will include a materials characterisation that includes the following information:

- names/types of materials released;
- amount of materials released;
- location of the release;
- cause of release;
- hazardous characteristics of the released substance(s);
- consequences due to spill (ie fire, injury, illnesses, and damage to the environment).

Material Safety Data Sheets, (MSDS), also known as 'Control of Substances Hazardous to Health' data sheets, or similar, will be maintained along with other site safety documentation for all substances stored and used on site.

9.4 RESPONSE IMPLEMENTATION

Likely response scenarios for the construction phase are outlined below. The responsibility for all spill response during construction will rest with the relevant Construction Contractor. The procedures described below are intended as an outline to guide the Construction Contractors in the development and implementation of more detailed procedures that will ensure an efficient and effective response to all spill incidents, both minor and major.

BOTAŞ procedures for emergency response are set out in the project Emergency Response Plan (BOT-PLN-HSM-GEN-002). This document sets out the procedures to be followed by BOTAŞ Emergency Response teams in the event of an emergency response including conduct, points of contact and reporting. While the respective Contractor will be fully responsible for responding to any pollution incident occurring in the course of their activities, Contractors shall also ensure that their own pollution response procedures are consistent with the BOTAŞ project Emergency Response Plan. Specifically, mechanisms for liaison with the BOTAŞ Emergency Response Team shall be addressed.

9.4.1 Typical Small Spills

Typical small spills include splashes and drips during refuelling, broken oil, hydraulic fluid, or coolant hoses, and oil and lubricant drips from equipment during normal operation. Such spill would normally be less than 0.1m³ in volume. Treatment of these small spills will be undertaken immediately by the persons involved. Typically, the source of the spill will be stopped, the spill contained, and the affected soil picked-up with shovels and placed in appropriate containers. Treatment of drip spots will be an on-going activity whereby the construction area is regularly inspected and stained soil or grease specks picked-up with a shovel and placed in an appropriate container.

Construction Contractors spill response procedures for responding to this type of spill will include, but not be limited to, the following mechanisms and resources:

- techniques for isolating the source;
- use of absorbent material to mop up the spill;
- appropriate disposal of contaminated soil;
- incident reporting.

The response time for spills of this nature will be immediate and all site personnel will be trained in the procedures for responding to this type of spill.

9.4.2 Large, Hazardous, or Unknown Spills

Spill response procedures will be activated in the event of large unplanned spills or releases of hazardous or unknown substances. It should be noted that, through good management practices, (see Section 9.3) no unknown substances would be stored or used on site. Any substance brought onto site will be done so because it has a specific use associated with site activities and will be in clearly labelled containers. Spills of this type would typically result from greater than 0.1m³ of spilled substance.

As soon as a spill is discovered the lead person at the scene will designate a restricted area and all nonessential workers will evacuate the immediate area if the spill may pose a threat to the health and well being of personnel. The Contractor Environmental Manager or Inspector and the BOTAŞ Site Manager will be informed immediately.

Once at the site, the Environmental Manager/Inspector will confirm the spill as a major spill and the Emergency Response Team (ERT) will be deployed. ERT members will be project personnel who have been trained to contain and cleanup spills.

Construction Contractors spill response procedures for responding to this type of spill will include, but not be limited to, the following mechanisms and resources:

- larger spillage on land:
 - techniques for isolating the source;
 - containment of the spread of the spill using sand bags or other appropriate techniques;
 - excavation of trenches downhill of the spill to intercept groundwater with absorbent material in trench;
 - appropriate disposal of contaminated material;
 - incident reporting;

- spillage into water:
 - immediate reporting techniques;
 - deployment of a chevron type boom layout downstream of the spillage and spanning the entire watercourse for spills to rivers or streams;
 - angling of the boom to direct pollutant to one of the banks for spills to rivers or streams;
 - deployment of a boom to contain the spilled material for spills to lakes or the marine environment;
 - use of floating absorbent and/or skimmers to remove the pollutant;
 - removal of contaminated material from site;
 - appropriate disposal of contaminated material.

The initial response time for this type of spill will normally be immediate, as all site personnel will be trained in initial response procedures. A fully trained and equipped ERT will normally respond to a major spill within 2 hours unless the spill occurs in a very isolated area away from the main construction activities eg spills associated with vehicles transporting materials or equipment to the construction site.

Solid waste due to a spill or arising during the clean-up of a spill will be disposed of in accordance with the requirements of the Project WMP. Any contaminated water will be treated prior to discharge to ensure compliance with project wastewater discharge standards (see Section 4).

9.5 EQUIPMENT

9.5.1 Containment Equipment

The Contractor will ensure that appropriate spill response equipment is located at the following locations:

- with all crews working on the RoW or at construction sites;
- at each construction camp;
- at all fuel or chemical storage facilities.

The designated ERT will proceed to the spill area with the appropriate equipment. The following spill response equipment will be held and maintained such that it can be deployed to the incident scene:

- absorbent boom of no less than 30m in length together with anchoring equipment to hold the boom in place;
- absorbent pads;
- appropriate personal protective equipment (PPE);
- a hand operated fuel pump;
- chemical resistant storage drum of no less than 100 litres capacity;
- sandbags;
- dry granular absorbent;
- shovels made or coated with polyethylene (non-sparking material);
- corrosion resistant pump;
- hoses;
- warning tape or traffic cones;
- skimmer equipment; and
- fast tanks.
- in addition, inflatable booms, pumps and skimmers will be available for use in the event of a larger river spill.

In addition to the standard containment equipment described above, Contractors involved with construction of the BTC Marine Terminal shall ensure they have immediate access to appropriate containment equipment for use in the marine environment. This shall include containment booms, skimmer equipment and suitable marine vessels for the deployment of spill response equipment.

If a Contractor cannot source the appropriate equipment from their own resources, protocols shall be established with BOTAS or other nearby sources of spill response and containment equipment to ensure the immediate access to such equipment.

9.5.2 Personal Protective Equipment (PPE)

The Health and Safety Manager/Inspector together with the Environmental Manager/Inspector will determine the appropriate PPE, including PPE during the initial entry into the restricted area. Personnel involved in spill treatment will be trained in proper use and care of PPE. Basic PPE for spill containment operations comprises the following:

- hard hat;
- safety goggles;
- rubber boots (at least knee length) with toe protection;
- chemical resistant inner and outer gloves;
- coveralls with hood.

If appropriate full face air purifying respirators with organic vapour/acid gas/HEPA cartridges will be used. Personnel involved in spill treatment around the marine terminal shall also be supplied with life jackets.

The Health and Safety Manager/Inspector together with the Environmental Manager/Inspector will determine if upgrading or downgrading of PPE is necessary. Reference to the appropriate Material Safety Data Sheet (see Section 9.3) will be made and/or appropriate specialist advice on the nature of the spilled substance will be sought in determining the appropriate level of PPE.

9.6 MONITORING

The Environment Manager/Inspector will monitor progress of the spill and the associated cleanup effort. In order to facilitate this process and to record all actions taken with respect to the spill response, a *Spill Log* shall be maintained. The person discovering the spill will initiate the *Spill Log*. Appropriate training in the use and contents of the *Spill Log* will be included in the spill response training given to all construction personnel. Ownership of the *Spill Log* will be transferred to the Environment Manager/Inspector once they are on site although the Environmental Manager/Inspector may wish to delegate the maintenance of the *Spill Log* to a responsible person. The following information will be recorded in the *Spill Log*:

- all response actions taken or decisions made;
- observations regarding the movement/spread of the spilled material or effectiveness of spill response;
- date and time of the action, decision or observation;
- person(s)/parties undertaking action, decision or observation;
- any other relevant information eg cost, equipment used, weather conditions.

If the spill response extends to more than one location, a separate *Spill Log* will be kept at each location.

The Environment Manager/Inspector will also appoint personnel to visually monitor the progress of the spill and associated clean-up effort and report back to the Environment Manager on a regular basis. These observations will also be recorded in the *Spill Log*. Such monitoring may also include chemical sampling of affected waters, soil, etc as considered necessary by the Environment Manager/Inspector.

9.7 NOTIFICATION

Wherever possible, hazardous material spills/releases will be controlled by on-site personnel. The Environmental Manager/Inspector in conjunction with the BOTAŞ representative will determine what external notifications are required.

The on-site BOTAŞ Environmental Inspector will be immediately verbally informed of all spill incidents. In the event of a minor spill an incident report will be issued to BOTAŞ within 12 hours of the incident. For significant spills the incident will be reported immediately. The Contractor will also comply with the reporting requirements of local and national authorities in consultation with the BOTAŞ representative. Contact with the media, etc will only be by BOTAŞ or as authorised.

9.8 RECORD KEEPING

The Environmental Manager and/or Inspector will document the spill in an incident report. The incident report will be forwarded to the BOTAŞ Environmental Manager. Records of all hazardous materials releases will be maintained with the Project files. Information will include:

- time and date of incident;
- exact location of incident;
- potential causes of incident;
- those who might be involved in the incident;
- size of release;
- chemicals involved;

- names of Environmental Manager/Inspector;
- cleanup procedures;
- unusual or pertinent incidents during the cleanup;
- follow-up actions;
- notifications;
- support services required;
- safety/health hazards related to the spill;
- monitoring and investigation results;
- PPE used.

A proforma sheet for use in recording the above information shall be included as part of the Construction Contractors spill response procedures.

9.9 CONTRACTOR SPILL PREVENTION AND RESPONSE PROCEDURES

Construction Contractors will be required to further develop the spill prevention and response procedures outlined in this section to a level of detail that will ensure that all construction personnel are fully aware of their role and the procedures to be followed in the event of a spill. These procedures will be subject to the approval of BOTAŞ as described in Section 1.1. The generic requirements described in this section are intended to provide guidance to the Contractor and to assist the Contractor in the development of their detailed site-specific spill prevention and response procedures. To develop the above mentioned procedures, the Contractor will need to undertake the following tasks:

- further detailed procedures that will be adopted for spill prevention;
- identify the roles and responsibilities of different construction personnel with regards to spill response;
- develop a training programme to ensure all staff understand the procedures to be followed for initial spill response and response to minor spills;
- develop a training programme for Emergency Response Team members to ensure they fully understand their role and the procedures to be followed in the event of a major spill;
- identify the type, number and location of spill response and containment equipment that will be available during construction;
- identify the type, number and location of PPE equipment that will be available during construction;
- agree protocols with BOTAŞ and any appropriate organisations regarding the use of spill equipment to supplement Contractor resources as necessary;
- identify the preferred techniques to be used in spill response;
- detail the notification, reporting and monitoring procedures that will be followed; and
- identify the preferred methods of waste disposal in accordance with the requirements of the Project WMP.

BIBLIOGRAPHY

Ref 1 (2001) Correspondence with State Authorities (LET-BOT-ENV-83)

Ref 2 ESE (2001) Verification of Hydrological and Hydraulic Analysis of River Crossings
(ESE-REP-ENG-PLG-002)

Appendix C5 – Traffic Management Plan

1 BACKGROUND

1.1 INTRODUCTION

The BOTAŞ BTC Crude Oil Pipeline Project aims to transport 50 MTA (approximately 1,000,000 barrels per day) of crude oil from Azerbaijan to Turkey, via Georgia. Approximately 1070km of the pipeline runs through Turkey, with the Marine Terminal at the end point of this section, in southeast Turkey. A number of associated facilities will be constructed along this pipeline route, including pumping stations, control valves and stockyards.

The construction of the pipeline, AGIs, terminal and associated infrastructure may lead to impacts on existing road users and other sensitive receptors. This Traffic Management Plan (TMP) identifies the potential impacts and s appropriate measures to mitigate them.

The Contractor shall use the TMP as the basis for undertaking a detailed Traffic Assessment (TA) and preparing a detailed TMP identifying specific measures to mitigate any predicted impacts. The Contractor's TMP shall include detailed procedures that demonstrate how the impacts of traffic on communities have been taken into consideration. The Contractor shall develop and submit:

- procedures within 30 days of the start of the construction phase; and
- detailed project-specific procedures that specify how the requirements of their TMP will be implemented to the satisfaction of BOTAŞ and the appropriate traffic authorities 12 weeks prior to the clearance of the RoW.

The Contractor shall regularly update their TMP as the construction method is developed and vehicle movement requirements are identified in detail.

The Contractor shall consult with the relevant government agencies to identify where project plans can complement existing road development plans at the district and provincial level. The Contractor will also consult with the Muhtars (headmen of villages) of any communities that will suffer a significant increase in traffic (as defined in the EIA) in order to identify alternative routes, or appropriate mitigation measures.

The Contractor will:

- identify those responsible for carrying out and managing the procedures;
- reference the procedures and activities the Contractor will develop and implement;
- identify work to be undertaken on the roads prior to construction activities to upgrade or stabilise the roads;
- identify the routes that will be used with the estimated numbers of traffic movements, speeds and times of travel;
- justify where a route has to pass through residential areas and the measures that will be used to ensure the safety of the community and minimise the nuisance impact of traffic movements;

- identify how existing road development plans have been taken into account in the identification of routes and road restoration measures;
- identify the programme of road restoration measures that are likely to be required post construction;
- address how the Contractor can reduce the exposure of vehicle drivers, their passengers and other road users from the hazards of road-related accidents;
- identify (and adopt to the maximum extent feasible) all reasonably practicable alternatives to road transportation (rail) in order to reduce the number of trucks on the roads;
- provide details of audits and reviews of the components of the project transport system.

The Contractor shall also develop and implement a Journey Management Plan for all journeys involved on the BOTAŞ BTC Project Contract. This will be based on, but not limited to, the BOTAŞ document entitled 'Journey Management Plan' included as Attachment 4 to the BOTAŞ Construction Health and Safety Manual. All movements of Contractor and subcontractor vehicles shall be subject to the Journey Management Plan, which shall include procedures for vehicle inspection and driving at night restrictions. Since night driving restrictions may have a large impact on the feasibility and timing of the project, this needs to be agreed prior to submission of the 'Journey Management Plan'

The Contractor shall gain approval from BOTAŞ for their Journey Management Plan and TMP. The Contractor's procedures shall be based on, but not limited to, the provisions of this TMP.

A Logistics Study has been completed by BOTAŞ [Ref 1]. This addresses issues critical to the import, storage, transport, delivery, handling and placement of material, plant and equipment for construction of the Turkish section of the BTC Pipeline.

1.2 STRUCTURE OF THE TMP

The remainder of this TMP identifies:

- relevant traffic management policies and standards (Section 2);
- the potential traffic impacts of the Project (Section 3);
- appropriate measures and procedures for mitigating the impacts (Section 4).

The Table of Contents of the BOTAŞ Logistics Study referred to above is presented as Annex A to this TMP.

2 TRAFFIC MANAGEMENT POLICIES AND STANDARDS

2.1 GENERAL

The project is being developed in accordance with International Financial Institution policies and guidelines. The policies of the following institutions are included in the requirements of the Project:

- International Finance Corporation (IFC) which represents the World Bank Group;
- Export-Import Credit Agency of the United States (Ex-Im);
- Overseas Private Investment Corporation (OPIC);
- European Bank for Reconstruction and Development (EBRD).

2.2 COMMITMENT TO MAXIMISE USE OF RAIL TRANSPORT

The Turkish section of the BTC Pipeline will comprise three construction lots and for each lot a primary camp location has been identified. Transport logistics with respect to delivery of line pipes, equipment and material to these camps (and onward to the construction corridor) will comprise an important aspect in the efficient and timely realisation of the Project. In this regard, BOTAŞ is committed to maximising the use of rail transport as an effective means of delivery of materials to the construction sites. This strategy will minimise avoidable road congestion, potential for traffic accidents and reduce emission of greenhouse gases.

2.3 BOTAŞ ENVIRONMENTAL POLICY

A set of policies has also been established for the execution of all work undertaken at the BTC Project Directorate. The Project Directorate recognises its responsibility to ensure that through the implementation of good environmental management practices, all potential adverse impacts on the environment associated with the Project are either avoided or appropriately mitigated.

Accordingly, all work undertaken will be conducted in compliance with the environmental law and relevant regulations as well as with standards and best practices generally prevailing in the international petroleum industry. Turkish Standards relating to traffic and transport include:

- Notice on Prevention of Pollution Caused by Exhaust Gases of Motor Vehicles (Official Gazette 22/10/1992 and #21383) issued by the MoE.
- Turkish Regulation on Vehicle Production, Repair, Assembly (Official Gazette 03/02/1993 and #21485) issued by the Turkish Ministry of Industry and Trade.
- Notice on the Application Rules on the Air Pollutants Emitted from Exhaust of Motor Vehicles to be introduced to the Traffic. (Official Gazette 03/12/2000 and #24249) issued by the Turkish Ministry of Industry and Trade.

- Notice on the Application Rules on the Air Pollutants Emitted from Exhaust of Motor Vehicles to be introduced to the Traffic (Official Gazette 12/12/2000 and #24258) issued by the Turkish Ministry of Industry and Trade.
- Highway Traffic Law (Official Gazette 13/10/1983 and #2918).

The work will be conducted in a manner that supports the protection, preservation and enhancement of the environment. In order to achieve this aim, the BOTAŞ BTC Project Directorate shall:

- establish and implement an Environmental Management System, in accordance with ISO 14001:1996, which will form a vital part of the Project Quality Management System;
- perform top management annual reviews to ensure compliance with polices, procedures and environmental regulations;
- give clear guidance on vehicle speed limits and monitor that such measures are being implemented by the Construction Contractors;
- maintain a commitment with regard to pollution prevention and waste minimisation and incorporating these principles when outlining project specifications and conducting related activities;
- identify, assess and manage environmental risks and review quantifiable targets and objectives associated with its operations, in order to reduce the likelihood of adverse environmental impacts;
- be committed to building relationships with government, the scientific community, and the public to promote the development and communication of cost-effective solutions to environmental problems;
- ensure a commitment to the continuous improvement of the Environmental Management System where possible.

All BOTAŞ BTC Project personnel and the Contractors' personnel shall be individually and collectively responsible for adhering to, and effective application of, the policies and principles in the environmental policy statement.

3 POTENTIAL TRAFFIC IMPACTS

3.1 BACKGROUND

There are insufficient data and information to accurately predict the impact of traffic movements related to constructing the pipeline. However, an initial assessment of the traffic impact of transporting joints of pipe from ports to construction areas has been undertaken. The purpose was to indicate those traffic routes that may be sensitive to impact, since it is anticipated that transporting the pipe joints will be the most significant transportation requirement during the construction of the pipeline.

The following assumptions were used for the predictions:

- Each spread will require approximately 35,000 joints of pipe, making a total of 105,000 joints needed for construction of the whole pipeline.
- Each joint of pipe will weigh approximately 4 tons and 4 joints will be carried per load.
- The joints will be transported during a 6 month period at the start of the construction period.
- The pipe joints will be transported along routes indicated in project report 'Access Roads from Ports to Pump Stations and Stock Yards through Highways and Railways (Document no. BOT-REP-LLA-GEN-001).
- There will be 45 hours in a working week.

Use of the assumptions indicates an average daily flow of 143 vehicles for transporting the pipe joints. This figure has been compared with the baseline flows, which were taken from the Motorways and State Roads Traffic Flow Map for 2000, from the Turkish General Directorate of Highways/Planning Department/Transportation and Cost Analysis Division (May 2001). The links that are predicted to be subject to a significant increase in traffic flow are listed in Table 3.1. Based on the data available, other road links will be exposed to minor impacts only.

Table 3.1 Predicted Traffic Impacts of Transporting Pipe Sections from Ports to Pump Stations and Stock Yards

ROUTE	BASELINE TRAFFIC FLOW (VEHICLES PER DAY) ⁽¹⁾	PREDICTED INCREASE IN TRAFFIC FLOW DUE TO TRANSPORT OF PIPE SECTIONS (%)
From the Port of Iskenderun		
Pinarbasi to Sarkisla	263	54
	181	79
Akarsu	1391	10
Pasinler to Posof	128	112
	1098	13
	1089	13
	860	17
	966	15
	799	18
	8	1787.5
Kozan to Tufanbeyli	1050	13.6
	384	37.2

**BTC PROJECT EIA
TURKEY**

ROUTE	BASELINE TRAFFIC FLOW (VEHICLES PER DAY) ⁽¹⁾	PREDICTED INCREASE IN TRAFFIC FLOW DUE TO TRANSPORT OF PIPE SECTIONS (%)
Kuskayasi	358	39.9
From the Port of Mersin		
Pinarbasi to Sarkisla	263	54
	181	79
Akarsu	1391	10
Pasinler to Posof	128	112
	1098	13
	1089	13
	860	17
	966	15
	799	18
	8	1787.5
From the Port of Hopa		
Ardanuk to Posof	1082	13.2
	678	21.1
	966	14.8
	799	17.9
	8	1787.5
Ardanuk to Tortum	887	16.1
	551	26.0
	445	32.1
	522	27.4
	818	17.5
	548	26.1
Bayburt to Kelkit	457	31.3
	770	18.6
	1060	13.5
	1116	12.8
Erzincan	334	42.8
Bayburt	457	31.3
	770	18.6
	1199	11.9
From the Port of Trabzon		
Ardahan to Posof	678	21.1
	966	14.8
	799	17.9
	8	1787.5
Bayburt	457	31.3
	770	18.6
	1199	11.9
Kose to Erzincan	739	19.4
	1116	12.8
	334	42.8
	181	79
	263	54
From Port of Samsun		
Ardahan to Posof	678	21.1
	966	14.8
	799	17.9
	8	1787.5
Ukye to Camici	1082	13.2
	487	29.4

ROUTE	BASELINE TRAFFIC FLOW (VEHICLES PER DAY) ⁽¹⁾	PREDICTED INCREASE IN TRAFFIC FLOW DUE TO TRANSPORT OF PIPE SECTIONS (%)
Kuskayasi	358	39.9
Yildizeli to Pinarbasi	330	43.3
	181	79.0
	263	54.4

(1) Where several flows are given for a single section of route this is because several different stretches of road are involved.

Although the above routes will require attention in the Construction Contractors' TMPs, the focus will not be limited to these alone, since access along many minor roads, not assessed above (through absence of any baseline flows), will also be required by the Project.

3.2 CONSTRUCTION TRAFFIC

Construction traffic will be generated by the following:

- the supply and movement of construction materials, equipment and waste to/from the terminal site, working width and construction lay down areas;
- the supply and movement of construction plant and secondary construction material to the terminal site, working width/spread;
- the supply and movement of wastes generated during construction of the pipeline, AGIs and the terminal;
- personnel movements.

3.3 POTENTIAL IMPACT

The main potential impacts associated with the construction and operation of the BTC Pipeline, terminal and associated facilities likely to occur during the construction phase include:

- temporary increases in traffic flows on the road network leading to potential for delays and congestion;
- conflicts between motorised and non-motorised forms of transport;
- short-term closures and diversions of existing transport routes (eg roads, paths and railways) where the pipeline and associated infrastructure cross these routes, resulting in disruption to transport users;
- visual intrusion, increased roadside litter and traffic-related noise and emissions;
- impacts on natural resources where traffic needs to travel 'off-road';
- the loss of vegetative cover brought about by the construction of new roads;

- water pollution from spills or accumulated contaminants on road surfaces and potential modifications to natural drainage patterns brought about by the construction of new roads;
- traffic accidents, which may result in death, injury or environmental damage.

4 TRAFFIC MANAGEMENT MEASURES AND PROCEDURES

4.1 KEY ISSUES

The key issues addressed by the TMP in terms of mitigation measures include:

- access to construction areas;
- routing of construction traffic;
- temporary traffic control and management;
- road crossings;
- parking facilities;
- keeping highways clean of mud and dust;
- reducing the probability of traffic accidents.

The requirements on Contractors include the following mitigation measures.

4.2 ACCESS ROADS

There is a possibility of significant environmental impacts associated with the construction of access roads and working areas. Key access routes shall be determined prior to commencement of any construction activities and shall be considered and discussed as part of the environmental process. The following environmental aspects shall be considered in determining the location of the access roads that will be constructed specifically for the BTC Project:

- archaeology;
- nature reserves;
- environmentally sensitive areas;
- river crossings (particularly if the road is going to be used for the transportation of fuels and chemicals during construction and operation).

The locations of access roads, other infrastructure, pump stations, valve stations, pressure reducing stations and the pipeline will be selected such that they:

- balance project costs with biophysical and socio-economic issues/considerations;
- satisfy the hydraulics requirements of the transportation system;
- limit passage through wetland areas;
- preferentially utilise land already impacted by human activities.

The need to build new permanent access roads to the pumping stations, intermediate pigging station and block valves stations has been minimised by locating these sites close to the existing road network as much as possible. The approximate length of new access road required at each of the pumping stations and the intermediate pigging station are as follows:

- PT 1 – 164m and 179m;
- PT 2 – 513m;
- PT 3 – 355m;
- PT 4 – 517m;
- IPT 1 – 125m.

Individual lengths of new access roads required at the block valve stations are given within the relevant **Environmental Impact tables**. Impacts associated with the construction of these roads will be the same as those for construction of the pump station and block valve station facilities themselves.

Other measures for mitigating the impact of access roads are as follows:

- Access will be via specified routes, which will be agreed with the relevant authorities.
- Existing, upgradeable roads and the Right of Way will be used where practicable, to avoid the need to construct new roads.
- Access roads to previously inaccessible sensitive areas will be avoided.
- If the Contractor requires additional routes, a specific proposal will be submitted to BOTAŞ for consideration and approval.
- Access roads will be designed so as to limit physical land usage and the concomitant need for land clearing and/or vegetation removal.
- Temporary roads will be removed when no longer needed and will be reinstated. All damage to existing roads will also be reinstated.
- Any additional routes will be selected to avoid ecologically sensitive areas, and to minimise erosion.
- The Contractor will liaise with the appropriate regulatory authorities to gain approval to use, and regularly inspect, the road infrastructure.
- Culverts will be installed as necessary where access roads cross water courses.
- Watercourse crossing locations will be selected so as to avoid unstable watercourse beds or banks.
- The size of new project road/bridge watercourse crossings will be minimised.
- New project road/bridge watercourse crossings will be oriented so as to be nearly perpendicular to the axis of the watercourse channel.
- Crushed rock will be applied where necessary to act as an erosion control measure at temporary access roads, turning areas and other locations where sediment causes problems. Where crushed rock is applied over wet clay it may sink in to the soil and may require the Contractor to install an appropriate filter blanket at the soil-stone interface.
- Temporary access roads will be kept free from deposits to prevent silt, oil or other materials from entering drains or watercourses. Small dams in roadside ditches may therefore be required to assist in silt retention, particularly on steep slopes.

- Access routes to be used by construction traffic will be properly signposted. This shall be sufficient to prevent vehicles from leaving the designated routes and ensure that the appropriate speed limits are enforced particularly through residential areas.
- Access and site roads will be maintained in good condition.
- Suitable measures will be implemented to avoid damage to public roads and any damage will be repaired to an equal or better standard in a timely manner.
- The Contractor will remove all temporary roads or road enlargements, except where local communities or landowners request that a new road be left in place. BOTAŞ will advise the Contractor regarding the views of regulators, environmental considerations and the concerns of stakeholders for those roads that are to be left in place.

4.3 ROUTING OF CONSTRUCTION TRAFFIC

- Relevant authorities will be consulted to agree on specific routes for use by construction traffic to avoid any sensitive residential areas and unsuitable parts of the road network.
- The working width of the pipeline construction route will be used where practicable as the principal transport route for moving supplies to the head of operations.
- Precautions will be taken by the Contractor to avoid damage to the public highways used by vehicles or other items of equipment. Timber mats, tyres or steel plates will be laid as necessary, in particular under tracked equipment. Any road damage will be repaired.
- Hump-backed, Roman or Seljuk bridges, steep gradients and sinuous or narrow roads will be avoided where practicable.
- Advance warning will be given of any proposed road diversions and closures.
- The Contractor should consider whether to use buses to transport workers from the construction bases to, and along, the working width.
- The Contractor will comply with all statutory vehicle limits (width, height, loading, gross weight) and any other statutory requirement.

4.4 TRAFFIC CONTROL AND MANAGEMENT

- Traffic flows will be timed, wherever practicable, to avoid periods of heavy traffic flow along main roads. In addition, the Contractor will not commence any work that affects the public highway until all agreed traffic safety and management measures essential for the works are accepted and agreed with the relevant authorities.
- In terms of traffic control, vehicles will be prohibited from reversing unattended into the construction base, construction sites or working width along the pipeline route. Vehicles and plant shall enter and exit these areas in a forward direction, as far as possible. In addition, the Contractor will ensure that all heavy goods vehicles are equipped with audible reversing alarms.

- Clear signs, flagmen and signals will be set up where necessary. Where temporary traffic signals are required, the details and locations of the signs shall be discussed with the relevant authorities. The signs will be fixed safely and securely to ensure that they do not become detached or dislocated, and will be visible and comprehensible by all. The Contractor will also carry out maintenance checks to clean and re-secure signs if necessary.
- Appropriate supervision will be provided by the Contractor to control the flow of traffic when machinery needs to cross roads.
- Liaison with the police and other authorities will occur prior to the movement of any abnormal loads. In particular, liaison with the General Directorate of State Highways will occur prior to transportation on motorways.
- Access to commercial and residential properties shall be maintained and speed limits will be established and enforced over all construction traffic routes.
- Where roads used by children to reach schools are used by construction traffic, road safety education will be provided at schools. Vehicle traffic will be minimised during hours that children are travelling to and from school.
- Ambulances and fire services will be consulted regarding road diversions. Road diversions will not increase the response time of these services to local communities.
- Access to residential and commercial properties will be maintained.
- If road closures are required, diversions will be planned and communicated to the authorities (including emergency services and public transport providers) and affected communities in advance (via the pre-construction community meeting) and will be properly sign-posted. Crossing for pedestrians and animals will be provided to avoid the need for a diversion. No diversion will be permitted that prevents a public transport service from continuing or requires a diversion of more than 1km for vehicles or a diversion of more than 500m for pedestrians or livestock. Notification periods for road closures are as follows: two weeks minimum notice on closure of up to 28 days; one month minimum notice on closure of 28 days to three months; three months notice for closure over three months or for permanent closure.
- Education on traffic safety will be provided by the Community Liaison Officers (CLOs) to communities not normally subjected to high traffic loads.
- Fuel use will be minimised during the transportation of construction materials and personnel. A fuel use assessment will be undertaken, in conjunction with safety assessments, at the outset of the construction programme.
- A 30km/h speed limit shall be enforced on the RoW. The speed limit shall be 50km/h in the cities and villages. The speed limit on the motorways and highways shall be 90km/hr.
- A 30km/h speed limit shall be established and enforced over all construction traffic routes.

4.5 ROAD CROSSINGS

Crossings of main roads and railways shall be undertaken by non-open cut methods (including thrust boring, pipe jacking and auger bore). The crossing of tracks and roads by open-cut techniques shall be expedited in the shortest time frame possible. Plans for all road and rail crossings shall be submitted to the relevant authorities for approval and permitting. Any specific requests from the authorities shall be adopted by the Contractor and will form part of the permit for the works.

Provision shall be given for the continuation of normal traffic during open-cut road crossings and all open cuts shall be covered at the end of each working day night-time work is prohibited except in emergency situations. If night-time work is required under an emergency operation, then warning lights will be used around the working site.

A method statement will be produced for each crossing, for approval by the appropriate authorities and the BOTAS representative, prior to commencing work. (A protocol has to be signed in accordance with the requirements of General Directorate of Highways or General Directorate of State Railways. Without a protocol crossings are not possible.)

4.6 PARKING FACILITIES

Signposted, parking facilities shall be provided at pipe yards and accessible locations on the road network. The parking of construction vehicles on footways, and double parking, shall be prohibited on public highways in the vicinity of the working width.

The Contractors will ensure that part of the temporary hardstanding area on the construction bases is set aside for the parking of emergency service vehicles. The Contractor shall ensure that the Emergency Service Parking area and access routes around the sites are never occupied by any other vehicles and will be provided with a sign denoting Emergency Services Parking Area. The Contractor is expected to make provision for a dedicated parking area on the construction base for the private vehicles of construction personnel.

4.7 MAINTAINING HIGHWAYS

The Contractor is expected to keep highways free from mud and dust and to ensure that no vehicle or other items of equipment leaving the construction base or working width, deposit soil, debris or rock on public highways or public right of ways.

Measures will be implemented to ensure that the transport of mud and dust from the site onto public highways and roads is limited. Such measures shall be developed in consultation with the BOTAS representative and may include:

- the use of hard core surfaces on access roads;
- the provision of an easily cleaned hardstanding area within the construction base for vehicles entering, parking and leaving;
- the provision of wheel washing facilities adjacent to the egress points for use by vehicles leaving the construction base/working width;

- the appointment of site personnel to clean the construction base hardstanding area and to remove any mud or debris deposited on the public highways;
- the provision of mechanical road sweepers to clean hardstanding areas and to clean any mud or debris deposited by work vehicles on roads or footways in the vicinity of the construction base/working width;
- fully sheeting all works vehicles carrying potentially dusty material or likely to deposit loose materials on the public highway during transit;
- the Contractor shall clean and maintain temporary and permanent roads, and shall remove mud and debris from public roads.

4.8 ROAD-RELATED ACCIDENTS

BOTAŞ has identified that hazards to personnel associated with vehicle transportation, both on- and off-road, will present one of the most significant risk exposures of the Project. Accordingly, the Contractor shall be expected to develop and implement management systems and procedures that will provide the highest level of control over these hazards.

Accordingly, the Contractor's procedures shall specifically cover arrangements for the following important aspects:

- the source of and number of qualified drivers required;
- training and approval requirements for drivers;
- hours of driving and rest periods;
- security arrangements for drivers, vehicles and loads;
- arrangements for driver communication with control points and vehicle equipment;
- language/communication issues;
- the source of suitable vehicles (eg quality and specification);
- the number of vehicles required;
- the programme for preventative vehicle maintenance;
- vehicle routes, route planning and alternative routes;
- overall vehicle movements;
- procedures for the emergency recovery of vehicles;
- an appraisal of the social impact of vehicles in the local community;
- procedures for spot checks and audits of the transport system and for reporting problems.

The contractors Journey Management Plan shall include the following provisions:

- a specific Journey Management form shall be completed and approved for journeys of more than 25 kilometres;
- pre-use vehicle inspections shall be completed and recorded on the approved form;
- off-road journeys on non-marked roads shall include two vehicles as a minimum in the convoy with one radio in each vehicle;

- satellite communications shall be provided in one vehicle if the communications protocol indicates that this is necessary (100% coverage by mobile phone cannot be guaranteed in all areas of Turkey). The communications protocol will predetermine communications needs prior to the start of work.
- all drivers shall be trained and evaluated in defensive and off-road vehicle operation
- passengers shall comply with the ‘Safe Passenger’s Code’ and drivers shall comply with the ‘Safe Driver’s Code’ (as detailed in the BOTAŞ Construction Health and Safety Manual);
- no unauthorised passengers shall be carried.

4.9 VEHICLE STANDARDS AND MAINTENANCE

The Contractor shall comply with all other aspects of the BOTAŞ Construction Health and Safety Manual, which include requirements for vehicle standards and maintenance. The contractor shall also ensure that:

- All vehicles shall be maintained so that their noise and emissions do not cause nuisance to workers or local people.
- New vehicles: vehicles/equipment purchased ‘as new’ after contract award shall comply with the appropriate emission standards in force on the purchase date.
- Older vehicles: vehicles/equipment not purchased ‘as new’ after contract award shall be maintained so that noise and emissions levels are no greater than when the vehicle/equipment was new.

The contractor shall produce method statements, as part of their TMP, to cover routine maintenance and to minimize equipment emissions. Routine maintenance shall be to a high standard to ensure that vehicles are safe and that emissions and noise are minimised. Method statements shall require regular maintenance of diesel engines to ensure that emissions are minimised, for example, by cleaning fuel injectors.

BIBLIOGRAPHY

Ref 1 Logistics Study, BOT-REP-LAC-GEN-004 Rev B, 29 April 2002.

ANNEX A - LOGISTICS STUDY CONTENTS PAGE (BOT-REP-LAC-GEN-004)

1	GENERAL INFORMATION	4
1.1	Purpose	4
1.2	Scope	5
1	LOTS	7
1.1	Lot A	7
1.2	Lot B	8
1.3	Lot C	9
2	METHODOLOGY	11
2.1	General Information on Ports	13
2.2	Ports Operated by State Authorities	14
2.2.1	Port of Istanbul Haydarpaşa	16
2.2.2	Port of Derince	17
2.2.3	Port of Samsun	18
2.2.4	Port of Mersin	22
2.2.5	Port of Iskenderun	24
2.2.6	Port of Trabzon	27
2.3	Ports Operated by Private Sector	30
2.3.1	Isdemir Port	30
2.3.2	Hopa Port	32
2.4	Port Cost Comparison Table	35
2.5	Use of Motorways	36
2.5.1	Distances Between the Ports with Railway Connection and the Cities on the Route (km)	36
2.5.2	Motorway Distances Between the Cities in Kilometres	37
2.5.3	Motorway Transportation Costs from Ports to Camp Sites	38
2.5.4	Motorway Transportation Costs from Factories to Camp Sites	38
2.5.5	Motorway Transportation Cost Items	39
2.5.6	Port-storage Area Motorway Transportation Optimisation	39
3	SCENARIOS	48
3.1	Scenario 1: 60% Domestic Production	48
3.2	Scenario 2: 70% Domestic Production	49
4	INSURANCE	51
5	CONCLUSIONS	52
6	BIBLIOGRAPHY	64
6.1	Maps	64
6.2	Documents	64

Appendix C6 – Oil Spill Response Plan (OSRP)

1 INTRODUCTION

This document provides the Framework for the development of the Oil Spill Response Plan (OSRP) for the Baku-Tbilisi-Ceyhan (BTC) Project. It relates directly to the Risk Assessment (RA) for determination of release sizes and frequencies and to the potential environmental and social consequence of potential releases for the proposed BTC Pipeline and its marine terminal at Ceyhan.

It describes existing and proposed actions needed to develop the BTC Oil Spill Response System, considering:

- Existing spill response arrangements for the Western Route Export Pipeline (WREP) and the terminals at Sangachal and Supsa.
- Existing arrangements for the port of Ceyhan.
- Specific oil properties relevant to:
 - the behaviour of the oil once spilt;
 - future selection of appropriate response equipment and techniques.

A key element in this initiative is the harmonization of the elements of the existing contingency plans for the WREP and its terminals, augmented where necessary to satisfy the additional requirements of the new BTC Pipeline and its terminals. The final product is envisaged to be a single over-arching Oil Spill Response Plan in Azerbaijan, Georgia and Turkey. These OSRPs will cover not only BTC but also other projects operated by the BP Baku Business Unit.

BP has prepared this report with assistance from Corbett and Holt, LLC.

1.1 LAYOUT OF THE REPORT

This report has been set out in the following manner:

Section 1	Provides details of the BTC in context and also sets out the key elements of the Oil Spill Response Planning process including important definitions
Section 2	Provides details of the Policy, Legal and Administrative framework
Section 3	Sets out an overview of the BP incident management system
Section 4	Outline of the Baku business unit incident management system IMP
Section 5	Provides a Framework for the OSRPs that will be developed for Azerbaijan, Georgia and Turkey
Section 6	Provides details of draft framework for relevant sections of operations manuals
Section 7	Philosophy for selection of OSR equipment and locations
Section 8	containment manuals
Section 9	Provides an overview of Preliminary Resource Estimates
Section 10	Overview of the proposed OSR during the construction phase of BTC
Section 11	Provides an overview of the approach to training
Section 12	Establishes the proposed schedule for further development of the OSRP documents and implementation of the Plan

1.2 OVERVIEW OF BTC PROJECT

The initial stages of the BTC Project are being progressed by a group of oil companies including SOCAR, BP, Delta Hess, TPAO, Itochu, Unocal and Statoil. BP is the largest Foreign Oil Company stakeholder and is leading the Project development at this stage. For the purposes of this document this group of sponsors is referred to as the BTC Co. Discussions with these and other potential stakeholders are ongoing in an effort to form a partnering group of oil companies to fund the Project beyond the design phase.

The Project will comprise the following main facilities:

- approximately 1700k of pipeline of nominal diameter between 42 and 46 inches commencing at Sangachal passing through Azerbaijan, Georgia and Turkish territory to Ceyhan (see Figure 1.1);
- pump stations (approximately 8, one of which may be deferred for several years);
- pressure Reduction Station (IPT);
- associated block valves and other above ground facilities;
- a Marine Terminal and loading facility at the Mediterranean port of Ceyhan.

Detailed engineering is currently being undertaken with the intention that construction will commence in the latter part of 2002/beginning of 2003. Commencement of pumping is planned for 2005.

1.3 THE BTC BOUNDARIES

These facilities described above define the areas for preparedness for an oil spill that will be the subject of the OSRP. For the purposes of this Framework and subsequent OSRP, the extremities of the Project areas is considered to be the fence line at Sangachal Terminal and the end of the loading arms at the BTC Marine Terminal. Other notional boundaries will be important for determining BP and BOTAS' responsibilities and assessing actual and potential environmental impacts. The latter are addressed in the BTC Environmental Impact Assessments (EIAs).

In consideration of the international and regional regimes established for oil pollution preparedness and response, it is assumed that BTC OSRP will address spills emanating from the Sangachal terminal, the pipeline, and the BTC Marine Terminal loading or storage facilities, as described above, unless local requirements place additional legal responsibility on the BTC partners. Other spills, particularly those within Ceyhan Port originating from a tankship are assumed to be the responsibility of the ship operator and the host government. Notwithstanding the foregoing, BP and BOTAS should be prepared to act in accordance with internal corporate policy should an oil spill occur outside the confines of the BTC Project area.



Figure 1.1 Overview of BTC Project

1.4 OSRP IN CONTEXT

BTC Co. recognises that an integrated approach to oil spill preparedness and response is required to minimize the risk of a spill and the potential environmental damage from a spill. Such an integrated approach requires that the following be taken into consideration:

- designing the pipeline system to ensure that the risks of incidents during operation are minimized;
- constructing the Project in a manner that minimizes risks of incidents;
- ensuring the pipeline is operated and maintained in a manner that minimizes the risk of incidents;
- recognizing that incidents may occur and being aware of their consequences;
- ensuring appropriate emergency response resources and procedures are in place;
- ensuring appropriate training is undertaken.

This framework has been developed as part of the preliminary work programme to address the latter two items. The other items are being addressed as part of the engineering design process for BTC.

1.5 AIMS AND OBJECTIVES

The aims and objectives of the proposed BTC OSRP will be to provide the means to:

- control a release which may arise from a fault in the operation of the pipeline and associated facilities;

- minimise the volume of such releases when they do occur by securing the source in the most appropriate way;
- minimise the movement from the source of released oil by timely containment;
- minimise the environmental impact of primary releases by timely containment and recovery response;
- maximise the effectiveness of such response through appropriate equipment and technique selection. This will be based on full knowledge of the relevant properties of the oil and the changes in their properties arising from the ambient conditions into which they are released and the sea and land conditions and morphologies onto which they are released;
- maximize the effectiveness of the response through trained and competent operational and response teams.

1.6 OTHER PROJECTS IN THE REGION

BP and its partners, other oil companies, governments and commercial entities active in the region are considering a number of significant projects. Those of most relevance to BTC include:

- The offshore full field development of the Azeri, Deepwater Gunashli, Chirag (AGC) field in the Caspian.
- The proposed offshore Gas development of the Shah Deniz field.
- The proposed gas export pipeline Project from the Shah Deniz field to Turkey – the South Caucasus Pipeline Project (SCP).

The SCP and BTC Projects follow similar proposed corridors, and have a number of common issues. Each Project has a different partner set and schedule. Both are lead by BP and possible synergies are constantly assessed, in particular to minimize cumulative impacts.

Aspects of the OSRP discussed in this document are directly relevant to SCP including the Incident Management System and Oil Spill Response activities associated with construction.

2 POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

This section provides an overview of the relevant policies, legal and administrative framework in which the Project as a whole is being implemented. Country specific information is provided in Attachment B (HGA), Attachment C (Current Oil Spill Response Issues in Turkey) and Attachment D (International Conventions).

2.1 OVERVIEW

The Project is being implemented within the framework of the Inter-Government Agreements (IGA) and Host Government Agreements (HGAs). In addition, a Lump Sum Turnkey Agreement (LSTKA) with BOTAS forms the contractual basis for the construction phase of the Turkish section of the Project. Figure 2.1 depicts the framework under which these documents have been enacted.

		<u>Azerbaijan</u>	<u>Georgia</u>	<u>Turkey</u>
Signed and ratified by the three States		Inter-Governmental Agreement	Inter-Governmental Agreement	Inter-Governmental Agreement
Unexecuted forms attached to Intergovernmental Agreement	Signed by relevant Government and BTC Investors	Host Government Agreement	Host Government Agreement	Host Government Agreement
	Signed by Turkish Government and BTC Investors			Government Guaranty
	Signed by BTC Investors and BOTAS			Turnkey Contract (BOTAS)
	Signed by BTC Investors and SOCAR	Funding & Co-operation Agreement (including Business Framework)		

Figure 2.1 Administrative Framework

2.2 HOST GOVERNMENT AGREEMENT'S (HGA)

The HGA for each country is a key document setting out the obligations of the BTC partners and the Government of the respective country. Whilst the HGA for each country differs slightly each contains words relating to OSRP similar to the following:

“Prior to the completion of the Facilities and in relation to Pipeline Activities, a plan for Petroleum spill response capability (‘Spill Response Plan’) as to spills within or that could affect the Territory will be created and implemented by the BTC Co. The Spill Response Plan will include:

- (i) environmental mapping of habitats vulnerable to potential Petroleum spills in the entire BTC Company System;
- (ii) situational scenarios of potential spillages and responses, taking into consideration local circumstances;
- (iii) plans for the provision of relevant Petroleum spill clean up equipment, materials and services;
- (iv) plans for the deployment of relevant equipment and emergency response notification details of the organisation required to handle Petroleum spill response;
- (v) plans for the treatment and disposal of resulting contaminated materials.”

The relevant sections of the HGA for Turkey are included in Attachment B.

2.3 OPERATING AGREEMENT FOR TURKEY

BOTAŞ will be responsible for operation of the Turkish section of the BTC Project. In defining the terms in which BOTAŞ will operate the system BP is in the process of negotiating an Operating Agreement with BOTAŞ. This document will set out the basis in which the OSR capabilities will be adopted and will include the requirement to:

- Prepare an OSRP;
- Establish the legal framework for response to oil spills;
- Purchase OSR equipment;
- Maintaining OSR equipment;
- Undertaking training and providing for the necessary resources to enable an appropriate response to an oil spill.

Transboundary oil spill response issues, such as those between Azerbaijan and Georgia and Georgia and Turkey will also be addressed to facilitate an efficient oil spill response.

2.4 INTERNATIONAL INSTITUTIONS AND CONVENTIONS

International, regional, and national legal regimes for oil spill preparedness and response have been established to address the basic principles of responsibility (liability), communication, and activities that need to be addressed in the OSRP. The host countries may be signatory to many or all of these conventions (see Attachments C and D). The OSRP for each host country will have to address the institutional and legal requirements that may exist in each host country. For example, Turkey is signatory and party to the Barcelona Convention, and Georgia is signatory to the International Convention on Oil Spill Preparedness Response and Cooperation.¹

Details of policies and conventions applicable in each country are included in Attachment D with an overview of the international instruments that may apply in one or more host countries and which may need to be addressed in each OSRP including:

- Convention on the Transboundary effects of Industrial Accidents (Helsinki, 1992);
- Convention on EIA in a Transboundary Context (Espoo, 1991);

¹ Azerbaijan is not currently signatory to these conventions, however, it may decide to accede to these or other conventions in the future.

- Convention on the Protection and Use of Transboundary Watercourses and International lakes (Helsinki, 1992);
- Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 1979);
- Convention on Persistent Organic Pollutants (Stockholm, 2001);
- International Convention on Oil Pollution Preparedness Response and Cooperation (OPRC);
- International Convention for the Prevention of Pollution from Ships, 1973, as amended (MARPOL 73/78);
- International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971 and Protocol.

In addition to the treaties and conventions that may apply in each country, certain international institutions have established programmes that are available to assist countries in dealing with oil spills and which have established policies and practices that may have to be addressed in the OSRP.

- United Nations Environment Programme (UNEP) - recent activities include ship/shore interface issues, chemical dispersants;
- Mediterranean Action Plan (MAP) - implementing the Barcelona Convention for pollution assessment and nature conservation;
- International Maritime Organisation (IMO) - vessel related oil spill incidents;
- Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC) - the regional oil spill combating centre for facilitating mutual assistance in the event of large oil spills.

A key aspect of these conventions is the determination of who pays for the cleanup effort. In this regard, international instruments generally follow the principle of the 'polluter pays' (to a prescribed limit of liability). Nation states, including the host governments of the BTC Project, have an obligation to deal with oil spills within their territory and around their coasts in a manner consistent with the international laws and regional schemes to which they are party. Some governments, while not acceding to a particular convention, often apply its provisions as a matter of 'customary law'. The reward for performing in a manner consistent with international law is the opportunity to claim reimbursement for costs and damages incurred for an incident from either the party responsible for the oil spill or, in certain instances from the existing Global Compensation Regimes.

2.5 OTHER APPLICABLE REGIONAL INITIATIVES

There are a number of initiatives currently in place or being developed including:

- Convention on the Protection of the Black Sea against Pollution (Bucharest, 1994);
- Convention for the Protection of the Mediterranean Sea against Pollution, 1976 (the Barcelona Convention). The Barcelona Convention and Protocol have been developed as mechanisms through which the members undertake to use their best endeavors to provide each other with assistance in the event of an oil spill incident in the geographic areas covered by the agreement;
- Protocol Concerning Cooperation in Combating Pollution of the Mediterranean Sea by Oil and Other Harmful Substances in Cases of Emergencies;

- Mediterranean Oil Industry Group (MOIG). The International Petroleum Industry Environmental Conservation Association (IPIECA), comprising petroleum companies and associations around the world, established the Mediterranean Oil Industry Group (MOIG) as the means for providing a regional oil industry forum on oil spill preparedness and response for the Mediterranean Region. It provides a regional industry interface with REMPEC. BP and other BTC partners are key members of both IPIECA and MOIG.

In addition BP is a member of an industry lead initiative on oil spill response related issues for the Caspian and Black Sea 'region'. Members of Oil Companies operating in the region have established a Steering Group and working groups for the Caspian and Black Sea areas.

2.6 EUROPEAN UNION

Whilst none of the host countries are members of the European Union it is possible that one or more of these countries will join the EU during the life of this Project. Should this occur, an EU host country will be bound by relevant EU legislation.

2.7 PARTNER POLICIES AND INITIATIVES

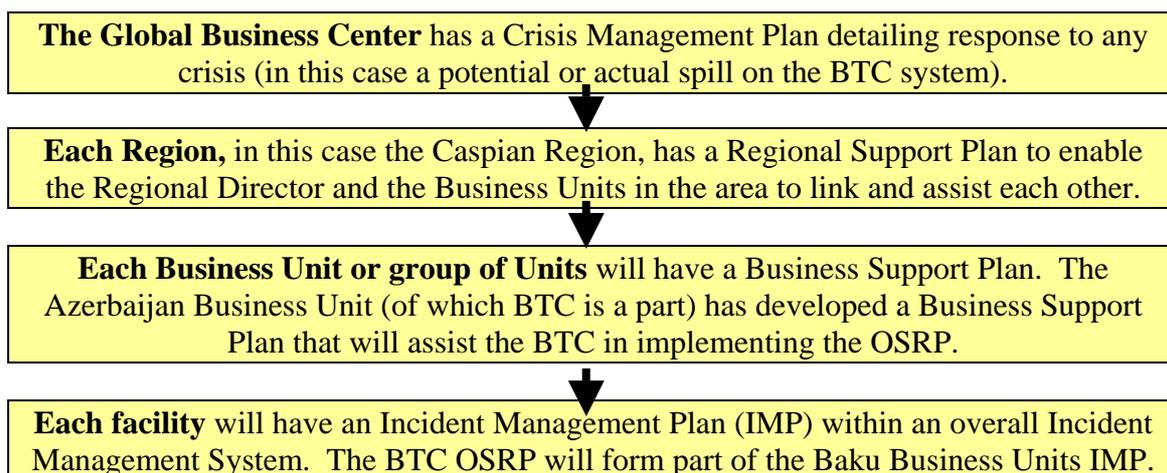
Notwithstanding the various legal regimes that might apply to the BTC Project, it is anticipated that the HGA and internal BP policies and practices, such as BP Group Emergency Management Principles - Element 11, which represent industry 'best practices', will apply to oil spills from the BTC Project in the absence of other more rigorous international or regional standards. Subsequent sections of this report describe how the OSRP developed as part of the BTC Project development will be implemented in accordance with the BP Group Crisis Management System.

3 OVERVIEW OF THE BP CRISIS AND EMERGENCY MANAGEMENT SYSTEM

BP has instituted a Crisis and Emergency Management (CEM) System throughout its global operations. Emergency management plans are maintained to cover all of BP's facilities, locations and products. Plans prepared under the CEM System identify equipment, training and personnel necessary to protect the workforce, customers, public, and environment, and BP's reputation in the event of an incident. The expectations underlying the development of such a plan are:

- Emergency Management Plans are based on the risks that potentially impact the business. These plans are documented, accessible, clearly communicated and align to the BP Group's emergency management system.
- Equipment, facilities and personnel needed for emergency response are identified, tested and available.
- Personnel are trained and understand emergency plans, their roles and responsibilities, and the use of crisis management tools and resources.
- Drills and exercises are conducted to assess and improve emergency response/crisis management capabilities, including liaison with and involvement of external organizations.
- Periodic updates of plans and training are used to incorporate lessons learned from previous incidents and exercises.

In a crisis event, there will be a maximum of three levels of management, with a clearly defined team leader at each level.



All plans are regularly tested through exercises to measure their effectiveness and to provide training for the response organisation.

4 OUTLINE OF THE AZERBAIJAN BUSINESS UNIT INCIDENT MANAGEMENT SYSTEM

Responsibility for construction and operation of the BTC Project falls within the remit of the BP Azerbaijan business. Development of the necessary incident management plans for BTC will therefore also be undertaken within the framework of the Azerbaijan Business units Incident management Plan and a number of plans that are linked to this IMP. The following sections provide an overview of the existing documents with particular emphasis on the OSRPs currently in place.

4.1 INCIDENT MANAGEMENT PLAN (IMP)

The BP Azerbaijan Business Unit IMP has been developed during the Early Oil Project and covers the procedures to be followed in the events such as:

- Fires/Explosions;
- Spills (Oil)/Releases (Gas);
- Injury/Casualty / Medevac;
- Transportation Accident;
- Natural Disasters.

The IMP includes:

- Policy and Expectations;
- Response and Organization;
- Notification and Callout;
- Incident Management System;
- Roles and Responsibilities;
- Response Action Plans;
- Forms;
- Status Boards;
- Meeting Agendas and Protocols;
- Standard Operating Procedures.

Relevant information from the existing Azerbaijan Business Unit IMP is included in this Framework document with a detailed table of contents included in Attachment A. The IMP will be updated to include BTC (including Turkey) within the same timeframe as for the OSRP as indicated in Section 12. A table of contents for the BOTAS BTC Project Emergency Response Plan is also included in Attachment A.

Key roles are set out in the existing IMP documents and are included below (see Table 4.1) with an organization chart shown in Figure 4.1.

Table 4.1 Key Roles as Included in the Azerbaijan Business Units IMP

TEAM	LOCATION	ROLE	LEADER	TITLE
Site Operations, or Project Site Response Team (SRT)	Incident Command Post, Emergency Scene	Initial Response, implementation of tactics, on-scene safety	Facility, Operations or Project Manager or designate	On-scene Commander (OC)
Incident Management Team (IMT)	Incident Management Center (IMC), Baku Tbilisi office Ankara / Ceyhan	Strategy, tactics, logistics, agency liaison, finance/admin., planning, ongoing operations	Incident Commander	Incident Commander (IC)
Business Management Team (BMT)	Business Management Center (BMC), Baku	Crisis Management, Policy, political liaison, external affairs, finance, legal	BU Leader of Affected Business Unit or his nominee	Crisis Manager (CM)
Group Crisis Team (GCT)	BP Group Headquarters, London	Establish business response Strategy ensure that Group Concerns are appropriately managed	BP Group GCT member	Group Crisis Manager

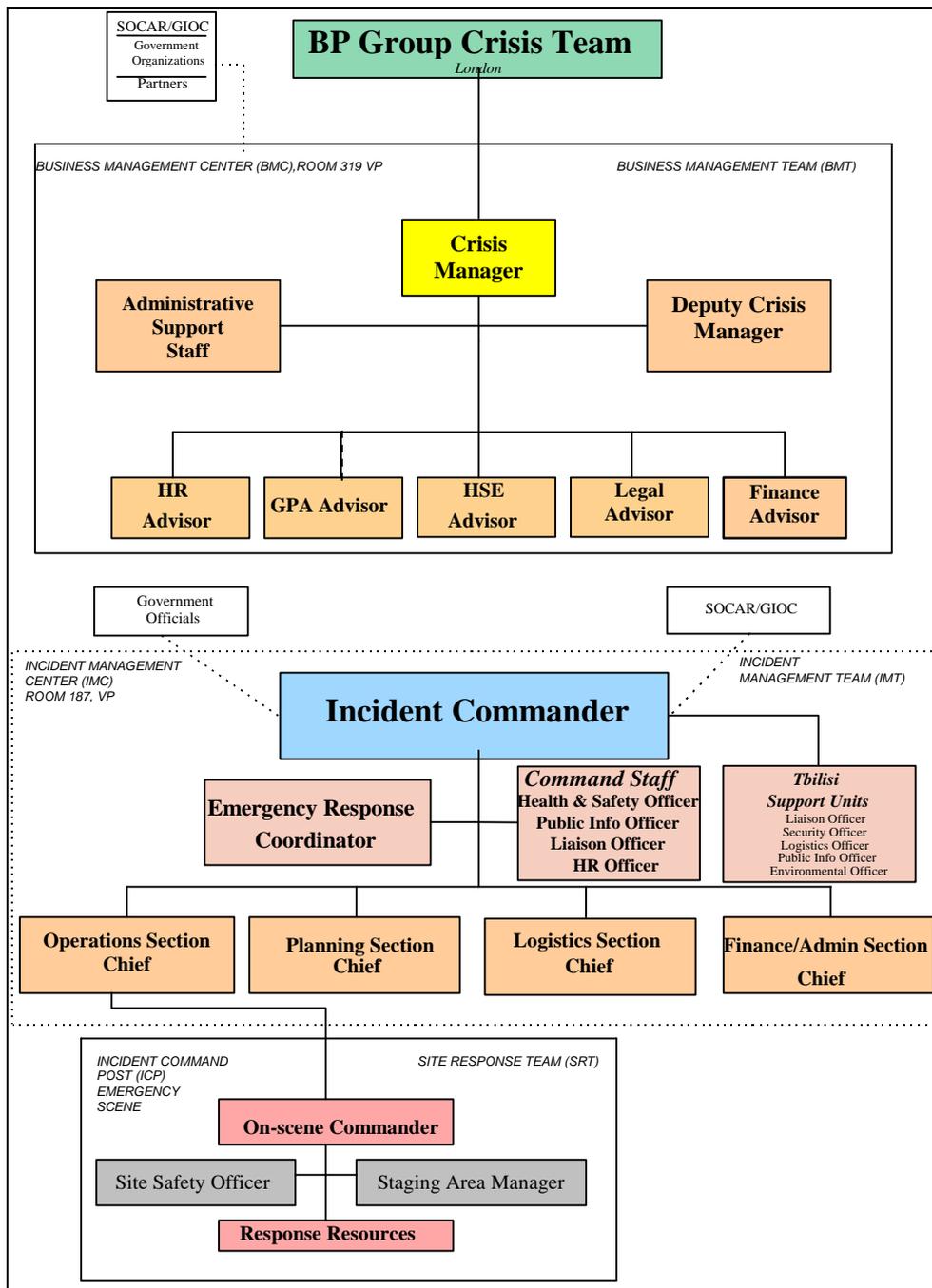


Figure 4.1 BP Incident Management Team and Azerbaijan Management Team Organisation

4.2 LINKAGES BETWEEN THE IMP AND OIL SPILL RESPONSE PLAN

Table 4.2 provides an overview of the linkages between the various plans that will comprise the individual country OSRP with more details provided in Figure 4.2. Specific elements of these plans as they relate to response to incidents are described in Section 5.3.

Table 4.2 Overview of Linkages between the Azerbaijan Business Unit IMP and the OSRP Documents

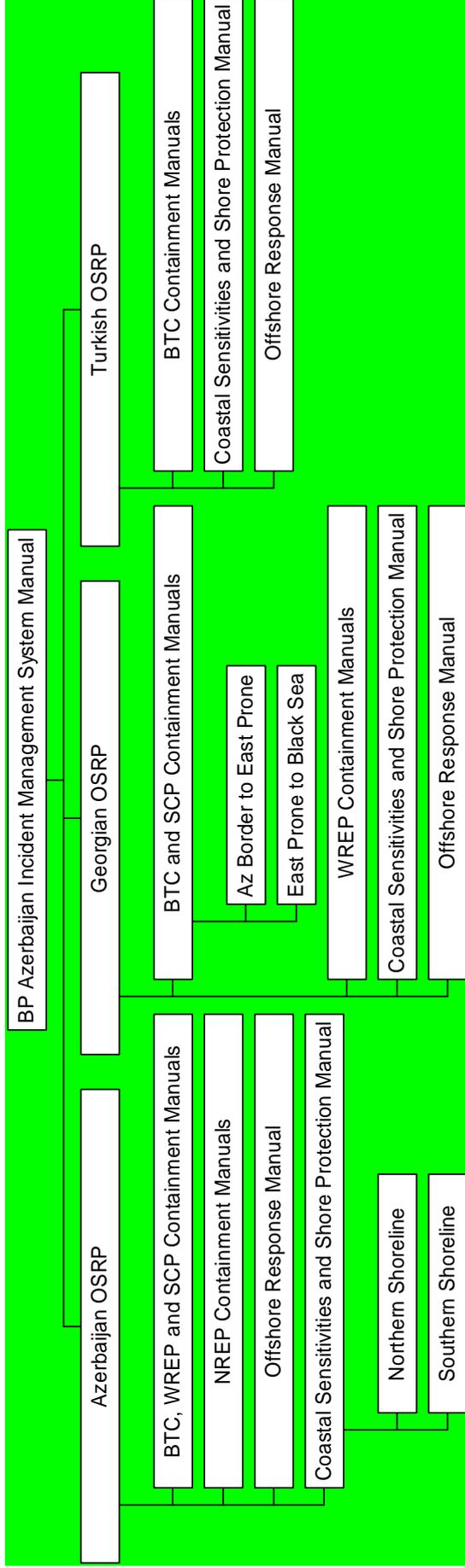
Azerbaijan Business Unit Incident Management Plan	As described above this is the over arching document that details the procedures to be followed in response to any incidents in the BP Azerbaijan Business Unit region
Country Specific OSRP	Separate OSRPs will be developed for each country along the BTC corridor. These will be integrated with the existing OSRPs prepared for the WREP, NREP and other onshore facilities.
Containment Manuals (Onshore) Coastal Sensitivity and Shoreline Protection Manuals Offshore Response Manuals	These include specific proposed response and containment sites. Details such as environmental sensitivity, river (and sea current) data, Maps and/or aerial photographs etc

4.3 EXISTING RESPONSE PLANS

Whilst this framework document is primarily focused on the BTC Project the integration of BTC documentation into the IMP will be undertaken with due regard to the following existing plans:

- WREP River containment and deployments manuals;
- The Azerbaijan and Supsa shoreline containment manuals;
- Continued use of the OSIS model for oil spill trajectory prediction into the response arrangements for the Caspian sea, which with the input of appropriate metocean data could extend for application to Ceyhan;
- The work on weathering effects on the Caspian Crude oil now underway in Baku;
- The existing containment and recovery provision at Ceyhan and the opportunity to incorporate the OSIS model into the future response planning arrangements for the port.

Figure 4.2 Structure of BP Azerbaijan Business Unit Incident Management Documentation



Note: For clarity this organization chart does not show the linkages with other documents associated with Incident Management ie

- Medical emergencies etc
- Other BP operations in the Caspian ie Alov, Inam etc

5 FRAMEWORK FOR THE OSRPs

5.1 INTRODUCTION

For each country in the BTC system, a country specific OSRP will be developed to cover all of the facilities operated by BP and BOTAS. It is currently proposed that each OSRP will be structured in a similar manner to the IMP but will contain more specific information relevant to oil spill response. The contents of the OSRP are likely to include:

- response and organisation;
- notification and callout procedures;
- contact details;
- roles and responsibilities;
- risk assessment;
- response action plans.

The first four items in this list will include extracts from or linkages to the IMP and will be augmented by OSR specific elements. Further details on the latter two items in the list are set out below.

5.2 DEFINITION OF EVENT SEVERITY

Definition of a spill event in terms of Tier 1, 2 and 3 is recognized practice and is used to define spill size in the existing Azerbaijan and Georgia OSRP. Extracts from the existing OSRP definitions are set out below:

Tier 1 event	A small local spill requiring no outside intervention and can be dealt with on site by local staff and stockpiled equipment.
Tier 2 event	A larger spill that would require additional outside resources and manpower, such as an oil spill response Contractor.
Tier 3 event	A large, possibly ongoing spill, which will require additional regional and possibly international resources. Such spills are very rare and would only occur through full diameter pipe rupture, storage tank collapse or a major tanker incident such as collision with another vessel.

The clean up operation for a Tier 3 event will utilise all BTC manpower and resources, and be augmented by additional resources from external Contractors. Possible Contractors include Briggs Marine Environmental Services (BMES) in Baku, Oil Spill Response Ltd. (OSRL) from Southampton, UK or East Asian Response Ltd (EARL) in Singapore.

5.3 RISK ASSESSMENT

The OSRP will include relevant sections of the environmental risk assessment work undertaken as part of the BTC design. For onshore spills this section will discuss the various aspects that define the risk including:

- failure modes (3rd part damage, natural hazards, corrosion, operator error);

- environmental receptors;
- spill volumes assessment;
- risk profiles.

Similarly for offshore spills, the environmental risk assessment will address:

- likely causes of oil spills from the terminal and loading facilities;
- maximum and most probable release volumes.

Further detail on the linkages between Risk Assessment and OSR planning to be used for BTC is set out in section 7.1.1.

5.4 RESPONSE ACTION PLANS

There will be a number of specific response plans prepared as part of the overall OSRP including response plans for onshore and offshore spills as set out below.

5.4.1 Inland Spill Response (Containment Manuals)

For each country, an Inland Spill Response Plan will be prepared that provides background information for OSR staff and operations staff. The dissemination of this information in the plans and in training modules will provide relevant members of the OSRP team with the necessary knowledge to make informed decisions in the event of an incident. The more mechanical aspects of oil spill response will be provided in the very specific containment manuals. Key elements to be included in the Inland Spill Response Plans for each country may include:

- guidance on the risk models;
- guidance on the use of the GIS;
- guidance on the methods for Prediction of oil movement from source of leak;
- general information on containment and recovery of released oil on:
 - land
 - rivers
 - wetlands
 - lakes
 - forest areas
 - archaeological sites;
- disposal of waste arising from oil spill recovery operations;
- trans-boundary response;
- contractor guidance;
- secondary response.

5.4.2 Marine and Terminal Operation and Spill Response

The Marine and Terminal Spill Response may include:

- guidance on the risk models;
- oil spill tracking ie OSIS and other methods for prediction of oil movement;
- containment and recovery of oil on:
 - sea
 - wetlands

- beaches;
- trans-boundary response;
- containment of oil at risk of release from marine installations and ships (marine salvage);
- selection and operation of shoreline cleaning techniques for the various shoreline types at risk, or actually polluted;
- disposal of recovered oil and contaminated beach materials;
- contractor guidance;
- secondary response.

A discussion on some of the key elements of the onshore and offshore plans is set out below with the equipment selection process described in section 7.

5.4.3 Trans-boundary response

Sufficient response capabilities will be established in each country to enable a Tier 2 incident to be handled using in country resources. Notwithstanding, BP will continue to consult with the boundary authorities in Azerbaijan, Georgia and Turkey to ensure Tier 2 equipment could be moved from country to country in the event of a spill. The OSRP will also address the responses required in the event of an oil spill occurring in one country that could potentially impact another country. An example of such an event could be an oil spill:

- into the Azerbaijan section of the Kura with potential to flow into the Caspian and hence to the waters of a Caspian littoral state other than Azerbaijan;
- into the Kura River in Georgia with oil potentially passing into Azerbaijan;
- into the Kura or Posov Rivers in Turkey potentially passing into Georgia;
- into the Euphrates River in Turkey with oil potentially passing into Iraq;
- an oil spill at the Turkish / Syrian boarder potentially effecting Cyprus and Syria.

Appropriate provision will be included in the IMP and OSRP including:

- roles and responsibilities;
- contact numbers lists;
- IMP – mobilisation of appropriate external response in the event that an oil plume may impact on territories in which no OSRP capability or Inter- Government agreement exists;
- Containment Plans (ie identification of containment locations inside the Azerbaijan boarder to ensure a spill in Georgia can be appropriately contained when it crosses).

5.4.4 Monitoring of spill progress

The OSIS model can be used to follow movement at sea and natural dispersion as a function of time and temperature. To complement the predictions from the OSIS modelling mechanisms for deployment of vehicles, vessels or aircraft will be established.

5.4.5 Salvage

Salvage is an important component of marine oil spill response activities in that they serve as the principal means of securing the source of the release and minimising the amount of oil that

may be lost. It is the responsibility of an affected ship's owner to provide salvage resources, but it is incumbent on BP to be aware of salvage arrangements and activities in the event of a spill from a vessel associated with the BTC Project. The OSRP will provide a summary of the main shipping company contacts and the various companies salvage arrangements.

5.4.6 Waste disposal

BP is currently undertaking a review of waste management issues to ensure adequate facilities will be in place to deal with wastes generated during the construction and operation of existing and proposed facilities in the region through which the BTC Pipeline passes. In undertaken this assessment consideration of possible wastes arising in the unlikely event of an oil spill is being addressed.

Should an event occur an important part of the secondary response will be consideration of where wastes are transported to and how they are treated. In making this assessment it will be important for the decision maker to understand that there will be environmental impacts associated with any disposal option and these will be to be assessed as part of the decision making process.

5.4.7 External contractor guidance

External Contractors are likely to be identified as an important resource to be called on in the event on an oil spill or other incident. The OSRP will provide details of the Contractors with which BP and or BOTAŞ has agreements with to assist in such events. Reference will be made to documents that clearly set out the account manager and terms of engagement for the various Contractors.

6 FRAMEWORK FOR RELEVANT SECTIONS OF OPERATIONS MANUALS & PROCEDURES

6.1 OVERVIEW

Figure 6.1 provides a generic structure of the various documents, which control the Management, Operational, Repair and Emergency activities on a typical pipeline system. The BTC documentation system will be structured to provide information, guidance and instruction to ensure that the safety, operability and integrity of the pipeline is maintained throughout its lifetime.

6.2 LINKAGES BETWEEN OPERATIONAL & EMERGENCY DOCUMENTS

Where required, linkages between the Operational & Emergency documentation, will be provided, within the text of the documents, to ensure that, in the event of an emergency, the Pipeline Operators are provided clear directions to enable them to take the appropriate actions quickly and efficiently.

6.3 INTEGRITY MANAGEMENT

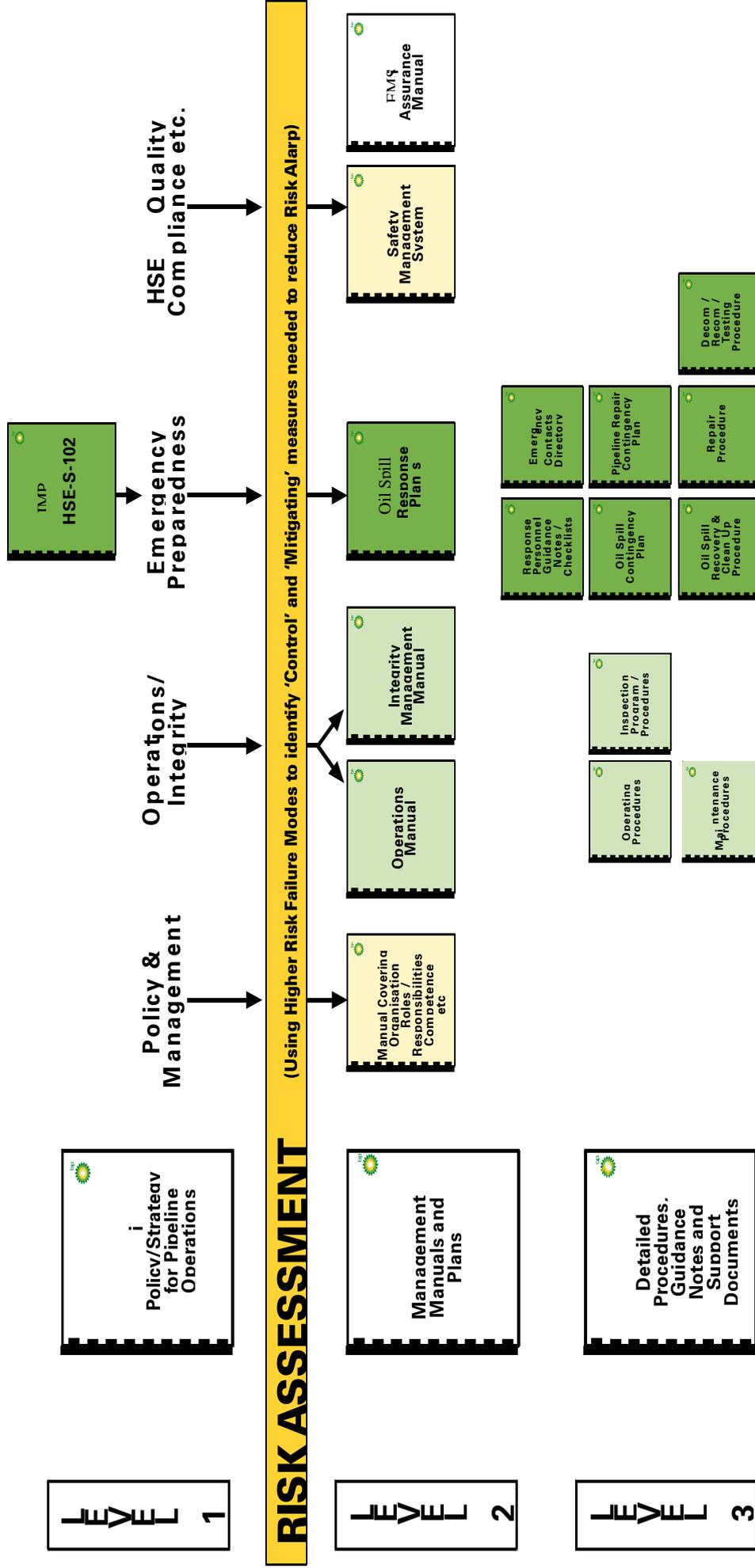
BTC will develop an Integrity Management System, which will outline the processes by which the Technical Integrity of the BTC Pipeline will be managed and assured.

The Integrity Management System will address the management and assurance processes required to:

- Maintain the technical and operational integrity of the system.
- Identify the system boundaries and components.
- Demonstrate, by independent review, the delivery of technical and operational integrity.
- Identify the roles and responsibilities of those persons involved in maintaining and assuring the integrity of the system.
- Ensure that the appropriate level of inspection, testing and review is maintained.
- Ensure that operating limits and philosophies are consistent with the design intent and reflect system changes and modifications.
- Ensure that changes and modifications, to the system, are engineered and implemented such that the integrity of the system is not compromised.

The Integrity Management System plays a critical role in the prevention of oil spills. A primary element in developing the Integrity Management System, will be the Pipeline Risk Assessment Process where, for each component of the pipeline system, the threats and the probability and consequences of the threats will be evaluated to derive the maintenance and inspection intervals for the various elements of the pipeline system.

Figure 6.1 Linkages between Operations and OSRP



7 PHILOSOPHY FOR SELECTION OF OSR RESOURCES

General oil industry practice dictates that:

- Tier 1 response capability be immediately available for response to “operational” spills;
- Tier 2 capability to be provided either in-house or through formal agreements to ensure response to larger events;
- Tier 3 capability is normally associated with government response agreements. To complement Government response BP also participates in an alliance formed specifically to respond to large oil spills anywhere in the world.

The immediate response and containment actions developed will be based on the following parameters:

- linking the response capability to the risk assessment process;
- defining what constitutes Tier 1, 2, and 3 for the different components of the BTC system;
- assuring that response activities are planned with due regard to logistical and safety considerations;
- considering oil properties and national and regional priorities in selection of response strategies,

7.1 PLANNING STANDARDS

The parameters required to achieve an effective response will be defined in the OSRP planning standards. Development of these standards will include consideration of travel times, people and equipment and will be linked to the Risk Assessment process as discussed below.

7.1.1 Linking risk assessment to OSRP

As described in the EIA an assessment has been undertaken to understand the possible spill scenarios that could be expected along the BTC Pipeline. The assessment is considered conservative as it is based on historical pipeline performance data (CONCAWE) and does not take into consideration:

- improvements in pipeline design techniques;
- improvements in asset management methodologies including the use of intelligent pigging.

Notwithstanding the conservative assumptions made in the risk assessment the outputs will however be very useful in enabling the Oil Spill Response planners to define the appropriate resources that should be employed for the BTC Pipeline. In particular the outputs from the risk assessment will be used to determine what ‘Tier 2’ resources shall be employed. In consideration of the outputs from the risk assessment consideration will be given to having different response strategies dependant not only on the probable leak size but also on the sensitivity of the environment in the leak location.

An environmental risk assessment is also being undertaken for the terminal and loading facilities. The findings from this assessment will be used in defining the appropriate OSRP resources and particularly the Tier 2 response capability to be obtained and operated by BOTAŞ.

7.1.2 Logistics

In development of the complete OSRP and the associated selection of equipment and storage locations the following aspects will be considered:

- Access - Much of the system is adjacent to existing rights-of-ways (ie highways and roads, and parallel pipelines) that will provide access to the BTC. However, there are several reaches of pipeline that have no access excepting the BTC right-of-way itself. In these reaches of pipeline, it is likely that during the winter months oil spill response personnel and equipment will have to be transported to the spill site via helicopter/fixed wing aircraft, or surface vehicles suitable for over-snow transport. This will influence the size and type of containment equipment selected. Where the pipeline parallels or crosses waterways, or where a spill may enter a major waterway, water-borne transport may be required. This will also affect the type of containment equipment selected.
- Local infrastructure varies significantly along the BTC alignment. Where available and competent local infrastructure will be incorporated in the plan.
- Terrain also varies significantly along the BTC alignment. In the eastern sections of the alignment in Azerbaijan terrain facilitates access. The alignment through most of Georgia and Turkey in mountainous and inhibits the ease of access.

The logistics of equipment deployment will be based on:

- amounts and types of equipment available for use in the three countries involved;
- availability of equipment in immediately contiguous regions;
- cross border clearance times;
- availability of equipment from out of area stockpiles.

Because of the difficulty of moving equipment across borders, enough equipment to adequately respond to a Tier 2 spill should be located in each country: Azerbaijan, Georgia and Turkey. Additionally, this equipment will be strategically placed at locations that allow response personnel to deploy it at appropriate sites. The equipment will be generally dedicated to the BTC, and purchased and maintained by the systems operators, however, it must be acknowledged that oil spills do not lend themselves to predicable responses and may require other types of equipment and procedures not normally thought of as dedicated equipment, such as earth moving equipment. BTC personnel and equipment will be augmented by regional response organizations and OSRL. When future regional Oil Spill Response Organizations (OSROs) are organized, BTC will arrange for them to also augment internal BTC resources.

7.1.3 Safety

Notwithstanding the above strategies, BP has developed procedures to ensure the safety of personnel and the public. These policies include specific policies in regard to travel including:

- Restrictions on vehicle speeds with vehicles towing trailers stipulated to travel at slower speeds. Restriction on the amount of night driving.

- Safety issues associated with working in the vicinity of high pressure gas pipelines (ie the SCP pipeline).

These policies will be considered in determining appropriate storage locations of OSR equipment and staff.

7.2 OIL SPILL CONTAINMENT AND CLEANUP EQUIPMENT

7.2.1 Overview

Oil spill containment and cleanup equipment is typically associated with marine spills. Inland spills, such as those which may occur from a pipeline, are usually handled with general construction equipment, such as earth moving machinery, that facilitates dealing with the terrain and small creeks, streams, and rivers into which such spills occur.

Mechanical equipment, such as booms and skimmers, are effective in protected waters around harbours and bays, but have limited utility offshore. Additionally, most spills occurring in 'near shore' areas can be expected to come ashore, despite best efforts to contain and control free floating oil, making shore cleanup equipment, such as excavators, backhoes and other general construction equipment, of great value for removing stranded oil and contaminated material.

Offshore spills may respond favourably to treating with approved chemical dispersants, under prescribed parameters, such as time, rate, and method of application. Lighter crude oils can be effectively treated with dispersants when the chemical is applied early in the spill before the oil has the opportunity to develop into an oil/water emulsion (sometimes called 'mousse').

Sometimes, the best option is the 'no action' option. Certain sensitive environments can be more damaged by response activity than by the presence of oil alone. This response option needs to be carefully coordinated with national authorities to ensure that concurrence is obtained before the 'no action' option is pursued.

Equipment required to deal effectively with an oil spill* may include:

- Immediate Response Equipment:
 - transportation (boats, trucks, trailers, planes, helicopters);
 - communications equipment;
 - maps and positioning equipment;
 - containment and removal equipment (booms, excavators etc);
 - pumping equipment and associated hoses / pipes;
 - storage facilities.
- Repair Equipment (welding machines, pipe patching kits etc)
- Spill Monitoring Equipment (aircraft, boats, trucks)
- Secondary Response Equipment:
 - oil water separators;
 - earth moving equipment and other Mechanisms for cleaning and removing contaminated soils and sand;
 - restoration materials of impacted habitats, flora and fauna and cultural resources (reseeding capability etc).

* The list of possible equipment was not intended to be exhaustive, but to representative of the type of equipment that should be considered in the OSRP. Specific response requirements will be articulated in the OSRP based on the assessed risk (section 6.1) and the planned response "targets" (section 6.2).

7.2.2 Oil property considerations

The oil properties which determine the relative difficulty and extent of the response problem and hence the type and capacities of the required response equipment for any given release volume, location and ambient temperature are:

- The pour point temperature, which determines whether the released oil will remain liquid or solidify after release.
- The distillation - temperature profile which determines the extent of evaporative loss on exposure to the air and hence the extent of reduction in the volume requiring recovery.
- The viscosity, asphaltene and wax content, of the transported oil which influence the viscosity and stability of the water-in-oil emulsions which form on contact agitation with water, and which subsequently determine the rates of natural dispersion.
- The value of the viscosity of the fully developed emulsions which also determine the selection of equipment for optimal recovery rates and whether dispersants are a viable option.

7.2.3 Number of response units required

The decision as to how many response units of the various types should be provided, for the various application sites and conditions will be based on:

- expected spill volumes;
- expected treatment rates inherent to the equipment design and type;
- logistics of delivery to response sites.

8 CONTAINMENT MANUALS

The key containment manuals for each country will be the Onshore Containment Manuals and Coastal Sensitivities and Shore Protection Manuals. An outline of the information that will be included in these is set out below.

8.1 ONSHORE CONTAINMENT MANUALS

This volume will graphically display Maps and/or aerial photographs, and photographs will depict oil drainage pathways, specific immediate response and containment sites. This hard-copy volume will be supported by an interactive GIS system, which will display spill volumes and pathways for an event at any location along the BTC Pipeline and terminals.

Specific response for all types of environmental receptor shall be included ie:

- rivers;
- lakes;
- wetlands;
- agricultural Land;
- areas used for extraction of Groundwater;
- archaeological Sites.

At a minimum, each map and/or aerial photograph and photograph will display the following information:

- location;
- time and distances to each containment site;
- rendezvous point;
- forward holding positions;
- pipeline crossing location;
- containment sites;
- transfer station;
- site characteristics;
- access;
- storage.

Details of the environmental aspects of the receptor and containment sites are also given ie:

- river flow data;
- environmental sensitivities;
- other sensitive receptors ie power station intakes.

Details of site specific oil spill response equipment is also given ie:

- limitations;
- recommended equipment (containment and recovery);
- ancillary equipment;
- consumables.

8.2 COASTAL SENSITIVITY AND MARINE RESPONSE MANUALS

The development of the Coastal Sensitivities and Marine Response Manuals will be undertaken in accordance with the regulations described in Section 2. In terms of specific BTC requirements (as opposed to the Plans for Supsa associated with the WREP) the HGA and Operating agreements set out the main provisions for preparation of these reports and maps.

9 PRELIMINARY RESOURCE ESTIMATES

A preliminary assessment of possible concepts for provision of oil spill response facilities has been undertaken as part of this framework assessment and is set out below.

9.1 EMERGENCY RESPONSE CENTRES

Emergency response centres will likely form the locations where any response activities are to be co-ordinated and are likely to be located in Baku, Tbilisi and Ceyhan.

9.2 TIER 2 RESPONSE EQUIPMENT STORAGE LOCATIONS

Oil Spill response equipment will be located at various locations within all three countries with possible locations as set out in Table 9.1.

Table 9.1 Preliminary Assessment of Locations for Tier 2 Response Equipment

Country	Location	OSR Equipment for Offshore and Coastal Cleanup	OSR Equipment for Spills from Onshore Facilities
Azerbaijan	Baku / Sangashal	Offshore and Coastal cleanup equipment as part of the ACG response capabilities	WREP equipment augmented with equipment for BTC and SD as determined from assessment of response times and risks set out in this document
	WREP PS 5		WREP equipment augmented with equipment for BTC and SD as determined from assessment of response times and risks set out in this document
	WREP PS 8		WREP equipment augmented with equipment for BTC and SD as determined from assessment of response times and risks set out in this document
Georgia	BTC PS G1		Equipment for BTC and SD as determined from assessment of response times and risks set out in this document
	BTC PS G2		Equipment for BTC and SD as determined from assessment of response times and risks set out in this document
	WREP PS 13		WREP equipment
	WREP PS 15		WREP equipment
	Supsa	Offshore and Coastal cleanup equipment as part of the WREP response capabilities	WREP equipment
Turkey	PT1		Equipment for BTC as determined from assessment of response times and risks set out in this document
	PT2		Equipment for BTC as determined from assessment of response times and risks set out in this document
	PT3		Equipment for BTC as determined from assessment of response times and risks set out in this document
	PT4		Equipment for BTC as determined from assessment of response times and risks set out in this document
	Ceyhan	- BTC specific Offshore and Coastal cleanup equipment - Offshore equipment associated with existing facilities	

9.3 LOCATIONS FOR LANDING TIER 3 EQUIPMENT

A preliminary assessment of possible landing locations for OSRL planes has been undertaken during the development of this framework document. On the basis of this assessment it is considered likely that Tier 3 equipment could be landed at the following locations:

Table 9.2: Possible landing locations for Tier 3 equipment.

Country	City/Town	Distance from Pipeline (km)	Category	Operator	Elevation (m)	Open Hours
Azerbaijan	Baku Airport		International Airport			20 hours
	Ganja		National Airport			
Georgia	Tbilisi		International Airport			20 hours
Turkey	Istanbul		International Airport	State		20 hours
	Ankara		International Airport	State		20 hours
	Sivas	34	Military/Civil	State/Air Force	1,596	Summer/Winter different
	Adana	53	Civil	State	19.7	24 hour
	Erzincan	16	Military/Civil	State/Army	1153	Summer/Winter different
	Erzurum	2	Military/Civil	State/Air Force	1757	Summer/Winter different
	Kahramanmaras	50	Civil	State	525.1	Summer/Winter different
	Kars	22	Civil	State	1795	Summer/Winter different
	Kayseri	90	Military/Civil	State/Air Force	1052	Summer/Winter different
	<i>Ardahan</i>	<i>6.1</i>	<i>Planned</i>			

10 OSR DURING THE CONSTRUCTION PHASE OF BTC

Whilst the risk of oil and fuel spills during construction is significantly lower than that of the operations phase, there is some risk of spills from storage and transport of fuels and oil and during the refuelling process. To ensure an appropriate response to small events the construction Contractors shall be required to maintain Tier 1 response equipment. This response capability will be augmented by the existing Tier 2 capability in place in Azerbaijan and Georgia.

A bridging or link document will be prepared for each significant contract to ensure appropriate incident response can be undertaken within the BP incident management system. These bridging documents will include the following elements/sections:

- Purpose and Scope;
- Call out procedure;
- Call out of the BP Incident Management Team;
- Call out of the Project Management Team;
- Contact list for the Contractor's sites (Site Response Teams).

11 TRAINING

The IMP and or OSRP and the Operations and Maintenance Manuals will include details of a continuous training program. The appropriate documents will be revised as required to reflect Lessons learned during construction and operation of the system (ie continuous improvement).

The Training programme will be designed to ensure that due regard is taken of outcomes from ongoing risk assessment with particular regard to environmental and societal risks. The programme will be documented, accessible, clearly communicated and aligned to Business Unit and Regional IMPs.

It is the intention to provide training of operatives at the various levels on a uniform basis across the three countries for both pipeline and terminal related spill responses, recognising that the solution to inland and shoreline spill response problems share much in common.

The training courses will be designed to ensure appropriate levels of understanding is achieved at the different levels within the OSR team and will include:

- Communications and decision making;
- Working with 3 rd party Contractors;
- GIS and other tools;
- Safety;
- Region specific issues;
- Discussions on the oil properties and how these change with environmental conditions along the pipeline;
- The relationship of oil properties and the approach to undertaking a response;
- The selection and operation of appropriate equipment and techniques;
- Maintenance of equipment and trouble shooting;
- Deployment of equipment;
- Free product recovery;
- Waste Disposal.

The exercises will be designed to ensure the teams are fully aware of the procedures to be followed and have a clear understanding of how to use the various tools and equipment within the total range of chosen techniques. The training will highlight the importance of appropriate equipment selection and procedures to ensure the environmental impact of an event is minimized.

It is recognised that the results of training can only be fully realised if opportunities are provided for those trained to use their knowledge in suitably constructed drills and exercises. Examples of training exercises that may be undertaken include:

- Notification exercises, which would involve unannounced checks on the communications systems and contacting key staff;
- Incident Management Team Exercises;
- Partial activation exercises.

12 SCHEDULE

This Framework document has described the position now reached and the approach to be adopted for the creation of a fully comprehensive OSRP with all its associated equipment, manuals, and the guidance to be provided through training, drills and exercises.

Table 12.1 outlines the forward schedule:

Table 12.1 Preliminary Schedule for Establishment of OSR Capabilities for BTC

ACTIVITY	COMPLETION DATE
Review of existing contingency Plans	Nov 2001
Prepare Framework OSRP	Dec 2001
Issue Framework OSRP with EIA	June 2002
Obtain acceptance of approach in Framework OSRP as part of EIA approval Process	Aug 2002
Review existing equipment inventories	Sept 2002
Identify types of suitable equipment having regard to oil properties for	Nov 2002
i inland	
ii river	
iii shorelines	
iv water borne	
v sand/pebble washing	
vi waste recycling	
vii final waste disposal	
Consider numbers of the different types of equipment required, having regard to spill volumes and to:	Dec 2002
i amounts and types already available in-house	
ii amounts and types held by Contractors	
iii amounts and types held by Tier 2 Contractor	
iv amounts and types held by OSRL	
v routes and capacities for waste recycling and disposal	
vi logistics considerations	
Update IMP to include Turkey	Mar 2003
Finalise Planning Standards	Jan 2003
Complete Country Specific OSRP including BTC	Jan 2003
Procure Equipment	March 2003
Undertake consultation and data gathering with district leaders of potentially affected communities	June 2003
Development of BTC Response Manuals	August 2003
1. Sensitivity Mapping	
2. Pathway Modelling	
3. Containment Site Selection	
4. Map Preparation	

**BTC PROJECT EIA
TURKEY**

ACTIVITY	COMPLETION DATE
5. Identify equipment launch sites	
Receive Equipment	By Dec 2003
Training for operations staff and OSRP staff operatives for spills to:	By Feb 2004
i inland	
ii river	
iii shorelines	
iv wetland	
v sand/pebble washing	
vi waste management	
Training for managerial and supervisory staff on	By March 2004
i the content of the new Incident Response Plan	
ii the line operator's option to prevent or minimise releases	
iii the basis for selection of clean-up methods	
iv content of response manuals	
Linefill	Mid 2004

ATTACHMENT A

TABLE OF CONTENTS OF BP BAKU IMP

(Extracted from Document No UNIF-HSE-MA-400 Rev 0 April 2001 with proposed enhancements for BTC integrated plan in italics)

Section 0 Emergency Resources – Callout List

- Emergency Response Resources and Contacts
- Development & Production (D&P) Business Management Team (BMT)
- Business Management Team (BMT)
- Advisers Support Group to BTC (Business Management Teams (BMTs)
- Uxbridge/Sunbury, Shared Asset Emergency Support. Security Office Contact. Notification and Primary Support
- Personnel IMT Members
- Emergency Stand by Vehicles
- Expertise
- Facilities
- IMC BMC Contacts
- Response Resources in Georgia
- Response Resources in Turkey
- Other useful Offices
- National Agencies and Officials
- Helicopter Contractor
- Vessel Contractor
- Operations Base Contacts
- Equipment
- External National Contractors
- External International Contractors
- External International Contractors' Local Offices
- External Local Resources Baku
- *External Local Resources Georgia*
- *External Local Resources Turkey*
- FOC's Contacts

Section 1: Policy and Expectations

- 1.1 Policy
- 1.2 Background
- 1.3 Expectations
- 1.4 General Objectives
 - 1.4.1 Site Response Team (SRT)
 - 1.4.2 Incident Management Team (IMT)
 - 1.4.3 Business Management Team (BMT)
 - 1.4.4 Group Crisis Team (GCT)
- 1.5 IMS Custodian
- 1.6 Testing and exercising

Section 2: Response and Organization

- 2.1 General
- 2.2 Principles of Operation
- 2.3 Levels of Events
 - 2.3.1 Tier 1 (Minor Event)
 - 2.3.2 Tier 2 (Major Event)
 - 2.3.3 Tier 3 (Crisis)
- 2.4 Organization Structure
 - 2.4.1 General
 - 2.4.2 Response Teams Description
 - 2.4.2.1 On-scene Commander (OC)
 - 2.4.2.2 Incident Commander (IC)
 - 2.4.2.3 Crisis Manager (CM)
 - 2.4.3 Incident Management Team (IMT) – Organizational Structure
 - 2.4.4 Business Management Team (BMT) – Organizational Structure
 - 2.4.5 Combined IMT and BMT – Organizational Structure
- 2.5 IMT - BMT Liaison
- 2.6 Post - Crisis Review

Section 3: Notification and Callout

- 3.1 Initial Notification
- 3.2 Notification and Callout Procedure
 - 3.2.1 Incident Commander
 - 3.2.2 Switchboard Operator
- 3.3 Incident Assessment and Notification Procedures
- 3.4 IMT& BMT Callout and Activation
- 3.5 IMT Callout
- 3.6 BMT Callout
- 3.7 IMT Incident Management Center (IMC) Activation
- 3.8 BMT Business Management Center (BMC) Activation
- 3.9 Procedure for BTC Group Major Incident and High Potential Incident Reporting
 - 3.9.1 Major Incident
 - 3.9.2 High Potential Incident
 - 3.9.3 Common Processes
- 3.10 Medical Team Callout
- 3.11 Notification of Azerbaijan and Georgian Authorities
 - 3.11.1 Emergency notification matrix for Azerbaijan
 - 3.11.2 Emergency notification matrix for Georgia
- 3.12 Notification of Shareholders and State Regulatory Bodies

Section 4: Incident Management System

- 4.1 Purpose
- 4.2 Site Response Team (SRT)
 - 4.2.1 Site Control
 - 4.2.2 Site Safety
 - 4.2.3 Site Management
 - 4.2.4 Communications
- 4.3 Incident Management Team (IMT)
 - 4.3.1 Getting Organized

- Response Thought Process
- 4.3.2 Incident Potential
- 4.3.3 Strategic Objectives
- 4.3.4 Incident Management Center (IMC) Information Center
- 4.3.5 Incident Management Team (IMT) Assessment Meetings
- 4.3.6 Situation Status Reports
- 4.3.7 Preparing Incident Action Plans
 - 4.3.8.1 Nature and Content of an Incident Action Plan
 - 4.3.8.2 Incident Action Plan Development Process
 - 4.3.8.3 Incident Action Plan Implementation
- 4.3.9 Preparing the General Plan
 - 4.3.9.1 Nature and Content of General Plan
 - 4.3.9.2 General Plan Development Process
 - 4.3.9.3 General Plan Implementation
- 4.4 Business Management Team (BMT)
 - 4.4.1 Getting Organized
 - 4.4.2 Response Thought Process
 - 4.4.3 Incident Potential
 - 4.4.4 Crisis Objectives
 - 4.4.5 Business Management Center (BMC) Information Center
 - 4.4.6 Business Management Team (BMT) Assessment Meetings
 - 4.4.7 BMT Action Plan

Section 5: Roles and Responsibilities

- 5. Roles and Responsibilities
 - 5.1 Business Management Team (BMT)
 - 5.1.1 Crisis Manager
 - 5.1.2 Deputy Crisis Manager
 - 5.1.3 Administrative Assistant
 - 5.1.4 Legal Advisor
 - 5.1.5 HR Advisor
 - 5.1.6 GPA Advisor
 - 5.1.7 HSE Advisor
 - 5.1.8 Finance Advisor
 - 5.2 Incident Management Team (IMT)
 - 5.2.1 Incident Commander
 - 5.2.2 Operations Section Chief (General Staff)
 - 5.2.3 Planning Section Chief (General Staff)
 - 5.2.3.1 Situation Unit Leader
 - 5.2.3.2 Documentation Unit Leader
 - 5.2.3.3 Environmental Unit Leader
 - 5.2.4 Logistics Section Chief (General Staff)
 - 5.2.4.1 Procurement Unit Leader
 - 5.2.4.2 Security Unit Leader
 - 5.2.4.3 Transportation Unit Leader
 - 5.2.4.4 Communications Unit Leader
 - 5.2.5 Finance/Administration Section Chief (General Staff)
 - 5.2.5.1 Accounting Unit Leader
 - 5.2.5.2 Insurance Unit Leader
 - 5.2.5.3 Administration Unit Leader
 - 5.2.5.4 Office Assistants/Translation Unit Leader
 - 5.2.6 Health and Safety Officer (Command Staff)
 - 5.2.7 Public Information Officer (Command Staff)

- 5.2.8 Liaison Officer (Command Staff)
- 5.2.9 Human Resources Officer (Command Staff)
- 5.2.10 Emergency Response Coordinator
- 5.2.11 Baku, Tbilisi & Ceyhan Support Units
- 5.3 Site Response Team (SRT)
 - 5.3.1 On-scene Commander
 - 5.3.2 Site Safety Officer
 - 5.3.3 Staging Area Manager
 - 5.3.4 Aide(s)
 - 5.3.5 Source Control Branch Director
 - 5.3.6 Tactical Response Branch Director
 - 5.3.7 Pollution Control Coordinator
- 5.4 Switchboard Operator (Baku office)

Section 6: Response Action Plans

- 6.1 Fires/Explosions
- 6.2 Spills (Oil)/Releases (Gas)
- 6.3 Injury/Casualty/Medevac
- 6.4 Fatality Checklist
- 6.5 Transportation Accident
- 6.6 Natural Disasters
- 6.7 Additional BP Response Plan Links

Section 7: Forms

- 7.1 Forms used by the SRT
 - Miscellaneous forms
 - 7.2 Forms used by the IMT
 - Incident Action Plan forms
 - Miscellaneous forms
 - IMT Worksheet for Determining Incident Potential
 - 7.3 Forms used by the BMT
 - Miscellaneous forms
 - Major Incident and High Potential Incident Reporting forms
- BMT Worksheet for Determining Incident Potential

Section 8: Status Boards

- 8.1 Status boards used by the IMT
 - IMT Incident Facts Status Board
 - IMT Incident Facts Update Status Board
 - IMT Current and Forecast Weather Status Board
 - IMT Safety and Health Considerations Status Board
 - IMT Mass Balance Status Board
 - IMT Sensitive Areas Status Board
 - SRT Task Assignment Status Board
 - IMT Tasks Status Board
 - IMT Objectives Status Board
 - IMT Organization Status Board
 - Environmental Unit Summary Status Board

- IMT Schedule of Meetings Status Board
- IMT Notifications Status Board
- General Plan Status Board: Tasks and Durations
- General Plan Status Board: Equipment and Personnel Resources

Section 9: Meeting Agendas and Protocols

- 9.1 IMT Assessment Meetings
 - 9.1.1 Meeting agenda for IMT Assessment Meetings
 - 9.1.2 Meeting protocol for IMT Assessment Meetings
- 9.2 BMT Assessment Meetings
 - 9.2.1 Meeting agenda for BMT Assessment Meetings
 - 9.2.2 Meeting protocol for BMT Assessment Meetings

Section 10: Standard Operating Procedures

- 1. SOP-ADM-101 Preparation of Emergency Response Policies, Directives and SOPs
- 2. SOP-ADM-102 Handling Emergency Calls at Switchboard
- 3. SOP-CMD-201 Preparation of Site Safety Plan
- 4. SOP-CMD-401 External affairs during an Emergency or Crisis
- 5. SOP-CMD-601 IMC and BMC Setup
- 6. SOP-HR-102 Next of Kin Notification Plan
- 7. SOP-HR-103 Personnel Accounting System
- 8. SOP-HR-104 Survivor Reception Procedure
- 9. SOP-HR-106 POB Requirements and Distribution
- 10. SOP-LOG-301 Security for the IMC and BMC
- 11. SOP-LOG-302 VIP Visits to the Scene
- 12. SOP-LOG-501 IT/Telecom Plan
- 13. SOP-LOG-601 Transportation Procedures- Air
- 14. SOP-LOG-602 Transportation Procedures- Marine
- 15. SOP-LOG-603 Transportation Procedures-Land
- 16. SOP-PLN-201 Situation Unit Resources List
- 17. SOP-PLN-202 Gathering, Displaying and Maintaining Resource Status Information
- 18. SOP-PLN-203 Environmental Assessment, Priorities and Protocols
- 19. SOP-FIN-101 Finance Activities for Major Incidents

BOTAŞ BTC PROJECT EMERGENCY RESPONSE PLAN - TABLE OF CONTENTS

- 1 Abbreviations**
 - 2 Purpose**
 - 2.1 Associated Documentation
 - 3 BOTAŞ BTC Project**
 - 3.1 Personnel Safety
 - 3.2 Personnel Tracking
 - 3.3 Personnel Lists
 - 3.4 Coordination
 - 3.5 Organisation and Procedures
 - 3.6 Communications
 - 4 Incident Categories**
 - 5 BOTAŞ BTC Pipeline Project - Emergency - Information Flow**
 - 6 Emergency / Incident Reporting Timeline**
 - 7 BOTAŞ BTC Project Emergency Response (E.R.) Team Leader**
 - 7.1 Action in event of a Category 1, 2 or 3 Incident
 - 8 Contractor Team Leader / Deputy**
 - 9 Sub Contractor and other Project staff**
 - 10 Actions for Other events – Fire**
 - 11 Actions for Other events - Gas Release**
 - 12 Actions for Other events – Spillage**
 - 13 Actions for Other events - Medical Emergency**
 - 14 Actions for Other events - Site Security Incident**
 - 15 Actions for Offsite Transport Emergency**
 - 16 Interaction with the Media and General Public**
 - 17 Responsibilities of Media Contact Person**
 - 18 Duties of Emergency Team Members**
- Appendix 1 Transport Emergency – Questions to be Asked**

Appendix 2 Media Contact

Appendix 3 Bomb Threat / Terrorist Threat – Telephone Report

ATTACHMENT B

COUNTRY SPECIFIC HOST GOVERNMENT AGREEMENT CLAUSES

Extracts from the Host Government Agreement for Turkey that are relevant to the Oil Spill Response Plan are as follows.

HGA ARTICLE 13

ENVIRONMENT, HEALTH, SAFETY AND SOCIAL IMPACT

- 13.1 The applicable environmental, health and safety standards and practices for the Project shall be as set forth in Appendix 5 attached hereto. The State Authorities hereby agree to the standards and practices set forth in Appendix 5 and consent to any action taken by or on behalf of the BTC Co. and other Project Participants in conformity therewith. If a spillage or release of Petroleum occurs from the Facilities, or any other event occurs which is causing or likely to cause material environmental damage or material risk to health and safety, the BTC Company shall take all necessary action as set forth in Appendix 5 and, on request by or on behalf of the BTC Company, the State Authorities shall, in addition to any indemnification obligations the State Authorities may have under the Project Agreements, use their Best Endeavours to make available promptly and in reasonable quantities, any labour, materials and equipment not otherwise readily available to the BTC Company or their Contractors to assist in any remedial or repair effort.
- 13.2 The applicable social impact standards, practices and program for the Project shall be effected as set forth in Appendix 5 attached hereto. The State Authorities hereby agree to the standards and practices set forth in Appendix 5 and consent to any action taken by or on behalf of the BTC Company and other Project Participants in conformity therewith.

HGA APPENDIX 4

RIGHTS TO LAND IN THE TERRITORY ASSOCIATED WITH THE PROJECT

4. Phase 3 - Post Construction Phase
- 4.1 Following the completion of the Facilities, the BTC Company will require the following Rights to Land, all of which shall be obtained and secured by the State Authorities and granted to the BTC Company:
- (vi) The right of access over any land between the public highway and Pipeline Corridor and other Permanent Land without prior notice in cases of emergency.

HGA APPENDIX 5

CODE OF PRACTICE

3. Environment, Health and Safety
- 3.7 Prior to the completion of the Facilities and in relation to Pipeline Activities, a plan for Petroleum spill response capability (“Spill Response Plan”) as to spills within or that could affect the Territory will be created and implemented by the BTC Company. The Spill Response Plan will include:
- (i) environmental mapping of habitats vulnerable to potential Petroleum spills in the entire BTC Company System;
 - (ii) plans for the provision of relevant Petroleum spill clean up equipment and materials;
 - (iii) plans for the deployment of relevant equipment and emergency response notification details of the organisation required to handle Petroleum spill response;
 - (iv) plans for the treatment and disposal of resulting contaminated materials.
- 3.8 Each of the scoping study, risk assessment, Baseline Study, EIA and Spill Response Plan (collectively, the “Environmental Strategy Product”) shall be prepared by or in consultation with one or more recognised international environmental consulting firms selected by the BTC Co. The costs of the items constituting the Environmental Strategy Product, and implementation of the environmental strategy reflected in the EIA and the Spill Response Plan, shall be borne by the BTC Company except that the Government shall be liable for all costs associated with its technical representatives.
- 3.9 The development and completion of the Baseline Study, the EIA and the Spill Response Plan shall be subject to the following procedures to ensure that they represent implementation of an appropriate environmental strategy with respect to the Project:
- (i) The consulting firm(s) involved and representatives of the BTC Company shall, at the request of the Government, consult with the technical representatives of the Government, at reasonable times and places, during the preparation of the Baseline Study, the EIA and the Spill Response Plan.
 - (ii) The Baseline Study, the EIA and the Spill Response Plan shall each be subject to approval of the Government in accordance with the following procedures:
 - (a) The Baseline Study, the EIA (with executive summary demonstrating adequate response to public concerns, as described below) and the Spill Response Plan shall each be submitted to the Government upon its completion. The Government shall approve each such item if it has been prepared in accordance with the requirements of this Appendix 5.
 - (b) If the Government requires clarification of any portion of the Baseline Study, the EIA or the Spill Response Plan, or determines that it has not been prepared in accordance with the requirements of this Appendix 5,

it shall submit its specific concerns or questions to the BTC Co. within thirty (30) days of receipt of the item in question.

- (c) The Baseline Study, the EIA or the Spill Response Plan, as the case may be, shall be deemed approved by the Government if, within thirty (30) days after having been submitted to the Government, the BTC Co. have received no written submission of additional concerns or questions. If the Government submits specific concerns or questions, the item in question shall be deemed approved if, within thirty (30) days after the response to such concerns or questions is submitted to the Government, the BTC Co. have received no written submission of concerns or questions with respect to such response.
 - (d) If the Government disapproves of any of the Baseline Study, the EIA or the Spill Response Plan and the BTC Co. believe that the Government has unreasonably withheld its acceptance, then the BTC Co. shall so notify the Government and the Parties shall attempt to amicably resolve any dispute. Failing resolution of any such dispute within fifteen (15) days of the receipt of such notice by the Government, the BTC Co. may cause the dispute to be resolved in accordance with the provisions of Article 18 of the Agreement.
- (iii) The EIA shall be subjected to public review and comment in accordance with the following procedures:
- (a) Affected public and non-governmental organisations will be notified about the nature of the operation of the Facilities during the development of the EIA through dissemination of information to these organisations through meetings and exhibitions.
 - (b) Following the completion of the EIA, the public will be provided with information on the environmental aspects of the Project to enable it to comment with respect thereto. To facilitate this process the EIA and an executive summary (in the Turkish language) will be made available in a public place for review and comments; additionally an information copy of the executive summary shall be submitted simultaneously to the Government.
 - (c) A maximum of sixty (60) days will be allowed for public comments, which will be provided to the Government by the BTC Co. within thirty (30) days after the expiration of said sixty (60)-day period. Demonstration that the BTC Co. have reasonably addressed public concerns (through modification of the EIA, if necessary) will be included in a final executive summary that will be submitted to the Government.

3.10 Creation of the Environmental Strategy Product and implementation of the environmental strategy reflected therein shall be in accordance with the standards and practices generally prevailing in the international Petroleum pipeline industry. Creation of the EIA shall also be in accordance with the principals of EC Directive 85/337/EEC (as amended by EC Directive 97/11/EC) and will include the following general environmental principles, all of which shall be applied or performed in accordance with standards and practices generally prevailing in the Petroleum pipeline industry:

- (i) there shall be no discharging of petroleum;
- (ii) waste petroleum, sludge, pigging wastes, polluted ballast waters and other wastes will either be recycled, treated, burned, or buried employing the best practicable environmental option;
- (iii) all waste streams will be disposed of in an acceptable manner and concentration as determined during the course of the EIA;
- (iv) emission monitoring programs will be developed to ensure environmental compliance.

Attachment C: Oil Spill Preparedness and Response Arrangements in Turkey

1 INTRODUCTION

1.1 OIL SPILL PREPAREDNESS AND RESPONSE ARRANGEMENTS

Oil spill preparedness in Turkey has substantially progressed over the last few years. There is an established framework for oil spill response and a draft National Contingency Plan has been prepared and is currently under revision.

This document is an annex to the Oil Spill Response Plan (OSRP) for the Baku-Tbilisi-Ceyhan (BTC) Project, provided as Appendix C6. It outlines the institutional and regulatory framework for oil spill preparedness and response in Turkey. It also describes the existing technical capability in country to address potential oil spills and lists the private companies with oil spill containment equipment.

1.2 LAYOUT OF SECTION

This annex has been set out in the following manner:

- Section 2: Provides an outline of the national regulations and international treaties signed by Turkey related to the prevention of marine pollution.
- Section 3: Outlines the institutional framework for marine oil spill response and discusses the role of NGOs and scientific institutions.
- Section 4: Describes existing and proposed oil spill contingency plans of relevance.
- Section 5: Outlines oil spill response arrangements and technical capability in Turkey.

2 REGULATIONS AND TREATIES

2.1 RELEVANT NATIONAL REGULATIONS

Turkey has introduced a range of national regulations in order to implement international conventions ratified by the country (see Section 2.2 on Conventions and Treaties). Establishment of the Undersecretariat of Maritime Affairs and the Ministry of Environment (see next section) have accelerated legislation and planning in connection with the contingency process.

The active laws and regulations related to oil spill contingency are listed below.

National Laws and Regulations

Law/Regulation	Date	Relevance
Shore Law	1990	Shore Protection
Harbours Law	1925	Harbour Management
Law on Cabotage and Trade within Territorial	1926	Transportation by vessels
Marine and Coastal Fire Combat Regulation	1975	Safety
Coast Guard Command Law	1982	Safety
Environment Act	1983	Environment
Water Pollution Control Regulation	1983	Environment
Water Products Law	1971	Environment
Turkish Search and Rescue Regulation	1985	Safety
Maritime Traffic Regulations	1994/1999	Safety, Environment

This section outlines in more detail those regulations and the international treaties which Turkey is signatory to, particularly for the protection of the seas and towards the prevention of marine pollution and oil spill prevention.

12.1.1 Shore Law

This law governs issues relating to protection of shores, shore planning, shoreline determination and construction activities on shores. Also, there are general provisions related to environment as there shall not be any waste discharge on shores. The law came into effect on 4th April, 1990.

12.1.2 Harbours Law

This law restricts activities within harbours. Construction of port, embankment, boathouse and similar projects are subject to permission of the Harbour Master. The law came into effect in on 20th April, 1924.

2.1.1 Law on Cabotage and Trade within Territorial Waters

This law, which came into force in April, 1926 limits the use of foreign flag vessels in Turkey and, under a strict interpretation, makes it difficult to introduce foreign flag vessels and

incident control equipment. Temporary operation of salvage vessels is possible with a government permit.

2.1.2 Marine and Coastal Fire Combat Regulation

This regulation is one of the early legislative acts setting out principles for contingency planning. It came into force in September 1975 and is a starting point for contingency plans.

2.1.3 Coast Guard Command Law

This law describes the responsibilities of the Coast Guard Command. It came into effect in July 1982. The Command has to “monitor, identify and prevent marine pollution from aerial and marine sources in accordance with international treaties and national legislation, to identify individuals polluting and to deliver them to the relevant authorities”.

2.1.4 Environment Law

The Environment Law, which entered into force in August 1983, aims at enhancing the environment, rational use of land and natural resources in both urban and rural areas, and prevention of water, air and soil pollution.

In accordance with this law, it is unlawful for any real or legal person to pollute the environment, including the sea.

According to the Environment Law ships polluting the sea in Metropolitan Municipal areas may be fined by the relevant municipal administration. Outside these areas, Coast Guard Boat Commander is entitled to penalise any ship violating the pollution ban.

Moreover, the civil administration has the authority to fine polluters in all areas outside the Metropolitan Municipality borders for pollution created by them in marine area, rivers, lakes and ports. The law states that persons giving wrong information or preparing improper documentation will be guilty of an offence punishable by law.

The Ministry of Environment is currently working on amendments to the Environment Law in accordance with international requirements.

2.1.5 Regulation on Control of Water Pollution

This regulation was formulated in accordance with Environment Law of 1983 and with the legal provisions that have been annexed and amended to that law. Its purpose is to lay down the legal and technical foundations required for defining the principles of water pollution control in order to protect Turkey's water and groundwater potential for all uses, to ensure its optimum use, and to prevent water pollution in harmony with the targets of economic and social development.

The Regulation on Control of Water Pollution defines the wastes and other substances, classifies surface and ground waters, sets wastewater discharging principles, wastewater collection and disposal criteria as well as issuing of discharge permits.

All enterprises engaged in the processing, loading, unloading and storage of petroleum and its derivatives are required to have a capable organisation and necessary equipment and materials required for combating possible oil spills into a water medium as a result of accident or other special conditions at all times.

The Regulations on Control of Water Pollution give the responsibility of the implementation to the Ministry of Environment, Ministry of Health, Ministry of Tourism, Ministry of Culture, Ministry of Industry and Trade, State Hydraulic Works, to Governorships, and Metropolitan Municipalities.

The Regulation on Control of Water Pollution, the Regulation concerning the Establishment of Liability in Fines to be Levied on Ships and other Maritime Vessels, and the Procedures for Levying Fines and Receipts will provide the necessary technical details and standards in the implementation of these laws. In parallel to international practices aiming at the prevention of seas being polluted by vessels and other sea crafts, work has been accelerated to establish port reception facilities in Turkey.

2.1.6 Fishery Products Law

The Fishery Products Law (No.1380) entered into force in 1971. It regulates the production of aqua products and is concerned with the standardisation and conservation of the marine resources.

The law bans the discharge of substances that may be harmful to water products, to the consumers of such products or to equipment that is used for harvesting those products. It also prohibits the construction of facilities that might cause such discharges.

The law gives the duty and responsibility to take all appropriate measures and provide for necessary financial resources to the Ministry of Agriculture and Rural Affairs. In addition, State Hydraulic Works (DSI), police and gendarme and where these don't exist Muhtars (village headperson) and elders (the smallest administrative unit comprised of locally elected people) are responsible for the fulfilment of above-mentioned duties. A list of harmful substances that cannot be discharged into production areas and their limit values in receiving media are specified.

2.1.7 Turkish Search and Rescue Regulation

The Turkish Search and Rescue Regulation entered into force in 1989. The Regulation defines the scope and extent of search and rescue operations.

Turkey's Main Search and Rescue Centre (also referred to as AAKMM) has been established for search and rescue operations in accordance with the provision of this regulation.

Turkey's Main Search and Rescue Co-ordination Centre is located in Ankara and operated by the Undersecretariat of Maritime Affairs who reports to the Prime Minister, via a State Minister.

2.1.8 Maritime Traffic Regulations

These regulations became effective on July 1, 1994 and apply to all vessels navigating through the Turkish Straits and the Sea of Marmara. They aim to ensure the safety of marine navigation, life, security and custom inspections, health inspection, accidents and breakdowns.

2.2 INTERNATIONAL CONVENTIONS

Turkey has signed and ratified the following international maritime conventions. A number of other such conventions are currently being reviewed by Parliament for ratification.

Treaties and Conventions Signed and Ratified by Turkey

Title	Short Name	Date	Signed	Relevance
Convention Regarding the Regime of the Straits	Montreaux Convention	1936	1936	Transit rights
International Maritime Organization Convention	IMO Convention	1948	1958	Navigation
International Convention on Load Lines	Load Lines	1966	1968	Safety
International Convention on Tonnage Measurement of Ships	TONNAGE	1969	1982	Safety
International Regulations for Preventing Collisions at Sea	COLREG	1972	1980	Safety
International Convention for the Prevention of Pollution from the Ships	MARPOL	1973	1990	Environment, Safety
Safety of Life at Sea	SOLAS	1974	1980	Safety
International Maritime Satellite Organization Agreement	INMARSAT	1976	1989	Safety
Standards of Training, Certification and Watchkeeping for Seafarers	STCW	1978	1989	Environment, Safety
Maritime Search and Rescue	SAR	1979	1985	Safety

3 RELEVANT INSTITUTIONS

3.1 ROLE OF TURKISH INSTITUTIONS IN OIL SPILL CONTINGENCY

There are a range of Turkish institutions working on maritime issues, including safety in the Turkish Straits and the Sea of Marmara, and contingency planning and implementation. Some institutions are involved in policy making and at the regulatory level, some deal with technical issues and some carry out monitoring and implementation activities. The nine official institutions most relevant to maritime issues, of which the majority are also members of the Governor's Crisis Management Task Force (see Section 3.1.7) include:

1. Undersecretariat for Maritime Affairs
2. Ministry of Environment
3. Coastal Guard Command
4. Coastal Safety and Salvage Administration (CSS)
5. Istanbul Greater City Municipality
6. Harbour Master Istanbul
7. Turkish Maritime Organization
8. Turkish Straits Administration and Information System Project Office (TURBO)
9. Governor's Office

3.1.1 Undersecretariat for Maritime Affairs

The Undersecretariat for Maritime Affairs (UMA), established in August 1993, is the highest official body responsible for management of all maritime issues, and carrying out coordination with ministries and other official institutions and, in conjunction with the Ministry of Foreign Affairs, with international organisations. TURBO, which is affiliated to the Prime Ministry, has been conducting technical works on VTS and contingency planning for the Straits and the Sea of Marmara.

UMA's task comprises inter alia, co-ordination, monitoring and inspecting all kinds of activities which cause deterioration of marine ecology and pollution of the seas, co-operating with other related organizations in this field and taking the necessary measures to prevent deterioration and pollution of the marine environment.

Seven regional directorates and 68 harbour master offices are directly attached to the Undersecretariat. Under the UMA, a search and rescue centre has been established in which communications are ensured by telephones and telefaxes operating on a 24 hour basis. A notification system has also been developed. The report format includes time, place and reason of the accident notified, observation data, description of the accident, results and measurement.

3.1.2 Ministry of Environment

The Ministry of Environment (MoE), established in August 1991, comprises intervention, controlling and implementing policies adapted for the protection and conservation of the environment and for the sustainable development and management of natural resources.

The MoE is responsible for elaborating short, medium and long-term objectives, co-ordinating and co-operating with other relevant authorities for the implementation of

programs and investment plans for the protection of environment and for the prevention of marine pollution by ships.

The General Directorate for Monitoring and Prevention of Environmental Pollution is in charge of measures to prevent environmental pollution and to design and implement Contingency Plans. This department is also responsible for monitoring potential sources of marine pollution.

3.1.3 Turkish Coast Guard Command

The Turkish Coast Guard Command has been established since 1982 and is responsible for search and rescue, protection of marine life and environment, and control of navigational aids.

The Turkish Coast Guard Command is located in Ankara and has four subordinate Area Commanders for commanding its operational units covering all of Turkish seas surrounding Turkey.

In accordance with the Environment Law, the Coast Guard has the duty to prevent and control the pollution activities and issue the penalties stated under the law.

3.1.4 Coastal Safety and Salvage Administration

The present Coastal and Salvage Administration (CSS) was founded in 1997, combining the Salvage and Navigational Aids Departments and is a State Owned Commercial Organization. It is responsible for navigational aids, rescue of life, and salvage throughout the Turkish Seas.

The rescue forces of the CSS consist of fixed but mobilised Shore Stations and Life Boats. CSS manages 15 shore stations, 10 of which are located around the Istanbul Straits.

All of the shore fixed stations have the capability to assist ships grounded nearby the Istanbul Strait. They are able to throw lines up to 600 meters and form high-lines between the ship and the shore, in order to save or evacuate lives and properties.

In 1998, CSS established shore stations in Canakkale, Samsun, Giresun, Rize and Antalya, and is scheduled to establish another 20 stations in different locations around the country. CSS states its shore stations have a 15-minute response time.

Their main equipment includes two ocean-going tugs (command ships) and 12 fire-fighting boats. The company currently does not have any container booms or skimmers. Their key equipment in Istanbul and Canakkale includes:

In Istanbul:

- 1 ocean going tug/command vessel (7,220 hp, 86 tons bp)
- 2 fire-fighting tugs (2,600hp)
- 3 rescue boats
- 10 service boats

In Canakkale:

- 1 ocean going tug/command vessel (5,000hp, 45 tons bp)
- 1 fire-fighting tug (2,600 hp)

3.1.5 Turkish Maritime Organization

The Turkish Maritime Organization (TD) was originally the institution responsible for managing passenger and freight harbours, vessels, urban marine transportation services and search, rescue and salvage services. Its responsibility for search, rescue and salvage services was given to the CSS in 1993, when TD was privatised by the Prime Ministry.

3.1.6 Harbour Master of Istanbul

The Harbour Master's office operates under the TD and is responsible for the management of the various harbours of Istanbul. It is not directly involved in contingency works, though, together with its Traffic Co-ordination Administration, it has the authority to close the Bosphorus in case of an accident.

The Administration is based in Istanbul, operating under the Undersecretary of Maritime Affairs, and is in charge of monitoring of marine traffic through the Bosphorus and Dardanelles, through an office in each Strait.

3.1.7 Governor's Office

The Governor is the representative of the central government in each of Turkey's 81 provinces, and is in charge of civilian services and local administration. The Governors in Istanbul and relevant coastal areas are charged by the MoE with the development of local contingency plans and are authorised for their implementation. The Governor is the supreme local authority to ensure co-ordination between all institutions involved in contingency operations.

When an accident or oil spill occurs, the Governor established a crisis management task force, formed by representatives of the following institutions:

- Governor's Office
- Coastal Safety and Salvage Administration
- Coast Guard (Ministry of Defence)
- Harbour Master and Traffic Co-ordination Administration
- Istanbul Greater City Municipality
- Directorate of Environment
- Turkish Maritime Organization
- Marine Police
- Coastal Health Department
- Regional Directorate of Transportation
- Customs Office

In particular cases, the task force members may ask the following organizations to be involved as well:

- Navigation, Hydrography and Oceanography Department
- Agriculture and Forestry Department
- Universities
- TUB_TAK, the Stage Science Foundation
- Yesilkoy Meteorological Station
- Relevant Municipalities

3.2 NGOS AND SCIENTIFIC INSTITUTIONS

Since the early 1990s, the interest of non-governmental organisations (NGOs) in the protection of the marine environment in Turkey has increased. Moreover, support from scientists, seamen and businessmen, co-operation with national and international institutions, and good communication with the public have helped these NGOs to develop a public profile.

3.2.1 NGOs

The main NGOs are as follows:

Non-Governmental Organisations in Turkey

- Istanbul Chamber of Industry (ISO)
- Society for Peace with Nature
- Turkish Marine Research Foundation (TUDAV)
- Turkish Marine Pilots' Association (TUMPA)
- Turkish Chamber of Shipping
- Turkish Environmental Caucus
- Turkish Marine Environment Protection Association (TURMEPA)

3.2.2 Scientific Institutions

A number of scientific institutions and scientists working on marine environmental issues have also been identified as important members of oil spill contingency planning in Turkey. These include:

- the Fisheries Faculty and Marine Sciences Faculty of Istanbul University
- the Institute of Environmental Sciences of Bosphorus University
- the Environmental Engineering Department and Marine Sciences Institute of Middle East Technical University

The Turkish Scientific and Technical Research Organization (TUBITAK) is also conducting some research on marine environment.

4 EXISTING AND PROPOSED CONTINGENCY PLANS

4.1 THE NATIONAL CONTINGENCY PLAN

In accordance with the Government Decree on the establishment of the Ministry of Environment, preparation of contingency plans is the responsibility of the MoE. The Ministry of Environment, the Undersecretariat for Maritime Affairs, the Coast Guard and the Coastal Safety and Salvage Administration have drafted a Turkish National Contingency Plan for Marine Pollution Emergency Cases.

The draft National Contingency Plan, to be enacted as a law, covers the Black Sea, the Mediterranean, the Aegean, the Sea of Marmara, and the Turkish Straits. At present, the draft plan is still in revision and has not been released.

The draft Plan provides the framework for timely and adequate response to any navigational accidents or incidents. It specifies issues such as institutional and organisational responsibilities, required communication networks and modalities for activating response arrangements.

A National Contingency Plan Executive Committee has also been established to coordinate preparedness and response.

4.2 LOCAL CONTINGENCY PLANS

Contingency planning at the local level is another on-going initiative. Local contingency plans for some cities, such as Istanbul, Canakkale, Samsun, Trabzon, Antalya, and Mersin have already been prepared and implemented.

The local Contingency Plan for Istanbul was successfully implemented during Nassia and Volganef 248 tanker accidents, which occurred in the Strait of Istanbul in 1994 and 1999, respectively.

5 TECHNICAL CAPABILITY

5.1 RESPONSE ARRANGEMENTS

The Ministry of Environment in Turkey has the ultimate responsibility for dealing with oil pollution. At a district level, the Governor of the major town within the region is responsible for any response. Local responsibility is designated to managers of individual ports or, in the case of spills at sea, to the Turkish Coast Guard. Oil on shore would normally be dealt with by the municipalities.

Spill Notification Point

Turkish Coast Guard Command Karanfil Sokak 64 06640 Bakanli	Tel (24hr): +90 312 417 5050/1/2 Fax: +90 312 417 2878
---	---

Competent National Authority

Ministry of Environment Cevre Bakanligi Eskisehir yolu 8km Ankara 06100	Tel: +90 312 287 9964 Fax: +90 312 285 2742
--	--

5.1.1 Response Policy

To date, no firm policy on clean-up techniques appears to exist. In previous spills, containment, recovery and dispersal techniques have been considered. There is no official dispersant-testing procedure.

Equipment to combat spills is owned by the State or private companies. These are primarily operated by the government entity, the General Directorate for Coastal Safety and Salvage, located in Istanbul. Moreover, municipal authorities operate many pumps and vacuum trucks. Additional oil spill cleaning equipment is available at various oil companies in Turkey (see below).

5.2 MAJOR FACILITIES HAVING OIL SPILL CONTINGENCY PLAN (OSCP) AND EQUIPMENT

OSCP and equipment of the major petroleum and petrochemical companies in Turkey (see Figure A1 for the locations) are given below.

5.2.1 BOTAŞ

BOTAŞ (Petroleum Pipeline Co.) has two marine terminals and four pipeline facilities for transporting crude oil.

Facility	Capacity (Mton/year)
Ceyhan Marine Terminal (CMT)	70.9
Dörtyol Marine Terminal (DMT)	3.5
Ceyhan-Kırıkkale Pipeline (CKP) (448 km)	5
Batman-Dörtyol Pipeline (BDP) (511 km)	3.5
Şelma-Batman Pipeline (SBP) (42km)	0.8
Irak-Turkey Pipeline (ITP) (1876 km)	70.9

'Management of Petroleum Operations in Ceyhan' operates and maintains the above listed facilities. It has OSCP's (separate plans for inland, river and marine spills), personnel and equipment. The team consists of 34 personnel.

The equipment for inland spill response are given below.

Inland Spill Response Equipment

- Tow truck + pipe repairing trailer
- Tow truck + low bed + 225 CAT excavator
- Tow truck + low bed trailer + 955 CAT loader
- Gross crane
- Unimog crane
- Mobile workshop
- Fire fighting truck
- Ambulance
- 50 NC pick-up truck + projector
- Damper truck + generator
- Truck + welding generator
- Pumps (two in PS4 of ITP and one in CMT)
- All types of fitting materials
- Four wheel pick-up truck
- Tow truck + side boom + low bed trailer (for steep regions)
- Caravans with kitchen and beds (in PS4 of ITP)

The equipment for marine spill response is given below.

Marine Spill Response Equipment

- Skimmer	1 off
- Tugboats	1 off
- Dispersants	3000 litres (maximum stock)
- Booms	2km total length

In order to repair illegal hot-taps along the CKP separate team is available. The team consists of 18 personnel and the following equipment:

- Tow truck + 225 CAT excavator
- Mobile workshop
- Fire fighting truck
- Dodge pick-up truck + diesel welding machine
- 50 NC pick-up truck + projector
- Four cars

5.2.2 TÜPRAŞ

TÜPRAŞ (Turkish Petroleum Refineries Co.) has four refineries and one petrochemical plant.

Facility	Capacity (Mton/year)
İzmit Refinery	11.5
Körfez Petrochemical and Refinery	-
İzmir Refinery	10
Kırıkkale Refinery	5
Batman Refinery	1.1

Details of OSCP, equipments and personnel in the facilities are given in below:

Facility	OSCP	Response Agreement	Personnel/Equipment
İzmit Refinery/Körfez Petrochemical and refinery	Yes	A special agreement with the Oil Spill Response Lt. UK (OSRL). *	- 28 trained Personnel - 1000m barriers, skimmers, oil solvent booms, response boats, dispersants
İzmir Refinery	Yes	A special agreement with the Oil Spill Response Lt. UK (OSRL).*	- 10 trained Personnel - 1500m barriers, booms, response boats, dispersants
Kırıkkale Refinery	Yes	A special agreement with the Oil Spill Response Lt. UK (OSRL). *	Planning to train 2-10 personnel and purchase river barriers, skimmer and dispersants
Batman Refinery	No	A special agreement with the Oil Spill Response Lt. UK (OSRL). *	None

* OSRL is primarily focused on responding to "Tier 3" (a large or catastrophic spill that requires international assistance) incidents for its Participant's worldwide 24 hours a day.

5.2.3 TPAO

TPAO (Turkish Petroleum Co.) has three oil rigs. TPAO does not have specific OSCPS. Regional offices in Batman and Dörtüol have equipment and personnel to control and make the necessary repairs. These personnel will take all the necessary actions as required by the nature of the accident.

Oil Rig	Production (Mbarrel)*
Batman	6.9
Adıyaman	6.5
Trakya	0.09
* Cumulative crude oil production in 2000	

5.2.4 POAŞ

POAŞ (Petrol Ofisi Inc.) has 10 marine terminal storage facilities.

Facility	Approximate Net Capacity (MT)*
İskenderun Terminal	72
Mersin Terminal	70
Antalya Terminal	28
İzmir Aliağa Terminal	70
İzmit Terminal	124
Mudanya Terminal	16
Çubuklu Terminal	10
Haramidere Terminal	69
Samsun Terminal	42
Trabzon Terminal	61

All these onshore facilities have OSCPS, equipment and trained personnel. Each facility has 300m barriers, booms, and skimmer pumps.

POAŞ has airport storage terminals but these are not equipped with OSCPS and relevant equipment.

5.2.5 PETKİM

PETKİM (Petrochemical Holdings Inc.) has one facility in İzmir Aliağa. The facility has OSCP, trained personnel, 1000m barrier, response boat and organic absorbents.

5.2.6 ATAŞ

ATAŞ is situated on the Mediterranean coast and in the east of Mersin. The refinery is located on the western side of Deliçay Stream; tanker and lighter loading-unloading facilities are in the east of Mersin Port, six km away from the refinery in the west. ATAŞ jetty is located on the southeastern end of Mersin Port. Mersin in-port marine field and territorial field are approximately 1,277,368m² and 3,250,000m² respectively. The port in question is located in east-west direction in general terms. The port is protected by two moles allowing entry on eastern and western sides. The lengths of the eastern and western moles are 2933m and 1539m, respectively. An average of 4500 vessels enter into the port per annum.

Daily processing capacity of ATAŞ Refinery is 100,000 barrels of crude oil (4.4 million metric tones of crude oil annually). Crude oil is transported to the facility via vessels. LPG, unleaded-premium and regular gasoline, Jet fuel, gas oil, diesel fuel, home heating oil and various fuel oils are produced at the refinery.

SPILL RESPONSE EQUIPMENT

Category	Type
Barriers	Floating Barrier Slickbar MK-10, Fixed type Floating Barrier Slickbar MK-8 (numerous)
Oil Skimmers	Oil Skimmer, Vikoma Komara 12K and PSU; (12 tons/hour) Oil Skimmer, Vikoma Komara 50K and PSU (50 tons/hour); MANTA-RAY Diesel Skimmer and PSU; MANTA-RAY Skimmer operated with gasoline and PSU; POWER-VAC Vacuumed Oil Skimmer
Absorbing Covers/Plates	Absorbing Plate (200 pc./bale); (43cm x 48 cm) Absorbing Sausage; Absorbing Plate (100 pc./bale)- 200 gr. (80 cm x 100 cm); Absorbing Plate (100 pc./bale) – 100 g. (80 cm x 100 cm); Absorbing Plate (150 pc./bale) – 100 g. (80 cm x 50 cm).
Dispersants	Emulsol A- Spill wash; Emkem Emulsol LW Dispersant (172 kg./drum)
Others	Buoy; Anchor; Life buoy

AUXILIARY EQUIPMENT

Category	Type
Provisional Storage Locations	Vikoma inflated floatation tank with capacity 12.5 m ³ ; Schutz container of 1 m ³ for skimming spill
Motors	Motor boat, externally mounted 70 hp, with gasoline motor (ATAŞ III); Motor boat (ATAŞ IV), available for use with dispersants.
Scavenger	Scavenger, with 7 m ³ tank capacity; Scavenger, with 8 m ³ tank capacity
Cranes	PPM (30 tons crane); P&H (80 tons crane); A.W. Cherry Dicker (5 tons); Grove Crane (8 tons)
Forklift Trucks	KOMATSU; ÇUKUROVA
Emergency Lighting Devices	Diesel Generator 380/415 V; Telescopic Lighting Unit; Diesel Generator 330 KWA.

5.2.7 NATO Pipelines

NATO has 3000km of pipeline in Turkey (total capacity of 1 MT/year). These pipelines are operated and maintained by the State Ministry of Defence. The Ministry has two teams with OSCP and equipment based in Malatya and Eskişehir. Details of personnel and equipment are confidential information and thus could not be obtained.

ATTACHMENT D

LIST OF TREATIES AND CONVENTIONS

The Republic of Turkey is a party of various international conventions directly and/or indirectly related with the BTC Project by means of spill response and prevention, in the context of environmental protection, which are listed below.

- International Convention for the Prevention of Pollution from Ships 1973/78 (MARPOL 73/78).
- International Convention for the Protection of Birds, 1950.
- International Convention for the Safety of Life at Sea (SOLAS), 1960 and 1974.
- Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR), 1971.
- Convention Concerning the Protection of World Cultural and Natural Heritage, 1972.
- Convention for the Protection of Mediterranean Sea against Pollution, 1976.
- Convention on the Conservation of European Wildlife and Natural Habitats (BERN), 1979.
- Convention on Transboundary Movement of Hazardous Wastes and Their Disposal (BASEL), 1989.
- Convention on the Biological Diversity, 1992.

The “International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC), 1990” was signed by the Republic of Turkey on 24 December 1999 and is currently awaiting ratification from the committee formed by the Ministry of Foreign Affairs.

The international conventions related with the oil spills, but which are not signed by the Republic of Turkey, are given below for reference:

- International Convention for the Prevention of Pollution of the Sea by Oil (OILPOL), 1954.
- United Nations Convention on the Law of the Sea, 1982.
- International Convention on Civil Liability for Oil Pollution Damage (CLC), 1969 and 1992.
- Convention on the Establishment of International Fund for Compensation for Oil Pollution Damage (FUND), 1971 and 1992.

Appendix C7 – Cultural Heritage Management Plan (CHMP)

1 INTRODUCTION

1.1 PURPOSE AND SCOPE OF THE PLAN

The cultural heritage of an area may be impacted by a large-scale construction project, if it is not handled sensitively. With careful management, however, it is possible to complete the Project with minimal impact on the cultural resources and, in addition, provide a substantial increase in the quantity of archaeological evidence available for a region.

Cultural heritage encompasses a wide range of resources, including archaeological deposits and remains, historical monuments, sites and buildings, historical and culturally significant landscapes, places of worship, cemeteries and graveyards, places associated with local folklore, mythology and traditions and the location of historical and cultural festivals, events and rituals (as described in Article 6 of the Turkish law No. 2863 and World Bank guidelines). During the desktop research and field surveys undertaken as part of the cultural heritage assessment (and during the social surveys undertaken as part of the wider EIA process), a wide range of cultural heritage resources were researched and assessed, and this process informed the cultural heritage input to the route selection and detailed design process. In assessing the preferred pipeline route corridor and its associated facilities, the results of the baseline investigations defined the scope of the assessment to be focused primarily on the implications for the archaeological resource and the provisions required to ensure that the uncertainty associated with the discovery of, as yet, unrecorded deposits is effectively managed. This focus is reflected in the content and intent of the Cultural Heritage Management Plan.

This document, therefore, provides an outline model for management of the archaeological heritage on the Turkish Annex of the route corridor of the Baku–Tbilisi–Ceyhan (BTC) Pipeline Project.

The CHMP is a generic plan for all Contractor(s) to prepare his (their) own more detailed plan(s) and procedures for implementation in compliance with the guidelines and standards outlined in the annexes to this document. The Contractor shall submit an ‘Outline CHMP’ 30 days after Award of Contract for the approval of BOTAŞ. Cultural Heritage Management Procedures demonstrating how the requirements of the ‘Outline CHMP’ will be implemented, will be submitted 12 weeks prior to the clearance of the RoW, or the breaking of ground at other construction sites, for the approval of BOTAŞ.

The Plan is a living document, that has been amended in light of stakeholder comments during disclosure, regulatory conditions, and as more is learned about cultural resources in the Project area. The Plan is also part of an overarching Strategy for the cradle to grave management of cultural resources for the whole of the BTC Pipeline project.

1.2 ARCHAEOLOGICAL FRAMEWORK STRATEGY FOR THE BTC PIPELINE PROJECT

The main objective of the overall Strategy is to ensure that issues around cultural resources are managed consistently across all three countries through which the pipeline will pass. The Framework Strategy sets out:

- its Scope;
- the Regulatory background;

- the overall Strategy;
- Baseline surveys;
- the context for the Management Plan itself;
- the Phased Approach;
- Post-construction activities.

The phased approach is a particularly important point. Archaeological management for the Project started in the earliest stages of route development several years ago, with the clear objective of selecting and developing a pipeline route that avoids as many known cultural resources as possible. Thus the *Phased Approach* comprises the following:

- *Phase 1:* Basic Engineering baseline studies involved collection of desktop information utilising previous studies and archaeological work and field studies to optimise the 500m corridor.
- *Phase 2:* Detailed Engineering baseline studies involved an extensive investigation of the pipeline with local experts walking the route with engineers to evolve the most acceptable pipeline route. Based on information from this survey, the pipeline was re-routed to avoid archaeologically sensitive areas wherever possible. Where rerouting is not an option, archaeological evaluation will proceed at selected locations in order to determine the nature and extent of archaeological sites. Further work (extensive and intensive) will be carried out in mid to late 2002. In addition, the reroutes will be reviewed to establish if these are sufficient to avoid areas of concern. During this phase, extensive surveys will be conducted for PT2, PT3, IPT the main camp locations, access road locations, and sections that could not be investigated during Phase 2 due to seasonal constraints. The intensive surveys will be conducted for the sites that will be identified during the extensive survey.
- *Phase 3:* Immediately following Phase 2 evaluation, (which will establish the extent of threatened sites, and enable updated project specifications to be produced), Phase 3 excavation of threatened sites will be carried out by archaeological work teams appointed by BOTAS and technically managed by the Archaeological Management Consultancy, under the responsibility and authority of the Ministry of Culture (MoC). This work will involve both non-intrusive techniques such as remote sensing and geophysics as well as the excavation of trial trenches.
- *Phase 4:* Topsoil stripping down to the natural subsoil will be undertaken under archaeological supervision wherever the ground surface is to be disturbed along the proposed pipeline route; in advance of trenching activities. When archaeological deposits are encountered they will be excavated. Observation of construction activities and recording of features exposed by trench digging will be undertaken by archaeological work teams (an archaeological watching brief). When archaeological deposits are encountered the appropriate chance find procedures will be instigated under the technical management of the Archaeological Management Consultancy. In the event of a chance find Article 4 (Section 2.1.2) will be invoked.
- *Phase 5:* The results of the archaeological work will be analysed and reports prepared by archaeological specialists and the MoC.

At the EIA disclosure stage, Phase 1 and most of Phase 2 have been completed. This Plan therefore addresses the future management activities, primarily associated with the pre-construction and construction phases.

1.3 STRUCTURE OF THE PLAN

Section 2 presents a non-comprehensive overview of the legislative framework, both on a national and international level, within which the archaeological management plan will operate.

Section 3 presents an outline framework for the structure of archaeological management on the pipeline project.

Section 4 presents an overview of the procedures required during Phase 2, "Detailed Engineering Baseline Studies". A list of all sites requiring investigation in this phase is also included.

Section 5 presents an overview of the procedures required during Phase 3, "Investigation of Threatened Sites".

Section 6 presents an overview of the procedures required during Phase 4, "Pipeline Construction Activities".

Section 7 presents a bibliography of the reference sources cited in this Plan.

Annex A presents the protocol with the MoC for the works to be carried out relating to the cultural assets on the route of the BTC Pipeline. Additionally it will contain a gazetteer of known archaeological sites requiring mitigation strategies on the pipeline project.

Annex B presents guidelines for the preparation of desk-based assessments on the pipeline project.

Annex C presents guidelines for the selection of archaeological work teams on the pipeline project.

Annex D presents guidelines for the preparation of project briefs and specifications on the pipeline project.

Annex E presents guidelines and standards for the monitoring archaeologist (watching brief) on the pipeline project.

Annex F presents guidelines for the chance finds procedure on the pipeline project.

Annex G presents guidelines and standards for archaeological field evaluations on the pipeline project.

Annex H presents guidelines and standards for archaeological excavations on the pipeline project.

Annex I presents guidelines and standards for treatment of movable cultural and natural assets arising from the archaeological fieldwork on the pipeline project.

Annex J presents guidelines and standards for regulatory monitoring for archaeological work teams on the pipeline project.

Annex K presents guidelines and standards for publication and dissemination of the results of the archaeological fieldwork on the pipeline project.

Annex L will contain a gazetteer of known archaeological heritage sites requiring mitigation strategies on the pipeline project.

At present the gazetteer has been excluded on the basis that it is not necessarily good practice to disclose the locations of archaeological sites, especially those that are not already in the public domain. The World Bank Procedures (Draft BP 4.11, May 2001) states that where full disclosure of the cultural resources component would jeopardize the safety or integrity of the cultural resource involved, sensitive information may be excluded from disclosure at the discretion of the borrower and in consultation with the Bank. Thus, it is likely that sensitive

information, such as GPS coordinates of identified sites, may be removed from the management plan. It is suggested that the Gazetteer is compiled along the lines set out in the Strategy for baseline information.

Essentially, for each site identified in the survey, the Gazetteer will set out the following information:

- Site description;
- The classification or grade allocated to the site;
- GPS location and small map (or annotated aerial photograph) showing extent of site and its relationship to working areas for the pipeline construction) this information may be excluded if appropriate;
- Photographic record;
- Any existing agreement with the MoC;
- List of key concerns or potential impacts for the site;
- Mitigation actions already taken – ie reference to reroutes made during detailed design;
- Mitigation actions planned – ie specify such matters as preconstruction survey, fencing of site, protection of site from off-site excursions by workers, temporary facilities, access roads, quarries, etc.

The gazetteer will be treated as a living document to be provided to Construction Contractors with the CHMP.

2 LEGISLATIVE FRAMEWORK

In this Section an overview is presented of the legislative framework under which the Cultural Heritage Management Plan for the pipeline corridor will operate; as such the overview outlines the principal legislative requirements and is not intended as a comprehensive statement of law. Other legislation may apply at national, regional and local levels.

2.4 PROTECTION OF CULTURAL AND NATURAL ENTITIES LAW, LAW NO. 2863, (JULY 21, 1983)

The management plan for archaeological heritage mitigation strategies along the pipeline corridor is to be designed to meet the requirements stipulated in the *Protection of Cultural and Natural Entities Law, Law No. 2863, (July 21, 1983)*.

"The objective of the *Protection of Cultural and Natural Entities Law* is to set the definitions regarding the movable and fixed cultural and natural assets that shall be protected; to arrange the procedures and activities to be performed and to establish the formation and duties of the organization that will enforce the required principles and implementation decisions on this subject." (*Official Gazette, 23/7-1983 number 18113*). A number of Articles from this law are summarised in the following sub-sections.

2.4.1 Article 3: definitions

Article 3 of the *Protection of Cultural and Natural Entities Law* provides the following definitions:

- Cultural Assets are all over-ground, underground or submarine movable and fixed assets related with science, culture, religion and fine arts, belonging to prehistoric and historic eras.
- Natural Assets are the over-ground, underground or submarine assets that belong to geological eras, prehistoric and historic eras and that shall be protected because of their rarity or specifications and preciousness.

2.4.2 Article 4: obligation to inform

In the event of a chance find of movable or immovable cultural artefacts and natural assets, there is an obligation to inform the nearest Museum Directorate, Muhtar or civil administrative head, no later than 3 days after the find.

In the event artefacts are found at a military garrison or in the 'forbidden zone', the upper commandship will be informed.

The Muhtar should inform the nearest civil administrative head within 24hrs of the notification. The civil administrative head will inform the Ministry of Culture (MoC) and to the nearest Museum Directorate within 10 days of notification with an official letter.

The MoC, the General Directorate for the Preservation of Cultural and Natural Entities and the relevant Preservation of Cultural and Natural Entities Council Directorate are responsible for the registration of the find (see Article 7).

2.4.3 Article 7: legislative requirements prior to archaeological mitigation

Article 7 of the *Protection of Cultural and Natural Entities Law* states that relevant Preservation of Cultural and Natural Entities Council Directorates are responsible for registration of the cultural and natural assets. Therefore, BOTAŞ /Construction Contractor will apply to the MoC, the General Directorate for the Preservation of Cultural and Natural Entities and the relevant Preservation of Cultural and Natural Entities Council Directorate for the registration of fixed cultural assets identified in the pipeline pre-construction phase and afterwards. Registered cultural and natural assets shall be treated as state assets (according to the Article 5 of the *Protection of Cultural and Natural Entities Law*).

BOTAŞ /Construction Contractor will also be required to obtain permissions as stated in the “Protocol For the Works to be Carried Out relating to the Cultural Assets on the Route of Baku-Tbilisi-Ceyhan Crude Oil Pipeline” from the Republic of Turkey MoC/ General Directorate of Monuments and Museums for the rescue excavation of the potential archaeological sites along the pipeline route, and any other excavation arising during the course of the archaeological watching brief which is required by the Preservation of Cultural and Natural Entities Council Directorate.

2.2 REGULATION ON RESEARCH, BORING AND EXCAVATION OF CULTURAL AND NATURAL ENTITIES, REGULATION NO. 18485, (AUGUST 10, 1984)

The objective of the *Regulations on Research, Boring and Excavation of Cultural and Natural Entities, Regulation No. 18485 (August 10, 1984)* is to set the principles regarding the permissions for investigations, boring and excavations that are conducted to bring out the movable and fixed cultural and natural assets that are subject to Cultural and Natural Entities (Law no: 2863); preservation requirements for the findings; studies on these entities; duties, authority, responsibilities, rights and expenses of the relevant people (*Official Gazette, 10/8-1984 number 18485*)

A protocol has been signed with the MoC outlining the works to be carried out relating to the cultural objectives on the route of the BTC. This is attached as Annex A to this document.

2.3 EUROPEAN CONVENTION ON THE PROTECTION OF THE ARCHAEOLOGICAL HERITAGE (REVISED) (VALETTA, 16/01-1992)

The *European Convention on the Protection of the Archaeological Heritage (Revised) (Valetta, 16/01-1992)* is known as the Valetta Convention. It sets guidelines for the funding of excavation and research work and publication of research findings. It also deals with public access, in particular to archaeological sites, and educational actions to be undertaken to develop public awareness of the value of the archaeological heritage.

2.4 CONVENTION CONCERNING THE PROTECTION OF THE WORLD CULTURAL AND NATURAL HERITAGE, 1972

Turkey is a signatory to "The Convention Concerning the Protection of the World Cultural and Natural Heritage" (*The World Heritage Convention*), which was passed by The General Conference of the United Nations Educational, Scientific and Cultural Organization (UNESCO), meeting in Paris from 17 October to 21 November 1972.

The signatories to this Convention have agreed "*to ensure that effective and active measures are taken for the protection, conservation and presentation of the cultural and natural heritage*" on their territories.

2.5 WORLD BANK GROUP

The World Bank and IFC consider the conservation of important cultural heritage a part of the sustainable development process. Development projects, if improperly designed and executed can damage cultural heritage and diminish its value through a variety of means. In contrast, when planned and executed with care, development projects can avoid damage to known resources and even generate valuable data on previously unknown finds.

The World Bank Group guidance is set out in Operational Policy 4.01, January 1999 and in draft Operational Policy 11.03 for Cultural Property. It considers EIA as one of the main instruments in ensuring that development projects do not result in unacceptable damage to cultural heritage.

The following flow diagram shows how EIA runs alongside the project development and appraisal process, together with specific reference to managing cultural issues. This is broadly the sequence of events followed for the BTC Project, with Basic Engineering corresponding to the 'Identification' stage, when archaeological resources were considered in the development of the 500m corridor, and the Detailed Engineering (and preparation of the EIA) corresponding to the 'Preparation' stage and development of the 100m corridor.

The project is now in the Appraisal stage.

Figure 1: Cultural Heritage and the EIA Process

Environmental Screening	Scoping Bank and Borrower agree on how cultural Issues are to be addressed	Disclosure Draft submitted. Management Plan revised to incorporate comments	Remaining Issues discussed by appraisal team and borrower	Archaeological supervision based on EIA and loan agreements	Cultural heritage aspects evaluated in completion and evaluation reports
-------------------------	---	---	---	---	--

Project Stages



Cultural Heritage Inputs

Identify heritage issues from available data and rapid filed visits.	Extensive surveys. Significance assessment and consultation. Mitigation measures. Design Management Plan	IFC Appraisal team review cultural heritage issues in project documents.	Measures agreed to protect heritage, including chance find procedures. Measures reflected in legal agreements and binding contract documents	Monitoring of project activities. Training as required.	Evaluation of effectiveness of measures.
--	--	--	--	---	--

3 OVERALL MANAGEMENT FRAMEWORK ISSUES

Please also refer to:

- **Annex A: the protocol with the MoC for the works to be carried out relating to the cultural assets on the route of BTC pipeline.**
- *Annex B:* guidelines for the preparation of desk-based assessments on the pipeline project.
- *Annex C:* guidelines for the selection of archaeological work teams on the pipeline project.
- *Annex D:* guidelines for the preparation of project briefs and specifications on the pipeline project.
- *Annex E:* guidelines and standards for the monitoring archaeologist (watching brief) on the pipeline project.
- *Annex F:* guidelines for the chance finds procedure on the pipeline project.
- *Annex G:* guidelines and standards for archaeological heritage field evaluations on the pipeline project.
- *Annex H:* guidelines and standards for archaeological excavations on the pipeline project.
- *Annex I:* guidelines and standards for treatment of movable cultural and natural assets arising from the archaeological fieldwork on the pipeline project.
- *Annex J:* guidelines and standards for regulatory monitoring for archaeological heritage work teams on the pipeline project.
- *Annex K:* guidelines and standards for publication and dissemination of the results of the archaeological fieldwork on the pipeline project.

3.2 DEFINITIONS

- Ministry of Culture (MoC): Responsible authority.
- Museums Directorate: Responsible for mobilising appropriate personnel to field locations within 24hrs of notification and designate a chance find.
- BTC Co.: Responsible for overall BTC archaeological assurance.
- BOTAŞ: BTC Project Directorate responsible for overall BTC Project Archaeological Contract Management.
- Archaeological Management Consultancy: Independent organisation responsible for the technical management of extensive and intensive surveys, rescue surveys and chance finds, coordination of the contractor 'watching brief' and regulatory approvals.
- Archaeological Work Teams: Appointed by BTC Construction Contractors as a 'watching brief'.

3.3 MANAGEMENT STRUCTURE AND RESPONSIBILITIES

An Archaeological Management Consultancy will be appointed for the management of the archaeological heritage on the route corridor of the BTC Pipeline under the responsibility and authority of the Ministry of Culture (see Annex A).

The Archaeological Management Consultancy will be an independent archaeological specialist agency, that will work within the management structure of the Project, but will be independent of the archaeological work teams appointed by the Construction Contractors.

The Archaeological Management Consultancy will manage the technical aspects of the work with respect to the archaeological work teams, rather than actually being directly involved in

fieldwork themselves. However, if archaeological work teams are lacking particular expertise, this will be provided by the Archaeological Management Consultancy.

A central archaeological management unit in Ankara will be established, under the auspices of the Archaeological Management Consultancy. In addition, it may be necessary to establish local management centres, also under the auspices of the Archaeological Management Consultancy.

BOTAŞ will be responsible for implementation of the archaeological mitigation strategies in the construction phase. BTC Regulators and Archaeologists and management will meet on a monthly basis, and should include suitably qualified representatives from the concerned departments at the MoC (the Director of the Directorate General of Monuments and Museums, or his representative); the Heads or Assistant Heads of the relevant Preservation of Cultural and Natural Entities Directorate, or their representatives; from the Archaeological Management Consultancy, from BTC Co.; and from other concerned institutions (for example, representatives from the regional museums etc).

Cultural heritage evaluations and excavations will be conducted in the areas permitted by the MoC, by archaeologists from the MoC, with assistance from archaeological work teams appointed by the construction firms (this will be valid for construction phase) undertaking work on the pipeline in the relevant region, from archaeologists from BOTAŞ, and from the Archaeological Management Consultancy if required.

In advance of the construction of the pipeline and associated facilities, all topsoil stripping will be monitored in the form of an 'archaeological watching brief'. The archaeological work teams who provide this function will be appointed by the construction firms undertaking work on the pipeline in the relevant region. When archaeological deposits are encountered the appropriate chance finds procedure will be instigated. Any archaeological deposits encountered during this watching brief will be excavated by archaeologists from the MoC, with assistance from archaeological work teams appointed by the construction firms undertaking work on the pipeline in the relevant region, from archaeologists from BOTAŞ, and from the Archaeological Management Consultancy if required. BTC Co. will facilitate a training session of 'watching briefs' using experienced personnel.

The archaeological mitigation works will be monitored by representatives from the MoC and by representatives from the relevant Regional Museums.

The Archaeological Management Consultancy will co-ordinate the monitoring procedures.

Negotiations on technical issues with the concerned Preservation of Cultural and Natural Entities Council Directorate will be arranged by the Archaeological Management Consultancy and BOTAŞ when necessary.

After completion of the archaeological fieldwork, the Archaeological Management Consultancy will co-ordinate publication of the results of the archaeological mitigation strategies subject to regulatory approval.

After completion of the archaeological fieldwork, the Archaeological Management Consultancy will provide consultancy services for archaeological heritage management, which will be implemented during the BTC Pipeline construction.

4 PHASE 2. DETAILED ENGINEERING BASELINE STUDIES

Please reference:

- *Annex A:* Protocol with the MoC
- *Annex B:* Guidelines for the preparation of desk-based assessments on the pipeline project
- *Annex F:* Guidelines for the chance finds procedure on the pipeline project
- ***Annex G: Guidelines and Standards for archaeological field evaluations on the pipeline project***
- *Annex I:* Guidelines and standards for the treatment of moveable assets arising from field work on the pipeline project
- *Annex J:* Guidelines and standards for regulatory monitoring of archaeological activities on the pipeline project

A provisional list of areas where archaeological field evaluations are needed has been prepared. Further locations will be added to this list as areas of rerouted pipeline are surveyed.

Prior to any archaeological fieldwork, desk based assessments should be produced for each site, in order that as much information as possible can be gathered before intrusive fieldwork commences. Thus archaeological fieldwork can be targeted with a specific agenda based on comprehensive desk-based knowledge about each particular site.

The aim of the evaluation is to define the nature and extent of the archaeology in those locations, sufficiently well so as to prepare a plan for further required work for Phase 3 activities.

For each of the areas identified, an individual project specification will be prepared showing the following:

- the location and description of the site;
- details of pipeline construction requirements;
- extent and duration of the proposed archaeological works;
- ownership details of the land;
- access arrangements to the site;
- health and Safety requirements specific to the site;
- contact details for the BTC staff;
- contact details for other pipelines and services specific to the site.

5 PHASE 3 EXCAVATION OF THREATENED SITES

Please also refer to:

- *Annex A*: the protocol with the MoC for the works to be carried out relating to the cultural assets on the route of BTC Pipeline.
- *Annex B*: guidelines for the preparation of desk-based assessments on the pipeline project.
- *Annex D*: guidelines for the preparation of project briefs and specifications on the pipeline project.
- *Annex F*: guidelines for the chance finds procedure on the pipeline project.
- ***Annex H*: guidelines and standards for archaeological heritage excavations on the pipeline project.**
- *Annex I*: guidelines and standards for treatment of movable cultural and natural assets arising from the archaeological fieldwork on the pipeline project.
- *Annex J*: guidelines and standards for regulatory monitoring for archaeological work teams on the pipeline project.
- *Annex K*: guidelines and standards for publication and dissemination of the results of the archaeological fieldwork on the pipeline project.

Following Phase 2 evaluation (which will establish the extent of threatened sites, and enable updated project specifications to be produced), full scale excavation of threatened sites will be carried out by archaeological work teams appointed by BOTAŞ and technically managed by the Archaeological Management Consultancy under the responsibility and authority of the Ministry of Culture (see Annex A). This work will involve both non-intrusive techniques such as remote sensing and geophysics as well as the excavation of trial trenches.

An updated project specification will need to be prepared for these sites (based on the standards outlined for the evaluation work).

6 PHASE 4. PIPELINE CONSTRUCTION ACTIVITIES

Please also refer to:

- *Annex A:* the protocol with the MoC for the works to be carried out relating to the cultural assets on the route of BTC Pipeline.
- *Annex B:* guidelines for the preparation of desk-based assessments on the pipeline project.
- *Annex C:* guidelines for the selection of archaeological work teams on the pipeline project.
- *Annex D:* guidelines for the preparation of project briefs and specifications on the pipeline project.
- *Annex E:* guidelines and standards for the monitoring archaeologist (watching brief) on the pipeline project.
- ***Annex F: guidelines for the chance finds procedure on the pipeline project.***
- *Annex G:* guidelines and standards for archaeological field evaluations on the pipeline project.
- *Annex H:* guidelines and standards for archaeological heritage excavations on the pipeline project.
- *Annex I:* guidelines and standards for treatment of movable cultural and natural assets arising from the archaeological heritage fieldwork on the pipeline project.
- *Annex J:* guidelines and standards for regulatory monitoring for cultural heritage work teams on the pipeline project.
- *Annex K:* guidelines and standards for publication and dissemination of the results of the archaeological heritage fieldwork on the pipeline project.

Topsoil will be stripped down to the natural subsoil under suitably qualified archaeological supervision, so that archaeological features can be observed and archaeological mitigation strategies can be implemented.

The archaeological work teams monitoring topsoil stripping will be augmented by archaeological work teams who carry out any necessary excavation of archaeological chance finds, while topsoil stripping continues to be monitored further along the pipeline route. The function of the archaeological monitoring process will be as follows:

- Provide advice to define the areas where the construction activities may continue or shall be stopped.
- To record archaeological features observed on, and close to the existing pipeline.
- To record archaeological features discovered during pipeline construction activities.
- To provide advice in the form of a ‘preliminary assessment’ to the construction superintendent on the significance and implications of new archaeological discoveries on the pipeline route.

The classification of chance finds, in terms of significance, will be performed by the regulators (Museums Directorate) within 24 hrs of notification.

Example guidance to be followed in the event of a new archaeological discovery or ‘chance find’ is given in the following sections (see Annex F for more detailed information):

6.1 ARCHAEOLOGICAL DISCOVERIES OF MINOR SIGNIFICANCE

This type of archaeological discovery would be of fairly small size, such as an isolated feature or find-spot. It is anticipated that the monitoring archaeologist should be able to adequately record the feature unassisted. The monitoring archaeologist will be allowed 24 hours to record the archaeological discovery.

The discovery will be reported to the BOTAŞ Representative in the field immediately. The construction activities will be ceased at the site where the find is discovered and the discovery will be reported to the expert of the relevant Museum Directorate (MoC). After the investigation of the relevant Museum Directorate expert, necessary action will be taken. Arrangements should be made to demarcate the archaeological deposits from construction vehicles to prevent damage.

6.2 ARCHAEOLOGICAL DISCOVERIES OF MODERATE SIGNIFICANCE

This type of archaeological discovery would be of small to medium size, such as a small group of features or a single burial. The monitoring archaeologist would be unable to record the discoveries by himself. Assistance would be required in the form of other archaeologists and labour to lead the excavation and recording of the discovery. The discovery, and the recording process, may cause a limited disruption of up to 72 hours to construction activity, although mainline activities should continue. Arrangements should be made to demarcate the archaeological deposits from construction vehicles to prevent damage.

The preliminary assessment will be performed by the monitoring archaeologist. The discovery will be reported by the monitoring archaeologist to the Construction Superintendent immediately, who will then inform the relevant contact within the Museums Directorate. Appropriate arrangements will have been made prior to this time for a small team of archaeological technicians, who may be despatched to assist in the recording of the features.

6.3 ARCHAEOLOGICAL DISCOVERIES OF MAJOR SIGNIFICANCE

This type of archaeological discovery would have fairly major significance such as a settlement site or group of burials. The archaeological features would cover the working width of the pipeline easement such that construction vehicles and equipment would not be able to pass down the right of way without causing damage to the archaeological deposits. The excavation and recording of these deposits may take a considerable period of time and cause some disruption to construction activities, which may need to find an alternative right of way in the vicinity of the site.

Thus, the two possible scenarios to be considered are whether the:

- find requires the pipeline to be re-routed; or
- will the resulting excavation and recording be completed within a finite period of time, thus enabling back-end crews to complete the pipeline construction using the same centre line.

In order to assist in the decision making process, further archaeological evaluation of the site may be required to assess the extent and nature of the find.

The decision will be made following consultation with the archaeological work team, the Archaeological Management Consultancy, the relevant museum directorate, and with BOTAŞ.

Procedures for dealing with excavations arising from archaeological finds of major significance encountered during the construction period have been agreed in the Protocol with the MoC.

7 PHASE 5: POST CONSTRUCTION ACTIVITIES

Please also refer to:

- *Annex E*: guidelines and standards for the monitoring archaeologist (watching brief) on the pipeline project.
- *Annex F*: guidelines for the chance finds procedure on the pipeline project.
- *Annex G*: guidelines and standards for archaeological heritage field evaluations on the pipeline project.
- *Annex H*: guidelines and standards for archaeological heritage excavations on the pipeline project.
- ***Annex I*: guidelines and standards for treatment of movable cultural and natural assets arising from the archaeological heritage fieldwork on the pipeline project.**
- ***Annex K*: Guidelines and standards for publication and dissemination of the results of the archaeological heritage fieldwork on the pipeline project**

Following the completion of archaeological fieldwork, a post excavation (or post fieldwork, in the case of the monitoring archaeologist) assessment report and updated project design shall be prepared by the relevant archaeological work teams for the BTC Environmental Department. Following approval of these assessment reports and updated project specifications, final project reports shall be produced. In line with Article 43 of the *Protection of Cultural and Natural Entities Law, No. 2863* the Heads of the archaeological work teams (authorised personnel for the relevant Local Museum Directorate) will be responsible for submitting reports to the MoC. Scientific reports should be published within two years at the latest from completion of the excavation, and the final report within five years.

The concept of 'post construction' excavation will not arise during the Project. If sites are threatened by the construction process, either directly or indirectly, they will be excavated prior to construction, if impact cannot be avoided by other mitigation measures (for example re-routing). If the sites are not threatened, then the principle of 'preservation *in situ* wherever possible', which is upheld in all relevant legislation, on both a national and international level, would indicate that no further excavation should take place.

8 BIBLIOGRAPHY

Association of County Archaeological Officers 1993 *Model briefs and specifications*, 11, UKACAO.

Council of Europe 1992 *ETS No 143: European Convention on the Protection of the Archaeological Heritage (Revised) (The Valletta Convention)*

English Heritage 1991 *Management of Archaeological Projects*

General Directorate of Preservation of Cultural and Historical Heritage 1983 *Protection of Cultural and Natural Entities Law (1) Law No. 2863*

IFA (Institute of Field Archaeologists) 2001 *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials*

IFA 1994 *Standard and Guidance for an archaeological desk based assessment (revised 1999)*

IFA 1994 *Standard and Guidance for an archaeological watching brief (revised 1999)*

IFA 1994 *Standard and Guidance for an archaeological field evaluation (revised 1999)*

IFA 1994 *Standard and Guidance for an archaeological excavation (revised 1999)*

SCAUM (Standing Conference of Archaeological Unit Managers) 1996 *Guidelines and notes on competitive tendering for archaeological services*

SCAUM (Standing Conference of Archaeological Unit Managers) 1997 *Recording Information about Archaeological Fieldwork*

UNESCO 1972 *Convention Concerning the Protection of the World Cultural and Natural Heritage*

9 ANNEXES

10 ANNEX A PROTOCOL WITH THE MOC FOR THE WORKS TO BE CARRIED OUT RELATING TO THE CULTURAL ASSETS ON THE ROUTE OF BTC PIPELINE

10.1 CLAUSE 1. PARTIES

This protocol was signed between BOTAŞ and the MoC, Directorate General of Monuments and Museums.

10.2 CLAUSE 2. DEFINITIONS

Work Team: The team that will carry out the archaeological works. The relevant museum directorate shall lead the excavation/research by the work team.

BOTAŞ: Petroleum Pipeline Corporation or any of its authorised contractors.

10.3 CLAUSE 3. OBJECTIVE AND SCOPE OF PROTOCOL

This Protocol is prepared on account of the importance of Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC Pipeline) Project, aiming not to cause any delay in project activities and to secure and rescue the archaeological entities that may be encountered throughout the pipeline route, appropriately and as soon as possible.

Scope of rules of practice to be complied with during the rescue works within the BTC Project and liabilities of the parties are identified within the framework of this Protocol.

In this direction, no further permission or authorisation for the permissions fixed in the protocol shall be required by the MoC for the rescue works under the Protocol.

10.4 CLAUSE 4. LAW/ REGULATIONS

- Law no: 2863 about the Protection of Cultural and Natural Entities with the changes in Law no: 3386
- Regulation on Research, Boring and Excavation of Cultural and Natural Entities published in 10 August 1984 (numbered 18485 in the official gazette).

10.5 CLAUSE 5. LIABILITIES

Pre-Construction Period:

Conditions for taking permission for surface Investigation and rescue excavations are as follows:

1. Notification of work team. Further to the conditions required in Article 5 of the Regulations on Research, Boring and Excavation of Cultural and Natural Entities, required qualifications for the archaeological work team of BOTAŞ or BOTAŞ' authorized contractor are as followed:
 - i. Notification of resumes.
 - ii. Being a graduate of relevant scientific branches (such as Protohistory, Asia Minor Archaeology, Classical Archaeology, Prehistory, Art History etc).
 - iii. Having 5 years archaeological field experience.
2. BOTAŞ should submit its report on the archaeological works that are carried out on the BTC Crude Oil pipeline corridor and excavation request to the MoC, General Directorate of Monuments and Museums.
3. The MoC, General Directorate of Monuments and Museums shall, within two (2) official working days subsequent to the receipt of the excavation request, give the relevant museum directorate the necessary permission for excavation. General Directorate of Monuments and Museums will inform BOTAŞ regarding the number of personnel that they will assign for this work. (But this number could change according to the scope of work).
4. The scientific report issued by the work team for the site where the rescue works were carried shall be submitted to the MoC, General Directorate of Monuments and Museums through the relevant museum directorate.
5. BOTAŞ shall employ the unqualified workers needed by the museum directorate for carrying out the excavation. BOTAŞ shall pay for the excavation related costs.
6. BOTAŞ shall provide all items (including security of the cultural asset and storage facility) needed by the Museum Directorate during the excavation period for rescue and protection of the cultural asset.

Construction Period

For Foreseen and Non-envisaged Cultural Assets:

1. When any cultural asset is discovered during the construction phase, the construction shall be suspended and BOTAŞ authorized official shall notify, within the same day, the nearest official administration or the relevant museum directorate. The relevant Museum Directorate will give priority to the BTC Project works as provided in the Circular of Prime Ministry dated 15.12.2000 and numbered B.02.0.PPG.0.12-320-22627.
2. In order to save time, BOTAŞ shall provide transportation of the expert from the nearest Museum Directorate and the construction site.
3. The expert from the Museum Directorate shall send the list of work team and the finding report including the necessary data that s/he identified at inspection on site (on which the cultural asset was discovered) by fax within 24 hours subsequent to the report date, to the General Directorate of Monuments and Museums.

4. The MoC, General Directorate of Monuments and Museums shall, within two 2 official working days subsequent to the receipt of the excavation request by the General Directorate, give the relevant museum directorate the necessary permission for excavation.

5. The scientific report issued by the work team for the site where the rescue works were carried shall be submitted to the MoC, General Directorate of Monuments and Museums through the relevant museum directorate.

6. BOTAŞ shall employ the unqualified workers needed by the Museum Directorate for carrying out the excavation. BOTAŞ shall pay for the excavation related costs.

7. BOTAŞ shall provide all items (including security of the cultural asset and storage facility) needed by the Museum Directorate during the excavation period for rescue and protection of the cultural asset.

10.6 CLAUSE 6. ACQUIRED RIGHTS

Publication rights of scientists or of committees of scientists that worked or are still working, under the permission of the MoC, Directorate General of Monuments and Museums, on the route of the pipeline, are reserved.

10.7 CLAUSE 7: VALIDITY

This protocol is valid until the completion of BTC HPBH Project construction works.

When required the parties may sign further standards.

10.8 ARTICLE 8. EFFECTIVE DATE

This protocol was issued and signed by and between the parties on 12/03/2002 in 4 (four) copies.

11 ANNEX B DESK BASED ASSESSMENTS

Detailed desk-based assessments were produced during the Detailed Engineering phase of the Project. These desk-based assessments will provide detailed information from which individual project designs or specifications can be produced by the archaeological work teams.

=

The content of the desk-based assessments will vary according to the scope of the proposals and the complexity or otherwise of the information available from existing sources.

11.1 STANDARDS

Reports will contain as a minimum:

- Non-technical summary.

This will include the aims and main results of the work, and also reference to authorship.

- Introductory statements.

This will include any restrictions on reporting or access to relevant records, and also the size surface geology and topography of the study area.

- Aims and objectives of the assessment.
- Methodology.

The methods used and an outline of sources consulted.

- An objective summary statement of results.
- Assessment of the impact of the proposed development on the archaeological resource identified in the study.
- Conclusion, including a confidence rating.

This will summarize and interpret the results, and put them into a local, regional and national context (if appropriate). The confidence rating will include a statement on the reliability of the sources consulted, or any limitations imposed upon consultation. The conclusion may also include recommendations for further work, for example archaeological evaluation by fieldwork.

- Supporting illustrations at appropriate scales.
- Supporting data, tabulated or in appendices.
- Index to and location of archive.
- References.

(IFA, 1994)

12 ANNEX C ARCHAEOLOGICAL WORK TEAMS

12.1 GUIDELINES ON SELECTION OF ARCHAEOLOGICAL WORK TEAMS

Further to the conditions required in Article 5 of the Regulations on Research, Boring and Excavation of Cultural and Natural Entities, required qualifications for the archaeological work-team of BOTAŞ or BOTAŞ' authorised contractor are as follows:

Any archaeologist employed as a member of an archaeological work team on the BTC Pipeline will possess a relevant degree (such as Protohistory, Asia Minor Archaeology, Classical Archaeology, Prehistory, Art History etc), and additionally will have at least five years archaeological field experience.

BOTAŞ, the Archaeological Management Consultant and the BTC Pipeline Archaeological Heritage Management Counselling Board will approve each archaeological work team contracted to work on the pipeline.

If any archaeological work team is found during routine monitoring to have failed to comply with the agreed specification or project design, this will be pointed out by the monitor to the archaeologist undertaking the work, and their client if appropriate, at the earliest opportunity. If, following notice of this non-compliance, the archaeological work team fails to rectify the matter, they will be excluded from the list of approved archaeological work teams, and prevented from involvement in subsequent archaeological mitigation measures.

All archaeological work teams employed on the pipeline project will ensure that the recording system and data standards which they intend to utilize during mitigation works are compatible with all other work teams involved in archaeological mitigation on the pipeline corridor. This will be co-ordinated by the Archaeological Management Consultancy.

All archaeological work teams working on the BTC Pipeline Project will be members of the Institution of Social Insurances, and will follow all relevant Health and Safety guidelines.

13 ANNEX D PROJECT SPECIFICATIONS

Each archaeological work team will provide an individual specification or project design for approval to the Archaeological Management Consultancy prior to the commencement of each archaeological mitigation measure.

The specification will be presented sufficiently in advance of archaeological mitigation commencing to allow time for amendments to be made if required.

The specification or project design will contain, as a minimum, the following elements:

- non-technical summary;
- site location (including map) and descriptions;
- context of the Project;
- geological and topographical background;
- archaeological and historical background;
- general and specific aims of the fieldwork;
- reference to relevant legislation;
- recording systems and data management systems;
- field methodology;
- collection and disposal strategy for artefacts and ecofacts;
- arrangements for immediate conservation of artefacts;
- post-fieldwork methodology;
- report preparation method;
- publication and dissemination proposals;
- copyright;
- archive deposition;
- timetable;
- staffing;
- Health and Safety considerations;
- monitoring procedures;
- contingency arrangements.

(IFA 1994)

14 ANNEX E MONITORING ARCHAEOLOGIST (WATCHING BRIEFS)

14.1 INTRODUCTION

All topsoil stripping during construction works on the pipeline corridor will be monitored by archaeological work teams appointed by the construction contracts, as an 'archaeological watching brief'.

This is defined as 'a formal programme of observation and investigation conducted during any operation carried out for non-archaeological reasons. This will be within a specified area or site where there is a possibility that archaeological deposits may be disturbed or destroyed'. The watching brief will result in the preparation of a report and ordered archive (IFA, 1994)

The purpose of the archaeological watching brief is:

- to allow, within the resources available, the preservation by record of archaeological deposits, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development
- to provide an opportunity, if needed, for the watching archaeologist to signal to all interested parties, before the destruction of the material in question, that an archaeological find has been made for which the resources allocated to the watching brief itself are not sufficient to support treatment to a satisfactory and proper standard.

The watching brief is not intended to reduce the requirement for excavation or preservation of known or inferred deposits, and it is intended to guide, not replace, any requirement for contingent excavation or preservation of possible deposits.

14.2 STANDARDS

An archaeological work team will only undertake a watching brief that is governed by a written and agreed specification or project design prepared in advance of work commencing. The specification or project design will conform to the brief/project outline if one has been set, and must in any case be approved in advance by the Archaeological Management Consultancy and the BTC Pipeline Archaeological Heritage Management Counselling Board.

In preparing a specification or project design for the work, the archaeological work team will establish the intention of the work, and the extent to which archaeological considerations will be allowed to affect the development schedule of the pipeline project.

The specification or project design will consider the need to include appropriate contingency arrangements with respect to field procedures, and thus often to resources. Contingency arrangements will not be open ended but will be properly specified in their own right, and reflect prior knowledge of the site, the physical context of the site and the primary objectives of the watching brief. Work teams will be in a position to justify in detail the eventual implementation of contingency arrangements.

The specification and/or project design will be agreed by all relevant parties before work commences. All work will conform to the agreed specification or project design. Any variations will be agreed in writing by all relevant parties.

Full and proper records (written, graphic, electronic and photographic as appropriate) will be made for all work, using *pro forma* records and sheets appropriate to the work.

The recording system used will be one that appropriate to the requirements of the Project, and will be agreed with relevant parties including the body that is to receive the archive.

The recording system and data standards used during the watching brief will be compatible with those of all other work teams involved in archaeological mitigation on the pipeline corridor (IFA, 1994).

15 ANNEX F CHANCE FINDS PROCEDURE

15.1 PROTOCOL WITH THE MOC

Please see Clause Five of the protocol of the MoC for the agreed procedures for excavations arising from chance finds during the construction period of the BTC Pipeline project.

15.2 PROCEDURES

In the event of a chance find discovery, the following actions will be executed:

1. Archaeological Works Team (AWT) to stop work in the area of the find and inform the Site Superintendent.
2. AWT to inform Museums Directorate using information given in Table 1. Museums Directorate representatives to mobilise to site within 24hrs of notification.
3. AWT to perform a 'preliminary assessment' using the guidelines provided in Figure 2 and inform site superintendent of potential time delay.
4. Delegation from the Museums Directorate to assess findings and determine the significance of the find and agree with the AWT the scope of the resulting investigation.
5. Site Superintendent and Construction Lot Manager to be informed of actual time delay.

Table 1. Contact Information

Museum	Address	Telephone	Authority Boundary Of Regional Museum	KP From/To	Approx. Distance (Between City Centre To Site)	Approx. Estimated Time (City Centre To Site)
KARS MUSEUM	İstasyon Mahallesi Cumhuriyet Caddesi No:481	0 (474) 212 14 30	From Georgia Border to Horosan (Erzurum)	0 - 225	195 Km	5.5 Hours (Maximum Speed 80 km/h by car)
ERZURUM MUSEUM	Paşalar Caddesi No:11	0 (442) 218 14 06	From Sarıkamış to Zara (Sivas)	225 - 630	295 Km	8 Hours (Maximum Speed 80 km/h by car)
SİVAS MUSEUM	Ordu Evi karşı İnönü Mahallesi İstasyon Caddesi	0 (346) 221 04 46	From Zara to Altınyayla	630-730	90 Km	4 Hours (Maximum Speed 80 km/h by car)
KAYSERİ MUSEUM	Gültepe Mahallesi. Kışla Caddesi No:2 Malikgazi	0 (352) 222 21 48	From Altınyayla to Sarız (Kayseri)	730- 835	105 Km	4.5 Hours (Maximum Speed80 km/h by car)
K.MARAŞ MUSEUM	Yenişehir Mahallesi No:35	0 (344) 223 44 88	From Sarız to Andırın (Kahramanmaraş)	835 -945	95 Km	4 Hours (Maximum Speed80 km/h by car)
ADANA MUSEUM	Fuzulî Caddesi No: 10	0 (322) 454 38 55	From Andırın to Ceyhan(Adana)	945-1070	75 Km	3.5 Hours (Maximum Speed80 km/h by car)

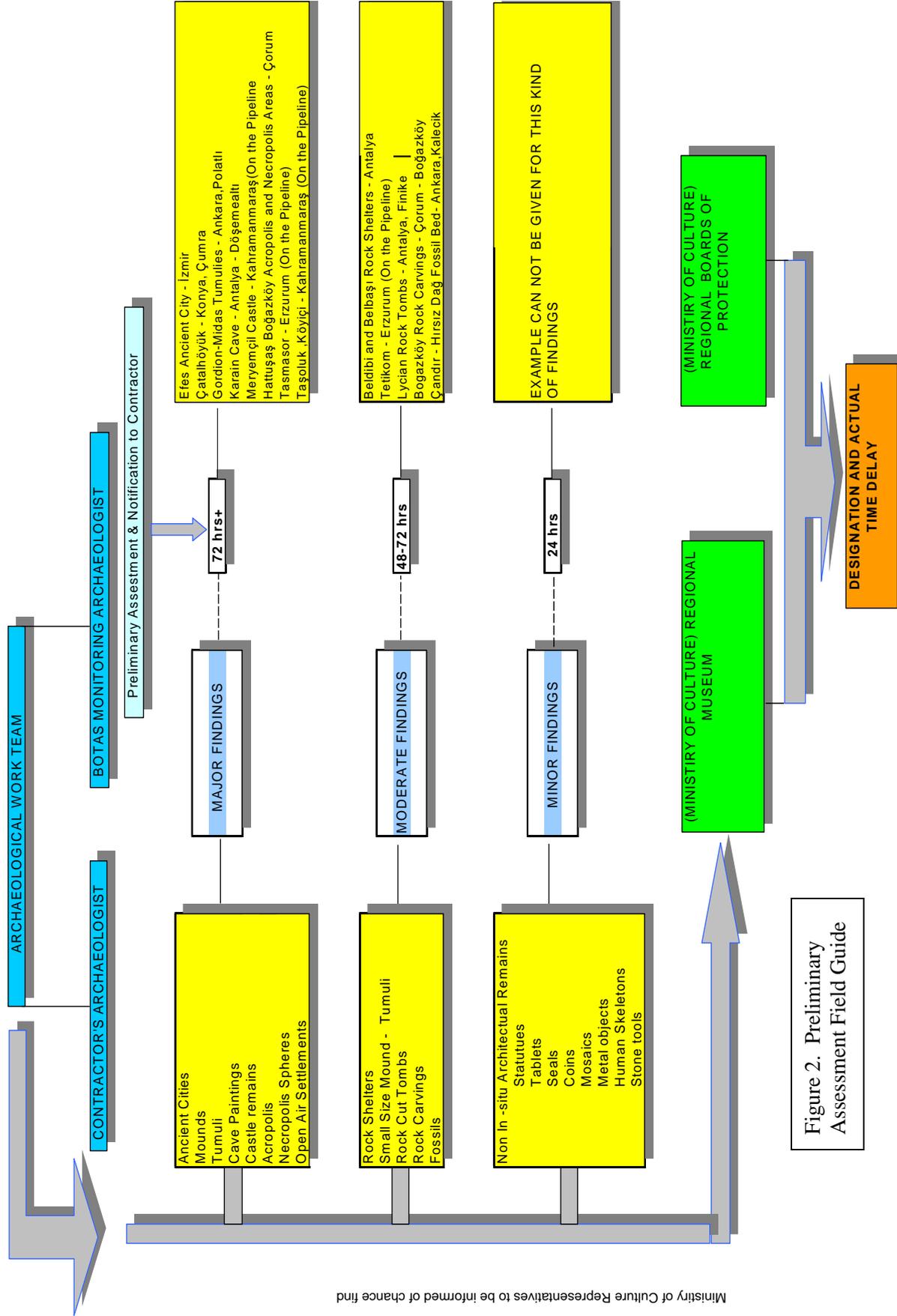


Figure 2. Preliminary Assessment Field Guide

Ministry of Culture Representatives to be informed of chance find

17 ANNEX G ARCHAEOLOGICAL FIELD EVALUATION

17.1 INTRODUCTION

This work will be carried out on known archaeological sites in the BTC Pipeline corridor in the summer of 2002.

=

In addition, this procedure will be undertaken on chance finds of archaeological sites encountered during topsoil stripping and the construction period. This will be carried out by archaeological work teams prior to full-scale excavation of the site.

An archaeological field evaluation will determine, as far as is reasonably possible, the nature of the archaeological resource within a specified area using appropriate methods and practices.

The definition of an archaeological field evaluation is 'a limited programmed of non-intrusive and/or intrusive fieldwork which determines the presence or absence of archaeological features, structures, deposits, artefacts or ecofacts within a specified area or site. If such archaeological remains are present field evaluation defines their character, extent, quality and preservation, and enables an assessment of their worth in a local, regional, national or international context as appropriate' (IFA, 1994).

The purpose of a field evaluation is to gain information about the archaeological resource within a given area or site (including presence or absence, character, extent, date, integrity, state of preservation and quality) in order to make an assessment of its merit in the appropriate context, leading to the formulation of a strategy to ensure the recording, preservation or management of the resource (IFA, 1994).

17.2 STANDARDS

An archaeological work team will only undertake a field evaluation once a project brief or specification has been produced, and has been agreed by the Archaeological Management Consultancy.

The archaeological work team will ensure that the field evaluation is minimally intrusive and minimally destructive to archaeological remains in both the design stage and in the execution of the work.

The results of the field evaluation will be presented to the Archaeological Management Consultancy, and the other relevant parties (for example the regional Museums and Boards of Protection) in a suitable time frame so that a decision can be reached about the requirement for additional archaeological fieldwork or otherwise.

18 ANNEX H ARCHAEOLOGICAL EXCAVATION

18.1 INTRODUCTION

An archaeological excavation will examine and record the archaeological resource within a specified area of the pipeline corridor using appropriate methods and practices. These will satisfy the stated aims of the Project. It will result in one or more published accounts and an ordered, accessible archive.

An archaeological excavation is defined as ‘a programme of controlled, intrusive fieldwork with defined research objectives, which examine, records and interprets archaeological deposits, features and structures, and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site. The records made and objects gathered during fieldwork are studied and the results of that study published in detail appropriate to the project design’ (IFA, 1994).

If required, an excavation may be supplemented by non-destructive means of investigation, such as:

- geophysical survey;
- remote sensing;
- geochemical survey;
- earthwork survey;
- field scanning (otherwise known as field walking) to observe and map artefact distributions;
- standing building survey.

18.2 STANDARDS

18.2.1 Fieldwork

The specification and/or project design must be agreed by the archaeological work team and the Archaeological Management Consultancy and shall be consistent with the “Protocol For the Works to be Carried out Relating to the Cultural Assets on the Route of the Baku-Tbilisi-Ceyhan Crude Oil Pipe Line” and the standards stated by the Ministry of Agriculture before work commences. All work must conform to the agreed specification or project design. Any variations must be agreed to in writing by all the relevant parties.

Sufficient and appropriate resources will be used in order for the Project to be completed successfully, within the timetable, to an acceptable standard, and comply with all statutory requirements.

All staff must be suitably qualified and experienced for their project roles.

A number of techniques are available for archaeological excavation. Several techniques may be valid, under the terms of the brief/project outline, and the contractor will explain the criteria for selection. The methods selected must be fit for the defined purpose. When the use of machinery is specified this must be under the direct supervision of an archaeologist.

Full and proper records (written, graphic, electronic and photographic as appropriate) will be made for all work, using *pro forma* records and sheets appropriate to the work.

The recording system used will be one that appropriate to the requirements of the Project, and will be agreed with relevant parties including the body that is to receive the archive.

The recording system and data standards will be compatible with those of all other contractors involved in archaeological mitigation on the pipeline corridor.

Following completion of the on-site excavation a post-excavation assessment report will be produced:

18.2.2 Post-excavation assessment report

A post excavation assessment report (which is different from the report stated in the protocol) will be produced by the archaeological work team within a reasonable time limit (for example 6 months) following completion of the on-site excavation. It will be submitted to the Archaeological Management Consultancy for approval. A post-excavation Assessment Report will normally contain:

1. Introduction

- scope of the Project;
- circumstances and dates of fieldwork and previous work;
- comments on the organization of the report.

2. Original Research Aims.

3. Summary of the documented history of the site(s).

4. Interim statement on the results of fieldwork.

5. Summary of the site archive and work carried out for assessment:

- site records: quantity, work done on records during post-excavation assessment.
- finds: factual summary of material and records, quantity, range, variety, preservation, work done during post-excavation assessment.
- environmental material: factual summary of human and animal bone, shell and each type of sample, quantity, range, variety, preservation, work done on the material during post-excavation assessment.
- documentary records: list of relevant sources discovered, quantity, variety, intensity of study of sources during post-excavation assessment.

6. Potential of the data:

- A discursive appraisal of the extent to which the site archive might enable the data to meet the research aims of the Project. Different classes of data will be discussed in an integrated fashion, sub-divided according to the research aims of the Project.
- a statement of the potential of the data in developing new research aims to contribute to other projects and to advance methodologies.
- A summary of the potential of the data in terms of local, regional, national and international importance.

Additional information will normally include:

- supporting illustrations at appropriate scales;
- sufficient supporting data, tabulated or in appendices, and/or details of the contents of the Project archive, to permit the interrogation of the stated conclusions;
- index, references and disclaimers.

The Post-Excavation Assessment report will enable an updated Project Design to be produced, following approval of the Post Excavation Report by the Archaeological Management Consultancy.

18.2.3 Updated project design specification

This will include the following sections:

1. Background:
 - A summary of the original objectives of the Project, as expressed in the original project design;
 - A summary of the results of the Project to date.
2. Summary statement of potential:
 - Material of critical importance for interpreting the site;
 - Material that merits publication for other stated reasons outside the context of a site report.
3. Aims and Objective.
4. Post excavation research design.
5. Publication and Presentation:
 - A publication synopsis will be prepared, giving the proposed format, structure and content of the published report;
 - Those aspects of a site, which could support a more popular treatment, will be identified.
6. Methods statement:
 - The recording strategies that it is intended to employ during analysis.
7. Resources and programming:
 - Staffing and equipment;
 - Timetable;
 - Budget.

A research archive will then be produced.

18.2.4 Research archive specification

The research archive will contain the following:

1. Catalogues and other records.

The research archive will be derived from the work done during the analysis phase and will comprise: stratigraphical/structural, artefact, environmental, and other catalogues and all other records as well as details of the methods and selection strategies used in each case.

The archive will contain some or all of the following elements:

- context information;
- photographic catalogue;
- photographs;
- stratigraphic drawings;
- object catalogues and details of where objects are located;
- object drawings;
- x-ray catalogue;
- x-rays;
- conservation records;
- sample catalogue;
- human bone catalogues;
- animal bone catalogues.

2. Analytical Reports

The report text will be derived from the above material, and will form the basic text from which the final publication will be prepared, comprising:

- site narrative: an interpretative structural and stratigraphic history of the site, illustrated by maps, plans, elevations and Annexes.
- artefact reports: the full text, accompanying data and illustrations, relating to those artefacts selected for analysis.
- environmental reports: the full text, accompanying data and illustrations relating to environmental data selected for analysis.

(English Heritage, 1991)

Finally, a published report shall be produced. Please see Annex K 'Publication and Dissemination of Results' for guidelines and standards regarding publication.

19 ANNEX I MOVABLE CULTURAL AND NATURAL ASSETS

Movable cultural and natural assets are hereafter known as artefacts and ecofacts.

19.1 STATEMENT OF INTENT

The collection, documentation, conservation and research of artefacts and ecofacts will result in an ordered, stable, accessible archive, using appropriate methods and practices. This process is known as 'finds work'. Finds work will result in report(s) intended for dissemination. The methods and practices employed must satisfy the stated aims of the overall project.

19.2 INTRODUCTION

The importance of finds work cannot be overstated, as it contributes to the formulation of conservation, preservation, collection, dispersal, presentation, education and management strategies; and also local regional, national and international research frameworks and policies.

Finds work therefore needs to be fully integrated into all stages of the archaeological process, from the earliest stage in project planning.

19.3 STANDARDS

19.3.1 Project specification and design

- Finds work (which can encompass some or all of the activities of recovery, assessment of data, analysis, interpretation, publication, conservation, archiving and storage), will be identified and costed. A project design will be written, setting out a schedule of works in sufficient detail for the work undertaken to be quantifiable, implemented and monitored.
- A recovery policy for archaeological heritage material outlining aims and methods will be written for submission as part of the fieldwork project design and specification. This will reflect the number and type of material expected, excavation methods, sampling strategies, finds retention, the nature of soil deposits and the achievement of the Project research aims.
- Finds collection and discard policies, strategies and techniques will be fit for the defined purpose.
- The programme of work will result in a stable archive. The specification or project design will identify relevant data standards for records organisation and content that will be used in information recording systems employed by the Project. These data standards will be compatible with those of all archaeological work teams involved in mitigation on the pipeline corridor.
- The project design will address assignment of ownership or archaeological material and requirements for the deposition of the archive with a recipient museum or repository.

19.3.2 Fieldwork

All finds and samples will be collected, processed, sorted, quantified, recorded, labelled, packed and sorted according to the project design. In that respect authorised personnel or experts from the relevant Local Museum Directorate or MoC shall be informed regarding the excavation inventory.

19.3.3 Post-excavation assessment

After processing (which includes conservation, recording and marking) the finds assemblage will be assessed to give an overview of its potential to meet the research aims of the Project. This assessment will include the following steps:

- quantification of the assemblage by material and assessment of their condition
- statement of their provenance, including how retrieved (hand excavated, metal detected, within soil sample) and contextual integrity
- provision of identification and date range of the assemblages
- identification of both the extent to which the assemblages can contribute to each of the Project's stated aims and any new aims which may be addressed.
- statement of the value of the archaeological material for research and/or educational use beyond the terms of the Project will also be recorded.

Recommendations for the extent of further analysis of all or selected components of the finds assemblage will contribute to the up-dated project design:

19.3.4 Post-excavation project design

- The updated project design will include a task list indicating duration and cost of each task including archive preparation and deposition and the intended scope and nature of dissemination.

19.3.5 Publication and dissemination

- As it is stated in Clause 6 of the Protocol publication rights of scientists or of committees of scientists that worked or are still working, under the permission of the MoC, Directorate General of Monuments and Museums, on the route of the pipeline, are reserved.
- The publication format will conform to the project design.
- The final report will specify where every component of the archive is deposited, and the existence and location of unpublished documentation, if known, will be indicated.

19.3.6 Monitoring

- Chance finds' work will be included in the overall project monitoring process.

19.3.7 Archives, ownership and deposition

- The requirements for archive preparation and deposition will be addressed at the outset of the Project.
- Article 41 of the *Protection of Cultural and Natural Entities Law, Law No. 2863* states that all movable cultural and natural assets revealed in excavations are to be transferred to the museum nominated by the MoC at the end of the excavations.

- According to the Protocol BOTAŞ shall provide all items (including security of the cultural asset and storage facility) needed by the Museum Directorate during the excavation period for rescue and protection of the cultural asset.
- The proposed recipient museum or other approved repository will be contacted at the project planning stage and arrangements for the deposition of the material archive will be detailed in the specification and/or project design (IFA, 2001).

20 ANNEX J REGULATORY MONITORING

20.1 LEGISLATIVE BACKGROUND

This is an overview of the legislative framework under which the monitoring procedure for the pipeline corridor must operate, and not a comprehensive statement of law. Other legislation may apply at national, regional and local levels.

Article 48 of the *Protection of Cultural and Natural Entities Law, No. 2863* requires that one authorized expert on behalf of the MoC monitors archaeological mitigation works carried out by Turkish contractors, and one or more representatives monitors works carried out by foreign institutions. In addition, archaeological mitigation works will be conducted in the areas permitted by the MoC in the audit of the representatives from concerned museums in the region.

20.2 STANDARDS

All work must be monitored by the archaeological cultural heritage organization whose work team are undertaking the work, BOTAŞ' archaeologists and by representatives of the MoC and the relevant regional museum.

Monitors will be suitably experienced and qualified, or have access to appropriate specialist advice.

Monitoring will be undertaken against the written specification and/or project design.

Monitors will bear in mind the need for flexibility, within the stated parameters, in contractual matters such as staff numbers, budgets of timetable.

All monitoring visits will be documented, and agreed to by each party. Although monitors may choose to visit at any time, they will normally inform the archaeologist undertaking the work of any intended visits in advance. Monitors will respect reasonable requests from the client commissioning the work to attend only at prearranged times, and, if necessary, in the company of the client's representative.

Non-compliance with the agreed specification or project design will be pointed out by the monitor to the archaeologist undertaking the work, and their client if appropriate, at the earliest opportunity.

All monitoring arrangements will be agreed in writing at the outset of the Project.

Any costs for monitoring will be agreed in writing at the outset of the Project. Article 48 *Protection of Cultural and Natural Entities Law, No. 2863* states that costs of the experts from the MoC attending excavations carried out by Turkish delegations or institutions will be met by the MoC. However, the costs associated with the monitoring of works by foreign delegations or institutions will be met by those delegations and institutions.

21 ANNEX K PUBLICATION AND DISSEMINATION OF RESULTS

21.1 INTRODUCTION

It is a generally agreed principle that the results of destructive fieldwork shall be disseminated and the project archive shall be deposited in an accessible public archive (ACAO, 1993) and (English Heritage, 1991). Information that does not enter the public domain is effectively lost.

Knowledge of past work is one major input to decisions regarding the further investigation of a particular area, and when planning projects of all types. The failure of such information to enter the public domain therefore damages the quality of decisions and the archaeological record, and is an absolute loss to archaeologists and to society for whose benefit resources have been spent (IFA 1994).

Therefore, archaeological work teams and the Archaeological Management Consultancy involved in archaeological mitigation strategies on the pipeline project have a duty to disseminate the information obtained from these strategies in forms which are accessible to both to the specialist archaeological community and also the wider public.

Standards for production of specialist academic publications based on the results of fieldwork are set out below.

Additionally, the Archaeological Management Consultancy will actively promote the dissemination of knowledge about archaeological discoveries on the pipeline route, particularly at local level.

Also, archaeological work teams appointed by construction companies will provide acceptable strategies for the promotion of public awareness with their project design or specification.

In addition to the knowledge dissemination aspect of reporting, this element of the work will also report on the effectiveness of the mitigation and management measures adopted so that lessons, if any, can be learned and applied elsewhere on the pipeline route and in other projects.

21.2 LEGISLATIVE FRAMEWORK

This is an overview of the legislative framework under which the publication and dissemination of results procedure for the pipeline corridor must operate, and not a comprehensive statement of law. Other legislation may apply at national, regional and local levels.

According to Article 43 of the Protection of Cultural and Natural Entities Law; Right of Publication:

“Right of publication of the assets to be revealed in the excavations, borings and researches rests with the ones who actually manage the excavation, boring and research on behalf of the delegations and institutions that receive permissions for excavation, boring and research, under the provisions of Law no 5846 on Intellectual and Artistic Works. Heads of excavations are responsible to submit a report to the MoC and Tourism at the end of each excavation period. All rights of publication of the delegations about the cultural and natural assets found by excavation delegations in excavations, borings and researches who do not publish their

scientific reports on the studies of the excavation period within two years at the latest from the completion of the excavation and their final reports within five years are transferred to the MoC and Tourism.”

Scientific reports about the excavations, borings and researches made on behalf of the MoC and Tourism are prepared by the head of the excavation in a manner as to be published. The MoC and Tourism publishes those of them that it deems necessary.

The delegations and persons who do not publish their final reports within the aforementioned period without grounds acceptable to the MoC and Tourism are not furnished with licenses for further excavation. Article 43 of the *Protection of Cultural and Natural Entities Law, No. 2863* stipulates that Heads of Excavations are responsible for submitting a report to the MoC at the end of each excavation period. Scientific reports will be published within two years at the latest from completion of the excavation, and the final report within five years. If these deadlines are not met, rights to publication will be transferred to the MoC.

Article 7 of the *European Convention on the Protection of the Archaeological Heritage* (The Valetta Convention) states that *"for the purpose of facilitating the study of, and dissemination of knowledge about, archaeological discoveries, each Party undertakes to take all practical measures to ensure the drafting, following archaeological operations, of a publishable scientific summary record before the necessary comprehensive publication of specialised studies"*.

Article 9 of the *Valetta Convention* states that:
"Each Party undertakes:

- *to conduct educational actions with a view to rousing and developing an awareness in public opinion of the value of the archaeological heritage for understanding the past and of the threats to this heritage;*
- *to promote public access to important elements of its archaeological heritage, especially sites, and encourage the display to the public of suitable selections of archaeological objects."*

Article 5 of the *World Heritage Convention* states that:
"Each party will undertake

- *to adopt a general policy which aims to give the cultural and natural heritage a function in the life of the community; and*
- *to take the appropriate legal, scientific, technical, administrative and financial measures necessary for the identification, protection, conservation, presentation and rehabilitation of this heritage."*

21.3 STANDARDS

21.3.1 Minimum requirements

The published report will contain the following information:

- The research objectives as expressed in the project design and the updated project design where applicable.
- Circumstances and organization of the work and the date at which it was undertaken.
- Identity of the individual/organization by whom the work was undertaken.
- Summary account of the results of the Project.

- Summary of the contents of the project archive, where it is housed, and how it may be consulted.
- The national grid reference of the site of fieldwork (suitably abbreviated if publication of the exact site location is not in the general interest, or if it is necessary to restrict public access).

21.3.2 Report writing criteria

When writing up the results of a project consideration will be given to the following:

- The report will appropriately reflect the importance of the results of the Project, and deal adequately with the site's social, political and historical context.
- The interpretation of the site will be justified by the evidence presented. Ambiguities in the database will be discussed, and where more than one interpretation is possible the alternatives will be presented.
- The report will present information about what was found in a well balanced logical, accessible and structured way. It will be immediately intelligible to and usable by those who know nothing about the site.
- The extent to which the objectives of the Project have been fulfilled will be discussed, including a critical assessment of the methodologies employed and the lessons learned in terms of the effectiveness of mitigation and management actions in protecting archaeological resources.
- The report will be written clearly and concisely, and will make appropriate, consistent and economical use of other methods of data presentation, for example tables, plans or photographs.
- Specialist reports and their supporting data will be carefully chosen and given their proper value. Specialist contributors must be involved in or informed of editorial decisions affecting the presentation of their work in print.
- All the constituent parts will cross-refer adequately.
- Attention will be drawn to areas of future study potential that it has not been possible to explore fully within the limits of the agreed project design.

(English Heritage, 1991)

Once the text has been completed for publication by the archaeological work team it will be sent to the Archaeological Management Consultancy for approval.

All outputs from archaeological work teams will be approved by the Archaeological Management Consultancy prior to dissemination.

Consideration will be given to publicising the results of archaeological fieldwork on the pipeline project through a range of media from conventional archaeological publication to, for example, display panels, exhibitions and lectures, open days and school visits, radio and television programmes, videos and popular publications and the internet (IFA, 1994).

Appendix C8: Social Management And Monitoring Plans (SMMP)

TABLE OF CONTENTS

1 DETAILED SOCIAL MANAGEMENT AND MONITORING PLANS	2
1.1 Community Liaison Management Plan	2
1.1.1 Introduction.....	2
1.1.2 Objectives	2
1.1.3 Responsibility	3
1.1.4 Monitoring and reporting.....	6
1.1.5 Resources.....	7
1.1.6 Community Relations Management Plan	8
1.2 Construction Impacts Management Plan	15
1.2.1 Introduction.....	15
1.2.2 Objectives	15
1.2.3 Responsibility	16
1.2.4 Monitoring and reporting.....	16
1.2.5 Resources.....	16
1.2.6 Construction Impacts Management Plan	17
1.3 Community Safety Management Plan	28
1.3.1 Introduction.....	28
1.3.2 Objectives and targets.....	28
1.3.3 Accountability.....	28
1.3.4 Monitoring and reporting.....	29
1.3.5 Resources.....	29
1.3.6 Community Safety Management Plan	30
1.4 Employment and Training Management Plan	35
1.4.1 Introduction.....	35
1.4.2 Objectives	35
1.4.3 Responsibility	36
1.4.4 Monitoring and Reporting.....	36
1.4.5 Resources.....	37
1.4.6 Employment and Training Management Plan	38
1.5 Procurement and Supply Chain Management Plan	46
1.5.1 Introduction.....	46
1.5.2 Objectives	46
1.5.3 Accountability and responsibility	46
1.5.4 Monitoring and reporting.....	47
1.5.5 Resources.....	47
1.5.6 Procurement and Supply Chain Management Plan.....	48
1.5.7 Monitoring plan for the construction and operation of the pipeline, AGTs, construction camps and Marine Terminal.....	50

1 DETAILED SOCIAL MANAGEMENT AND MONITORING PLANS

1.1 COMMUNITY LIAISON MANAGEMENT PLAN

1.1.1 Introduction

The Community Liaison Management Plan is the critical element of the overall Social Management and Monitoring Plan (SMMP). Regular and transparent communication both between the Project and local settlements and vice-versa is fundamental to building positive relationships between these two parties. It is also crucial for identifying and managing unexpected situations that will arise on any project the size of the BTC Project.

This plan should be read in conjunction with all other social management plans in the SMMP, as the community liaison team has responsibilities within each of these plans. The focus of this plan is community liaison during construction of the pipeline and marine terminal. However, it also includes some community liaison measures for the operational phase of the facilities. Operational measures should be further developed during the construction phase as understanding between local settlements and the Project increases.

1.1.2 Objectives

The BTC Statement of Social Objectives provides a framework for the Project as a whole. The overarching objective for the community liaison team is to build positive, non-dependent relationships ⁽¹⁾ between the Project and the local settlements during the construction period, which will be the basis of strong relationships during the operational period. These relationships should be based on open communication and mutual respect. Efforts to establish good relations are consistent with the philosophy that the Project (including contract workers) are guests in the project area and the local residents their hosts.

The following more operational objectives, indicators and targets can also be defined.

OBJECTIVE	INDICATOR	TARGET
During Construction To provide settlements affected by the Project with regular information on the progress of work and the implications for these settlements.	Feedback from feedback meetings in affected settlements (see <i>Monitoring and Reporting</i> below).	90% surveyed settlements report that communication is adequate or improved.
To identify any significant new issues and manage any disputes that may arise during the construction period.	Time taken to address a complaint via formalised interview / report procedure.	Less than seven days.
To monitor implementation of mitigation measures and the impact of construction and revise mitigation measures such that overall objectives are met.	See tables below.	

(1) The project will aim to prevent dependency building up between the settlements and the project. The project will not duplicate or replace the legitimate role of existing governance and development structures.

OBJECTIVE	INDICATOR	TARGET
During Operation		
To maintain constructive relationships between settlements and the pipeline and marine terminal operators.	Feedback from feedback meetings in affected settlements (see <i>Monitoring and Reporting</i> below).	90% surveyed settlements report that project related communication is adequate or better.
To maintain awareness of safety issues among settlements along the pipeline route.	Number of incidents involving damage to pipeline.	Zero incidents.
To ensure compliance with land use constraints among land owners.	Encroachment of buildings or restricted crops on the right of way.	Zero encroachment.
To ensure compliance with BTC security exclusion zone and manoeuvring area restrictions.	Transit of local vessels through BTC security exclusion zone (at any time) and transit of local vessels through manoeuvring area (during tanker arrivals).	Zero incidents.

1.1.3 Responsibility

BOTAŞ, as Turnkey Contractor, will have overall responsibility for ensuring that the above objectives are met. BOTAŞ may set additional targets / Key Performance Indicators (KPIs) in these areas to ensure implementation of the various measures.

The BTC Co will be responsible for monitoring the Community Relations Programme as part of its assurance role on the Project.

The Community Relations Teams of BOTAŞ and BTC Co will be empowered to stop the works if they are of the opinion and can demonstrate that the requirements of the Social Management and Monitoring Plan (SMMP) have not been met.

The primary responsibility for carrying out the activities required to take forward the Community Relations Programme will be shared by BOTAŞ and the Construction Contractor.

BOTAŞ

One Community Relations Manager and seven Community Relations Supervisors (CRS) responsible for overseeing all works carried out by the Contractors (one of these CRS's will be dedicated to the marine terminal and another two will be office based – one full time in order to deal with free-phone inquiries related to the marine terminal, the pipeline and associated AGI's, and other part-time in the office and part-time along the pipeline route providing support to the remaining CRS's, as required)

BTC Co

The Community Relations team of the BTC Co will comprise a Community Relations Manager who will oversee all community relations activities (pipeline and marine terminal), supported by a minimum of seven environmental and social inspectors.

Construction Contractors

The Construction Contractor will have day-to-day responsibility for community liaison, and will be the principal point of contact with affected settlements. During construction, the teams in each spread will be laying the pipeline in approximately 20km sections. Each spread team will also be working at discrete locations to construct above ground facilities, operate pipe dumps and run a construction camp. Communication with affected settlements will be achieved by the Construction Contractor providing adequate resources to manage community liaison on each spread. As a guideline, the Construction Contractor will employ the following minimum resources:

- The Contractor shall appoint a full time dedicated Community Liaison Officer(s) (CLO) for the co-ordination of project public relations and external liaison needs. The Contractor shall appoint additional CLO(s) as required in order to fulfil the Scope of Work detailed in the Social Management and Monitoring Plan (SMMP). Furthermore, the CLO(s) will manage the good reputation of both BOTAS and the Contractor. This position shall report directly to the Contractor's Project Manager including regular, on-going liaison with the BOTAS Community Relations Manager. In addition, the CLO(s) shall liaise with third parties who are or may be affected by the execution of the Works as well as interface with landowners.

The CLOs will be Turkish speaking, preferably with an understanding of English and the project area. They will preferably be graduates with a degree or diploma that has a social focus, with proven field skills in communications and a minimum of two years relevant experience, preferably in community relations. A minimum of one in every three CLOs will be female. The Construction Contractor will assign CLOs of adequate competency. All CLO appointments shall be subject to interview and approval by BOTAS.

The Contractor community liaison team will be duplicated for each contract. At the present time it is envisaged that there will be separate contracts for the following:

- A contract for each Lot (thus three contracts in total) – including pipeline construction, pipe dumps, construction camps, access roads and block valve stations.
- One Contract for Marine Terminal – onshore and offshore
- One Contract for the four pump stations and for the pressure reduction station

The roles and responsibilities of the community relations teams during construction are outlined in Box 1 below and further identified in detailed Community Relations Management Plan.

Box 1 Roles and Responsibilities with Regard to Community Relations teams

<p>Construction Contractor: Responsible for Adhering to Requirements of SMMP</p> <ul style="list-style-type: none"> • Provide primary interface between project and affected settlements. • Coordinate and implement required pre-construction activities, namely: <ul style="list-style-type: none"> – produce management plans for community relations, construction camps and transport; – train staff with community relations responsibilities; – implement induction training workshops for all construction staff. • Assist in local recruitment process. • Ensure on-going communication with affected settlements through the following activities. <ul style="list-style-type: none"> – Meet with community leaders and hold community meetings prior to arrival of construction teams in a given locality to inform local residents about construction activities, work schedule, construction staff Code of Conduct, Complaints Procedure, safety issues, dates of future meetings and contact details of Community Liaison staff. – Hold fortnightly meetings in directly affected settlements during construction (monthly close to pump stations and pressure reduction stations) to provide information on progress and provide channel for issues and queries to be raised. – Liaise with contract representatives on major issues arising and ensure that the settlements are kept informed of any expected or unexpected disruption through leaders and by maintaining a community notice board. – Provide a focus for negotiation and resolution of specific disputes with residents if/when they arise, using the Complaints Procedure. • Submit fortnightly and monthly social impacts report to the Project. • Monitor processing and resolution of complaints and ensure alignment across the Project with the Complaints Procedure.
<p>BOTAS: Overall Accountability</p> <ul style="list-style-type: none"> • Assist the Construction Contractors to develop community relations procedures prior to construction start-up, including required management plans, recruitment procedures, contracting procedures, CLO recruitment and training. • Agree Complaints Procedure with the Project, Construction Contractor and settlements. • Monitor implementation of / adherence to all relevant management plans through liaison with the Construction Contractor and meetings with settlements. • Identify breaches of management plans, and recommend corrective action. Stop work in the event of serious breaches that may cause serious impacts on local settlements or on the reputation of the Project. • Track the social impact of the Project against the BTC Objectives and Key Performance Indicators as stipulated in the Social Management and Monitoring Plan (SMMP) and work with the Construction Contractors where amendments to the mitigation measures are required. • Monitor processing and resolution of complaints and ensure alignment across the project with the Complaints Procedure. • Provide regular information to the BTC Co on performance. • Represent the Project at community meetings.
<p>BTC Co: Monitoring and Assurance</p> <ul style="list-style-type: none"> • Review all community relations procedures compiled by Construction Contractors. • Monitor performance through review of information provided by BOTAS (including performance against KPIs and targets), field observations and community meetings and submit recommendations for amendments or additions to community relations procedures. • Make information on the Project available to the public, including performance against KPIs. • Monitoring and assurance of processing and resolution of complaints • Monitoring and assurance of working practice of project security team. • Monitoring and assurance of recruitment and contracting processes. • Provide regular information to BOTAS Site managers on performance. • Assist at community meetings where necessary.

The responsibility for community liaison during operation will fall solely to the BTC Co. However, following the completion of the construction phase, BOTAS, as part of the Turnkey

Agreement, is required to resolve outstanding community relations matters or undertake any work necessary for a 12 month warranty period.

1.1.4 Monitoring and reporting

The BOTAS Community Relations Manager will be responsible for the overall performance of the SMMP against the objectives and Key Performance Indicators (KPI's) identified in the table below. The BOTAS Community Relations Manager will monitor the performance of all the plans in the SMMP and liaise with those responsible for the plans, to improve the measures and their implementation where necessary.

Table 1 Overall Objectives for the SMMP and Key Performance Indicators

Objective	Key Performance Indicator	Target
Build positive, non-dependent relationships between the Project and local settlements	Number of lost days due to community disturbance	To be determined during the pre-construction period as a condition of contract
Minimise negative impacts caused by the Project	Compensation paid as a result of project impacts other than pre-construction land compensation	To be determined during the pre-construction period as a condition of contract
	Injury to or loss of life of community members	To be determined during the pre-construction period as a condition of contract
Optimise potential benefits brought by the Project	% unskilled, semi-skilled and skilled labour from directly affected settlements, district, province and national level	To be determined during the pre-construction period as a condition of contract
	Number of skill training days per 100 staff in addition to HSE training	To be determined during the pre-construction period as a condition of contract
	% goods and services supplied from districts and provinces crossed by the BTC Pipeline	To be determined during the pre-construction period as a condition of contract

The BOTAS Community Relations Manager, along with the other members of the Community Relations team, will monitor progress against the targets for community liaison outlined above as well as against the specific actions set out in the management plan below.

The BTC Co will undertake a quality assurance role. As part of this they will undertake community feedback meetings in all Project affected districts. The first series of feedback meetings will be undertaken within the first three months of construction. Thereafter they will be held every six months or more frequently as required. Information from these meetings will be made available to the BOTAS Project Directorate.

During construction, the BOTAŞ Community Relations Manager will ensure that the following information is reported by the Contractor CLO team, (all reports will be provided to the BTC Co):

Report	Content
Daily Reports	<ul style="list-style-type: none"> • Any community incidents causing injury. • Any community incidents resulting, or with the potential to result in, a stoppage of the work.
Fortnightly Reports	<ul style="list-style-type: none"> • Any disputes that have not been resolved within 7 days. • Summary of the daily reports.
Monthly Reports	<ul style="list-style-type: none"> • Community liaison activities carried out. • Community liaison activities planned. • Performance against targets. • Results of meetings with health and education authorities.

1.1.5 Resources

The following resources will be required to fulfil the objectives of the Community Liaison Management Plan.

Company	Personnel with dedicated community relations responsibilities
Construction Contractor	The Contractor shall appoint Community Liaison Officers as required in order to fulfil the Scope of Work as detailed in the Social Management and Monitoring Plan. Community Liaison Officers will be appointed for each contract.
	The Contractor shall staff his operation in order to perform all the requirements and obligations contained in this specification and all Contract Documents.
BOTAŞ	<ul style="list-style-type: none"> • 1 Community Relations Manager • 7 Community Relations Supervisors
BTC Co	<ul style="list-style-type: none"> • 1 Community Relations Manager • Field team of 7 environmental and social inspectors

In order to carry out the required pre-construction activities, the Community Relations Manager of BOTAŞ and the BTC Co will be appointed six months prior to construction. The seven Community Relations Supervisors (BOTAŞ) and the seven environmental and social inspectors of the BTC Co will be appointed immediately following award of the construction contract.

The Contractor will appoint one Community Liaison Officer six months prior to commencement of construction. The remainder will be appointed no less than one month prior to construction.

1.1.6 Community Relations Management Plan

Mitigation Measure	Implementation		
	Action	Responsibility	Component of the BTC Project to which Measure Applies
Pre-Construction			
Establish Community Relations Team	Recruit Community Relations Manager by June 2002. This person will oversee the development of management plans and carry out community liaison in relation to preparatory construction activities in the summer of 2002. This position will be open to foreign nationals.	BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations
	Recruit and train Community Relations Supervisors immediately following contract award.	BOTAŞ and BTC Co	Pipeline Marine Terminal Pump and Pressure Reduction Stations
	Recruit and train CLOs. The CLOs from each Construction Contractor to be in place no less than one month prior to construction (ie during the construction mobilisation phase of the Project).	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
	Develop management plans for community relations, construction camps and transport. All plans to be authorised by BOTAŞ and BTC Co.	Construction Contractors with guidance from BOTAŞ and BTC Co	Pipeline Marine Terminal Pump and Pressure Reduction Stations

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
Location of Construction Camps	<p>The primary marine terminal construction camp to be located within BOTAŞ property. Should alternative locations be investigated or additional camps proposed, these to be selected by BOTAŞ in line with the following criteria:</p> <ul style="list-style-type: none"> • Camps are not to be placed where they will impact on local infrastructure and utilities. If state land is selected, preference to be given to land that is not cultivated or under intensive grazing. • Construction camps are to be located at least 2km from any settlement, wherever possible, or within BOTAŞ property. • Camps to be located at least 5km from settlements identified as having resistance to construction camps, wherever possible. <p>Once a potential site has been agreed upon, the CLO of the Construction Contractor to undertake on-going community liaison as part of their community liaison responsibilities.</p>	BOTAŞ Construction Contractor	Marine Terminal
Location of Construction Camps	<p>Potential locations for main camps and other smaller temporary camps to be selected by Construction Contractor in line with the following criteria:</p> <ul style="list-style-type: none"> • Camps are not to be placed where they will impact on local infrastructure and utilities. Preference is to be given to old camps used during construction of other projects (eg the East Anatolian Natural Gas Pipeline). • Camps are to be located at least 2km from any settlement wherever possible. Where they are within 2km, reasons to be provided. • Camps to be located at least 5km from settlements identified as having resistance to construction camps (see Section 6) wherever practicable. <p>Once a potential site has been agreed upon, the CLO of the Construction Contractor to undertake on-going community liaison as part of their community liaison responsibilities.</p>	Construction Contractor	Pipeline Pump and Pressure Reduction Stations

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
<p>Construction Camp Management Plan, Code of conduct, Induction Training</p>	<p>Develop a Construction Camp Management Plan to address:</p> <ul style="list-style-type: none"> • Discipline and general behaviour • Community liaison • Communicable diseases • Induction Training <p>Develop and publish a Worker Code of Conduct in the form of posters and distribute to all settlements. These will include the following:</p> <ul style="list-style-type: none"> • Respect for local residents and customs. • Zero tolerance of bribery or requesting gifts from settlements. Any 'gifts' to be immediately reported. No hunting, fishing or unauthorised gathering of products. • Zero tolerance of illegal activities by construction personnel including: involvement in unlicensed prostitution; illegal sale or purchase of alcohol; sale, purchase or consumption of drugs; illegal gambling or fighting. • No use of camp vehicles for non-work business. No use of personnel vehicles for work business. • Limits on hours of movement and use of security passes by all workers. • No access to camps by non-authorized personnel. • No purchase of goods or services at the camp gate. • An alcohol and drugs policy (both in and out of work hours). • Rules on access to, and use of camp entertainment facilities. • Description of disciplinary measures for infringement of the code and camp rules. • Country-wide road speed limits (10% lower than those legally imposed). <p>Provide all staff with training on camp management rules and overall discipline and cultural awareness. Training will include:</p> <ul style="list-style-type: none"> • Camp Rules briefing. • Community relations orientation. 	<p>Construction Contractor with guidance from BOTAŞ to ensure all camp management plans are aligned</p> <p>Construction Contractor</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
Entertainment Facilities	Ensure that appropriate entertainment and recreation facilities are included in plans for construction camps	BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Workforce Health Strategy	<p>Develop and implement a Disease Awareness and Prevention Strategy in liaison with government health authorities and other expert health organisations in Turkey. This will include:</p> <ul style="list-style-type: none"> • Health screening for all personnel, including sub-contractors • Health awareness training for workers including sexually transmitted diseases and HIV/AIDS at induction and then periodically throughout their employment • A personal health programme for workers including check-ups and immunisations, if required • Awareness raising on health issues for settlements close to camps or neighbouring the BTC Marine Terminal (via posters, leaflets, through health clinics, community meetings) • Availability of condoms from camp doctor, without charge (BTC Co to cover cost) • Liaison with local health authorities <p>The camp doctors recruited by the Construction Contractor must be a recognised member of a Chamber of Medicine associated with the Turkish Medical Association.</p>	<p>Construction Contractor BOTAŞ</p> <p>BTC Co</p> <p>Construction Contractor</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Community Relations Training	<p>Train other staff with community relations responsibilities. This should include community liaison teams and work foremen within the Contractor's firm and relevant staff of the Project.</p> <p>Include as part of induction training workshops for all construction personnel. Provide induction training for all staff, both national and expatriate. To include:</p> <ul style="list-style-type: none"> • Community relations orientation to increase awareness about the local area, cultural sensitivities and the Code of Conduct • Sexually transmitted diseases (including condom use) and other health considerations 	<p>BOTAŞ</p> <p>Construction Contractor</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
Inward Migration	Actively discourage inward migration of people seeking employment opportunities on the pipeline, pump stations and pressure reduction station and marine terminal by implementing and publicising the Employment strategy outlined in Employment and Training Management Plan.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Construction			
Provide Information on Construction Timetable	Notify directly affected settlements of any major changes to the project timetable and activities, including residents of their summer settlements, yaylas.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Alcohol Policy	Provide a limited volume and selection of alcoholic drinks to workers within the camps (this is designed to discourage them from seeking alcohol outside the camps.) Enforcement of alcohol free camps will be left to the discretion of the Contractor, as this is usual practice for Turkish Contractors.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Complaints Procedure	For a community complaint: record details of the complaint, its source, its location and date/time of offending event. Telephones must be answered in person wherever possible rather than left to messaging services. Investigate the complaint. Address all complaints that are received from local community members or local authorities within 7 days. Investigate all complaints that have not been addressed within 7 days	Construction Contractor Construction Contractor Construction Contractor BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Access to Construction Camp	Limit entry to construction camp to the workforce only. In the event of a medical emergency being brought to the camp, medical staff will offer immediate emergency medical support and lend reasonable assistance in organising transport to health services.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Inward Migration	Ensure that no-one recruits workers either at construction camps or on the route or at entrance to BOTAŞ property. Publicise the fact that no products will be purchased by the Construction Contractor at camp locations or work sites.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
Inward Migration	<p>Liase with health authorities close to construction camps to identify if there are any increases or diseases linked to construction workers on a monthly basis.</p> <p>Include in monthly report.</p>	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Safety of Neighbouring Settlements	<p>Minimise the hazards posed by construction activities on settlements through good work practices outlined below (see Construction Impacts Management Plan for more detail).</p> <ul style="list-style-type: none"> • Community Liaison meetings on road safety and construction hazards. • Women's meetings on safety measures. • Roads used for access to schools identified and road safety awareness information provided to school children. • Securing the worksite. 	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Operational Phase			
General Measures	<p>Hold regular meetings with settlements</p> <p>Maintain awareness of safety issues</p> <p>Provide monthly reports to the operation company on issues arising from community liaison</p> <p>Inform the company of breaches of safety or and use constraints, or serious disputes</p> <p>Advertise a telephone free-phone number as well as email and postal addresses for residents to report any incidents, concerns or grievances.</p> <p>Monitor the pipeline route to ensure compliance with land use constraints</p>	<p>Construction Contractor</p> <p>BOTAŞ</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations

1.2 CONSTRUCTION IMPACTS MANAGEMENT PLAN

1.2.1 Introduction

The Construction Impacts Management Plan sets out the specific actions that must be implemented to minimise the disruption and negative impacts for all settlements affected by construction and subsequent operation of the BTC Pipeline in Turkey. This includes actions to minimise disruption to infrastructure and natural resources as well as measures to avoid damage to household and community assets such as land, houses, roads, irrigation networks etc. Where damage does occur this plan outlines the actions that should be taken to assist settlements in the compensation process. This plan should be read alongside Appendix C9, which outlines the Overview to the Land Acquisition Plan (OLAP), which is currently being developed. Many of the actions within this plan are continuous, ie they will need to be implemented with each new community or settlement along the route or in settlements neighbouring the marine terminal.

1.2.2 Objectives

The BTC Statement of Social Objectives provides a framework for the Project as a whole. These can be found in Section 17 (Management and Implementation).

The following more operational objectives, indicators and targets can also be defined.

Objective	Indicator	Target
Minimise damage to community and household assets from the construction process	Number of settlements affected by unplanned disruption to services (roads, irrigation, utilities etc) Duration of works in any one location.	To be determined during contract negotiation Less than 40 days, with all safety requisites in place.
'No Net Loss' of infrastructure and utilities to settlements	Number of cases where compensation is paid for permanent loss of infrastructure	To be determined during contract negotiation
No reduction in household health or income as a result of a temporary disruption to infrastructure or services	Number of cases where compensation is paid for disruption to infrastructure or services	To be determined during contract negotiation
No reduction in household livelihoods as a result of permanent loss of natural resources	Number of cases where compensation is paid during or after construction due to damage to natural resources	To be determined during contract negotiation
No reduction in quality of utilities to local settlements as a result of project activities.	Number of complaints by settlements	To be determined during contract negotiation

1.2.3 Responsibility

BOTAŞ, as Turnkey Contractor, will have overall responsibility for ensuring that the above objectives are met. BOTAŞ may set additional targets/Key Performance Indicators (KPIs) in these areas to ensure implementation of the various measures.

The Construction Contractor (particularly the foremen) will have primary responsibility for day-to-day implementation of all the measures. The Contractor Community Liaison Officers will provide support for some measures and will be responsible for ensuring that complaints are rapidly resolved.

The Land Acquisition and Authority Liaison Teams will be responsible for resolving compensation claims for damage to land and infrastructure during construction.

The BOTAŞ Community Relations Supervisors will monitor the implementation of all measures and oversee the resolution of any complaints that are not resolved by the Contractor within seven days.

The BOTAŞ Community Relations Manager will monitor performance, and discuss any performance problems with the Contractor.

1.2.4 Monitoring and reporting

The Contractor will monitor progress against the targets outlined above as well as against the specific actions set out in the management plan below.

The reporting structure is as follows:

Report	Content
Daily Reports	<ul style="list-style-type: none">• Unforeseen disruption to infrastructure and services.• Spread progress review
Weekly Reports	<ul style="list-style-type: none">• Timetabled disruption to infrastructure and services, results of risk assessment and measures that have been put in place to minimise disruption to local settlements.• Work progress highlighting any location where spread has been open for more than 30 days and proposed action.
Monthly Reports	<ul style="list-style-type: none">• Unforeseen disruption to infrastructure and services.• Spread progress review• Opportunities to provide benefits to local settlements and results of any joint interventions

1.2.5 Resources

The construction engineering teams will be able to implement the measures with the assistance of the community liaison teams employed for the Project. The CLOs will be able to advise settlements of measures proposed and seek feedback where necessary on their implementation, advise the engineers on modifications and report to BOTAŞ on the effectiveness of measures in minimising the social and economic impacts.

No additional resources will therefore be required.

1.2.6 Construction Impacts Management Plan

Mitigation Measure	Implementation		
	Action	Responsibility	Component of the BTC Project to which Measures Applies
Pre-Construction			
General Measures: Crossings	Submit a method statement outlining how each crossing on the Right of Way (RoW) will be handled, including irrigation canals of varying sizes. This can be generic for particular types of canals, crossings etc.	Construction Contractor	Pipeline Marine Terminal (on-shore)
	Liase with Muhtars of settlements bordering the pipeline route to identify settlements that move their livestock across the RoW. Agree the location of crossing points across the RoW with landowners, land users (including seasonal grazers) and settlements prior to construction.	Designated State Authority (DSA) Construction Contractor	
	Identify crossings or activities (eg blasting) that will require disruption to infrastructure and services. Where disruption will be for more than 12 hours, carry out a risk analysis of effects on affected settlement . Where there will be a risk to health or livelihood to settlements, or where the disruption is not acceptable to the affected settlements, alternatives must be provided. If alternatives are not available, method statement must be revised.	Construction Contractor	
	Carry out risk assessment of unplanned disruption. Prepare contingency plans that will prevent impacts on health of local residents and compensate for loss of livelihood.	BOTAŞ and BTC Co	
	BOTAŞ and BTC Co to review and approve method statements and contingency plans.		
Liase with relevant authorities to obtain appropriate permits and ensure affected settlements are informed in advance of any planned disruption.	Construction Contractor		

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measures Applies
General Measures: Demarcate Working Areas	<p>Demarcate all working areas prior to construction using fencing, marker posts or signs at least two months prior to the agricultural or honey production season in the year of construction (before November from Ceyhan to the Taurus mountains and before January in all other areas).</p> <p>Specific measures include:</p> <ul style="list-style-type: none"> • In advance of construction, CLOs and settlements to agree areas of danger to livestock and stock proof fencing. • Clearly marking all working areas. • Marker posts placed and maintained to identify the working width. 	Construction Contractor	Pipeline Marine Terminal (on-shore)
General Measures: Line List	<p>During land acquisition, prepare "line list" of items to be protected and / or reinstated in each area. To include: location of state and private infrastructure (eg telephone masts, electricity cables, water pipes) and those items agreed to by DSA and land owners</p> <p>Contractor to identify any item that cannot be protected.</p> <p>Land owners/users or settlements to be notified of any item that cannot be protected and compensation to be paid prior to the commencement of construction as determined in the Overview to the Land Acquisition Process, which is currently being developed (See Appendix C9, the OLAP)</p>	<p>DSA</p> <p>Construction Contractor</p> <p>DSA</p>	Pipeline
General Measures: Pre-Construction Condition	<p>Document the pre-construction condition of the working area (including the right of way and community roads to be used by construction traffic).</p> <p>Include photographic evidence and agree findings with the settlement / local authorities in advance of construction. Provide local authorities with copies of photographs taken.</p>	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
General Measures: Work Progress	<p>Prepare work plan identifying planned dates of construction along the spread and duration of construction activities. No spread to be open in one location for more than 40 days. All requisite safety measures to be in place for full duration of construction activities. Identify locations where duration will be greater than 30 days and measures that will be deployed to ensure that this does not extend to 40 days.</p> <p>To be approved by BOTAŞ. To be communicated to settlements during pre-construction meeting</p>	<p>Construction Contractor</p> <p>BOTAŞ Construction Contractor</p>	Pipeline Marine Terminal (on-shore)

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measures Applies
Roads: New Roads	<p>Consult with settlements and landowners before building any new roads. Identify if settlements want roads to remain after construction or for them to be removed.</p> <p>Review against environmental sensitivities and consult with regulators and decide on whether road will be left or site restored. Communicate decision to settlements.</p>	<p>Construction Contractor</p> <p>BOTAŞ</p>	<p>Pipeline Pump and Pressure Reduction Stations</p>
Utility Services: Electricity	<p>Confirm expected power draw for each site (construction camp, pipe yard, AGI etc)</p> <p>Consult with electricity providers to identify whether this will affect supply to local settlements. If this will affect supply, develop self-generation power plan and provide to BOTAŞ and BTC Co.</p>	<p>Construction Contractor</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>
Utility Services: Water	<p>Confirm likely water draw at individual sites/for each activity (construction sites, construction camps).</p> <p>If local water resources to be used, assess whether this will affect local water resources. No reduction to water resources that will impact upon local settlements to be permitted.</p> <p>Secure appropriate licences.</p> <p>Where bore wells are to be sunk, inform BTC Co.</p>	<p>Construction Contractor Authority Liaison Officer</p> <p>BOTAŞ</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>
Utilities Services: Sewage and Wastewater	<p>Develop plan for wastewater management that demonstrates no net loss on community wastewater infrastructure.</p> <p>Where waste water systems are to be constructed, inform BTC Co.</p>	<p>Construction Contractor</p> <p>BOTAŞ</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>
Utilities Services: Solid Waste Disposal	<p>Conduct an environmental and social impact assessment of all sites proposed for waste management facilities (see Waste Management Plan). This assessment must include community consultation. Report results to BOTAŞ.</p> <p>Where new waste management facilities are to be constructed, inform BTC Co.</p>	<p>Construction Contractor</p> <p>BOTAŞ</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>
Extraction of Aggregates	<p>Identify local sources of aggregate for project needs.</p> <p>Where sites are not licensed, licence must be secured. Environmental and social impact assessment must include community consultation and must be submitted to BOTAŞ and BTC Co.</p>	<p>Construction Contractor</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation		
	Action	Responsibility	Component of the BTC Project to which Measures Applies
Beekeeping: General Measures	<p>Identify any stationary or mobile beehives in settlements within 500m of construction areas (through liaison with either sub-governor, agricultural departments and / or Muhtars).</p> <p>Send an official letter to all Muhtars and sub-governors to warn them not to give permission to mobile beekeepers to position their hives within 300m of construction areas. Where possible mobile beekeepers should position their hives further away from the construction areas in order to reduce the impact of de-vegetation on nectar collection</p>	<p>DSA</p> <p>BOTAŞ</p>	Pipeline
Beekeeping: Stationary Beekeeping	<p>At least two months before the beginning of the production season (in the year that the area will experience construction activity), inform sub-governors and Muhtars, in whose jurisdiction stationary beekeeping is practiced, to remove hives at least 300m from the route.</p> <p>If stationary hives have to be moved during the production season, they will be moved at least 7km away for 15 to 20 days. If this is the result of poor communication from the Project, the Project will investigate and agree additional costs incurred.</p>	<p>Construction Contractor</p> <p>BOTAŞ</p> <p>Construction Contractor</p> <p>BOTAŞ,</p>	Pipeline Pump and Pressure Reduction Stations
Fisheries	<p>Identify any settlements undertaking commercial or artisanal fisheries activities up to 2km downstream of all river crossings (Note: these settlements may be more than 2km from the river itself).</p> <p>Muhtars from identified settlements to submit names and contact details (eg addresses or phone numbers) of all commercial and artisanal fishermen to the relevant BOTAŞ CRS.</p> <p>Any reports of decreased fish yield to be assessed against results of water quality monitoring downstream of river crossings as well as monitoring against compliance with construction requirements for river crossings (see EMP, Appendix C1).</p> <p>Where there is a decrease in fish yield as a result of the project, the necessary compensation to be provided. The level of compensation will be determined through the Project's Complaints Procedure.</p>	BOTAŞ	Pipeline

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measures Applies
Damage to Houses	<p>Assess and document the likely impact on houses close to all routes identified in the Traffic Management Plan, pinch points and above any horizontal directional drilling points.</p> <p>Provide house owner/occupants with a copy of documentation with pre-construction structure assessment.</p>	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Construction			
Safety of Neighbouring Settlements: Crossing Points	<p>Install crossing points across the RoW as agreed with landowners, land users and settlements to ensure safe and uninterrupted access across the RoW.</p> <p>Make all crossing points clearly visible, fenced and sign posted.</p> <p>Provide and maintain safe diversions, temporary bridges, traffic controls, barricades, signs and warning lights as necessary where roads and other used paths cross the pipeline RoW.</p>	Construction Contractor	Pipeline Marine Terminal (on-shore)
Safety of Neighbouring Settlements: Securing the Worksite	<p>Limit the amount of trench open at any one time on each spread to 20km or 40 days construction time, whichever is shorter.</p> <p>Demarcate open trenches with luminous temporary fencing.</p> <p>Erect stock proof fencing in areas of danger for livestock. Agree areas for fencing with relevant settlements and livestock owners in advance.</p> <p>Erect protective barrier fencing (sufficient to impede young children) on sections that come within 500 metres of residential areas, major river or road crossings, and in areas where the trench is deeper than 2 metres.</p> <p>Fence all crossing points over open trench.</p> <p>Secure heavy machinery at agreed locations over night.</p> <p>Storing wastes properly overnight to avoid attracting animals.</p>	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measures Applies
	<p>Prior to construction, provide safety briefings during all scheduled community meetings along the route, within settlements neighbouring the marine terminal and AGI sites, those adjacent to access roads for the marine terminal and residents within BOTAŞ property. This will include information on road safety and also an explanation of the hazards posed by the construction activities (see Community Liaison Management Plan).</p> <p>Employ watchmen to survey the areas of trench on which activity is taking place to discourage public infringement onto the RoW.</p>		
General Measures: Safe Access to Land	<p>Identify the most appropriate quantity and locations for crossing points across the RoW and agree these with landowners, land users (including seasonal grazers) and settlements to ensure safe and undisrupted access across the RoW.</p> <p>Make all crossing points clearly visible.</p> <p>Maintain access to residential and commercial properties</p> <p>Provide and maintain safe diversions, temporary bridges, traffic controls, barricades, signs and warning lights as necessary where roads and other used paths cross the pipeline RoW. Diversions for pedestrians and livestock should not be more than 500 m. Diversions for transport should not prevent running of public transport services.</p> <p>Regarding Pump Station 1, ensure undisrupted and safe movement of cattle from local grazing areas near settlement to their summer pastures (yaylas).</p>	Construction Contractor	<p>Pipeline Marine Terminal (on-shore)</p> <p>Pump Station 1</p>

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measures Applies
General Measures: Use of Land Outside of Demarcated Area	<p>Undertake all construction activities within predetermined working areas for which compensation procedures have been completed.</p> <p>Ensure strict enforcement of requirement to keep within the working area by all workers. Any breach to be considered a serious disciplinary offence that may result in termination of employment.</p> <p>Compensate for any damage that takes place outside of approved working areas, following procedure developed in pre-construction phase outlined above.</p>	<p>Construction Contractor</p> <p>Construction Contractor</p> <p>Construction Contractor in conjunction with DSA</p>	<p>Pipeline Pump and Pressure Reduction Stations</p>
General Measures: Planned Disruption	<p>In the event of planned disruption to utilities or other infrastructure (including water sources for livestock), inform potentially affected settlements of the date, time and duration of the disruption and of alternative supplies (if provided) more than 3 days in advance. Information to be provided through community leaders, by posting a notice on the community notice board and through an announcement in the mosque.</p> <p>Alternative supplies to be identified where risk analysis has shown this to be necessary for disruption of more than 12 hours.</p>	<p>Construction Contractor</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>
General Measures: Unplanned Disruption	<p>In the event of unplanned disruption to utilities or other services, authorities of affected settlement to be informed, whenever possible, within two hours of the reason for the disruption and the expected duration of the disruption.</p> <p>Within 1 day, written information to be provided to the Muhtar or mayors (of district centre) providing details of the disruption, of measures already taken and of any measures that will be taken to assess any damage caused (as determined in contingency plans).</p> <p>Notices to be posted on community notice boards and announced in mosques within the affected settlements.</p>	<p>Construction Contractor</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation	Responsibility	Component of the BTC Project to which Measures Applies
	Action		
General Measures: Protection of Line List	Implement line list of items to be protected along the Right of Way. Any breach to be reported. Implement compensation procedures.	Construction Contractor Liaison with DSA	Pipeline
Roads	Ensure Traffic Management Plan is implemented.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
New Roads / Improvements to Roads	Maintain roads to a reasonable standard throughout the construction phase Ensure that the standard of all roads is returned to pre-construction state after construction.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Waste Management	Store all wastes overnight as per waste management plan, particularly sharp or otherwise dangerous objects and organic waste.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Impact of Noise and Dust	Avoid blasting where this will require evacuation of households.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Post-Construction			
Damage to Existing Roads	On completion of construction, agree with settlements that roads are in a condition that is at least as good as the pre-construction condition, as identified during the pre-condition survey.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
New Roads / Improvements to Roads	Leave roads that have been agreed to by BOTAŞ. Otherwise carry out land restoration.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation		
	Action	Responsibility	Component of the BTC Project to which Measures Applies
New Roads in Ecologically Sensitive Areas	If built, these must be removed following the completion of construction. In the case of removal: liase with relevant settlements to explain the rationale for removal of roads in ecologically sensitive area.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
General Measures: Protection of Line List	Repairs to infrastructure to be monitored for a minimum of three years, to ensure adequacy of repairs carried out	Construction Contractor for first year BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations

1.3 COMMUNITY SAFETY MANAGEMENT PLAN

1.3.1 Introduction

The Community Safety Management Plan includes requirements that need to be integrated into the health and safety procedures of the Contractor and Project on measures needed to ensure the safety of: settlements along the route; settlements adjacent to the marine terminal and residents within BOTAŞ property; settlements along access roads; and the safety of any livestock. The majority of these requirements are included in other plans such as the Health and Safety Requirements and Traffic Management Plan. However, as health and safety is the overriding priority of the Project, they are repeated here for incorporation into the overall project health and safety management programme.

1.3.2 Objectives and targets

The BTC Social Objectives provide a framework for the Project as a whole. These can be found in the general introduction to the Social Management and Monitoring Plan.

The following more operational objectives, indicators and targets can also be defined.

Objective	Indicator	Target
Safety of community members is not affected by project construction or operation	Loss of life or injury to members of the community	Zero
Increased safety awareness in local settlements, such that they are pro-active in managing their own safety with regards to the pipeline and marine terminal	Incidents that could have caused loss of life or injury	To be determined during contract negotiation
No increase in disease levels in local settlements related to construction activities or construction workforce	Disease incidence	No increase

1.3.3 Accountability

The BOTAŞ Health and Safety Manager will have overall accountability for ensuring that the above objectives are met and may set targets in these areas to provide incentives to other parties responsible for implementation of the various measures.

The BTC Co Health and Safety Manager will have responsibility for monitoring activities during both construction and operation and will report publicly and to the executive committee on any serious health and safety incidents.

The Contractor will have primary responsibility for the implementation of these measures during construction.

Responsibility for health safety during operation falls to the BTC Co.

1.3.4 Monitoring and reporting

The Construction Contractor will report to BOTAŞ Health and Safety Manager. Major health and safety incidents such as fatalities or serious accidents will be reported to BOTAŞ immediately.

All reports will be shared with the BOTAŞ Health and Safety Manager who will meet at least monthly to review status and make any necessary revisions to procedures.

The reporting structure is as follows:

REPORT	CONTENT
Daily Reports	<ul style="list-style-type: none">• Any injury to local community member• Serious injury or fatality to workers
Monthly Reports	<ul style="list-style-type: none">• Progress against indicators.• Community complaints regarding health and safety.• Health and safety training undertaken and planned.• Meetings with health authorities and other parties and outcomes• Implementation of planned measures, any difficulties and recommendations.

1.3.5 Resources

It is proposed that the community liaison team within BOTAŞ, the BTC Co and the Construction Contractor will be able to implement these measures with the assistance of the construction engineers on technical details and on specific construction measures.

1.3.6 Community Safety Management Plan

Mitigation Measure	Implementation	Responsibility	Component of the BTC Project to which Measure Applies
	Action		
Pre-construction			
General Measures: Crossings	Submit a method statement outlining how each crossing on the RoW will be handled, including irrigation canals of varying sizes. This can be generic for particular types of canals, crossings etc and should demonstrate how disruption to infrastructure will be avoided wherever possible.	Construction Contractor	Pipeline Marine Terminal (on-shore)
	Liase with Muhtars of settlements bordering pipeline route to identify settlements that move their livestock across the RoW. Agree the location of crossing points across the ROW with landowners, land users (including seasonal grazers) and settlements prior to construction.	Construction Contractor Designated State Authority (DSA)	
	Identify crossings or activities (eg blasting) that will require disruption to infrastructure and services. Where disruption will be for more than 12 hours, carry out a risk analysis of effects on affected settlements. Where there will be a risk to health or livelihood to settlements, or where the disruption is not acceptable to the affected settlements, alternatives must be provided. If alternatives are not available, method statement must be revised.	Construction Contractor	
	Carry out risk analysis of unplanned disruption. Prepare contingency plans that will prevent impacts on health of local settlements and compensate for loss of livelihood.	BOTAŞ, BTC Co	
	BOTAŞ and BTC Co to review and approve method statements and contingency plans.	BOTAŞ, BTC Co	
Liase with relevant authorities to obtain appropriate permits and ensure affected settlements are informed in advance of any planned disruption.	Construction Contractor		

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
Safety of Local Settlements	<p>Develop a programme of traffic safety awareness raising in settlements affected by traffic. Where roads used by children to reach schools are to be used by construction traffic, road safety education to be provided in schools.</p> <p>Conduct traffic safety awareness training in settlements identified in the Traffic Management Plan. Residents of the summer settlements (known as yaylas) associated with the identified settlements, to be included.</p> <p>Compensate for traffic related damage as specified by procedures above and/or in the Overview to the Land Acquisition Process (OLAP), which is currently being developed (See Appendix C9, the OLAP Framework).</p>	<p>Construction Contractor</p> <p>Construction Contractor</p> <p>DSA</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>
Roads: Increased Traffic	<p>Develop Traffic Management Plan which specifies:</p> <ul style="list-style-type: none"> • routes, • speeds, • times of travel, • key roads in terms of local services (particular routes to hospitals, schools and fire services) and delivery of goods to market • measures to be taken to limit impacts on these key roads • timing of road closures and planned diversions • signalling and signing, • method statement for crossings for pedestrians and animals. <p>Traffic Management Plan must demonstrate that:</p> <ul style="list-style-type: none"> • vehicle traffic will be minimised on roads used by children to reach schools during the hours of travelling to and from school • road diversions will not increase the response time of ambulances and fire services. <p>BOTAŞ and BTC Co to review and approve Traffic Management Plan</p> <p>Consult with leaders of settlements that will experience significant increases in traffic volumes. Amend Traffic Management Plan if alternative routes are identified.</p>	<p>Construction Contractor</p> <p>Construction Contractor</p> <p>BOTAŞ, BTC Co</p> <p>Construction Contractor</p>	<p>Pipeline Marine Terminal Pump and Pressure Reduction Stations</p>

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation	Responsibility	Component of the BTC Project to which Measure Applies
	Action		
	Consult with emergency services.	Construction Contractor	
Workforce Health Strategy	<p>Develop and implement a Disease Awareness and Prevention Strategy in liaison with government health authorities and other expert health organisations in Turkey. This will include:</p> <ul style="list-style-type: none"> • Health screening for all personnel, including sub-contractors • Health awareness training for workers including sexually transmitted diseases and HIV/AIDS at induction and then periodically throughout their employment • A personal health programme for workers including check-ups and immunisations, if required • Awareness raising on health issues for settlements close to camps or neighbouring the BTC Marine Terminal, (via posters, leaflets, through health clinics, community meetings) • Availability of condoms from camp doctor, without charge (cost to be covered by BTC Co) • Liaison with local health authorities <p>The camp doctors recruited by the Construction Contractor must be a recognised member of a Chamber of Medicine associated with the Turkish Medical Association.</p>	<p>Construction Contractor BOTAŞ</p> <p>BTC Co</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Training for Local Workers	Provide health and safety training (See Employment and Training Management Plan for further details of employee training)	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Construction			
Traffic Safety	Conduct traffic safety awareness training in settlements identified in Traffic Management Plan (See Construction Impacts Management Plan)	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Water Quality	<p>Monitor water quality after wastewater treatment to ensure this meets international standards.</p> <p>Report water quality assessments to BOTAŞ.</p>	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which Measure Applies
Community Medical Emergencies	In the event of a medical emergency being brought to the camp, the medical staff will offer immediate emergency medical support and lend reasonable assistance in organising transport to health services.	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Safe Access to land	<p>Identify the most appropriate quantity and locations for crossing points across the RoW and agree these with landowners, land users (including migratory herders) and settlements (including BOTAŞ residents) to ensure safe and undisrupted access across the RoW.</p> <p>Make all crossing points clearly visible.</p> <p>Maintain access to commercial and residential properties.</p> <p>Provide and maintain safe diversions, temporary bridges, traffic controls, barricades, signs and warning lights as necessary where roads and other used paths cross the pipeline right of way. Diversions for pedestrians and livestock should not be more than 500 m. Diversions for transport should not prevent running of public transport services.</p>	Construction Contractor	Pipeline Marine Terminal (onshore)
Open Trench	<p>Limit the amount of trench open at any one time to 20km or 40 days whichever is shorter, with all requisite safety measures in place.</p> <p>Erect stockproof fencing in areas of danger for livestock. Agree areas for fencing with relevant settlements and livestock owners in advance.</p> <p>Erect protective barrier fencing (sufficient to impede young children) on sections that come within 500m of residential areas and in areas where the trench is deeper than 2.0m .</p> <p>Fence all crossing points over open trench.</p> <p>Secure heavy machinery in an agreed location over night.</p> <p>Provide safety briefings during all scheduled community meetings along the route prior to construction. This will include information on road safety and also an explanation of the hazards posed by the construction activities.</p>	Construction Contractor	Pipeline Marine Terminal (on-shore)

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation	Responsibility	Component of the BTC Project to which Measure Applies
	Action		
	Employ watchmen to survey the areas of trench on which activity is taking place to discourage public infringement onto the RoW.		
Irrigation Channels: sediment control	Sediment control measures to be used where construction passes channels used by animals for drinking. Where channels are used for drinking by people, alternative sources of supply to be provided to settlements during the period of construction.	Construction Contractor	Pipeline Pump Station 1
Operation			
Community Relations	Employ pipeline monitors to walk pipeline route on a regular basis to identify any breaches of pipeline safety that will affect settlements close to the route.	BOTAŞ	Pipeline

1.4 EMPLOYMENT AND TRAINING MANAGEMENT PLAN

1.4.1 Introduction

Local employment is the main benefit that the Project can directly bring to people living in the settlements that will be affected by pipeline and marine terminal construction and to the districts and provinces through which it passes. There is a high expectation of local employment in the settlements along the route and adjacent to the marine terminal. Implementation of the Employment and Training Management Plan is central to maximising the opportunities for local employment and ensuring a fair distribution of jobs to all affected settlements. This is vital to establishing a good relationship between the Project and the local settlements.

This plan outlines the skills development and training process to ensure that local settlements can benefit from this project in the longer term by developing skills that can help them find employment once the Project is completed. The plan will help the Construction Contractor ensure that it meets the requirements set out in the Tender Documents for managing employment.

1.4.2 Objectives

The BTC Statement of Social Objectives provides a framework for the Project as a whole. These can be found in the General Introduction to the SMMP.

The following more operational objectives, indicators and targets can also be defined (see Tables 2 and 3).

OBJECTIVE	INDICATOR	TARGET
To maximise local employment in skilled, semi-skilled and unskilled categories during construction and operation of the BTC Project	% unskilled, semi-skilled and skilled labour from directly affected settlements, district, provincial and national levels	To be determined during contract negotiation. Expected that targets will not be below those shown in Tables below.
To provide a fair and transparent recruitment process	Community complaints regarding recruitment	To be determined during contract negotiation.
To enhance the local skills base through training provided on the Project	Number of training days per 100 staff in addition to HSE training Variation in skills training	To be determined during contract negotiation

Table 2 Preliminary Employment Targets During Construction (To Be Revised During Contract Negotiation)

	DIRECTLY AFFECTED SETTLEMENTS	DISTRICTS	PROVINCIAL	TURKISH NATIONALS
Pipeline, Pump Stations and Other AGI's				
Unskilled	90%	100%	100%	100%
Semi-skilled	-	60%	80%	100%
Skilled	-	-	30%	80%
Marine terminal				
Unskilled	90%	100%	100%	100%
Semi-skilled	-	40%	80%	100%
Skilled	-	-	30%	80%

Table 3 Preliminary Employment Targets During Operation

	DIRECTLY AFFECTED SETTLEMENTS	DISTRICT	PROVINCIAL	TURKISH NATIONALS
Pipeline, pump stations and other AGI's				
Unskilled	100%	100%	100%	100%
Semi-skilled	Rising to 80% within 5 years	Rising to 100% within 5 years	100%	100%
Skilled	-	Rising to 40% within 5 years	Rising to 80% within 5 years	Rising to 100% within 5 years
Marine terminal				
Unskilled	100%	100%	100%	100%
Semi-skilled	Rising to 80% within 5 years	Rising to 100% within 5 years	100%	100%
Skilled	-	Rising to 40% within 5 years	Rising to 100% within 5 years	-

1.4.3 Responsibility

During construction, the BOTAS Personnel Management will have overall responsibility for ensuring that the objectives for construction are met.

The Construction Contractor will have primary responsibility for the implementation of these measures and for ensuring that they are passed down to all sub-contractors.

The BTC Co will play an assurance role during construction and operation.

1.4.4 Monitoring and Reporting

The BOTAS Community Relations Manager will monitor performance against targets and carry out quality monitoring of activities. The BTC Co will report publicly on progress against targets via the internet on a monthly basis.

1.4.5 Resources

These measures will be implemented by existing human resources within both the Construction Contractor and Project with the assistance of the community relations team employed for the Project. This team will be able to help run employment recruitment at district level.

In order to ensure fairness of the recruitment process BOTAS together with BTC Co will organise an independent third party to be present during recruitment of unskilled workers. An observer from the BTC Co Community Relations team will also attend.

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component to which Measure Applies
	<ul style="list-style-type: none"> - The Construction Contractor will be responsible for the selection of employees from the identified disadvantaged group. - Interviewing of applicants will be done by the Contractor in their offices or in BOTAŞ DSA Offices, whichever is closer. No applicant (from a directly affected settlement) will be required to travel more than a three hour journey by public transport. However, if a settlement does not have access to public transport or if there are cases where the journey by public transport will exceed three hours, then the Construction Contractor will provide transportation for the applicants concerned. The exact locations for recruitment are currently being determined by BOTAŞ. - Following the selection of applicants, the Construction Contractor to notify the selected personnel and forward their names to the BOTAŞ Personnel Management. <p>Where the strategy is different to that proposed in the EIA, this will be agreed with BTC Co.</p>	<p>Construction Contractor supported and monitored by BOTAŞ. Assurance by BTC Co.</p> <p>BTC Co.</p>	
Application for employment for semi-skilled and skilled workers	<ul style="list-style-type: none"> • All applicants to present a residence permit (ie an appropriately authorised document showing location of residence of at least six months) to the Construction Contractors Offices. • For semi-skilled work recruitment will be carried out at the Construction Contractors Offices or the BOTAŞ DSA Offices. • Residents of directly affected settlements and those of districts and provinces through which the pipeline passes or in which the marine terminal is located will receive priority for semi-skilled and skilled employment. However, if there is a shortage of semi-skilled or skilled workers within the priority areas, the Construction Contractor will be allowed to select the personnel that they have previous experience with. An explanation and evidence to be provided to BOTAŞ Personnel Management and BTC Co. as to why the employment targets could not be met. 	<p>Construction Contractor supported and monitored by BOTAŞ. Assurance by BTC Co.</p>	

**BTC PROJECT EIA
TURKEY**

Mitigation Measure	Implementation Action	Responsibility	Component to which Measure Applies
Employment: Integrity of Employment Policy	<p>Develop an Employees' Policy to cover employees and contractors and all sub-contractors involved in the Project. This will include:</p> <ul style="list-style-type: none"> • commitments to pay and conditions, collective bargaining, working hours, wage levels, maternity leave etc, that is in accordance with Turkish regulations and all relevant international standards (eg International Labour Organisation conventions); • drugs and alcohol policy; • disciplinary procedures. <p>BOTAŞ to liaise with NGOs and/or relevant local university departments (eg Labour Economics and Sociology) to identify an impartial third party to oversee the recruitment process (this may vary along the route).</p> <p>Turkey Ministry of Labour to audit the employment process every six months for conformity with the Employment and Training Management Plan.</p>	<p>BOTAŞ, with assurance by BTC Co.</p> <p>BOTAŞ, with assurance by BTC Co Independent third party monitors Ministry of Labour</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Employment: Integrity of Recruitment Process	<p>Draw up detailed job descriptions (identifying whether they are categorised as skilled, semi-skilled or unskilled), employment numbers and durations. These will include a statement of specific skills levels required, including any certification requirements.</p> <p>Establish the pick up points for workers that will not stay in construction camps (eg main roads, district centres).</p>	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Employment: Increase Local Content	<p>Employment strategy to be agreed with Contractor and included in contract agreements. Employment strategy to be passed down to sub-contractor employing more than 50 staff. Targets to become KPIs against which performance is monitored and publicly reported. Procedures to monitor the compliance of the Construction Contractor with employment principles will also be determined.</p> <p>Agree and include in contracts with Contractors and sub-contractors local worker targets for: skilled workers (at provincial and national level); semi-skilled workers (at district, provincial and national level); and unskilled workers (at level of directly affected settlements).</p>	<p>Construction Contractor and the Project</p> <p>BTC Co</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation Action	Responsibility	Component to which Measure Applies
Employment: Information Provision	<p>At least one month prior to the beginning of recruitment, distribute information on the projected number and duration of employment opportunities, recruitment procedures, pick-up points, the location of recruitment centres and dates of recruitment.</p> <p>This will require the following:</p> <ul style="list-style-type: none"> • Distribution of leaflets and posters in directly affected settlements and the district centres, via local representatives (eg the Muhtar or mayor and sub governor) and by placing information at public places such as bus stop, market and coffee house. Request Imam to announce during Friday prayers. • Provision of the Employment Strategy and leaflet to sub-governors of districts along the pipeline route, including Ceyhan and Yumurtalik districts within Adana province (for the marine terminal) and all provincial governors in Turkey. Ensure effective coverage in local and national media, including the Project web page. Publication of the fact that registration for employment and recruitment will not take place at construction camps or at work sites. <p>Ensure that information/adverts regarding employment do not raise unrealistic expectations. Extent and duration of employment to be accurately communicated such that the limitations to employment opportunities are known.</p>	Construction Contractor in liaison with BOTAŞ. Assurance by BTC Co.	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Employment: Skills Enhancement	<p>Develop an Employee Training Strategy. This should include provision for both pre-construction skills training and on-the-job training and identify the contribution that this strategy will make to the local content of employment and to the future employability of workers. It should therefore focus on skills that are transferable or where there is a future market in the local area (eg construction, driving etc).</p> <p>Develop and implement training on HSE and community relations.</p> <p>Set target number of man-days of skills-based training to be provided each month and report monthly against target.</p> <p>Employee Training Strategy to be approved by the Project.</p>	<p>Construction Contractor in liaison with BOTAŞ</p> <p>BOTAŞ</p> <p>Construction Contractor</p> <p>BOTAŞ, BTC Co</p>	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Construction			
Employment: Optimise	For the Pipeline Applicants resident in directly affected settlements will have priority for jobs where a directly	Construction	Pipeline

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation Action	Responsibility	Component to which Measure Applies
<p>Employment: Optimise Local Employment Opportunities</p>	<p>For the Pump Stations and Pressure Reduction Station: Recruitment for unskilled workers is to be held at the district level. Priority to be given to residents of directly affected settlements where these are defined as follows.</p> <ul style="list-style-type: none"> • Settlements within 5km of the station. • Settlements that will experience a substantial increase in traffic loads. <p>Those resident in directly affected settlements again to have priority for semi-skilled employment, followed by those living in the districts and then the provinces in which the pump and pressure reduction stations are located.</p> <p>Skilled workers to be recruited on a nationwide basis in line with the employment targets. Priority will be given to the project affected settlements followed by the districts and provinces through which the pipeline passes.</p> <p>Turkish nationals to be given priority over expatriates. Expatriates only to be used where their particular skills and experience cannot be supplied by Turkish nationals.</p> <p>Ensure that the recruitment process is monitored by independent third party (to be determined by BOTAŞ and BTC Co.).</p>	<p>BOTAŞ and BTC Co</p> <p>Construction Contractor in liaison with BOTAŞ.</p> <p>Independent third party monitors BOTAŞ and BTC Co</p>	<p>Pump and Pressure Reduction Stations</p>
<p>Employment: Optimise Local Employment Opportunities</p>	<p>For the Marine Terminal: Priority to be given to residents of directly affected settlements where these are defined as follows.</p> <ul style="list-style-type: none"> • Settlements of Golovasi / Sahil Satesi, Karatepi and Incirli. • Settlements that experience a substantial increase in traffic loads. • Settlements within a 5km radius of the construction camp (in the case that workers are not housed in an urban centre or within BOTAŞ property). <p>Those resident in directly affected settlements to have priority for semi-skilled employment, followed by those living in other settlements in Yumurtalik and Ceyhan district, and then Adana province.</p>	<p>Construction Contractor in liaison with BOTAŞ.</p>	<p>Marine Terminal</p>

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation Action	Responsibility	Component to which Measure Applies
	<p>Skilled workers to be recruited in Adana and other national centres. Those resident in Adana province to have priority for employment opportunities.</p> <p>Turkish nationals to be given priority over expatriates. Expatriates only to be used where their particular skills and experience cannot be supplied by Turkish nationals.</p> <p>Ensure that the recruitment process is monitored by third party (to be determined by BOTAŞ and BTC Co.</p>	Independent third party monitors, BOTAŞ and BTC Co	
Employment: Integrity of Recruitment and Employment	<p>All employees to be provided with written contracts that state:</p> <ul style="list-style-type: none"> • Job description • Hours • Working conditions • Wage level (normal and overtime) • Rules including drugs and alcohol policy • Disciplinary procedures 	Construction Contractors	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Reporting	Progress against employment targets and training targets to be published monthly on the web and to interested parties	BTC Co	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Operations			
Direct Employment	<p>Support projects to increase the proportion of local staff employed in the operating company in line with medium term targets and with a long-term view of 100% local operation.</p> <p>Provide necessary supervision and training during the initial period of pipeline operation to ensure skills development with a view to 100% local operation.</p> <p>Select expatriate staff for their training and coaching skills, as well as their proven HSE and technical expertise.</p>	BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Enhanced Local Skills	Develop a comprehensive training programme for all national staff.	BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations

1.5 PROCUREMENT AND SUPPLY CHAIN MANAGEMENT PLAN

1.5.1 Introduction

There will be opportunities for using local goods and services for construction activities (for example aggregates / sand, concrete, building materials, timber, straw bales (for silt control), equipment hire, transport services and storage facilities) and also to provide the construction camps with local produce. Many of these opportunities, such as supply of vehicles and materials will be let through supply contracts. Others will depend upon the purchasing strategy of individuals, such as the catering manager of the construction camp. Local people and firms have high expectations with regard to providing these goods and services.

Although the cost of local supply will generally be competitive, there are common barriers to realising these opportunities such as the ability of local companies to provide the quality and quantity of supply necessary, to prepare adequate tenders etc. This management plan outlines the steps required to overcome these barriers and realise these benefits.

1.5.2 Objectives

The BTC Statement of Social Objectives provides a framework for the Project as a whole. These can be found in the General Introduction to the SMMP (See Section 17).

The following more operational objectives, indicators and targets can also be defined.

OBJECTIVE	INDICATOR	TARGET
To maximise local supply of goods and services during the construction and operation of the BTC Project	% goods and services supplied from districts and provinces crossed by the BTC Project	To be determined during contract negotiation
To ensure fair and transparent tendering procedures	Number of justified complaints about tendering procedures	To be determined during contract negotiation
To enable local firms to competitively tender for opportunities	% tenders from firms located in the provinces crossed by the BTC Project	To be determined during contract negotiation

1.5.3 Accountability and responsibility

BOTAS will have overall responsibility for ensuring that the above objectives are met and may set targets to ensure implementation of the various measures.

The Construction Contractor will have primary responsibility for the implementation of these measures during construction and for ensuring that measures are passed down to all sub-contractors.

The BTC Co will have overall accountability for activities and performance during operation.

1.5.4 Monitoring and reporting

The BOTAS Community Relations Manager will monitor performance against targets and carry out quality monitoring of activities. The BTC Co will report publicly on progress against targets via the Internet and to interested parties on a monthly basis.

1.5.5 Resources

The Construction Contractor and Project's existing personnel will implement the measures proposed in this management plan with the assistance of the community relations team employed for the Project. However, most of these measures focus on preparing a strategy. Implementing the strategy is likely to require resources such as funds for training courses and communications. These resources will be best utilised by working through the existing business organisations along the pipeline route (including Adana province for the marine terminal), who have communications channels into relevant local businesses.

BTC PROJECT EIA
TURKEY

Mitigation Measure	Implementation Action	Responsibility	Component of the BTC Project to which the Measure Applies
Procurement of Local Goods and Services In-migration: Purchasing Strategy	Develop Purchasing Strategy for products for construction camps. The strategy will include: <ul style="list-style-type: none"> • Goods that will be required including quantities and any quality requirements • Local sources of these goods. • The goods that will be supplied locally and any additional cost that this will incur. Reasons for not supplying other goods locally. • Process by which the Project will ensure that workers can use recognised local outlets (markets, shops etc) without disturbing impacting negatively on local settlements. 	Construction Contractor	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Construction			
Procurement of Local Goods and Services	Invite third party to monitor contracting procedures.	BTC Co	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Reporting	Report on progress against targets on Project website.	BTC Co	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Operations			
Procurement of Local Goods and Services	Develop and implement a purchasing strategy that aims to maximise supply of goods and materials for permanent facilities from local businesses. The purchasing strategy also to include details on how the BP and BOTAŞ HSE Standards will be met.	BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations
Reporting	Report on progress against targets on website.	BOTAŞ	Pipeline Marine Terminal Pump and Pressure Reduction Stations

1.5.7 Monitoring plan for the construction and operation of the pipeline, AGIs, construction camps and Marine Terminal

1.5.7.1 Introduction

Responsibility for the monitoring of the SMMPs is as follows:

- the CLO team for the construction Contractor is responsible for monitoring day-to-day adherence to the SMMP and will implement aspects of the SMMPs, where relevant;
- the BOTAS Community Relations Team to monitor implementation of / adherence to the SMMP through liaison with the construction Contractor and meetings with settlements;
- the BTC Co Community Relations Team will undertake a quality assurance role, and will support BOTAS on identified monitoring actions.

This Monitoring Plan serves the purpose of ensuring that the commitments of the Contractor are adequately adhered to. As a result, the responsibilities within this plan fall largely to BOTAS, although support is provided by the BTC Co Community Relations Team and independent third parties on identified monitoring actions.

Section 1.5.7.2 and Section 1.5.7.3 outline the monitoring actions, responsibility for monitoring and frequency and timing thereof for the construction and operation phases respectively.

1.5.7.2 Monitoring Plan for the Construction of the Pipeline, AGIs, Construction Camps and Marine Terminal

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
COMMUNITY RELATIONS			
Community Relations Training	Review materials for training course Spot check training course	BOTAŞ Community Relations Team and BTC Co Community Relations Team BOTAŞ Community Relations Team	Before implementation of training Once for each training course conducted prior to construction
Worker Induction Training (by Contractor CLOs)	Review induction training materials and induction training course. Spot check training course	BOTAŞ Community Relations Team	Before implementation of training One spot check for each unskilled, semi-skilled and skilled recruitment drive
General Community Relations Management	Spot attendance at pre-construction meetings to: <ul style="list-style-type: none"> • assess whether appropriate information is being provided to settlements • to assess whether sufficient information is being collected from settlements in order to ensure effective mitigation (eg identification of bee owners) Spot attendance at community meetings during construction to: <ul style="list-style-type: none"> • assess whether complaints and issues are being dealt with effectively • gauge the feelings of community members towards the Project Spot monitoring on whether liaison with informal settlements (eg herders) who are potentially affected by the construction process have	BOTAŞ Community Relations Team	Fortnightly for community meetings at construction camp affected locations. Meeting each month for settlements along pipeline route. Fortnightly for informal settlements along route.

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
	been consulted with. Check for written reports of meetings, talk with these communities informally to ask whether they have been consulted		
Complaints Procedure	<p>Spot check on distribution of contact details (of Contractor CLO and BOTAŞ Community Relations Supervisors) and notification of Complaints Procedure to local settlements.</p> <p>Spot follow up of complaints recorded in complaints register to assess whether complaints have been adequately addressed and within the agreed upon timeframe.</p>	<p>BOTAŞ Community Relations Team</p> <p>BOTAŞ Community Relations Team and BTC Co Community Relations Team</p>	<p>Prior to construction phase</p> <p>Monthly</p>
Construction Camp Disciplinary Procedures	<p>Review HR Records, disciplinary log books and complaints register at construction camps to:</p> <ul style="list-style-type: none"> • ensure that construction camp rules and Code of Conduct are being implemented effectively and adhered to by construction staff • assess the effectiveness of the Complaints Procedure and community liaison following any incident. 	BOTAŞ Community Relations Team	<p>Monthly, after the camp has been in operation for one month. If issues found in first review are minor, monitor every two months. If major issues are found, then review monthly, until issues are being managed satisfactorily.</p>
General Review of Community Relations Mitigation Measures	<p>Monitor any changes to community relations mitigation measures via:</p> <ul style="list-style-type: none"> • formal review meetings with the Contractor CLO team • review of formal requests for changes to mitigation measures • spot checks to identify where mitigation has changed but BOTAŞ and the BTC Co have not been notified. To be carried out via general review of mitigation activities (actual versus those agreed in the EIA). 	BOTAŞ Community Relations Team and BTC Co Community Relations Team	<p>Every month for first three months and then on a six monthly basis or as needed.</p> <p>Monthly for first 6 months and then every three months</p>
HEALTH AND SAFETY			
Community	Spot monitoring of accident incidence rates for community members and	BOTAŞ Community	Monthly

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
Safety	<p>full review of any serious incidents.</p> <p>Spot monitoring of community traffic safety meetings to ensure that they are being carried out and that the information presented is sufficient to minimize the likelihood of accidents.</p>	Relations Team and BOTAŞ Safety manager	Monthly for first 6 months and if safety briefing is considered acceptable, revert to once every six months. If briefing is not of sufficient quality then continue at two to three spot checks every four months.
Implementation Of General Safety Measures During Construction	Spot monitoring of implementation of safety measures during construction as outlined in the Community Safety Management Plan	BOTAŞ Community Relations Team and BOTAŞ Engineering Project Manager	Monthly for first three months. If implementation of mitigation measures is proceeding appropriately, reduce monitoring to every second month, with review of written activity reports submitted on a weekly basis.
Worker Safety Training	Monitor HR records to ensure training is provided to all workers and spot monitor all courses (general health and safety, safe driving training, job specific safety) provided to ensure training is adequate	BOTAŞ Community Relations Team	Prior to construction
Worker Health	<p>Monitor HR records to ensure that:</p> <ul style="list-style-type: none"> • health awareness training is provided to all workers • a personal health programme for workers including check-ups and immunisations (if required) are being carried out. <p>These courses and programmes to be spot monitored.</p>	BOTAŞ Community Relations Team	<p>During the first three months of construction</p> <p>Prior to construction (for immunisations) and once every six months for the personal health programme</p>
Community Health	Monitor HR records to ensure that awareness raising is being provided on health issues for settlements close to camps, including availability of free condoms from camp doctor (BTC CO to cover cost). Spot checks to	BOTAŞ Community Relations Team BTC CO	Within one month of construction camp being constructed and occupied

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
	be carried out on these courses.		
LAND AND RESOURCES			
Compensation For Decreased Access To Marine Resources	<p>Monitor success of compensation package (and other mitigation measures) to maintain levels of livelihood prior to development of the BTC Project (livelihood indicators to be developed prior to construction)</p> <p>Monitor access to Golovasi Port throughout construction and operation</p>	<p>Responsibilities for internal and external monitoring currently being developed under the Resettlement Action Plan (RAP). BOTAŞ Community Relations Team</p>	<p>Prior to construction and every month during construction</p> <p>Fortnightly during construction</p>
Fisheries	<p>Review documentation identifying settlements undertaking fishing activities</p> <p>Monitor any reports of decreased fish yields and resolution of reported incidents</p> <p>Spot check allocation of compensation for decreased fish yield</p>	<p>BOTAŞ Environmental Team. Assurance by BTC Co. BOTAŞ BOTAŞ Community Relations Team</p> <p>BOTAŞ Community Relations Team. Assurance by BTC Co.</p>	<p>Prior to river crossing</p> <p>One month after monitoring programme is started. Thereafter, every three months</p> <p>One month after river crossing, repeat after three months</p>
Bee Keeping	<p>Review documentation identifying presence and type of bee keeping activities</p> <p>Spot check the marking of expropriation areas prior to the start of the honey production season</p> <p>Spot check written notification to Authorities on the positioning of hives more than 300m from the RoW, prior to construction</p>	<p>BOTAŞ</p> <p>Assurance by BTC Co.</p>	<p>Prior to construction</p> <p>Two months prior to construction</p> <p>Prior to construction</p>

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
	Spot check that hives have been moved away from the RoW (300m if moved before onset of production season; 7km if moved during production season)		Prior to construction
Land Compensation	See OLAP in Appendix C9.	Responsibilities for internal and external monitoring currently being developed under the Resettlement Action Plan (RAP).	-
Access to Land	Spot check the identification and suitability of crossing points across the RoW Review relevant Contractor CLO documentation to ensure that consultation with landowners and land users regarding location of crossing points has taken place	BOTAŞ Community Relations Team	Prior to construction
In-Migration	Consult with local authorities and/or Muhtars, teachers, Imams and Council of Village Elders to assess occurrence of in-migration as a result of the BTC Project. Where there are reported concerns regarding in-migration, employment and procurement practices will be assessed in terms of the increases in population (due to in-migration).	BOTAŞ Community Relations Team	One month prior to construction. Thereafter, every three months for a one year period.
EMPLOYMENT & SOURCING			
Employment strategy	Assess construction Contractor's employment strategy to: <ul style="list-style-type: none"> • ensure that it meets the Project Objectives of maximising local employment • ensure reasonable geographic spread along the pipeline route • validate the process for identification of applicants to be prioritised for employment Review job descriptions to be provided at recruitment centres to ensure accurate and adequate information is provided	BOTAŞ Community Relations Team, BTC Co Community Relations Team and an independent third party monitors, (eg NGO) BOTAŞ Community Relations Team and BTC Co Community Relations Team	Prior to recruitment for construction Prior to recruitment for construction and as new job descriptions are developed.
Publicise Recruitment /	Spot check that the employment strategy is being publicised to all relevant stakeholders	BOTAŞ Community Relations Team and	Prior to recruitment for construction

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
Recruitment / Purchasing Strategy		BTC Co Community Relations Team	
Recruitment Targets	Monitor recruitment targets through monthly reports from construction Contractor	BOTAŞ Community Relations Team and BTC Co Community Relations Team	Monthly
Geographical Distribution of Unskilled Workers	Sample monitor employment records to check that new unskilled workers are being employed when the Construction Contractor moves to a new camp site. Review of employment records to be supplemented with spot checks at work site during change over of unskilled staff.	BOTAŞ Community Relations Team, BTC Co Community Relations Team with independent third party monitors eg NGO	Before and after changing of camp sites.
Equality of Recruitment Process	Sample monitor recruitment days to ensure equality of recruitment process	BOTAŞ Community Relations Team, BTC Co Community Relations Team with independent third party monitors, eg NGO	Presence at three recruitment days per recruitment centre in initial recruitment round.
Selection of Personnel	Sample monitor employment records to ensure that selected personnel are residents from the identified project affected settlements and fall within the identified disadvantaged groups	BOTAŞ Community Relations Team, BTC Co Community Relations Team with independent third party monitors, eg NGO	Presence at three recruitment days per recruitment centre in initial recruitment round, followed by monthly spot checks at work sites.
Working Conditions	Sample audits of Construction Constructor's HR documentation recording working conditions for all workers. This should include inspection of records of hours worked, wages paid, disciplinary actions taken, etc.	BOTAŞ Human Resources and Community Relations Teams	Twice in first three months. If conditions meet local legal requirements and international standards, spot review every six months. If standards have not been met, spot review every month until standards are

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
	Spot monitoring of working conditions against local, national and international regulations	Independent third party monitors	reached. As above
Skills Enhancement	Review programme for skills based training (pre-construction and on-the-job), ensuring it meets objectives outlined in the Employment and Training Management Plan Review HR records detailing man-days of skills based training against targets set in the Employee Training Strategy Spot check training courses.	BOTAŞ Community Relations Team and BTC Co Community Relations Team	Pre-construction Fortnightly One spot check for each contractor
Procurement of Local Goods and Services	Review of purchasing arrangements against local sourcing plan and targets/KPIs set during bid negotiations	BOTAŞ Community Relations Team and BTC Co Community Relations Team	Fortnightly
CONSTRUCTION IMPACTS			
Implementation Of General Construction Mitigation Measures	Spot checks at RoW, construction sites and affected settlements to ensure mitigation measures are being implemented. This will look specifically at: <ul style="list-style-type: none"> • Implementation of measures to avoid disruption to infrastructure such as telecommunications, electricity, gas and water • Implementation of measures to avoid disruption of irrigation • Implementation of measures to ensure safe movement of livestock and access to grazing areas • Implementation of community safety measures (fencing near residential areas, fencing on public trench crossings, warning lights and warning signs at open areas of trench) • Suitable diversions are in place where necessary • Dust and noise mitigation measures are in place 	BOTAŞ Community Relations Team and Engineering Project Manager	Fortnightly for first 3 months. If implementation of mitigation measures is proceeding appropriately, reduce monitoring to monthly with review of written activity reports submitted on a weekly basis.

**BTC PROJECT EIA
TURKEY**

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
	<ul style="list-style-type: none"> • Alternative water sources are provided as appropriate • Construction activities are taking place only within approved construction areas and these approved areas are clearly demarcated • Sediment prevention measures are in place as appropriate • Quality of repair work done on any damaged property (eg houses, fencing, irrigation channels, etc.) is acceptable to the Project and has been agreed as acceptable with the land owner. With housing, repaired state to be compared with documentation from pre-construction assessment • Equipment secured appropriately over night and night security and storage measures are being implemented (eg organic waste removed, night watchmen employed, lighting over open trench) 		
Traffic Management Plan	See Environmental monitoring measures in Appendix C5		
Additional Project Sites	<p>Verify that appropriate social impact assessment and consultation has been completed for any additional sites to be used by the project (eg waste sites, aggregate sites, additional camps or pipe yards.)</p> <p>Review documentation of community consultation data</p> <p>Spot monitoring of community meetings for the consultation process associated with new sites</p>	BOTAŞ Community Relations Team	<p>As needed</p> <p>One month prior to first data being used</p> <p>Spot monitor initial meetings held. If procedures considered inadequate, all meetings to be attended until required standards are met.</p>
Condition Of Roads	Routine monitoring of standards of roads being used during construction process (as identified in the TMP) against initial documentation	BOTAŞ – Engineering Project Manager	Monthly for first three months. If implementation of mitigation measures

BTC PROJECT EIA
TURKEY

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
			outlined in Section 6 is proceeding appropriately, reduce monitoring to fortnightly with review of written activity reports submitted on a weekly basis.

1.5.7.3 Operational Phase Monitoring Plan (Pipeline, AGIs, Construction Camps and Marine Terminal)

MITIGATION MEASURE	MONITORING ACTION	RESPONSIBILITY FOR MONITORING	FREQUENCY/TIMING
Community Relations – General	Random presence at community meetings to monitor community attitude towards pipeline, marine terminal and AGIs Spot follow up of complaints recorded in complaints register to assess whether complaints have been adequately addressed	BOTAŞ Community Relations Team	Every six months
Community Safety	Review documentation from pipeline monitors to assess the extent to which any breaches in pipeline safety have occurred. Spot follow up on recorded incidents to assess whether incidents have been adequately addressed.	BOTAŞ Community Relations Team	Monthly
Local Employment	Monitor local employment figures against identified targets Report employment figures on website	BOTAŞ Community Relations Team	Monthly
Skills Enhancement	Monitor implementation of employee training strategy (pipeline and Marine terminal) and target number of man-days of skills-based training	BOTAŞ Community Relations Team	Every three months
Procurement of Local Goods and Services	Monitor sourcing of goods and materials against identified targets Report on progress against targets on website.	BOTAŞ Community Relations Team	Every three months
Fishing (Marine Terminal)	Monitor access to Golovasi Port On-going monitoring of success of compensation package (and other mitigation measures) to maintain levels of livelihood in the long term (livelihood indicators to be developed during on-going studies on fishing impacts)	BOTAŞ Community Relations Team	Every two months Annually
Decommissioning Study	Monitor decommissioning study, both in terms of the process and use of findings	BOTAŞ Community Relations Team	Three years before de-commissioning

Appendix C9: Overview Of Land Acquisition Process (OLAP)

1 OVERVIEW OF LAND ACQUISITION PROCESS (OLAP)

1.1 INTRODUCTION

This section outlines policies and principles to be applied in cases where project construction activities and operations involve impacts on land, non-moveable assets and land-based livelihoods. Detailed land acquisition and compensation procedures are still being formulated based on International Finance Corporation (IFC) requirements. Project land acquisition and associated livelihood impacts will be addressed in accordance with international good practice as embodied in the policies and guidelines of the IFC/World Bank Group. Requirements contained in the Turkish legislation and the Host Government Agreement (HGA) will also be complied with.

The principal policy instrument governing project impacts resulting from land expropriation is World Bank/IFC OD 4.30 *Involuntary Resettlement*. OD 4.30 is invoked where the involuntary taking of land results in people experiencing economic or physical displacement through one or more of the following circumstances:

- relocation or loss of shelter;
- loss of assets or access to assets;
- loss of income sources or means of livelihood, whether or not the persons must move to another location; and
- loss of access or restriction of access to communal resources and services.

Projects with any of the foregoing impacts are required to prepare a Resettlement Action Plan (RAP).

Through careful pipeline alignment and the siting of facilities, the Project has avoided impacts on housing and the need to physically relocate households. The project will, however, involve impacts on land, other productive assets, and livelihoods through:

- temporary use of land for construction purposes;
- permanent acquisition of land for the pipeline and four permanent pump stations and one pressure reduction station;
- the building or expanding of access roads as well as the temporary acquisition of land for construction and storage camps; and
- the establishment of a Security Exclusion Zone and Manoeuvring Area for the BTC jetty.

The project will impact both privately and publicly owned land. This appendix outlines the principles that are being followed to address land acquisition and associated impacts on land owners, users and occupiers. More detailed information on the extent of impacts, and the framework and procedures to be employed by the Project to mitigate these will be provided in a RAP that is currently under preparation. The overriding objective is to allow landowners, tenant farmers and other users to resume their pre-project activities on the land around the pipeline upon completion of construction.

1.2 OBJECTIVES

The construction of the Project in Turkey, including the oil pipeline, the pumping stations, pressure reduction station, construction camps, pipe yards and access roads, will require the acquisition of about 3,105 hectares (ha) of land, on either a temporary or permanent basis. To keep the expropriation of land to a minimum and to avoid physical and economic dislocation, the Project has adopted several measures, including:

- Routing away from settlements to minimize expropriation (both permanent and temporary);
- Minimizing Project land use and reinstating the land;
- Facilitating the re-use of land by adjacent owners post-construction¹, subject to minimum safety restrictions²;
- Determining compensation values based on extensive data collection and market analysis, and providing compensation before project construction begins, as required by Turkish legislation;
- Establishing a process of consultation with the affected populations and with local public and civil society organizations to ensure that there is a full understanding of Turkish legislation and of World Bank/IFC guidelines, and implementation the Project's arrangements for expropriation and compensation;
- Where possible, incorporating preferences voiced during the consultations with local people and government, NGOs and other stakeholders.

The objective of the OLAP is to demonstrate these measures and show that the Project follows the Turkish legal framework and World Bank/IFC guidelines on resettlement and compensation. It is also to illustrate that the Sponsor will create efficient mechanisms for monitoring compliance with these guidelines and will allocate sufficient monetary resources to cover the costs of mitigation of adverse affects created by the Project and for monitoring expenditures.

The World Bank/IFC guidelines cover “the involuntary taking of land resulting in loss of assets or access to assets and/or loss of means of livelihood, whether or not the affected persons must move to another location.”³

The World Bank/IFC directives on resettlement are as follows:

“Resettlement is involuntary when it occurs without the informed consent of the displaced persons or if they give their consent without having the power to refuse resettlement. Displacement may be either physical or economic. Physical displacement is the actual physical relocation of people resulting in a loss of shelter, productive assets or access to productive assets (such as land, water, and forests). Economic displacement result from an action that interrupts or eliminates people's access to productive assets without physically relocating the people themselves IFC's policy applies in either situation.” (IFC Handbook for Preparing an Overview of Land Acquisition Plan. 2001)

¹ Excluding the land that has been used for the construction of above ground installations.

² This benefit to the landowner/land user has not been taken into consideration when determining fair compensation for expropriation, in order to ensure that compensation reflects the true value of land.

³World Bank OD 4.30 (1990).

Affected populations in the Turkish segment of the BTC Project fall into four main categories:

- (i) private landowners;
- (ii) public landowners;
- (iii) users of private and/or public lands; and
- (iv) fishermen in the vicinity of the BTC Marine Terminal.

No physical resettlement will take place, but the potential for economic displacement would concern a relatively large number of people. The OLAP is prepared to ensure that all affected parties are fairly and equitably compensated and assisted in restoring their livelihoods. The OLAP thus ensures that:

- there are mechanisms for fair and transparent compensation for lands acquired from private owners, whether these lands are formally or customarily owned, and also that arrangements have been made for compensating tenant farmers;
- there is an adequate legal framework for the compensation of the public sector, especially for the acquisition of Treasury and forestlands, which adequately protects the public interest. This framework does not allow public resources to be captured by private interest without compensating the public;
- the rights of the users of private land are recognized and they are compensated for assets and crops; and
- the rights of users of public lands who are not owners of public lands, especially forests and pastures, are recognized. The Turkish legislation provides for compensation to the relevant public agencies but not to the individual and community users⁴. The OLAP has made an effort to estimate the losses that may accrue to forest communities as a result of the loss of a narrow strip of land and is developing strategies to compensate for the losses. The loss of income of other users of public lands will also be recognized and compensated.

1.3 PROJECT SPECIFIC LAND REQUIREMENTS

The project in Turkey will make use of 939 hectares of land permanently and 3,105 hectares temporarily during a three-year construction period. This is comprised of a construction corridor 28m wide and 947km long in areas other than forest and 22m wide and 123km long in areas defined as forest by the Ministry of Forestry⁴.

The total area of land permanently required by the Project is as follows:

- The total land area required for the 8m pipeline corridor is 838 hectares.
- The four pump stations and one pressure reduction station require approximately 63.5ha.
- The 52 remotely actuated block valves require approximately a site 40m x 40m. The total land to be permanently expropriated for the block valves and check valves is approximately 6.5ha.
- The permanent access roads require approximately 30ha.

⁴ For example, the compensation for publicly owned forestlands would go to the Forestry Department for re-forestation and for development programs in forest villages rather than targeted specifically for Project affected communities or individuals.

⁴ The total forest area acquired by the Project is less than 0.0001% of forests available in each affected province. This is also true for other categories of land.

The project will temporarily acquire the following:

- A temporary construction corridor of 20m wide and 947km long in areas other than forest, and 14m wide and 123km in forest areas. Total land required for the construction corridor is 2,066.5 hectares.
- Land for the three primary construction camps will require approximately 44ha.
- Land for campsites associated with the four pump stations and one pressure reduction station comprise 56ha.

1.4 POTENTIAL LAND AND LIVELIHOOD IMPACTS

Land and related livelihood impacts of the BTC Project will include the following:

- Permanent losses consisting of:
 - land and related income for the 8m corridor, AGIs, block and check valve locations, access roads and other ancillary works;
 - trees / perennial crops and assets in the 28m construction corridor (22m in forest areas);
 - income derived from fishing within the Ceyhan Marine Terminal Security Exclusion Zone and Manoeuvring Area for the BTC Jetty; and
 - reduced potential use of land for other purposes (such as for home building).
- Temporary losses consisting of:
 - cultivated land, with resultant loss of income for owners/tenants/other users for the construction period. The construction period is planned for approximately 32 months, although for most locations along the pipeline, only two growing seasons will be affected;
 - restricted access to grazing lands and pasture, due to;
 - crops at the time land is occupied for construction.

1.5 WORK UNDERTAKEN TO DATE

The land acquisition process preparation began with:

- Launching a census of potentially affected private land owners of affected land plots, including those who have customary ownership for their lands;
- Utilizing the analyses of a survey of a representative sample of potentially affected people who live in settlements within a four kilometre pipeline corridor and around other Project facilities to understand better their socio-economic characteristics and vulnerabilities;
- Conducting specific in-depth studies on potential losses in pasture and forestlands (these losses are not easy to assess in view of the narrow strip of land being temporarily or permanently acquired);
- Visiting a significant number of potentially affected communities during preparation of the impact assessment for information/discussion including land acquisition and valuation issues;
- Conducting: i) representative surveys of directly affected resident and absentee owners (as part of this, information was shared to affected people on the local legal framework and its applications); and ii) consultations with civic organisations on land acquisition issues;

- Evaluating feedback from communities in moving from the basic engineering phase to detailed engineering, so that the requests received for route changes are adequately considered and addressed; resulting in modification of the alignment to avoid physical displacement of households where appropriate; and
- Reviewing the legal framework and procedural issues and designing actions that would close the gaps between local policies and those of the World Bank/IFC.

1.6 POLICY AND LEGISLATIVE FRAMEWORK

The local legislative framework provides adequate compensation to affected private and public parties in a fair and transparent manner. The major difference between Turkish legislation and World Bank/IFC guidelines concerns compensation for private parties who use public lands without any signed agreement. The Turkish Law compensates the public at large for the expropriation of public lands while World Bank/IFC guidelines provide a process for compensating the specific private parties using the public lands. The OLAP contains elements to close this gap. Consultation and disclosure requirements are also different and measures to close the relevant gaps are likewise designed.

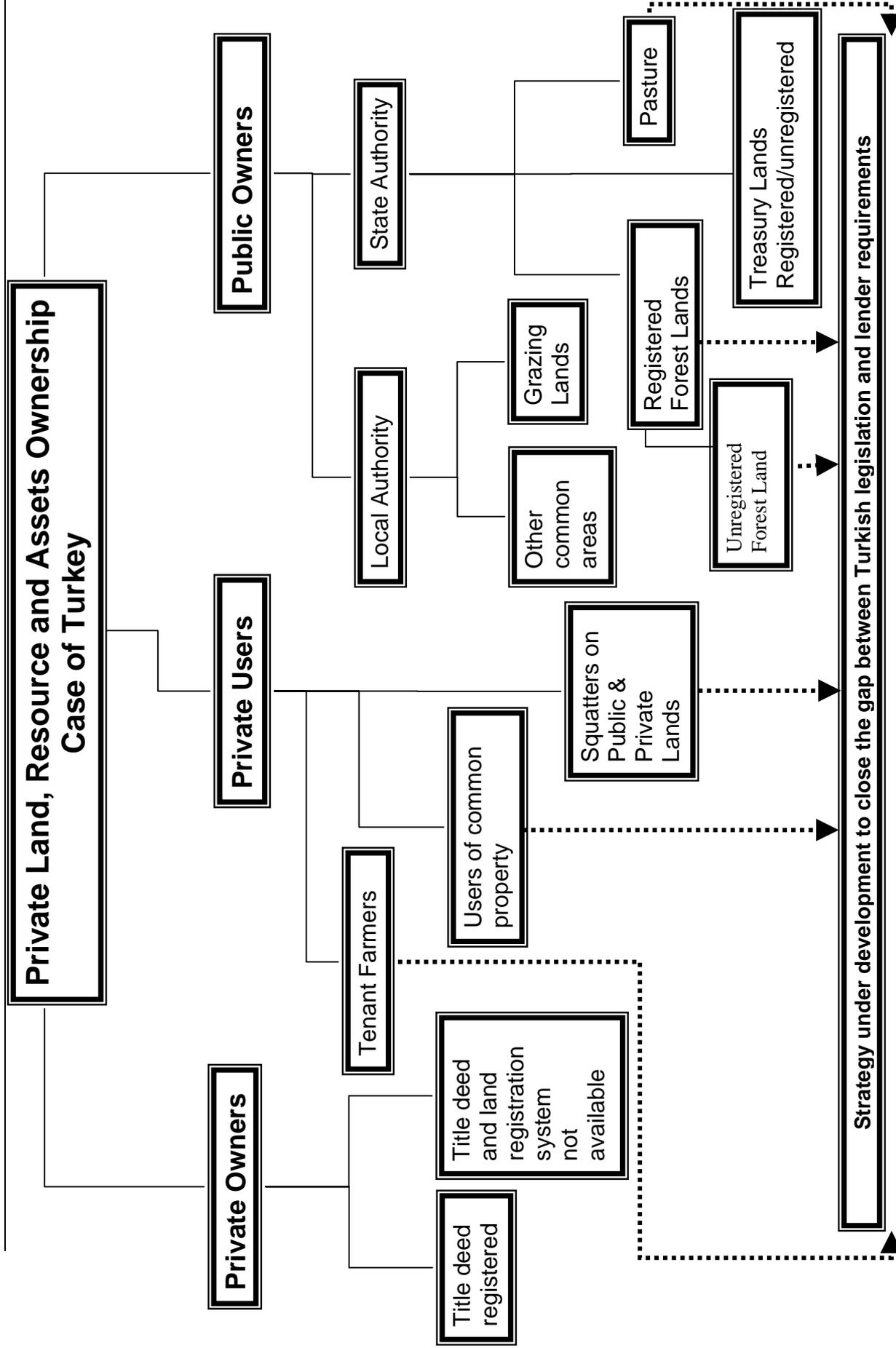
Project obligations relating to land acquisition and compensation are defined by the following:

- Legislation of the Republic of Turkey
- Host Government Agreement (HGA) with the Republic of Turkey
- Policies and guidelines of the IFC (part of the World Bank Group)

Major changes were made in the Turkish Expropriation Law in 2001 aimed both at protecting the interests of people and shortening the period of dispute over resolution of expropriation and compensation cases, especially by promoting negotiated solutions between directly affected populations and the Project developers. However, the Law and its application are so recent that issues around its implementation remain largely unknown, both among the affected populations and Turkish public and legal institutions. Consequently, those aspects of previous legislation and implementation procedures that were considered most burdensome and unfair, and which have been changed in the new Law, continue to adversely influence the perceptions of potentially affected people. Thus, an important objective of the land acquisition process is to:

- Use the new legislation to reached negotiated agreements based on a full understanding by affected people of their rights under the new Law; and
- Devise mechanisms to deal with gaps between Turkish Law and World Bank/IFC policies on resettlement and compensation as, for example, with regard to individual and community users of public lands.

Figure 1.1 illustrates different land ownership and land use scenarios within Turkey and identifies those aspects that will be addressed by the OLAP such that the gaps between Turkish legislation and lender requirements are closed.



The principal legislative and policy instruments that will govern project land acquisition and resettlement are summarised in the following table. The list is not exhaustive.

Table 1.1: Principal Policy and Legislative Instruments Applicable to BTC Land Acquisition

Law/Regulation	Date of Promulgation	Application to the BTC Project
Republic of Turkey Legislation		
Turkish Constitution	Amended in October 2001	The Turkish Constitution as amended in October 2001 includes major elements to protect the public interest and private owners during the expropriation process.
Expropriation Law	Law No: 2942 Date of amendment: 22.06.2001	Defines procedures and institutional responsibilities for the documentation and formal registration of land ownership and defines all the necessary steps to be made before the land is subject to expropriation. Enforces land valuation and negotiation for the land and assets values.
Forestry Law	Law no: 6831 Enforcement date: 8/9/1956	Defines the expropriation procedures for forestlands.
Law on Transportation of Oil by Pipeline	Law Number: 4586 Date of Enforcement: 23 June 2000	Defines the status of Pastures, Grassing Lands and other non-registered state owned lands.
Pasture Law	Law no: 4342 Date of amendment 28/2/1998	Defines procedures on Pasture Lands.
Procurement Law	Law Number: 2886 Date of Enforcement: 10/9/1983	The Procurement Law (no. 2886) allows tenant farmers to be compensated for crops and other assets that they may have on lands they have leased provided that they have written contractual arrangements. The same Law also allows the recognition of informal or verbal contractual arrangements.
Title Deed and Cadastral Law	Law no: 2644 Date of Enforcement 29/12/1934	The Land Deed and Registration Law (no. 3402) provides for the establishment of real estate ownership that is not registered in the cadastre.
Civil Code	Law no: 4721 07.12.2001 (date of amendment)	Defines share of the land between heirs where the Land in is registered in the name of deceased person.

**BTC PROJECT EIA
TURKEY**

HGA		
HGA	Date: 18/11/1999	Defines the relationship between Government of the state on the one hand, and Project Investors and/or other parties authorised by Project Investors.
IFC/World Bank Policies		
World Bank Operational Directive 4.30 Involuntary Resettlement	1 June 1990	Describes the World Bank's requirements for projects involving land acquisition and resettlement. Defines key issues to be considered, planning procedures to be followed, & matters that must be addressed in a Resettlement Action Plan.
International Finance Corporation Good Practice Manual "Doing Better Business through Effective Public Consultation and Disclosure"	IFC draft guidelines-1999	Recommends procedures and good practice for public consultation and information disclosure.

1.7 LAND ACQUISITION PROCEDURES

1.7.1 Introduction

The key preliminary land acquisition steps are guided by the optimisation of the route from technical, economic and social perspectives. The technical considerations are based primarily on safety and environmental considerations and are aimed at the identification of the best technical choice. The economic considerations require the identification of least cost construction alternatives, within technically sound and environmentally safe alternatives. The social considerations, on the other hand, are aimed at the minimization of social risks as defined by community support and ownership of the Project. More importantly, they aim at avoiding physical displacement and the minimization of livelihood impacts. During the evaluation of the pipeline route alternatives, these social considerations were explicit as were the openness to receive community feedback. Many steps involved local official stakeholders and/or the affected institutions and individuals. Thus, the Designated State Authority (DSA) had many opportunities to share project information and to receive feedback to modify the siting and routing arrangements.

1.7.2 Notification of the cadastral parcels through which the corridor passes

One of the first steps in the land acquisition process is to obtain the cadastral record of land parcels and to transfer them into a computer based Geographical Information System (GIS). Landowners are identified where title deed registry is available, in accordance with the Expropriation Law. In the areas where title deed registry systems are not available cadastral, surveying has been undertaken for the unregistered parcels. If villagers have been using the unregistered parcels for more than 20 years, the section of the land crossed by the pipeline is registered in the name of the users. If the land is not used and not registered then by law (Transportation of Oil by Pipelines) the section that is going to be expropriated is registered in the name of the Treasury and then transferred to BOTAŞ. This is a lengthy and cumbersome process but it is a critical step towards fair and full compensation of the owners. This is also a key step in the establishment of a baseline to monitor the progress of the land acquisition process.

1.7.3 Valuation and compensation

After the identification of owners and users and all relevant information about the parcels are obtained, BOTAŞ will apply to the provincial governorship for the acquisition of the parcels. Article 8 of the Expropriation Law specifies the process for land and asset evaluation. After the decision for expropriation is taken, the administration that undertakes expropriation will assign one value appraisal commission (or sometimes more than one) comprising of at least three individuals in order to determine the estimated cost of the immovable property. In addition, reports from experts, institutions or organizations specialising in this field and information from the Chambers of Industry and Trade and local real estate agencies will be used.

1.7.4 Negotiations

The DSA from BOTAŞ will establish a negotiation commission to negotiate directly with the owner or customary owner of affected assets (land, trees etc). The Project encourages affected owners to reach a mutually agreed compensation value. All documentation will be agreed with the entity or owner(s) involved and will be subject to notarisation in accordance with Turkish Law. All transaction costs including fees for notarisation, registration and transfer taxes will be borne by the Project.

1.7.5 Eligibility for compensation

In determining eligibility for compensation, the BTC Project will follow the IFC/ World Bank policies (OD 4.30). Accordingly, a lack of legal title will not disqualify people from receiving compensation. A census of all project-affected people, including informal dwellers, has been undertaken as part of project resettlement planning. Based on the findings of the census and of associated socio-economic surveys, compensation assistance measures have been formulated to address the needs of different categories of affected people.

1.7.6 Land re-instatement

So far as is feasible, all agricultural and pasture land will be restored to at least the condition it was in prior to construction. This will be the responsibility of the Construction Contractor and will be monitored by project personnel. Normal agricultural practices will then be allowed to continue over the pipeline, however there will be some restrictions with regard to planting deep rooted trees over the pipeline, deep ploughing and the construction of any building over or immediately adjacent to the pipeline.

1.8 MONITORING AND EVALUATION

A monitoring and evaluation programme that involves both internal monitoring (by Project participants) and external monitoring (by third parties) has been developed, to meet the objectives of:

- ensuring the timely and effective completion of the land and asset acquisition and compensation processes;
- establishing a participatory monitoring and evaluation mechanism so that affected people and other stakeholders can provide rapid, accurate and objective feedback to support and sustain aspects of the resettlement action plan, and so that timely action can be taken to refine aspects of the plan, where appropriate;
- confirming through both qualitative and quantitative mechanisms the effectiveness and sustainability of income and livelihood restoration measures; and
- providing an independent assessment of implementation of the RAP.

The responsibilities, schedule, budget and implementation activities for monitoring and evaluation have been defined; these are described in the RAP.

Appendix D Legislation and Policy Framework

1 INTRODUCTION

This Appendix D of the EIA outlines the legislation, standards and policies applicable to the BTC Project in Turkey in two sub-sections. The first sets out the environmental legislation and policy framework and the second sets out the social legislation and policy framework.

2 LEGISLATION AND POLICY FRAMEWORK

The BTC Project will be designed, built and operated in a manner intended to conform to a number of legislative and regulatory requirements and other guidelines and policies, the main categories of which are set forth below:

- National legislation (including the Intergovernmental Agreement and Host Government Agreement – the IGA and HGA, respectively – which form a prevailing legal regime under domestic law in Turkey);
- International Finance Institution (IFI) Policies;
- International Conventions in force in Turkey;
- BOTAŞ and BP Corporate Policies applicable to the project.

With the exception of the Constitution of Turkey, the standards set forth in the IGA and the HGA override national legislation to the extent such national legislation is inconsistent. Accordingly, the complete range of standards applicable to the BTC Project in Turkey includes not only what is set forth in the IGA and the HGA, but also Turkish environmental legislation and applicable international standards and guidelines to the extent that they are not inconsistent with the IGA and HGA. Finally, while the applicable national legislative and regulatory requirements together establish the minimum standards of performance below which the conduct of BTC Project Activities must not fall as a matter of law, the BTC Project will also be implemented in accordance with standards, practices and guidelines requiring conduct that will in many instances exceed those legal requirements. These include BOTAŞ corporate Health, Safety and Environment (HSE) policies, BP Corporate HSE policies applied by BOTAŞ for purposes of the BTC Project and the requirements of various IFIs with which BTC agrees to comply as part of the BTC Project financing.

This section of the EIA discusses the relevance of each of these to the BTC Project. The descriptions of the IGA, HGA and other laws and documents included below are summaries only and are qualified by reference to the full text of the actual laws or documents.

2.1 NATIONAL LEGISLATION

The national environmental legislation applicable to the BTC Project is comprised of the following sources of law listed hierarchically in accordance with the Constitution and other laws of Turkey:

- The Constitution of Turkey;
- The IGA;
- The HGA;
- The existing laws of Turkey on environmental protection, safety and emergency situations, to the extent they do not conflict with the IGA or HGA;
- Other regulatory requirements as set forth in ‘sub-legislative’ normative acts such as Governmental Decrees, Regulations, Communiqués, Ministerial Orders, Instructions etc, to the extent they do not conflict with the IGA or HGA.

The national environmental legislation applicable to the BTC Project, moreover, is covered by a covenant from the Government of Turkey to the MEP Participants to restore the initial Economic Equilibrium in case of any negative change to the national legislation in force as of the Effective Date (See Section 7.2(xi) of the HGA). Obviously, the policies of BOTAŞ, the IFIs and, where applicable BP, will be applied to the BTC Project as they exist from time to time regardless of this stability covenant.

Each of these pieces of legislation is reviewed below.

2.1.1 Constitution of Turkey

The Turkish Constitution does not directly address environmental matters. However, Section III of the Turkish Constitution establishes an ‘environment right’ as one of the Social and Economical Rights and Duties. Under Article 56, *“Everyone has the right to live in a healthy and stable environment. It is the duty of the State and the citizens to develop the environment, to protect environmental health and to prevent environmental pollution”*. Under this Article, it is one of the functions of the State to develop the environment, to protect environmental health and to prevent environmental pollution.

2.1.2 The Intergovernmental and Host Government Agreement Framework

The BTC Project is being implemented within the framework of an Intergovernmental Agreement (IGA) among the three transit countries (the Azerbaijan Republic, Georgia and the Republic of Turkey) and is comprised of a package of documents including the IGA itself, three unexecuted forms of the Host Government Agreements (HGAs) and, with respect to the Republic of Turkey, unexecuted forms of the Lump Sum Turnkey Agreement (LSTK) and the Government Guarantee. Upon ratification by the Parliament of the Republic of Turkey, the IGA document package constitutes binding international law and is included in the Turkish legal system as the controlling domestic law of Turkey governing the BTC Project.

The foregoing IGA document package was ratified by each of the three Parliaments and, in accordance with its own terms, entered into force on September 10, 2000. In October 2000, the MEP Participants executed one HGA with each of the three transit countries and, with respect to the Republic of Turkey, the LSTK and the Government Guarantee. Table 2.1 depicts the Intergovernmental and Host Government Agreement Framework.

Table 2.1: IGA and HGA Agreement Framework Matrix

AGREEMENT	AZERBAIJAN	GEORGIA	TURKEY
IGA Signed and ratified by Governments together with unexecuted forms of the three HGAs, the LSTK and the Government Guarantee appended thereto	✓	✓	✓
HGA Signed by Government and the MEP Participants as private law contracts.	✓	✓	✓
LSTK Signed by BOTAS and MEP Participants as a private law contract.	n/a	n/a	✓
Government Guarantee Signed by Turkish Government and MEP Participants as a private law contract.	n/a	n/a	✓

2.1.3 The IGA

In an effort to ensure more uniform application of environmental, health, safety and technical standards across the three jurisdictions in which the BTC Project will be constructed and operated, Article IV of the IGA states that “[such standards will be] in accordance with international standards and practices within the Petroleum pipeline industry (which shall in no event be less stringent than those generally applied in the European Union).” This more general statement is subsequently elaborated in the relevant provisions of the HGA as described below.

2.1.4 The HGA

In addition to its role as an integral component of the IGA, the HGA is also a contract signed between the Government of Turkey and the MEP Participants. The HGA determines the following components of the legislative and regulatory framework for the conduct of BTC Project Activities:

- The overall legislative framework within which the BTC Project will be constructed and subsequently operated including the technical and design standards.
- The applicable international environmental standards and practices incorporated by reference into the national legislation by the HGA.
- The regulatory requirements applicable to the BTC Project and the administrative responsibilities of different government departments for the BTC Project.
- The liability of the MEP Participants to the State and to third parties for, *inter alia*, breaches of the national environmental legislation.

Each of these components will be briefly summarised below.

2.1.5 The overall legislative framework

Article 13 and Appendix 5 of the HGA detail the environmental, health and safety standards and practices applicable to the project. The main principles of Article 13 include the following:

- The environmental, health and safety standards are set forth in Appendix 5 (Section 13.1);
- If spillage or release of Petroleum occurs, the MEP Participants will take all necessary action as set forth in Appendix 5 (Section 13.1);
- The applicable social impact standards are set forth in Appendix 5 (Section 13.2).

The following is a brief summary of the matters covered in Appendix 5 of the HGA:

- MEP Participants will use their Best Endeavors to minimize potential disturbances to the environment in conducting all Project activities (Clause 3.1);
- Order of priority for actions shall be protection of life, environment and property (Clause 3.1);
- Procedures to be followed in the event of an emergency (Clause 3.2);
- Enactment or promulgation of future environmental standards and practices by regional or intergovernmental authorities shall not apply to the extent they are different from or more stringent than the standards and practices generally prevailing in the international Petroleum pipeline industry for comparable projects applicable as of the Effective Date (Clause 3.3);
- Scoping study and risk assessment requirements (Clause 3.4);
- Contaminated land baseline study requirements (Clause 3.5);
- Environmental Impact Assessment procedures and requirements (Clause 3.6)
- Spill Response Plan procedures and requirements (Clause 3.7);
- General principles to be followed in the preparation of the scoping study, risk assessment, Baseline Study, EIA and Spill Response Plan (collectively termed the “Environmental Strategy Product”) (Clauses 3.8 to 3.11);
- Procedures to be followed in the event of dispute as to the implementation of the Environmental Strategy Product (Clause 3.12);
- Liability for pre-existing environmental pollution, contamination or damage (Clause 3.13);
- Abandonment plan procedures and requirements and post termination obligations (Clauses 3.14 to 3.16).

The general requirements described in Clauses 3.6 and 3.8 to 3.11 have formed the basis for the methodology and structure adopted in the environmental impact assessment for the project. For purposes of technical compliance, as well as for purposes of achieving compliance with the applicable environmental standards and practices, the HGA also sets forth the technical and design standards for the BTC Project.

2.1.6 The applicable international standards and practices

Clause 2 of Appendix 5 of the HGA states that the MEP Participants shall, in conducting all pipeline activities

“Comply with good international Petroleum industry standards and practice generally observed by the international community with respect to Petroleum pipeline projects comparable to the Project”.

2.1.7 HGA Environmental, Health and Safety Regulatory Process

The HGA also specifies that, *inter alia*, all environmental, health and safety approvals shall be provided on a priority basis within thirty (30) days but in no event later than sixty (60) days (subject to the provisions of Appendix 5). Appendix 5 of the HGA also details the regulatory requirements associated with the preparation, submission and publication of various components of the Environmental Strategy product including a scoping study, risk assessment, Baseline Study, the Environmental Impact Assessment and the Oil Spill Response Plan.

The main implementing authority in the field of environmental law and regulation in Turkey is the central government through the Ministry of Environment and its provincial organizations including, primarily, the provincial directorates and committees. Other public entities and agencies may also have roles with respect to environmentally related matters.

The Special Environment Protection Authority was established to deal with particular environmental issues in connection with the ‘Special Environment Protection Areas’ that are declared or to be declared under the Environment Law.

Under the Municipality Law, Municipalities are authorized within the municipal boundaries to monitor the environmental situation. Municipalities may require the polluters to indemnify for loss in cases where an industrial enterprise damages its environment. In addition, the Municipality Law provides the Municipalities with the power to introduce prohibitions and impose fines on those failing to comply with the applicable environmental legislation.

Furthermore, the General Public Health Law establishes Provincial and District Health Committees within the organization of the Ministry of Health and sets out their duties and powers for monitoring and protecting the general environmental health.

2.1.8 HGA principles on environmental and other liabilities

Sections 11.1 and 11.2 of the HGA set forth the principles of liability applicable to the MEP Participants in the event of a breach by them of the applicable environmental legislation. The MEP Participants shall be liable to the State Authorities for loss or damage arising from any breach by them of the HGA or the applicable law; provided, however, that the MEP Participants shall not be liable to the State Authorities for punitive or consequential damages. Moreover, the MEP Participants shall be liable to third parties for any breach of the standards set forth in the HGA or any applicable law.

2.2 THE TURNKEY AGREEMENT

The Turnkey Agreement between the MEP Participants and BOTAŞ was signed on 19 October 2000. This Agreement establishes the obligations of BOTAŞ to “timely and properly perform or cause to be performed in compliance with applicable health, safety, social and environmental standards, all work and services required in connection with the design, engineering, procurement, construction, inspection, start-up, demonstration and testing of the Facilities, including the co-ordination of the designated State Authority’s activities (as

provided for in the HGA) in securing the necessary Rights to Land, the conduct of all environmental evaluations, impact assessments and compliance procedures, provision of any and all material, equipment, machinery, tools, labour” as well as “other services and items required to deliver the fully functional Facilities to the MEP Participants, all on a lump sum fixed price turnkey basis (the Work)” and in accordance with the provisions of the HGA.

Therefore, the obligations of the MEP Participants under the HGA, including those with respect to the development, maintenance and implementation of the Environmental Strategy Product throughout the term of the Turnkey Agreement, have been fully assumed by BOTAŞ under the Turnkey Agreement.

As part of this Agreement BOTAŞ is also required to:

- a. carry out and complete the work so that no act, omission or default by BOTAŞ shall constitute to any breach by the MEP Participants of any of their obligations under the HGA, and
- b. assume and perform all of the obligations and comply with all of the conditions of the HGA on the part of the MEP Participants to be assumed, performed, observed and complied with insofar as they apply to the Work, any part thereof, or any other obligation of BOTAŞ under the Turnkey Agreement.

With regard to environmental, social, health and safety (ESHS) protection standards and safeguards, the Turnkey Agreement identifies certain requirements including but not limited to, the following:

- the Project components are required to constitute a ‘highly reliable and operationally efficient’ system and are required to include, among others, a leak detection system capable of ‘identifying and shutting down the pipeline system within several minutes of a major leak occurring anywhere on the pipeline system’;
- the environmental strategy employed must be in accordance with the standards and practices prevailing in the international petroleum pipeline industry;
- the EIA is required to fulfil World Bank requirements and (by implication) International Finance Corporation (IFC) and other international financial institution (IFI) guidelines and is to be in accordance with the principles of EC Directives on environmental assessment.

2.3 EXISTING NATIONAL ADMINISTRATIVE AND LEGAL FRAMEWORK

2.3.1 Framework legislation and policy

The principal environmental law of relevance to the BTC Project is the Environmental Law of 1983. The principal regulations associated with the Environment Law and which are relevant to the Turkish section of the BTC Pipeline Project are listed below:

- Environmental Pollution Fund Regulation (17 May 1985);
- Regulation on Preservation of Air Quality (TRPAQ) (2 November 1986);
- Noise Control Regulation (11 December 1986);
- Water Pollution Control Regulation (WPCR) (4 September 1988);

- Solid Waste Control Regulation (14 March 1991);
- Hazardous Waste Control Regulation (27 August 1995¹);
- Non-Hygienic Institutions Regulation (26 September 1995);
- Hazardous Chemicals Regulation (11 July 1993);
- Environmental Inspection Regulation (5 January 2002);
- Environmental Impact Assessment Regulation (23 June 1997).

In addition to the above regulations associated with the Environment Law, several other laws and regulations relevant to pipeline construction and operation are as follows:

- Petroleum Law (16 March 1954);
- Law on Transit Passage of Petroleum by Pipelines (29 June 2000);
- Natural Gas Market Law (2 May 2001);
- General Public Health Law (24 April 1930);
- Non-Hygienic Establishments Regulation (26 October 1983);
- Public Settlement Law (21 June 1934);
- Fisheries and Aquaculture Law (22 March 1971);
- Fisheries and Aquaculture Regulation (10 March 1995);
- Law on Protection of Cultural and Natural Entities (23 July 1983);
- National Parks Law (11 August 1983);
- Shore (coastal) Law (4 April 1990);
- Forestry Law (31 August 1956);
- Municipality Law (14 April 1930);
- Harbour Law (20 April 1925);
- Decree with the Force of Law on the Establishment of the Special Environment Protection Authority (13 November 1989);
- Labour Law (1 September 1971);
- Expropriation Law (no. 2942);
- Land Deed and Registration Law (no. 3402);
- Resettlement Law (21 June 1934);
- Communication Law (no. 7201);
- Procurement Law (no. 2986).

All regulations associated with the Turkish Environment Law will be complied with, insofar as they are not inconsistent with related provisions in the Host Government Agreement (see Section 2.1.4).

2.3.2 Existing national administrative and legal framework

Pursuant to Article 2.2 of the BTC HGA and the Letter of Ministry of Energy and Natural Resources dated 27 August 2001, the Energy Transit Pipelines Department of the Ministry of

¹ Please note that the dates referred to are the initial enactment dates of the said laws, which have been revised several times.

Energy is the government's MEP Representative, ie the BTC Participant's primary point of contact with the Turkish government. In addition, there will be several official bodies that will play a role in liaison with the BTC Project and provide expert advice in their specialist areas.

These include:

- Ministry of Energy and Natural Resources;
- General Directorate of Petroleum Affairs;
- General Directorate of Energy Affairs;
- Petroleum Registry;
- Ministry of Public Works and Resettlement;
- Energy Market Regulatory Authority;
- Foreign Capital General Directorate;
- Ministry of Labor and Social Security;
- Ministry of Health;
- Ministry of Environment;
- Ministry of Agriculture;
- Ministry of Forestry;
- General Directorate of Title Deeds;
- Relevant Municipalities or Regional Directorates.

2.3.3 Requirement for preparation of an EIA report

Article 10 of the Turkish Environment Law requires preparation of an EIA report in order to evaluate the potential impacts on the environment that may arise from a project. The HGA sets forth the methodology and structure underlying the environmental impact assessment for the Project. The EIA has been prepared in accordance with Sections 3.6, 3.8, 3.9 and 3.10 of Appendix 5 of the HGA after completion of a scoping study, risk assessment and Baseline Study. These studies, as well as the Oil Spill Response Plan, were prepared in consultation with ERM, a recognized international environmental consulting firm. The EIA will be implemented following Government approval in accordance with Section 3.11 of Appendix 5.

The EIA is a prerequisite for the implementation of the project and must be complete before any other permits can be issued. Moreover, as discussed in Section 3.5, the EIA must comply with World Bank Requirements, EC directive 85/337/EEC (as amended by EC Directive 97/11/EC) and other international standards.

2.3.4 Permitting process for pipelines and associated facilities

In compliance with the Turnkey Agreement Article 3.1.6, the Turnkey contractor must obtain and maintain in effect all Applicable Permits¹ pertaining to the Turnkey Contractor's performance including:

¹ In the Turnkey Agreement, 'Permit' is defined as any valid waiver, exemption, variance, franchise, validation, confirmation, permit, certificate, permission, authorization, licence or similar order or approval of or from any Governmental Authority.

- all Permits necessary to authorise the Turnkey contractor to do business and provide services in the jurisdictions where the work is to be performed;
- all specified building, construction and other permits required to be obtained with respect to the work (excluding permits relating solely to the post-completion operation of the facilities);
- all permits necessary to move, transport and deliver construction and other types of equipment and materials to and from the facility sites and to store, possess, operate or maintain such equipment and materials (whether on or off the facility sites).

2.3.5 Turkish Law on Transit Passage of Petroleum with Pipelines

The Turkish Law on Transit Passage of Petroleum with Pipelines, enacted on 6 June 2000 covers all activities related to the transit passage of petroleum with pipelines including surveys, route selection and engineering works, finance, land acquisition, construction, commissioning, operation, loading, maintenance, management, expansion, decommissioning and environmental rehabilitation after decommissioning.

The requirements of this law include:

- Owners and/or operators of a petroleum pipeline project¹ must enter into and execute project agreements with the relevant public entities in order to benefit from the provisions of the Transit Passage Law (Article 3);
- Appointment of the MoE as authorized agent to make necessary legal arrangements related to the EIA and other environmental legislation (Article 4);
- Compliance with international technical, quality, environment, security and health norms and standards specified in the project agreements during the engineering, construction and operation stages of the Project (Article 5);
- Stipulation that all participants of a transnational petroleum pipeline project have the responsibility not to cause any harm to the environment, including the surface, subsurface, and inland waters, sea, air, lakes, flora, fauna, and other natural resources (Article 7);
- Exempts pipelines within the scope of this law from the limitations and restrictions stipulated by the *Law on Title Deeds* (#2644), *Environment Law* (#2872), *Law on Encouragement of Foreign Capital* (#6224), *Petroleum Law* (#6326), *Forestry Law* (#6831) and other related pieces of legislation for those topics covered by related international agreements.

2.3.6 Land Use Planning/Development Control System

There are no written planning policies specifically related to the development of infrastructure projects in Turkey. However, there are some procedures that have to be followed by developers, which might be considered to be planning policy.

The State Planning Organisation (DPT), reporting directly to the Prime Minister, is the main body responsible for the preparation of *Five-Year Development Plans* and *Annual Implementation Programs* for all sectors of economic activity.

The BTC Project is described in the *Eighth Five-Year Development Plan; 2000 – 2005*, under Section 6 *Pipeline Transportation*. The importance of the BTC Project is acknowledged and

¹ Article 3 defines petroleum pipeline project as all facilities associated with a pipeline across Turkish territory carrying petroleum from and/or to foreign countries.

within Section 6 it is stated that the project will be completed within the implementation period of the Eighth Five-Year Development Plan. In addition, Budget Laws for the years 2001 and 2002 include specific provisions for the BTC Project.

2.4 INTERNATIONAL AGREEMENTS AND CONVENTIONS

The international agreements and conventions on environment related issues that are of relevance to the BTC Project to which Turkey is party are listed below:

- Montreal Protocol on Substances That Deplete the Ozone Layer (and sub. Amendments) (acceded by Law no. 4118 published in the Official Gazette dated 12 July 1995 and no. 22341);
- Vienna Convention on the Protection of the Ozone Layer (acceded by Law no. 3655 published in the Official Gazette dated 20 June 1990 and no. 20554);
- Barcelona Convention on the Protection of the Mediterranean Sea from Pollution (acceded by Law no. 2328 and published in the Official Gazette dated 12 June 1981 and no. 17368);
- Protocol on the Protection of the Mediterranean Sea from Pollution Caused by Discharges from Ships and Aircraft;
- Protocol for Combat and Cooperation in Cases of Pollution of the Mediterranean Sea by Petroleum and Other Hazardous Substances;
- Protocol on the Protection of the Mediterranean Sea from Earth-Based Pollutants (acceded by the Decision of the Council of Ministers dated 18 February 1987 and published in the Official Gazette dated 8 March 1987 and no. 19404);
- Protocol on Special Protection Zones in the Mediterranean Sea (acceded by the Decision of the Council of Ministers dated 7 October 1988 and published in the Official Gazette dated 23 October 1988 and no. 19968);
- International Convention on the Prevention of Pollution of Seas by Ships (MARPOL-73 CONVENTION) (acceded by the Decision of the Council of Ministers dated 3 May 1990 and published in the Official Gazette dated 24 June 1990 and no. 20558);
- Convention on the Protection of the Black Sea from Pollution (published in the Official Gazette dated 6 March 1994 and no. 21869);
- Protocol on the Protection of the Black Sea from Earth-Based Pollutants (published in the Official Gazette dated 6 March 1994 and no. 21869);
- Protocol for Combat and Cooperation in Cases of Pollution of the Black Sea by Petroleum and Other Hazardous Substances (published in the Official Gazette dated 6 March 1994 and no. 21869);
- Protocol on the Protection of the Black Sea from Pollution Caused by Discharges (published in the Official Gazette dated 6 March 1994 and no. 21869);
- Geneva Convention on Long-Range Transboundary Air Pollution (acceded by the Decision of the Council of Ministers dated 21 January 1983 and published in the Official Gazette dated 23 March 1983 and no. 17996);
- Ramsar Convention on Wetlands of International Importance Especially as Wildfowl Habitat (acceded by the Decision of the Council of Ministers dated 15 March 1994 and published in the Official Gazette dated 17 May 1994 and no. 21937);

- Bern Convention on Protection of Europe's Wild Life and Living Environment (acceded by the Decision of the Council of Ministers dated 9 January 1984 and published in the Official Gazette dated 20 February 1984 and no. 18318);
- UN (Rio) Convention on Biological Diversity (ratified by Law no. 4177 published in the Official Gazette dated 27 December 1996 and no. 22860);
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (acceded by Law no. 4041 and published in the Official Gazette dated 20 June 1996 and no. 22672);
- Paris Convention on the Protection of the World Cultural and Natural Heritage (acceded by Law no. 2658 published in the Official Gazette dated 4 February 1983 and no. 17959);
- European Culture Convention (acceded by Law no. 6998 and published in the Official Gazette dated 17 June 1957 and no. 9635);
- UN Convention to Combat Desertification (published in the Official Gazette dated 14 February 1998);
- Basel Protocol on Transboundary Movements of Hazardous Wastes and Their Disposal (published in the Official Gazette dated 15 May 1994 and no. 21935).

Turkey has also ratified several International Labour Organization conventions that are relevant to the BTC Project including:

- Forced Labour (C29, 1970 & C105, 1957);
- Freedom of Association and Right to Organise (C87, 1948);
- Right to Organise & Collective Bargaining (C98, 1949);
- Discrimination (Employment & Occupation) (C111, 1958);
- Equal Remuneration (C100, 1951);
- Minimum Age (C138, 1973).

2.5 INTERNATIONAL FINANCE INSTITUTION POLICIES AND GUIDELINES

The HGA requires that all Project Activities comply with good international Petroleum industry standards and practices generally observed by the international community (Appendix 5, Section 2.1(i)) and both the HGA and the Turnkey Agreement require that Environmental Strategy Products comply with relevant EC Directives (HGA Appendix 5, Section 3.10, Turnkey Agreement, Appendix A, Section 4.3.7). The EIA must also comply with World Bank Guidelines (Turnkey Agreement, Appendix 4, Section 4.3.7.). To satisfy the HGA, Turnkey Agreement, and potential lending agencies and to ensure good practice, all EIA work for the BTC Project is being carried out in accordance with relevant World Bank Group polices and EC directive 85/337/EEC (as amended by EC Directive 97/11/EC).

BTC is classed as a 'Category A' project for the purpose of lender environmental and social review and must be undertaken in accordance with their environmental and social policies. Category A projects must be subject to the full EIA process.

The BTC Project is currently negotiating financing with a number of IFIs. In connection with any financing, IFIs such as the International Finance Corporation, part of the World Bank Group; the European Bank for Reconstruction and Development; and export credit agencies

require compliance with specified environmental and social policies during the term of any financing provided by them. These policies will include environmental standards applicable to the project as well as guidelines covering resettlement and other actions involved in project development and operation. The policies that will apply to the project will be set out in the project loan documentation. The following table, Table 2.2 indicates the policies that might be deemed applicable, and have been considered in developing this EIA. Table 2.2 also indicates why the policies might be deemed of relevance; how they are being addressed by the project, and where they are discussed in the EIA.

Table 2.2 Relevant Polices to the BTC Pipeline

Policy	Relevance to the BTC Project	How It Is Addressed by the BTC Project	EIA Document Reference
<p>IFC OP4.01 Environmental Assessment (October 1998)</p>	<p>Requirement for environmental assessment (EA) of projects proposed for financing.</p> <p>The BTC Project has been classified as Category A. Projects are classified as Category A if they could potentially lead to significant environmental impacts that are sensitive, diverse, or unprecedented.</p> <p>The associated guidelines specify the stages of the EIA process, discuss their objectives and list requirements for each stage, including: screening, scoping and development of terms of reference, preparing environmental assessment report, EA review and project appraisal, and project implementation.</p> <p>EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.</p>	<p>The present EIA addresses issues and requirements relevant to Category A projects as set out in the policy.</p>	<p>Through the development of this EIA report. In particular Section 2 addresses project alternatives and Sections 6 to 8 and 12 to 16, environmental and social impacts and mitigation, respectively.</p>
<p>World Bank / IFC OP4.04 Natural Habitats (November 1998)</p>	<p>OP4.04 embodies the "no net loss" principle, Paragraphs 4 and 5 state:</p> <p>"The IFC will not invest in projects that significantly convert or degrade critical natural habitats or in projects that otherwise affect habitats supporting threatened or endangered species. They will also not invest in projects that significantly convert or degrade other natural habitats unless careful and comprehensive review and analysis indicate that:</p> <ol style="list-style-type: none"> 1. No feasible alternative exists for the project or it's 	<p>The BTC Project, and BTC Co recognise the importance of protecting biological diversity, and in particular ensuring that protected natural habitats are avoided where at all possible through the route selection process. Where an overall project assessment indicates that this is unfeasible, and the overall benefits substantially outweigh the environmental costs, direct mitigation measures have been developed and will be implemented to minimise the impact. Where a residual impact remains, the project will</p>	<p>See Sections 5 and 10, Baseline Description, and supporting reports of this EIA for a discussion of habitats and protected areas.</p>

Policy	Relevance to the BTC Project	How It Is Addressed by the BTC Project	EIA Document Reference
<p>siting; 2. The projects overall benefits substantially outweigh its environmental costs; 3. Project plans include mitigation measures acceptable to IFC; 4. Project sponsors have the ability to implement necessary conservation and mitigation measures or the project includes plans that are acceptable for developing this capacity.</p>	<p>The World Bank's general policy regarding cultural properties is to assist in their preservation, and to seek to avoid their elimination.</p> <p>OPN11.03 states that the Bank normally declines to finance projects that will significantly damage non-replicable cultural property.</p> <p>"Cultural Property" is defined as "sites having archaeological, palaeontological, historical, religious and unique natural values".</p> <p>Along the BTC pipeline route areas and sites have been identified that are important from an archaeological or cultural perspective. Appropriate actions are being taken at these sites to prevent significant damage.</p>	<p>implement compensation plans and environmental investment projects to offset this impact and ensure that there is no net loss to biological diversity.</p>	
<p>OPN11.03 Cultural Property (September 1986)</p>		<p>The project has gathered detailed cultural heritage and archaeological information through literature searches and consultation with national and international experts. Extensive non-intrusive integrated baseline surveys involving teams of national and international experts have been completed and sites of potential importance avoided where possible through route selection. Remote sensing tools, including aerial photographs have been used to identify potential sites. Intrusive Phase 2 surveys will be undertaken to define the extent of any potential sites prior to construction, enabling further avoidance measures to be taken. Pre-excavation of sites will take place if no alternative route can be identified, and the overall project benefits outweigh any costs. Direct site protection measures will be implemented during the construction phase. Archaeologists will be present to monitor any late finds during construction. Plans are being developed to manage, record and preserve finds. The Cultural Heritage Management Plans will be subject to regular review and revision to ensure that the Project Plans remain appropriate and effective.</p>	<p>See Sections 5 and 10, Baseline Description, and supporting reports of this EIA for a discussion of important cultural heritage features. A Cultural Heritage Management Plan is included in Appendix C7.</p>

Policy	Relevance to the BTC Project	How It Is Addressed by the BTC Project	EIA Document Reference
<p>OD 4.30 Involuntary Resettlement (January 1, 2002)</p>	<p>The principal World Bank instrument governing project impacts resulting from land expropriation is World Bank OD 4.30 <i>Involuntary Resettlement</i>. There are presently two involuntary resettlement policies within the World Bank Group. The project has adopted OD 4:30 <i>Involuntary Resettlement</i> on the advice of the World Bank Group. World Bank OP 4:12 <i>Involuntary Resettlement</i> is invoked where the involuntary taking of land results in people experiencing economic or physical displacement through one or more of the following circumstances: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the persons must move to another location; and, (iv) loss of access or restriction of access to communal resources and services. Projects entailing any of the foregoing impacts are required to prepare a Resettlement Action Plan.</p> <p>Through careful pipeline alignment and facilities siting, the BTC Turkey project will minimize impacts on housing and the need to physically relocate households.</p> <p>The project will also involve impacts on land, productive assets, and livelihood through (i) temporary use of land for construction purposes; (ii) permanent acquisition of land (or imposition of rights to construct and operate a pipeline under existing ownership) for the pipeline alignment and two permanent AGIs; and, (iii) imposition of restrictions on land use adjoining the pipeline. The project will impact privately owned land, municipal and state land, some of which is leased to private entities and individuals.</p>	<p>Project land acquisition and associated livelihood impacts will be addressed in accordance with international good practice as embodied in the policies and guidelines of the IFC/World Bank Group. Requirements contained in Turkish legislation and the project HGA will also be compiled with.</p> <p>The overarching goal of the BTC Project is:</p> <p>To restore or enhance project affected peoples' living standards, income earning capacity and production to at least without-project levels</p> <p>In compliance with OD 4.30, the BTC Project is completing Resettlement Action Plan (RAP). This document is currently under preparation using international specialists experienced in World Bank Group Policies and national land procedures. The RAP will be prepared through consultation with project-affected people and will be publicly disclosed once approved by IFIs.</p> <p>The RAP will also address the following key issues:</p> <ul style="list-style-type: none"> Grievance mechanisms Valuation of land and compensation determination Liaison with communities Negotiations Documentation of land use and/or ownership Eligibility for compensation Land re-instatement Monitoring and evaluation 	<p>See Appendix C9, Overview of the Land Acquisition Process of this EIA for a discussion of the land acquisition process. This section outlines the principles that are being followed to address BTC land expropriation and associated physical and economic impacts on land owners, users and occupiers in Turkey, and outlines in more detail how the above key issues will be addressed and compliance achieved.</p>

Policy	Relevance to the BTC Project	How It Is Addressed by the BTC Project	EIA Document Reference
Policy on Disclosure of Information (September 1998)	<p>The World Bank Group requires consultation with project stakeholders including the potentially affected population, NGOs and other interested parties about the project's environmental and social aspects, and to take their views into account. The consultation should begin at an early stage of the project design. IFC's publication "Doing Better Business Through Effective Public Consultation and Disclosure – A Good Practice Guide" provides "step-by-step" practical guidance on how to prepare a constructive public consultation programme and effectively disclose information.</p> <p>Under the World Bank Group policies, the BTC Project must complete a Public Consultation and Disclosure Plan (PCDP).</p>	<p>A Public Consultation and Disclosure Plan (PCDP) has been prepared for the BTC Project in accordance with the World Bank Group policies.</p> <p>Public Consultation and Disclosure of information have been carried out through the design stages of the BTC Project and will continue throughout construction and operations.</p> <p>A scoping report was completed in the early engineering design phase and summarised into an "Environmental Information Pack" and circulated among NGOs, scientists, academic institutions, regulators and other interested stakeholders. Comments were taken into consideration during the execution of the EIA baseline studies and impact assessment. Consultation continued during EIA preparation.</p> <p>The draft EIAs will be disclosed in accordance with the HGA and World Bank Group requirements.</p>	<p>The BTC Project consultation process is discussed in more detail in Section 3 Consultation.</p> <p>The full Public Consultation And Disclosure Plan is Provided In Appendix A1.</p>
IFC Policy Statement on Child/Forced Labour (March 1998)	<p>NOTE * Consideration of this policy is a requirement for all World Bank Group investments and does not presuppose that the Bank believes that the Project is involved in such practices.</p>	<p>The BTC Project or its contactors will not employ Child or Forced Labour.</p> <p>The invitations to Tender and Contracts contain appropriate clauses to address this.</p>	<p>Employment issues are addressed in Sections 6 and 12.</p>

Guideline	Relevance to the BTC Project	Compliance by the BTC Project	EIA Document Reference
<p>World Bank PPAH - Guidelines for Oil and Gas Development (Onshore) (July 1998)</p>	<p>The Oil and Gas Development (Onshore) Guidelines included in the PPAH address onshore oil and gas exploration, drilling and production operations. These Guidelines set out the standards that must be achieved during the performance of onshore oil and gas operations. The standards have been used in the development of BTC Project environmental standards.</p>	<p>The BTC Project has been designed taking into consideration these guidelines; in particular in the areas of air emissions, waste management and oil spill prevention.</p>	<p>A framework Oil Spill Response Plan for construction and operation phases has been included in Appendix C6of this report.</p> <p>Sections 4,5 and 9, Project Description, outlines the project design and how these standards have been achieved.</p> <p>Sections 5,8 and 14, Environmental Impacts and Mitigation, incorporates recommendations that ensure compliance with these requirements.</p>
<p>Procedure</p> <p>EBRD Environmental Procedures (1996)</p>	<p>EBRD Environmental Procedures detail the environmental appraisal process and standards required of projects sponsored by the Bank. An EIA is required for all Category "A" projects including large diameter oil and gas pipelines.</p> <p>It is the responsibility of the project developer to commission and conduct the necessary environmental investigations to the satisfaction of the Bank.</p> <p>EBRD operations are structured to meet national and</p>	<p>Compliance by the BTC Project</p> <p>The BTC Owners have commissioned this EIA to address the requirements of the EBRD's procedures.</p> <p>The Public Consultation and Disclosure Plan (PCDP) developed (discussed above) details the BTC Project's consultation and disclosure programme.</p>	<p>EIA Document Reference</p> <p>Environmental requirements have been addressed in the EIA report as well as Appendix C.</p> <p>Social requirements have been addressed in the EIA report and in the PCDP document.</p>

BTC PROJECT EIA
TURKEY

Guideline	Relevance to the BTC Project	Compliance by the BTC Project	EIA Document Reference
	<p>existing European (EU) environmental standards. Where EU standards do not exist, national, World Bank standards and international agreements apply where relevant. EBRD encourages developers to comply with good international practice and standards.</p> <p>EBRD believes that effective public consultation is a way of improving the quality of operations. The EBRD requires project sponsors to ensure that national requirements for public consultation in the country of operation be met and that these in turn meet the procedures described in the "Banks Disclosure of Information Policy". For Category "A" projects the EBRD requires the project sponsors to provide the affected public and interested NGOs with notification about the nature of the operation. The EIA and Executive Summary should be available to the public in the local language, in accordance with relevant national legislation and allow sufficient time for public comment.</p>		

2.5.1 Other international standards

To the extent applicable to the Project, the MEP Participants aim to comply with other relevant international guidelines such as international labour standards (eg ILO Conventions) and international standards on ethical conduct (eg the OELD Guidelines for Multinationals and International Chamber of Commerce Codes on Extortion and Bribery in International Business Transactions).

2.6 CORPORATE POLICY FRAMEWORK

2.6.1 BOTAŞ Environmental Policy

A set of policies has been established guiding the execution of all work performed at the BTC P/L Project Directorate. The policy that underpins the Environmental activities is included in the following Policy Statement:

The Baku-Tbilisi-Ceyhan Crude Oil Pipeline (BTC P/L) Project is a project in which the protection of the environment shall be given high priority.

BOTAŞ BTC P/L Project Directorate recognises that it has a responsibility to ensure that through the implementation of good environmental management practices all the potential adverse impacts on the environment associated with the project are either avoided or appropriately mitigated.

Accordingly, all work shall be conducted in compliance with all applicable environmental laws and regulations as well as the standards and best-practices prevailing in the international petroleum industry in a manner, which supports the protection, preservation and enhancement of the environment. To achieve this aim, the BOTAŞ BTC Project Directorate shall:

- establish and implement an Environmental Management System, in accordance with ISO 14001:1996, which shall be an integral part of the Project Quality Management System;
- perform top management reviews, at least annually, to ensure compliance with established policies, procedures and applicable environmental laws and regulations;
- maintain a commitment to waste minimisation and pollution prevention and shall incorporate these principles when defining project specifications and conducting its activities;
- identify, assess and manage environmental risks and endeavour to set and review quantifiable objectives and targets, associated with its operations, to minimise the likelihood of adverse environmental impacts;
- be committed to building relationships with government, the scientific community, and the public to promote the development and communication of innovative, cost effective solutions to environmental problems;
- ensure a commitment to the continuous improvement of the Environmental Management System wherever possible and sustainable.

All BOTAŞ BTC P/L Project personnel shall be individually and collectively responsible for adherence to, and effective application of the policies and principles contained in this environmental policy statement. BOTAŞ' commitment to HSE performance is presented in Figure 1.1 overleaf.



Figure 1.1 BOTAŞ HSE Commitment Statement

2.6.2 BP's corporate policy

In addition to BOTAŞ' Environmental Policy and the standards detailed in the HGA and the Turnkey Agreement, BOTAŞ aims to comply with the relevant portions of the Project Operator BP's corporate policy. The BTC Owners have endorsed BP's HSE policy for purposes of the BTC Project.

2.6.2.1 Policy

BP corporate policy focuses on five areas: ethical conduct; employees; relationships; health, safety and environment; and control and finance. They apply equally to all BP activities worldwide and are the foundation on which its business is built and carried out.

2.6.2.2 Ethical conduct

"We will pursue our business with integrity, respecting the different cultures and the dignity and rights of individuals in all the countries where we operate. BP supports the belief that human rights are universal. They are enshrined in the United Nations Declaration of Human Rights (UNDHR), which we support".

2.6.2.3 Employees

"We respect the rights and dignity of all employees. Everyone who works for BP contributes to our success and to creating a distinctive company. Working together, drawing from our diverse talents and perspectives, we will stimulate new and creative opportunities for our business. Collectively we will generate a more exciting and rewarding environment for work in which every individual feels responsible for the performance and reputation of our company".

2.6.2.4 Relationships

"We believe that long-term relationships founded on trust and mutual advantage are vital to BP's business success. Our commitment is to create mutual advantage in all our relationships so that others will always prefer to do business with BP".

This will be done by:

- understanding the needs and aspirations of individuals, customers, contractors, suppliers, partners, communities, governments and non-government organizations;
- conducting activities in ways that bring benefits to all those with whom relationships are held;
- fulfilling obligations as a responsible member of the societies in which the company operates;
- demonstrating respect for human dignity and the rights of individuals.

BP is committed to working to build long-term relationships founded upon:

- high performance standards;
- delivering on promises;
- openness and flexibility;
- learning from others;
- mutual interdependence;
- sharing success.

2.6.2.5 HSE policy commitment

BP's commitment to HSE performance in the Caspian region, and applicable to the BTC Project is outlined in Figure 1.2 overleaf.

BP expects to apply its corporate policies, and in particular on safety, health and the environment as long as it remains Operator of the project, and subject to the decisions made by Project Participants with respect to operation of the project. BP will apply these policies as in effect from time to time and the policies described in this EIA are subject to change.



Health Safety & Environmental Policy

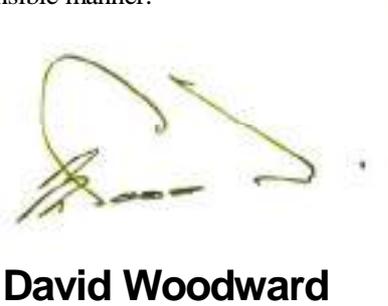
We fully endorse the BP Group Policy and are committed to our worldwide corporate goals: no accidents, no harm to people and no damage to the environment.

Getting HSE right is a fundamental part of our business in the Caspian Sea Region and BP through our operations in exploration, development, extraction and transporting of oil & gas fully supports its goals and requirements.

In meeting with this policy we will:

1. Expect all personnel to demonstrate commitment to, and leadership in, health, safety and environmental (HSE) protection, performance and compliance.
2. Manage HSE performance in compliance with the expectations in the BP "Getting HSE Right" management system.
3. Audit the environmental management system against ISO 14001.
4. Inform our employees, contractors, partners, stakeholders, government agencies and the public of relevant HSE aspects of our operations. Openly listen, consult and respond to their concerns.
5. Endeavour to continuously improve HSE performance.
6. Meet or exceed applicable HSE legislation, regulations and company requirements.
7. Ensure our employees and contractors are familiar with our HSE systems, and are competent and trained to carry out their work safely and with due regard for the environment.
8. Provide employees with a safe place to work.
9. Maintain a commitment to incident and pollution prevention, maintain emergency response plans and resources, and manage emergency situations resulting from our activities.
10. Set annual HSE objectives and targets and openly report our performance. Audit compliance with our policies and take corrective action where appropriate.

No task is so important that we cannot take time to plan and implement it in a safe and environmentally responsible manner.



David Woodward
Business Unit Leader BP Azerbaijan
September, 2001

Figure 1.2 BP HSE Commitment

2.6.2.6 HSE management

BP manages HSE through the application of a set of Corporate HSE Elements and Expectations embodied in the BP document “*Getting HSE Right*” or GHSER. All aspects of environmental management are addressed including the requirements for risk assessment; environmental impact assessment; emergency preparedness and response; community relations, and reporting and disclosure of information.

The policy expectations under the BP HSE Management System Framework state that, in all activities and operations, BP will:

- comply fully with all legal requirements and meet or exceed our HSE Expectations wherever we operate in the world;
- provide a secure working environment by protecting ourselves, our assets and our operations against risk of injury, loss or damage resulting from criminal or hostile acts;
- ensure that all BP employees, contractors and others are well informed, well trained, engaged in and committed to the HSE improvement process; we recognize that safe operations depend not only on technically sound plant and equipment but also on competent people and an active HSE culture, and that no activity is so important that it cannot be done safely;
- regularly provide assurance that the processes in place are working effectively; while all BP employees and contractors are responsible for HSE performance, line management is accountable for understanding and managing HSE risks;
- fully participate in hazard identification and risk assessments, Assurance Management System Assessments and reporting of HSE results;
- maintain public confidence in the integrity of our operations; we will openly report our performance and consult with people outside the company to improve our understanding of external and internal HSE issues associated with our operations;
- expect that all parties working on BP's behalf recognize that they can impact our operations and reputation, and must operate to our standards. We will assure ourselves that our contractors' and others' management systems are compatible with our Commitment to HSE Performance.

2.6.2.7 Environmental performance guidelines

Furthermore, BP has developed a set of environmental guidelines applicable to the development of new projects. The BP “*Upstream Environmental Performance Guidelines for New Projects and Developments*” apply to all new developments and major modifications undertaken by BP, including BTC. They link the environmental assurance process with the engineering, commercial and business development processes. The guidelines require projects to use a zero damage philosophy as the starting point for project design and development. Any variations away from this basis must be evaluated against the following criteria:

- Technical feasibility;
- Safety;
- Legal Compliance;
- Good Engineering Practice;
- Environmental Damage Costs;
- Expert Professional Judgment;
- Remediation & Mitigation Options;
- Reputation.

The Environmental Performance Guidelines require the establishment of a set of project environmental goals, based on the concept of zero damage. These goals serve as the aspirational drivers for the project. Targets are set in line with these goals against which the environmental performance of the project design and implementation are measured.

The environmental goals established for the BTC Project are:

- No combustion emissions;
- No loading and offloading emissions;
- Zero discharge to land or surface waters (eg oil, chemicals, wastes);
- Maximise efficiency of net energy exported;
- Restoration of habitat and hydrogeological regime after construction of pipeline;
- No permanent disruption to livelihood of local population;
- No resettlement of inhabitants of local population;
- No loss of containment of product;
- No third-party damage to the pipeline;
- No damage to protected ecological areas or archaeological sites;
- No creation of access routes to otherwise inaccessible areas.

2.6.2.8 Corporate focus areas

BP has three publicly stated corporate environmental focus areas:

- Biodiversity;
- Green House Gas Emissions Reduction;
- ISO 14001 Environmental Management System Accreditation.

2.6.2.9 Biodiversity

The BTC Project recognises that it has the potential to have real and measurable impacts on biodiversity, both positive and negative as reflected by the Project Environmental Goals.

In his speech in 2000 at the BP Conservation Awards ceremony, Lord John Browne formalised BP's ongoing practical commitment to biodiversity through making specific external commitments to take action on biodiversity issues:

“We can have a real, measurable and positive impact on the biodiversity of the world. That is a high aspiration - but like our other aspirations we're determined to show that we can deliver.”

And that BP were committed to achieve this by:

- “working to understand the impact of our current activities....
- ensuring that key staff monitor and manage conservation and biodiversity issues in their area of responsibility - as part of their performance contracts....
- expanding the area we manage for conservation....
- integrating biodiversity considerations into our operating practices....
- working with others - local communities, partners and contractors - so that our effort is part of a wider drive in the right direction....
- undertaking a series of specific initiatives in the countries and areas where we operate....

- measuring, reporting and auditing performance....
- setting targets to drive the right behaviours, publish results and have them independently verified....
- sharing our ecological data with the World Conservation Monitoring Centre (WCMC)”

BP has a strategy in place that sets out 5 elements for action:

- Responsible Operations - understand impacts on biodiversity and demonstrate continual improvement in performance;
- Public Policy - contribute constructively to the public policy on biodiversity;
- External Relations - understand what is important to people; forming partnerships to develop solutions to biodiversity issues;
- Conservation Projects - create collaborative partnerships, fund and contribute to conservation activities aligned with local, national, regional and global priorities;
- Research, Education and Awareness - make a positive contribution to biodiversity research and education; raise awareness and understanding of employees, people BP works with and customers.

At the BTC Project implementation level, the BP Corporate Biodiversity Strategy is translated into:

- The need to comply with the commitments and spirit of International Treaties and Conventions to which Azerbaijan, Georgia and Turkey are signatories;
- Integration of project plans with national and regional biodiversity action plans;
- A robust route selection process including evaluation of biodiversity impact, resulting in the pipeline construction corridor that avoids the most sensitive areas, including IUCN Category I to IV sites;
- An open and thorough public consultation process to identify sensitive areas, possible mitigation measures and achieve buy in and consensus on solutions;
- Development of direct mitigation measures such as re-routes; reduced working width; seasonal constraints etc;
- Incorporation of direct mitigation measures into pipeline construction Invitation to Tender (ITT) documents;
- Evaluation of possible indirect mitigation measures, such as offset projects resulting in overall enhanced biodiversity or environmental additionality;
- Identification of potential partners for implementation of offset projects;
- Provision of baseline data to the World Conservation Monitoring Centre (WCMC) to enhance its worldwide ecological database, thus assisting with biodiversity planning.

2.6.2.10 Greenhouse gas emissions reduction

BP is committed to maintaining brand distinction compared to market competitors through continued leadership on greenhouse gas (GHG) emissions reductions. To achieve this BP will look to continue to influence public policy on climate change. BP is well positioned to take advantage of the growing market for lower carbon energy and to build on value already created through energy savings, which have resulted from earlier initiatives. It is recognised that carbon has already become, and will increase in importance as a real business issue/cost.

BP supports the view of the Intergovernmental Panel on Climate Change that:

- the global average surface temperature has increased during the 20th century by about 0.6°C;
- about three-quarters of the anthropogenic emissions of CO₂ to the atmosphere during the past 20 years is due to fossil fuel burning;
- there is now new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities;
- future changes in atmospheric composition and climate are inevitable with increases in temperature and some extreme events, and regional increases and decreases in precipitation, leading to an increased risks of floods and droughts.

In 1998, BP targeted a 10% reduction in internal GHG emissions from a 1990 baseline (90MT) by 2010. This target was achieved in 2001 with emissions of 80.5 MT (9.5MT reduction). However, meeting the target is not the end of BP's commitment to tackling climate change.

Therefore BP has identified a number of further steps to address the climate change issue. These recognise the need for stabilisation of GHGs in the atmosphere, and include:

- Improved energy efficiency;
- Use of lower carbon fuels;
- CO₂ capture and storage in the medium term.

Through application of skills, technology and business processes BP has set an internal target to hold our net emissions at 10% below 1990, through 2012, by a combination of:

- 10 – 15% improvement in operational energy efficiency by 2012;
- Use of flexible mechanisms such as GHG emissions trading and carbon credits.

This will be achieved by:

- sharing knowledge and expertise on energy efficiency;
- producing and selling products with a lower carbon content;
- shifting the balance of our business in favour of lower carbon energy sources;
- working with others (eg Auto makers) to develop more energy efficient technologies;
- continuing our focus on growing our renewable energy portfolio.

BP has established a pioneering internal emissions trading scheme, which will be used to help meet GHG emissions targets. Through making and selling lower carbon products, BP will be helping to create “carbon credits”, which can be created when a change is made to a more efficient or lower carbon form of energy. BP is committed to working with others to advance

emissions trading and emissions credits. We will work with others to quantify credits and apportion ownership.

BP is continuing to lead in the commercialization of renewable energy technologies, and has one of the fastest growing renewable energy businesses in the world, BP Solar for example is expected to grow by 40% this year.

At the BTC Project implementation level, the BP Corporate commitment to GHG emissions reduction is reflected in the developing emissions profile for the project, as described in Sections 4 and 9, Project Description.

2.6.2.11 ISO 14001 Accreditation

To progress towards the BP Environmental Expectation that material activities and operations be managed in line with a recognized international Environmental Management System (EMS), specifically ISO 14001, the following target was established:

- By the end of 2001 (2002 for Arco heritage) all major facilities will have their EMSs certified to ISO 14001, and be producing regular verified site environment reports, available on the Internet.

The BP Caspian Sea Business Unit achieved certification of its EMS in the year 2000, covering all existing operational units.

At the BTC Project implementation level, the BP Corporate commitment to ISO 14001 certification is reflected in the requirement to achieve certification within nine months of operations commencing. To aid this certification process this EIA has been developed to be in line with the requirements of ISO 14001, including development of registers of legislation, aspects and impacts registers and monitoring and management plans. An EMS will be developed to manage activities during the construction phase, with certification to be achieved within nine months of operations commencing.

3 SOCIAL LEGISLATION AND REGULATORY FRAMEWORK

3.1 INTRODUCTION

As with the environmental requirements, pursuant to the terms of the HGA, the social standards set forth in the IGA and the HGA override national legislation to the extent that such national legislation is inconsistent. Therefore, the BTC Project social legislation and regulatory framework in Turkey includes not only what is set forth in the IGA and HGA, but also includes the Turkey national legislation to the extent that it is not inconsistent with the IGA and HGA. Additionally, the BTC Project will be implemented in accordance with the Turnkey Agreements, applicable international conventions in force in Turkey, IFI standards with which BTC agrees to comply as part of the BTC Project financing and BOTAS and BP project specific policies, which in many instances exceed the above mentioned legal requirements.

The descriptions of the IGA, HGA and other laws and documents included below are summaries only and are qualified by reference to the full text of the actual laws or documents.

3.2 HOST GOVERNMENT AGREEMENT (HGA)

Many of the requirements applicable to social assessment are set out in Article 13 of the Turkish HGA. Article 13 references Appendix 5, which outlines the standards and principles for social impact assessment (SIA). The key requirements are:

- Use best endeavours to minimise potential disturbances to surrounding communities and the property of the inhabitants thereof (Clause 4.1 of Appendix 5);
- Complete a general review of social conditions in the general location of the pipeline and associated infrastructure, consisting of a scoping study and a risk assessment. These will together form the basis of the content and structure for a social impact assessment of project activities and associated operations, to be conducted by the MEP Participants (Clause 4.3 of Appendix 5);
- During the course of project activities, from time to time, to confer with the State Authorities as to the impact of ongoing project activities in light of the SIA (Clause 4.4 of Appendix 5).

In addition to Article 13 and Appendix 5, Article 4.1 references Appendix 4, which further governs the social impact of the BTC Project. The key requirements are:

- The State Authorities shall obtain Rights of Land from the owners and occupiers of affected properties and grant them to the MEP Participants as needed to enable construction and operation of the Facilities (Appendix 4) (Article 7.2 requires the State Authorities to pay such compensation to Persons in the Territory as may be required by Turkish Law to authorize the State Authorities to grant to and vest in each of the MEP Participants the necessary Land Rights);

Finally, Article 19 of the Turkish HGA details certain employment and procurement practices. The key aspects include:

- The MEP Participants and any contractor may select and determine the number of employees to be hired in connection with the project. All citizens of the State hired in respect of the project shall be hired under written employment contracts that specify the hours of work required of the employees and the compensation and benefits to be paid. All employment practices applicable to citizens of the State working on the project in Turkey must be at least as stringent as the requirements provided for in Turkish labour legislation. These requirements include hours of work, leave, remuneration, fringe benefits and occupational health and safety standards (Section 19.2).

3.3 EXISTING NATIONAL LEGAL AND ADMINISTRATIVE FRAMEWORK - SOCIAL

The government administrative framework is outlined in Section 2.3 above. Specific detail on land, public participation and labour issues is provided below.

The descriptions of the legislation included below are summaries only and are qualified by reference to the full text of the actual laws or documents.

3.3.1 Land legislation

The overall framework for the granting of Rights to Land by the Government to the MEP Participants is set forth in Articles 4 and 7 and Appendix 4 of the HGA. Section 4.1 of the HGA grants to the MEP Participants:

- The absolute and unrestricted Rights to Land (other than ownership) to use, possess, control and construct upon and/or under the Permanent Land; and
- The exclusive and unrestricted right to restrict or allow the use, occupation, possession and control of, and construction upon or under the Permanent Land by any other Persons.

Section 7.2 of the HGA grants the MEP Participants the right to exercise the above mentioned Rights to Land by providing that the State Authorities shall:

- Exercise powers of taking, compulsory acquisition, eminent domain or other similar sovereign powers to allow the MEP Participants to receive and exercise the Right to Land in respect of the Permanent Land; and
- Pay such compensation to Person in the Territory as may be required by Turkish Law to authorise the State Authorities to grant land rights to the MEP Participants.

Appendix 4, which is appended to the HGA by Section 4.1(ii), further governs the MEP Participants Rights to Land by providing that:

- The Rights of Land granted to the MEP Participants shall be enforceable by the MEP Participants against all State Authorities and against all third parties; and
- The State Authorities shall obtain and grant to the MEP Participants, *inter alia*, the right to the exclusive use, possession and control the land in the Construction Corridor.

Besides the HGA, there are several land laws in Turkey that have direct implications for the social aspects of the BTC Project. The key items of legislation are:

- The Turkish Constitution, as amended in October 2001, allows for confiscation of property by a public agency for the public benefit (Article 46). For purposes of the BTC Project, the DSA, a special legal entity appointed pursuant to the HGA will acquire land temporarily and/or permanently for the Project and the MoE will make the declaration of public interest;
- The Civil Code requires landowners to permit the construction of a water or gas pipeline on their immovable property due to the nature of the public interest if certain conditions stated therein are met;
- Article 87 of the Petroleum Law states that a Petroleum Right Holder is entitled to acquire the surface rights on land where Petroleum activities are performed. Rights can be acquired, depending on the type of land ownership, via mutually agreed upon purchase, lease or sub-lease arrangements or state expropriation;
- The Expropriation Law and the Transit Passage of Petroleum with Pipelines Law set forth the procedures for state expropriation of public and private land, including those governing the provision of compensation;

- Turkey also has laws regulating, *inter alia*, resettlement, performance of activities in public forests, protection of cultural heritage, construction, notification of landowners, compensation for crops and assets, consultation and disclosure which are applicable to the extent they are consistent with the HGA.

3.3.2 Labour legislation

Turkey's Labour Law and Constitution aim to protect the rights of employees and their conditions of work, which in addition to the provisions of the HGA, govern the Project's employment policy.

3.3.2.1 Employment contracts

The *Labour Law (article 11)* requires that employment contracts for a period of one year or longer, or for a team of employees, must be issued in written form.

Applicable portions of the Labour Law include:

- Termination provisions (requiring notice or valid reason for termination) (Articles 13, 16 and 17);
- Notice compensation (paid by employee or employer) (Article 13);
- Severance pay (Article 14);
- Maximum working week (45 hours based on 6 working days of 7½ hours) (Article 61(a));
- Minimum wage (Article 5);
- Overtime work (requirements include consent of employee, maximum of 3 hours a day and 90 days a year, 50% pay premium and 100% pay premium on weekends or annual holidays) (Article 35);
- Annual leave (Articles 49-58);
- Minimum age (generally 15; subsurface or underwater work can only be performed by males over the age of 18; trainees can work between the ages of 13 and 15);
- Provisions related to discrimination based on gender, disability and criminal history (Articles 25, 26, 68 and 70).

3.3.2.2 Health and safety

Employers must take all reasonable measures to protect the health and safety of employees and must provide a secure workplace (*Labour Law (article 73)*). An employer failing to do so and resulting in the injury or death of an employee will be liable for costs and compensation (*Code of Obligations and Criminal Liability*).

3.3.2.3 Equality

Employees carrying out the same job and having equivalent qualifications must be treated by the employer equally (*Constitution (article 10)* and *Labour Law*). Wages, salaries and agreements regarding termination of contracts are exempt from this requirement.

3.3.2.4 Work performance

Employees must carry out their jobs in a good and timely manner, follow the instructions of the employer and take care to avoid behaviour or actions that may result in damage or loss to the employer.

Employees must also avoid any breach of competition rules and if such an offence occurs, the employee is liable to indemnify all losses and damages incurred by the employer.

3.3.3 Government social provisions

Every working individual has the right to receive social benefits from the state (*Constitution (article 60)*).

The principal organisation responsible for the provision of social state benefits to privately employed person is the 'Social Security Association' (SSK) established under *Law no.4792 of 1945*. SSK provides benefits related to a number of social issues including, but not limited to illness, disability, retirement and death. SSK also provides certain unemployment and medical benefits.

3.4 INTERNATIONAL AGREEMENTS AND CONVENTIONS

See Section 2.4 above for a discussion of the relevant international agreements and conventions.

3.5 INTERNATIONAL FINANCE INSTITUTIONS POLICIES

See Section 2.5 above for a discussion of the relevant IFI policies and guidelines.

3.6 CORPORATE POLICIES

See Section 2.6 above for a discussion of the relevant BOTAŞ and BP corporate policies.

4 ENVIRONMENTAL STANDARDS AND GUIDELINES

The environmental standards and guidelines relevant to the Turkish Section of the BTC Pipeline fall into two categories:

- discharge/emission standards;
- environmental quality standards.

This section focuses on international standards (Section 1.3 of this Appendix focuses on relevant Turkish standards), however, relevant Turkish standards are included to facilitate comparison with international standards. The Turkish and International standards are included for illustrative and comparison purposes and serve as reference points for Section 3, Approach and Methodology, as well as the EIA as a whole.

4.1 DISCHARGE/EMISSION STANDARDS

Standards of relevance to this assessment are summarised as follows:

- Table 4.1: Emissions from oil and gas production (onshore);

- Table 4.2: Limits for aqueous discharges to surface waters and soakaways,
- Table 4.3: Limits for aqueous discharges to marine outfalls,

Table 4.1: Emissions from Oil and Gas Production (Onshore)

Parameter	Maximum value milligrams per normal cubic metre (mg/Nm ³)
VOCs (including benzene)	20
Hydrogen sulphide	30
Sulphur oxides (for oil production)	1,000
Nitrogen Oxides <ul style="list-style-type: none"> • Gas-fired • Oil-fired 	320 mg/Nm ³ (or 86 ng/J) 460 mg/Nm ³ (or 130 ng/J)
Odour	Not offensive at the receptor end*
* H ₂ S at the property boundary should be less than 5µg/m ³	

Table 4.2: Limits for Aqueous Discharges to Surface waters and Soakaways

Parameter	Turkish Regulation on Fishery Products ⁽⁶⁾	Turkish Regulation on Water Pollution Control		WB General Environmental Guidelines ⁽¹⁾ and Onshore Oil and Gas Production ⁽²⁾
		Composite sample (2 hours)	Composite sample (24 hours)	
PH	5-9	6-9	6-9	6-9 ^{(1) (2)}
BOD, mg/l	50 (domestic) 75 (industrial)	100	50	BOD ₅ : 50 ^{(1) (2)}
COD, mg/l	170 (domestic) 255 (industrial)	160	100	250 ⁽¹⁾
Oil and Grease, mg/l	30 (domestic) 10 (industrial)	20	10	10 ⁽¹⁾ , 20 ⁽²⁾
TSS, mg/l	200	50	200	50 ^{(1) (2)}
Total Heavy metals, mg/L		10	-	10 ⁽¹⁾
Total toxic metals				5 ^{(2) (4)}
Hexavalent chromium, mg/l		0.5	0.5	0.1 ⁽¹⁾
Total chromium, mg/l	0.5	2	1	0.5 ⁽¹⁾
Lead, mg/l	0.5	2	1	0.1 ⁽¹⁾
Cyanide, mg/l	Total 0.3 Free 0.06	1	0.5	Total: 1 Free: 0.1 ⁽¹⁾
Cadmium, mg/l	0.05	0.1		0.1 ⁽¹⁾
Iron, mg/l		10		3.5 ⁽¹⁾
Fluoride, mg/l	20	15		20 ⁽¹⁾
Copper, mg/l	0.5	3		0.5 ⁽¹⁾
Zinc, mg/l	2.0	5		2.0 ⁽¹⁾
Mercury, mg/l	0.01		0.05	0.01 ⁽¹⁾
Nickel, mg/l	0.5			0.5 ⁽¹⁾
Arsenic, mg/l	0.5			0.1 ⁽¹⁾
Nitrate Nitrogen, mg/l	5			
Ammonia Nitrogen, mg/l	0.02			
Ammonia, mg/l				10 ⁽¹⁾
Chlorine, mg/l	0.5 (Free)			0.2 ⁽¹⁾
Total Sulphur, mg/l	1.0			
Total Phosphorus, mg/l	0.02			2 ⁽¹⁾
Phenols, mg/l	5.0			0.5 ⁽¹⁾ , 1 ⁽²⁾
Sulphide, mg/l				1 ^{(1) (2)}
Coliform bacteria				400 MPN/100ml ⁽¹⁾
Faecal Coliform	10 MPN/ 100 ml ⁽⁵⁾			
Temperature increase, °C				<3 ⁽³⁾

- (1) Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production – General Environmental Guidelines
- (2) Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production Oil and gas development (Onshore) (page 362).
- (3) The effluent should result in a temperature increase of no more than 3 °C at the edge of the zone where initial mixing and dilution take place (this is usually where the effluent reaches the surface in the case of a sub-surface discharge. Where the zone is not defined, use 100 m from the point of discharge.
- (4) Toxic metals include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium and zinc.
- (5) This value is for the most sensitive aquatic products and can be exceeded under certain circumstances, as specified in the Aquatic Products Regulation (10 March 1995).
- (6) Under Aquatic Products Law 1380, all of Turkey's seas and terrestrial surface water resources are classed as 'aquatic products' areas. In this context wastewater discharges must comply with the limits set out in Appendix 6 of the Fisheries Products Regulation, and the receiving waters should meet the requirements of Appendix 5.

Table 4.3: Limits for Aqueous Discharge to Marine Outfalls

Parameter	Turkish Regulation on Fishery Products (6)	Turkish Regulation on Water Pollution Control	WB General Environmental Guidelines ⁽¹⁾ and Onshore Oil and Gas Production ⁽²⁾
PH	5-9	6-9	6-9 ⁽¹⁾⁽²⁾
BOD, mg/l	50 (domestic) 75 (industrial)	250	BOD ₅ : 50 ⁽¹⁾⁽²⁾
COD, mg/l	170 (domestic) 255 (industrial)	400	250 ⁽¹⁾
Oil and Grease, mg/l	30 (domestic) 10 (industrial)	10	10 ⁽¹⁾ , 20 ⁽²⁾
TSS, mg/l	200	350	50 ⁽¹⁾⁽²⁾
Floating matter		Not allowed	
Total Nitrogen, mg/l		40	
Nitrate Nitrogen, mg/l			
Ammonia Nitrogen, mg/l	0.02		
Ammonia, mg/l			10 ⁽¹⁾
Total Phosphorus, mg/l	0.02	10	2 ⁽¹⁾
Total Sulphur, mg/l	1.0		
Cyanide, mg/l	Total 0.3 Free 0.06		Total: 1 Free: 0.1 ⁽¹⁾
Fluoride, mg/l	20		20 ⁽¹⁾
Chlorine, mg/l	0.5 (Free)		0.2 ⁽¹⁾
Surfactants, mg/L		10 (The discharge of materials which are identified as non-biodegradable by the Turkish Standards Institute is forbidden)	
Phenol, mg/l	5		0.5 ⁽¹⁾ , 1 ⁽²⁾
Sulphide, mg/l			1 ⁽¹⁾⁽²⁾
Coliform bacteria		<1000 TC/100 ml	400 MPN/100ml ⁽¹⁾
Faecal coliform bacteria	10 MPN/100 ml ⁽⁵⁾	<200 TC/100 ml	
Temperature increase, °C		<3	<3 ⁽¹⁾⁽²⁾⁽³⁾
Total toxic metals			5 ⁽²⁾⁽⁴⁾
Mercury, mg/l	0.01		
Cadmium, mg/l	0.05		
Lead, mg/l	0.5		
Arsenic, mg/l	0.5		
Total Chromium, mg/l	0.5		
Copper, mg/l	0.5		
Nickel, mg/l	0.5		
Zinc, mg/l	2.0		
Others	Fish bioassay: 20% mortality in 48 hours	The limits established in the Turkish Regulation on Dangerous and Hazardous Materials shall be complied with	

- (1) Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production.
- (2) Pollution Prevention and Abatement handbook 1998 – Toward Cleaner Production – Oil and gas development (Onshore) page 359.
- (3) The effluent should result in a temperature increase of no more than 3 °C at the edge of the zone where initial mixing and dilution take place (this is usually where the effluent reaches the surface in the case of a sub-surface discharge. Where the zone is not defined, use 100 m from the point of discharge.
- (4) Toxic metals include antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, vanadium and zinc.
- (5) This value is for the most sensitive aquatic products and can be exceeded under certain circumstances, as specified in the Aquatic Products Regulation (10 March 1995).
- (6) Under Aquatic Products Law 1380, all of Turkey's seas and terrestrial surface water resources are classed as 'aquatic products' areas. In this context wastewater discharges must comply with the limits set out in Appendix 6 of the Fisheries Products Regulation, and the receiving waters should meet the requirements of Appendix 5.

4.2 ENVIRONMENTAL QUALITY STANDARDS

Standards of relevance to this assessment are summarised as follows:

- EC Bathing Water Directive;
- Groundwater Resources;
- Fresh Water Fish Directive (Table 4.3);
- Table 4.4: Air Quality Standards;
- Table 4.5: Maximum Permitted Noise Levels for Various Noise Sources;
- Table 4.6 Turkish Ambient Noise Standards; and
-
- Table 4.7: World Bank Noise Standards.

4.2.1 EC Bathing Water Directive (76/160/EEC)

Bathing waters are monitored for total coliform bacteria and faecal coliform bacteria, indicators of the presence of traces of human sewage.

Sampling begins two weeks before the start of the bathing season (15 May to the 30 September).

Twenty samples are taken at each site at regular intervals - essentially every week during the season.

The samples are taken at pre-determined points, where there are usually the most bathers.

Samples are taken about 30cm below the surface; additional surface samples may be taken to test for mineral oils.

The mandatory (or imperative) standards, which should not be exceeded, are:

- 10,000 total coliforms per 100 millilitres (ml) of water;
- 2,000 faecal coliforms per 100ml of water.

In order for a bathing water to comply with the Directive, 95% of the samples (i.e. at least 19 out of the 20 taken) must meet these standards, plus other criteria.

The guideline standards, which should be achieved where possible, are:

- no more than 500 total coliforms per 100ml of water, and
- no more than 100 faecal coliforms per 100ml of water in at least 80% of the samples (ie 16 or more out of 20), and
- no more than 100 faecal streptococci per 100ml of water in at least 90% of the samples (ie 18 or more out of 20).

4.2.2 Groundwater resources

Article 12 of the RCWP presents a classification methodology for groundwater, as set out below:

- Groundwater Class I: high quality groundwater, suitable for the following needs:
 - Drinking water supply (if needed, following disinfection); Water supply for food industry.
- Groundwater Class II: medium quality groundwater, suitable for the following needs:
 - Drinking water supply (following an appropriate purification);
 - Agricultural (for irrigation and animal husbandry);
 - Industrial process water.
- Groundwater Class III: low quality groundwater, inferior to the quality parameters for Class I or Class II groundwater. Use of such water is determined based on the degree of treatment “attainable economically and technologically, and with respect to health”.

Article 13 of the RCWP describes how such groundwater classifications are determined. *Article 22* of the RCWP relates to prohibitions of the use of certain chemicals listed in national legislation, Notice on Hazardous and Harmful Substances in Water (12 March 1989), and the EU Directive on Dangerous and Hazardous Substances in areas where they could be released to the environment. A 50m protective zone around sources of Class I and Class II drinking water supplies (wells, springs etc) is delineated. Discharge or passage of any solid or liquid waste and construction of any building is prohibited in this protection area. *Article 22* additionally addresses issues regarding chemical storage, use of pesticides and spill prevention in areas near drinking water supply wells.

4.2.3 Freshwater Fish Directive (78/659/EEC)

The Freshwater Fish Directive sets standards to safeguard freshwater fisheries. These standards relate mainly to the quality of the water in which the fish live and not to the numbers of fish present.

The EC Freshwater Fish Directive was adopted in 1978. It requires that certain designated stretches of water (rivers, lakes or reservoirs) meet quality standards designed to enable fish to live or breed in the designated water. Two categories of water are identified, those suitable for:

- salmonid fish (salmon and trout - game fish). These are generally fast flowing stretches of river that have a high oxygen content and a low level of nutrients.
- cyprinid fish (coarse fish i.e. carp, tench, barbel, rudd, roach). These are slower flowing waters, that often flow through agricultural land.

The Directive sets different standards for salmonid and cyprinid waters. There are two types of standard within each category.

- Imperative (I) values - are standards that must be met if the stretch is to pass the Directive (for the stretch to be 'compliant'). Values have been set for dissolved oxygen, pH, non-ionised ammonia, total ammonium, total residual chlorine, zinc and (for thermal discharges) temperature (Table 4.6).
- Guideline (G) values - are quality standards that should be achieved where possible. G Values encompass other chemical parameters, such as copper, biochemical oxygen demand and suspended solids (Table 4.7).

- In exceptional circumstances, such as storms or droughts, derogations for certain substances which allow a stretch of water to exceed the I values without failing may be granted.

Table 4.3: Freshwater Fish Directive, Summary of Imperative Standards

Parameter	Imperative standards			Notes
	Units	Salmonid	Cyprinid	
Temperature	°C	1.5	3.0	Increase due to thermal discharge
	°C	21.5	28.0	Maximum at monitoring site
	°C	10.0	10.0	Maximum for breeding season
Dissolved oxygen	mg/l			
PH	-	6 to 9	6 to 9	
Phenols	-	No odour	No odour	
Hydrocarbon oil	-	Non visible	Non visible	
Non-ionised ammonia	mg/l	0.025	0.025	
Total ammonium	mg/l	1.0	1.0	
Total residual chlorine	mg/l	0.005	0.005	
Total zinc (standard is dependent on the average yearly hardness)	mg/l	0.03	0.3	Hardness <= 10 milligrammes CaCO3 / litre
	mg/l	0.2	0.7	Hardness <= 50 & > 10 milligrammes CaCO3 / litre
	mg/l	0.3	1.0	Hardness <= 100 & > 50 milligrammes CaCO3 / litre
	mg/l	0.5	2.0	Hardness > 100 milligrammes CaCO3 / litre

4.2.4 Air quality standards

Table 4.4: Air Quality Standards and Guidelines for Ground Level Concentrations $\mu\text{g m}^{-3}$ unless Specified Otherwise

Parameter	Turkish Regulation on Air Quality Protection	WB Guidelines for Onshore Oil and Gas Production	World Health Organisation	European Community
VOCs				
	2.0 (expressed as a 94 th percentile)			5 (for benzene to be achieved by 2010)
	10.0 (expressed as a 99 th percentile)			
Carbon Monoxide (CO)				
annual mean	10,000			
8hr mean			10,000	10,000 (running 8 hr mean)
max 24hr mean	30,000			
1hr mean			30,000	
30min mean			60,000	
15min mean			100,000	
Nitrogen Dioxide (NO₂)				
annual mean	100		40	40
max 24hr mean	300			
max 1hr mean			200	200 (max 18 exceedences per year)
Nitrogen Oxide (NO)				
annual mean	200			
max 24hr mean	600			
Oxides of Nitrogen (NO_x) as Nitrogen Dioxide (NO₂)				
Annual mean			30 (for protection of vegetation/ ecosystems)	
max 1hr mean				
Hydrocarbons (HCs)				
max 24hr mean	140			
max 1hr mean	280			
Hydrogen Sulphide (H₂S)				
max 24hr mean	40			
max 1hr mean	100			
		<5 (at boundary)		
Sulphur Dioxide (SO₂)				
Annual mean	150		50	
Max 24hr mean	400			125 (max 3 exceedences per year)
Max 1hr mean	900		350	350 (max 24 exceedences per year)
Max 10min mean			500	
Particulate Matter (PM)				
Annual mean	150			40 (PM ₁₀)
Max 24hr mean	300			50 max 35 exceedences per year (PM ₁₀)
Odour		No offensive odour at receptor		

4.2.5 Noise levels

Table 4.5: Maximum Permitted Noise Levels for Various Noise Sources

Noise Source	Noise Level (L_{eq} 5 minute) (dB(A))
Trucks (at a distance of 7.5 m)	85
Diesel powered scrapers and bulldozers (100-450 kW)	120
Diesel powered shovels with caterpillar treads (40-60 kW)	110
Diesel powered excavators (45-80 kW)	105
Diesel powered cranes with caterpillar treads	105
Diesel powered dump trucks (1.2-2.5 tons)	100
Diesel powered vibrating cylinders (2-75 kW)	110
Cement mixers	115
Cement pumps	115
Graders	120
Compressors (stationary)	115
Tractors	120
Loaders	115
Gears	95
Rock drilling guns	125
Pumps (300 hp)	120
Electric motors (300 hp)	105

These levels have been interpreted as sound power levels except for the specification for trucks that is a maximum noise level.

Table 4.6: Turkish Ambient Noise Standards for Construction and Operation of the Proposed Project

Noise Source	L_{eq} (5 minute) (dB(A))	
	Day (06:00-22:00)	Night (22:00-06:00)
<i>Construction Site Noise</i>		
Building construction (continuous)	70	-
Road construction (temporary)	75	-
Impact noise	100 (L_{max})	-
<i>Operational Noise</i>		
Continuous	65	55
Sudden	70	60

Table 4.7:World Bank Noise Standards

Receptor	Maximum allowable Leq (hourly), in db(A)	
	Daytime 07.00-22.00	Night time 22.00-07.00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

Appendix E - EIA Contributors

1 EIA CONTRIBUTORS

The preparation of the EIA has been co-ordinated by Environmental Resources Management (ERM). Organisations and experts who have contributed to the development of the BTC EIA are acknowledged below.

List of Participants and Contributors

SPECIALIST CONSULTANTS	PROJECT ROLE
ERM	Environmental Impact Assessment
ENVY	Environmental Impact Assessment (In-country)
ERM	Socio-economic Impact Assessment
KORA (METU)	Socio-economic Baseline Collection
Veri Arastirma	Socio-economic Baseline Collection

In addition, the following Local Organisations, Institutes and Scientists assisted through the provision of specialist services and advice (see below).

List of Local Institutes and Scientists

The governmental organisations visited during the Pre-Work field studies (September 2000) at the commencement of the Basic Engineering phase, in order to obtain information about the baseline conditions along the BTC route for route narrowing and optimisation works, are listed below:

Ardahan Province

- Governorship
- Provincial Directorate of Forestry
- Provincial Directorate of Culture
- Provincial Directorate of Health (Environmental Health Department)
- Provincial Directorate of Agriculture
- Posof District Directorate of Forestry

Kars Province

- Governorship
- Municipality
- XIV. Regional Directorate of State Hydraulic Works (DSI)
- Provincial Directorate of Culture
- Provincial Directorate of Agriculture
- Provincial Directorate of Health (Environmental Health Department)
- Provincial Museum Directorate
- Kafkas University

Erzurum Province

- Governorship
- Municipality
- VIII. Regional Directorate of State Hydraulic Works (DSI)
- Provincial Directorate of Environment
- Eastern Anatolia Regional Directorate of Forestry
- Provincial Directorate of Culture
- Provincial Directorate of Agriculture
- Directorate of the Committee for the Preservation of the Cultural and Natural Assets
- XII. Regional Directorate of Highways
- General Directorate of Water and Sewerage Administration
- Ataturk University

Erzincan Province

- Governorship
- Municipality
- Branch Directorate of State Hydraulic Works (DSI)
- Branch Directorate of Highways
- Provincial Directorate of Environment
- Provincial Directorate of Agriculture
- Provincial Directorate of Culture
- Provincial Directorate of Forestry

Sivas Province

- Governorship
- Provincial Directorate of Tourism
- Provincial Directorate of Culture
- Provincial Directorate of Museum
- Provincial Directorate of Agriculture
- Provincial Directorate of Health
- Provincial Directorate of Public Works and Resettlement

Kayseri Province

- Regional Directorate of Provincial Bank
- Regional Directorate of State Hydraulic Works
- Provincial Directorate of Environment
- Provincial Directorate of Health
- Provincial Directorate of Culture

- Provincial Directorate of Agriculture
- Regional Directorate of Rural Affairs
- Provincial Directorate of Forestry
- Directorate of Archaeological Museum

Kahramanmaras Province

- Governorship
- Provincial Directorate of Public Works and Resettlement
- Provincial Directorate of Environment
- Provincial Directorate of Rural Affairs
- Branch Directorate of Highways
- Provincial Directorate of National Parks
- Provincial Directorate of Culture
- Directorate of Archaeological Museum
- Provincial Directorate of Agriculture

Adana Province

- Regional Directorate of State Hydraulic Works
- Provincial Directorate of Public Works and Resettlement
- Provincial Directorate of Environment
- Provincial Directorate of Culture
- Regional Directorate of Forestry
- Directorate of Archaeological Museum
- District Directorate of BOTAŞ Marine Terminal

LOCAL AND CENTRAL GOVERNMENTAL BODIES

Official letters were sent and feedback from Governorships of the provinces through which the BTC Pipeline passes and various local governmental bodies was received from the following:

- General Directorate of Agricultural Production and Development
- General Directorate of Electricity Generation Corporation (EUAS)
- General Directorate of Mineral Works
- General Directorate of National Parks and Game Wildlife
- General Directorate of Protection and Control
- General Directorate of Railways (TCDD)
- General Directorate of State Highways (TCK)
- General Directorate of Technical Research and Application
- General Directorate of Turkish Electricity Distribution Corporation (TEDAS)
- General Directorate of Turkish Electricity Transmission Corporation (TEIAS)
- Governorship of Adana
- Governorship of Ardahan
- Governorship of Erzincan
- Governorship of Erzurum

- Governorship of Gumushane
- Governorship of Kahramanmaras
- Governorship of Kars
- Governorship of Kayseri
- Governorship of Osmaniye
- Governorship of Sivas
- Ministry of Culture
- Ministry of Culture (Adana)
- Ministry of Tourism
- Municipality of Erzurum
- Municipality of Ulas
- Undersecretariat of Maritime Affairs

All the letters officially received from the above stated governmental bodies were considered in the preparation of the EIA Report.

Local residents, authorities and interest groups / local Non Governmental Organisations within the provinces and districts through which the BTC Pipeline traverses were also consulted.

Other Baseline Contributors:

Other organisations involved in the baseline data-gathering phase include:

- *Prof. Dr. Coşkun Özgünel (Archaeology Expert)*, Ankara University, Department of Archaeology; *Assoc. Prof. Dr. Ali Cemal Gücü (Marine Ecology Expert)*, Middle East Technical University, Institute of Marine Sciences
- *Prof. Dr. Yusuf Gemici (Terrestrial Ecology Expert)*, Ege University, Department of Biology;
- *Prof. Dr. Aykut Barka*, Istanbul Technical University, Eurassia Geology Institute;
- *Phillip Edwards (Ornithology Expert)*, ENVY Consultant;
- General Directorate of Mineral Research and Exploration (MTA);
- TAÇDAM (Middle East Technical University).

Engineering Design and Route Selection:

Engineering Specialists involved in Basic and Detailed Engineering Design:

- ILF Consulting Engineers
- Pipeline Engineering GMBH (PLE)
- UNIVERSAL ENSCO, INC.
- Det Norske Veritas AS (DNV)
- Temelsu International Engineering Services Inc.
- Yuksel Project International (Yuksel Proje Uluslararası A.Ş.)
- ESER Consultancy Engineering (Eser Müşavirlik Mühendislik A.Ş.)
- WS Atkins Consultants Limited (Independent Geohazard Audit Team)
- MS GIS (informationsysteme gesellschaft m.b.h)
- SIAL (Yerbilimleri Etud ve Musavirlik Ltd Sti)
- Yuksel Proje Uluslararası Arastirma

Other Specialists

- Ministry of Environment Operations Directorate Ceyhan (BOTAŞ Petrol İşletmeleri Mudurluğu Ceyhan);
- Ayşe Kudat, Land acquisition specialist
- Ahmet İnci, Agricultural specialist
- Ayhan Çetin, Agricultural specialist
- AEA Technology (Oil Spill Modelling Framework)
- Corbett and Holt (Oil Spill Modelling Framework)
- Okan Ucer, Translation quality assurance;
- Nuvit Tarhan, Translation quality assurance.