



**BTC Project  
Environmental and Social Annual  
Report (Operations Phase)  
2007**



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## ABBREVIATIONS

ACG	- Azeri, Chirag, Gunashli (offshore oil fields)
AGI	- Above Ground Installation
APLR	- Association for the Protection of Landowners Rights
AzSPU	- Azerbaijan Strategic Performance Unit
BWRA	- Ballast Water Risk Assessment
bbl	- Barrel
BIL	- Botaş International Ltd
BNB	- See RUDF
BOD	- Biochemical Oxygen Demand
BTC	- Baku-Tbilisi-Ceyhan Pipeline
BTEX	- Benzene, Toluene, Ethyl Benzene and Xylene
BVT	- Block Valves
BWRA	- Ballast Water Risk Assessment
CARE	- CARE International NGO
CAS	- Centre for Archaeological Studies, Georgia
CBG	- Caucasian Black Grouse
CBO	- Community Base Organization
CCIC	- Consolidated Contractors International Company
CHPD	- Cultural Heritage Protect Department (of the Ministry of Culture, Monuments Protection and Sport of Georgia)
CIP	- Community Investment Programme
CLO	- Community Liaison Officer
CMT	- Ceyhan Marine Terminal
CO <sub>2</sub>	- Carbon dioxide
COD	- Chemical Oxygen Demand
CWAA	- Central Waste Accumulation Area
DAFWC(F)	- Days Away From Work Cases (Frequency)
dB	- Decibel
DSA	- Designated State Authority (Turkey)
E&S	- Environmental and Social
EBRD	- European Bank of Reconstruction and Development
EDDF	- Emergency Drain Down Facility
EEMP	- Environmental Emissions Management Plan
EPPD	- Export Pipelines Protection Department (Azerbaijan)
EIA	- Environmental Impact Assessment
EIP	- Environmental Investment Programme
EMS	- Environmental Management System
ESMS	- Environmental and Social Management System
ERA	- Environmental Risk Assessment
ERM	- Environmental Resource Management Ltd
ESA	- Ecologically Sensitive Area
ESAP	- Environmental and Social Action Plan

ESER	- Environmental and Social Evaluation Report
ESIA	- Environmental and Social Impact Assessment
EU	- European Union
GEF	- Global Environmental Facility
GIS	- Geographical Information System
GTZ	- Deutsche Gesellschaft für Technische Zusammenarbeit (NGO)
H&S	- Health and Safety
H1	- First half of year (January – June)
H2	- Second half of year (July – December)
HGA	- Host Government Agreement
HiPo(f)	- High Potential Incident (frequency)
HSE	- Health, Safety and Environment
HSSE	- Health, Safety, Social and Environment
IEC	- Lenders' Independent Environmental Consultant
IFC	- International Finance Corporation
IFI	- International Finance Institution
IPLOCA	- International Pipeline and Offshore Contractors Association
IPT	- Intermediate Pigging Station (Turkey)
ISO	- International Standards Organisation
IUCN	- International Union for Conservation of Nature and Natural Resources
KP	- Kilometre Point
KPI	- Key Performance Indicator
LSTKA	- Lump Sum Turn Key Agreement
MENR	- Ministry of Ecology and Natural Resources (of Azerbaijan)
MoEF	- Ministry of Environment and Forestry, Turkey
MoENR	- Ministry of Energy and Natural Resources, Turkey
mmbd	- Millions of Barrels per Day
MOC	- Management of Change
MoE	- Ministry of Environment (Georgia)
MOL	- Main Oil Line
NACRES	- Noah's Ark Centre for Recovery of Endangered Species (NGO)
NDVI	- Normalised Difference Vegetation Index
NGO	- Non-Governmental Organisation
NOx	- Nitrogen Oxides
OMP	- Offset Management Programme
OSR	- Oil Spill Response
OSRP	- Oil Spill Response Plan
PCR	- Public and Community Relations
PEIP	- Project Environmental Investment Plan
PM	- Particulate Matter
PSA	- Pump Station, Azerbaijan
PSG	- Pump Station, Georgia
PT	- Pump Station, Turkey

PTW	- Permit to Work
Q1/Q2/Q3/Q4	- Quarter 1 / Quarter 2 / Quarter 3 / Quarter 4
RAP	- Resettlement Action Plan
RDI	- Regional Development Initiative
RINJ	- Recordable Injuries
ROW	- Right of Way
RUDF	- Rural and Urban Development Foundation (now called BNB)
SARMS	- Special Area Reinstatement Method Statement
SCP	- South Caucasus Pipeline
SESMeke	- Joint Venture between SES and Meke Marine,
SIF	- Small Investments Fund
SLAP	- Supplementary Land Acquisition Programme
SLIP	- Supplementary Lenders Information Pack
SLCC	- State Land and Cartography Committee
SME	- Small and Medium Enterprises
SO <sub>2</sub>	- Sulphur Dioxide
SOC	- Safety Observations and Conversation
SPJV	- (Amec) Spie Petrofac Joint Venture
SRAP	- Social and Resettlement Action Plan
STP	- Sewage Treatment Plant
TOC	- Total Organic Compound
TPH	- Total Petroleum Hydrocarbons
TVA(R)	- Traffic Vehicle Accident (Rate)
UN	- United Nations
UNDP	- United Nations Development Programme
VOC	- Volatile Organic Compound
VPI	- Vulnerable People Initiative
WHO	- World Health Organisation
WWTP	- Waste Water Treatment Plant



## 1 EXECUTIVE SUMMARY

BTC Co. (hereinafter BTC) and its agents have complied in the development, construction and operation of the BTC Project with the Environmental and Social Action Plan (ESAP), applicable Environmental Laws and applicable Lender Environmental Policies and Guidelines in all material respects during the period covered by this report. There were no fines or penalties incurred for environmental or social non-compliances, and no material environmental claims against BTC during 2007.

All non-compliances that were identified during Independent Environmental Consultant (IEC) and Social and Resettlement Action Plan (SRAP) audits in 2007 are detailed in the Appendices of this report. Information is also given on the actions developed and implemented to address these non-compliances.

Two ESIA addendum documents were prepared during 2007. In September 2007 the ESIA Addendum for a new accommodation camp at PSA2 was approved by MENR. The camp is due to become operational in 2008-2Q. Also in September an ESIA Addendum to the BTC Azerbaijan ESIA was submitted to MENR for the Interim Routine Right of Way Access Strategy. This document describes how BTC intends to deliver its commitment of no routine driving on the Right of Way (ROW).

Eight Class III changes were submitted to lenders for approval; five in Azerbaijan and three in Georgia. All changes were related to the management of wastes.

In November Azerbaijan and Georgia were the subject of an ISO14001 pre-certification audit, with full certification planned for 2008.

Emissions monitoring for the operations phase continued in Azerbaijan and Georgia and results were generally in compliance. Monitoring of gas turbine exhaust gases was carried out for the first time in November and December. This showed emissions above project limits for NO<sub>x</sub> and CO, due to the gas turbines operating below their design load. Simultaneous ambient air monitoring confirmed that there was no breach of ambient air quality standards from these emissions.

Ten minor uncontained hydrocarbon (crude, diesel and lube oil) releases were reported in 2007, of which two were in excess of one barrel in volume. These were both as a result of third party actions.

BTC continued to benefit communities in all three countries through their Community Investment Programmes and Environmental Investment Programmes. In 2007 over \$10 million was invested in these programmes.

## 2 INTRODUCTION

The staged linefill of BTC with oil commenced from Sangachal Terminal near Baku on 18<sup>th</sup> May 2005, and crossed the Georgian Turkish border on 18<sup>th</sup> November 2005. Oil reached Ceyhan Marine Terminal (CMT) on 28<sup>th</sup> May 2006. A total of 10 million barrels of oil, from the Azeri-Chirag-Gunashli (ACG) fields in the Azerbaijani sector of the Caspian Sea, was required to fill the pipeline. The first shipment of oil sailed from the Mediterranean coast in the British Hawthorn tanker on 4<sup>th</sup> June 2006.

During 2006 the transition from the construction 'Project' team to the Operations team commenced.

Transition to Operations is now effectively complete, although some project legacy issues remain.

This BTC Annual Environmental and Social (E&S) Report has been prepared and structured in accordance with the requirements of Annex J of the ESAP governing construction of BTC and Annex H of the ESAP governing the operations phase of BTC. These requirements are reproduced in Appendix 1.

It is the fourth Annual E&S Report post-financing and covers the calendar year 2007<sup>1</sup>.

## **3 ESIA's / EIA AND PERMITTING**

### **3.1 SUMMARY OF ANY MATERIAL MODIFICATIONS TO THE ESIA's<sup>2</sup>**

#### **3.1.1 Azerbaijan**

##### **3.1.1.1 Construction and Operation of a Camp at PSA2**

An addendum to the BTC Azerbaijan ESIA was prepared for a new accommodation camp at PSA2. This camp will serve 40 people and occupies 1 ha of land immediately to the south of the PSA2 site. The site is owned by BTC. The ESIA Addendum was approved by MENR in September 2007. The camp is due to become operational in 2008-2Q.

##### **3.1.1.2 Interim Routine Right of Way Access Strategy**

An addendum to the BTC Azerbaijan ESIA was prepared for the Interim Routine ROW Access Strategy. This document describes how BTC intends to deliver its commitment of no routine driving on the ROW. It considers driving by both BP Operations and also Azerbaijan Government Export Pipelines Protection Department (EPPD). The ESIA Addendum was submitted to MENR in September 2007.

##### **3.1.1.3 BTC Expansions**

BTC owners have agreed to evaluate the expansion of the existing BTC system, for the purpose of transporting additional volumes of crude oil. An update of developments relating to the proposed expansion is discussed in Section 3.1.4.

#### **3.1.2 Georgia**

No formal Addenda to the BTC Georgia ESIA were submitted in 2007. For details of activities relating to the proposed expansion of the BTC system, see Section 3.1.4.

#### **3.1.3 Turkey**

No formal Addenda to the BTC Turkey EIA were submitted in 2007. For details of activities relating to the proposed expansion of the BTC system, see Section 3.1.4.

#### **3.1.4 Cross-Country Permitting Activity related to the Expansion of BTC**

The BTC Host Government Agreements (HGA) in each country already envisage an expansion of the existing BTC System. As such the BTC shareholders have agreed to investigate expanding the existing system for the purpose of transporting additional volumes of crude oil originating principally in Azerbaijan and the North Caspian. The first phase of expansion is to 1.2 million barrels per day (mmbd) by means of injecting a Drag Reduction Agent (DRA). At the end of 2007 this project was in Define Stage<sup>3</sup> and dialogue with the regulatory authorities has taken place as follows:

- In Azerbaijan and Georgia no extension beyond existing site boundaries is needed to enable an increase in throughput to 1.2 mmbd and it was therefore agreed with the regulator that no ESIA Addenda were required. However, a project description

<sup>1</sup> While construction started in 2003-Q2, the financing for the project was finalised in early 2004-Q1.

<sup>2</sup> Environmental and Social Impact Assessment. Note that in Turkey the formal terminology is EIA (Environmental Impact Assessment).

<sup>3</sup> BP projects are divided into five main stages: Appraise, Select, Define, Execute and Operate. The first three stages correspond to the initiation, planning and design of a project and execute corresponds to the implementation of the Project.

together with updated Environmental Risk Assessments (ERA), were submitted to both governments in the third and fourth quarters of 2007. Workshops were also held to support and explain the documentation.

- In Turkey, the proposed expansion to 1.2 mmbd will require minor expansion outside the existing site boundary at two block valves (BVT 48 and BVT 50) and will increase shipping traffic and loading of crude at Ceyhan Marine Terminal. For these reasons it was agreed with the regulators that a Preliminary EIA report would be prepared (also supported by the ERA and Oil Spill Response Capability documents)<sup>4</sup>. This document package was submitted in the fourth quarter of 2007. A response is expected in January 2008.

A document package consistent with that submitted to the regulatory authorities, together with a Management of Change (MOC) Note will be submitted to the Lenders and their environmental consultants in 2008.

### 3.2 SUMMARY OF MATERIAL PERMITS ISSUED IN 2007

BTC Operations related permits acquired in 2007 are as follows:

- Akhaltsikhe Camp Mineral Extraction License  
*Water abstraction from the Akhaltsikhe Camp bore well*
- PSG 1 Camp Water Discharge Permit  
*Discharge permit and limits of waste water from PSG 1 Camp Sewage Treatment Plant*
- PSG 1 – PSG 1 Camp – PSG 2 Camp – Mineral Extraction License  
*Water abstraction from PSG 1, PSG 1 Camp and PSG 2 Camp bore wells*
- PSG 2 Camp Water Discharge Permit  
*Discharge permit and limits of waste water from PSG 2 Camp Sewage Treatment Plant*

Other support permits were as follows:

- Environmental Impact Permit Sanitary  
*Permit issued to Contractor Sanitary by MoE allowing Disposal of solid domestic, toxic and hazardous waste at lagluja landfill and PSG1*
- Ghudushauri Hospital Environmental Impact Permit  
*Permit issued to subcontractor Ghudushauri Hospital by MoE for medical Waste Burning (Neutralization) in Incinerator*
- Kodiana Security Base Water Discharge Permit  
*Discharge permit and Limits for sewage discharge into Surface Water from Security base Sewage Treatment Plant*
- Water Abstraction Permit Triquest Tabatskuri  
*Water abstraction by contractor Triquest from lake Tabatskuri for construction of AGI access roads*
- In 2006 application was made for Building Use Permits for Residency Elements of Pump Stations, by BIL on behalf of Botaş. The permits have been issued for CMT (including the jetty) and PT4. The CMT permit was obtained in 2006 and transferred to BIL in 2007. The PT4 permit was obtained in November 2007. The remainder of the permits have not yet been issued due to an unresolved matter between Botaş and the related Ministry. Meetings are on-going between the three parties (BIL, Botaş and the Ministry) to resolve the issue as soon as possible. BTC is monitoring the issue.
- Preliminary and Highway Connection permit for Access Roads for Block Valve Stations 48, 49 and 50 were obtained in March 2007. The application was made in June 2006 as per the other Block Valve Stations; however there was a delay in the administration of the permit.

<sup>4</sup> It was subsequently confirmed by the Turkish Ministry of Environment and Forestry on 29<sup>th</sup> January 2008 that the preliminary EIA report was sufficient and that a full EIA Addendum was not required.

- Discharge permits for the Operations Waste Water Treatment Plants for PT1, PT2, PT3, PT4 and CMT were obtained in March, January, April, February and April 2007, respectively.
- Opening and Operation Permit (Non-Hygienic Establishments) applications for permanent permits were made for each major AGI and the pipeline in 2007. Permanent permits have been obtained for the pipeline and major AGIs in Osmaniye, Kayseri, Gumushane and Kars Provinces. Other permanent permits are being progressed however Turkish authorities have advised that while the application process is in progress Operations are legal under the temporary Operations permits that were obtained in 2006/07.
- A water abstraction permit was obtained for the ground-water well near the CMT facility (Yanikdegirmen well) in February 2007.
- Preliminary Emissions Permits for Fuel Burning Plants: Applications for all facilities completed in 2007. Provincial Environmental Directorates reviewing applications and undertaking on-site reviews as part of approval process. Process is on-going.

### 3.3 UPDATE ON STATUS OF PROJECT SPECIFIC REQUIREMENTS FOR FURTHER WORK UNDER THE ESIA<sub>s</sub> OR PERMITS

A summary of country-specific activities relating to ongoing studies or surveys as required under the ESIA<sub>s</sub> or permits is given below. Studies or surveys noted as completed in the 2006 Annual report are not shown.

#### 3.3.1 Azerbaijan

The only 'Additional ESIA Study and Survey' as specified in the Operations ESAP relates to groundwater monitoring programme.

Study/Survey:	Expected Timing:
Groundwater Monitoring Programme	Monitor water level and quality: Ongoing
<b>Ref:</b> 2004-Q1 (p5-3); 2004-Q2 (p3-3); 2004-Q3 (p3-2); 2004-Q4 (p3-2); 2005-Q1 (p3-2); 2005-Q2 (p3-2); 2005-Q3 (p3-2); 2005-Q4 (p3-1), 2006-H1 (p3-1)	
2007: Groundwater monitoring was carried out in May 2007 and November 2007. A summary of results is given in Section 5.2.2.5 and the data sheets are given in Appendix 2.1e	
<b>Completion Status:</b> ONGOING	

In the Construction ESAP there was a requirement to translocate *Iris acutiloba* off the ROW prior to construction. This requirement was fulfilled, and monitoring of the success of the relocation was ongoing in 2007. Similarly, Cultural Heritage programme Phase V (Analysis and Reporting) was ongoing during 2007. A summary of the results of both these surveys are given below:

Study/Survey:	Expected Timing:
<i>Iris acutiloba</i> Monitoring Programme	Monitoring: Ongoing
<b>Ref:</b> 2004-Q1 (p5-2); 2004-Q2 (p3-2); 2004-Q3 (p3-1); 2004-Q4 (p3-2); 2005-Q1 (p3-1); 2005-Q2 (p3-2); 2005-Q3 (p3-1); 2005-Q4 (p3-1), 2006-H1 (p3-1)	
Field surveys were carried out to assess <i>Iris acutiloba</i> survival rates in May 2007 and in September 2007. During both of these surveys very little above ground evidence of the plants was visible. However, excavations of a selection of bulbs during the September survey revealed that approximately 40% of bulbs remained viable. It is not uncommon for transplanted bulbs to remain dormant for 2 or 3 years after transplantation. Another survey shall be conducted in Q1 2008 to determine numbers of bulbs which have sprouted.	
<b>Completion Status:</b> ONGOING	



<b>Study/Survey:</b> Cultural Heritage – Archaeology Phase V (Analysis and Reporting)	<b>Expected Timing:</b> Phase V: Ongoing
<b>Ref:</b> 2004-Q3 (p3-2); 2004-Q4 (p3-2); 2005-Q1 (p3-2), 2005-Q2 (p3-2); 2005-Q3 (p3-2); 2005-Q4 (p3-1); 2006-H1 (p3-1)	
Work continues in association with the Institute of Archaeology and Ethnology. Refer to Case Study 1.	
<b>Completion Status:</b> ONGOING	

### 3.3.2 Georgia

Some of the commitments of the construction ESAP and requests from the Government of Georgia entailed the construction of additional pipeline facilities like the Emergency Drain Down Facility (EDDF), the Security Base and the Secondary Containment facilities in the Kodiana region. Environmental and social evaluation reports were completed for these facilities. These and other project deliverables are categorized as BTC / SCP Legacy Projects. Implementation of the Legacy Projects commenced in 2006 and continued passed 2007-Q4.

The only 'Additional ESIA Study and Survey' specified in the Operations ESAP relates to the groundwater monitoring programme.

<b>Study/Survey:</b> Aquifer Monitoring Wells	<b>Expected Timing:</b> Monitoring: Operations
<b>Ref:</b> 2004-Q1 (p5-7); 2004-Q2 (p3-5); 2004-Q3 (p3-4); 2004-Q4 (p3-4); 2005-Q1 (p3-4); 2005-Q2 (p3-4); 2005-Q3 (p3-3); 2005-Q4 (p3-3); 2006-H1 (p3-2); 2006 – Operations Phase (p5)	
Drilling and installation of wells for groundwater testing began in 2005-Q2 and sampling was carried out in 2005-Q3, 2006-Q2, 2006-Q3, and again in 2007-Q2 and 2007-Q3. Discussions held with Government of Georgia at the end of 2007 led to a reduction of monitored parameters, which will come into effect in 2008. More details on results of 2007 monitoring rounds are given in Section 5.2.2.5 and Appendix 2.2e of this report.	
<b>Completion Status:</b> ONGOING	

<b>Study/Survey:</b> Monitoring of Translocated Red Data Book Species	<b>Expected Timing:</b> Monitoring: Operations
<b>Ref:</b> 2004-Q1 (p5-5); 2004-Q2 (p3-4); 2004-Q3 (p3-3); 2004-Q4 (p3-3); 2005-Q1 (p3-3); 2005-Q2 (p3-3); 2005-Q3 (p3-3); 2005-Q4 (p3-2); 2006-H1 (p3-2)	
BTC committed to undertake the necessary steps to protect, conserve and encourage the growth of fourteen identified endangered plant populations through ex-situ conservation and subsequent reintroduction into the wild during reinstatement. Activities in 2007 included routine maintenance and plant cultivation. Results continue to indicate a high survival rate for translocated plants. Reintroduction into the wild is planned for 2008-Q2. Monitoring for survivability is due to begin during 2009-Q2.	
<b>Completion Status:</b> ONGOING	

<b>Study/Survey:</b> Cultural Heritage Phase IV: Archaeological Late Finds Phase V: Analysis and Reporting	<b>Expected Timing:</b> Monitoring: Operations
<b>Ref:</b> 2004-Q2 (p3-5); 2004-Q3 (p3-4); 2004-Q4 (p3-3); 2005-Q1 (p3-4); 2005-Q2 (p3-4); 2005-Q3 (p3-3); 2005-Q4 (p3-2); 2006-H1 (p3-2)	

The "Archaeology Claims Agreement" was signed by BTC/SCP and Georgia National Museum in August 2007. The agreement states that damaged sites along the ROW are to be effectively preserved *in situ* and that direct compensatory funding for damages should be directed towards additional archaeological investigations, improving laboratory/storage facilities for cultural materials from archaeological sites recorded in association with AGT Project, and publication of major and important research.

Additionally there are two off-ROW sites, damaged during the construction phase. These excavations will be funded because of their location; they are under a high risk of additional damage due to their exposure.

The Architectural sites agreement with Cultural Heritage Protect Department of the Ministry of Culture, Monuments Protection and Sport of Georgia (CHPD) was signed in May 2007. Following joint visits to the architectural sites by CHPD and BP Georgia Cultural Heritage team, a report was received from CHPD stating their conclusion that no damages to these monuments occurred during the construction phase of AGT project.

Archaeological Technical Reporting was completed in December 2007. All 11 Comprehensive Technical Reports were received from the Centre of Archaeology of Georgia National Museum. The reports were translated into English and revised and edited by an external expert Prof. Michael Vickers (Oxford, UK).

Construction activities are still ongoing, including the Kodiana Special Projects (Emergency Drain Down Facility, Secondary Containment construction etc.) and the Roads program. An additional heritage field officer was hired to monitor construction activities during the Summer.

**Completion Status:** COMPLETED/ONGOING

**Study/Survey:**

Kodiana Special Projects and Other Legacy Projects

Ref: 2006-H1 (p3-2)

**Expected Timing:**

Monitoring: Projects / Operations

In order to fulfil the commitments made under the Construction ESAP, construction of the Kodiana Emergency Drain Down Facility (EDDF) and Security Base continued throughout 2007. 69% and 74% of the works were completed at EDDF and Security Base respectively by the end of 2007 and both facilities are expected to be completed by 2008-Q3. Construction of the secondary Containment facilities is expected to commence during 2008-Q1.

Marneuli Camp was reinstated (70%) while Tsalka camp was decommissioned and handed back to the local community (school section) and land users.

**Completion Status:** ONGOING

**Study/Survey:**

BTC / SCP Biore Restoration

Ref: 2006-H1

**Expected Timing:**

Monitoring: Operations

Under the Construction ESAP, BTC committed to undertake the necessary steps to reinstate areas disturbed during construction to pre-existing conditions. Part of this commitment involved planting and seeding. The first phase of the planting and seeding campaign was completed in 2007-Q4. Monitoring for survivability shall begin during 2008-Q2.

**Completion Status:** COMPLETED

### 3.3.3 Turkey

Five 'Additional Studies and Surveys' as required in the Construction ESAP continued in 2007. Two of these (Marine Turtle Survey and Marine Ecological Survey) are also required in accordance with the Operations ESAP.

**Study/Survey:**

Special Area Reinstatement Method Statement and associated surveys

Ref: 2004-Q1 (p5-9); 2004-Q2 (p3-6/7); 2004-Q3 (p3-5); 2004-Q4 (p3-5); 2005-Q1 (p3-4); 2005-Q2 (p3-4); 2005-Q3 (p3-4); 2005-Q4 (p3-4); 2006 Annual (p6)

**Expected Timing:**

Construction

Following all reviews and rehabilitation works completed in Ecologically Sensitive Areas (ESAs), the ESA Vegetation Cover Recovery Trend (15 ESAs), Vegetation Cover (40 ESAs) and potential erosion performance (for each ESA) was assessed as part of the ROW Vegetation Monitoring described in Section 3.4. Results of analyses will be communicated to BIL for necessary action as part of the 2008 ROW monitoring programme.

**Completion Status:** ONGOING (but will be reported in 2008 as part of general ROW vegetation monitoring)

**Study/Survey:**

Landscape Plans and Monitoring for Facilities

**Expected Timing:**

Landscape monitoring ongoing until planting is established.

**Ref:** 2005-Q1 (p3-4); 2005-Q2 (p3-4); 2005-Q3 (p3-4); 2005-Q4 (p3-4) ; 2006 Annual (p6)

Landscape enhancements are on-going at facilities in accordance with findings of BTC 2006 review. Monitoring of landscape status will be undertaken again in 2008.

**Completion Status:** ONGOING**Study/Survey:**

Water Supply Sustainability Studies For Groundwater and Surface Water Supplies for Temporary and Permanent Facilities

**Expected Timing:**

Studies completed for temporary and permanent facilities. Monitoring ongoing (additional studies may be required depending upon actual water draw demand and results of monitoring).

**Ref:** 2005-Q1 (p3-4); 2005-Q2 (p3-4); 2005-Q3 (p3-4); 2005-Q4 (p3-4); 2006-H1 (p3-3), 2006 Annual (p7)

BTC developed a Groundwater Monitoring Strategy on behalf of BIL and is assisting BIL to implement the strategy.

**Completion Status:** ONGOING**Study/Survey:**

Marine Turtle Survey

**Expected Timing:**

Operations

**Ref:** 2004-Q1 (p5-10); 2004-Q2 (p3-8); 2004-Q3 (p3-6); 2004-Q4 (p3-5); 2005-Q1 (p3-5); 2005-Q2 (p3-6); 2005-Q3 (p3-6); 2005-Q4 (p3-5); 2006-H1 (p3-4), 2006 Annual (p7-8).

The annual marine turtle survey was conducted by DOKAY between June and September 2007. As in previous years the survey was carried out on four small beaches near CMT. In 2007 a total of 57 *Chelonia mydas* (Green Turtle) and one *Caretta caretta* (Loggerhead Turtle) nests were found in the study area. In addition 112 observations of non-nesting green turtles and four observations of non-nesting loggerhead turtles were recorded.

A summary of the number of nests observed in 2007 compared with previous years is as follows:

	2002	2003	2004	2005	2006	2007
<b>Green Turtle</b>	42	44	118	29	198	57
<b>Loggerhead Turtle</b>	18	3	3	7	0	1

The number of nests observed in 2007 was a third of the number observed in 2006. This is in keeping with previously surveyed fluctuations in nesting patterns and is thought to relate to a natural biological nesting cycle of the Green turtle.

This year's hatchling success was quite high despite the lower nest numbers (overall hatchling success was 82.3%). The predators' profile was same as that of last year. As reported previously no backward hatchling disorientation due to the presence of lights on the Botaş and CMT jetties was observed when the hatchlings were making their way from the nest to the sea

**Completion Status:** ONGOING**Study/Survey:**

Marine Ecology Survey

**Expected Timing:**

Operations

**Ref:** 2006 Annual (p8).

The objective of the survey was to repeat the marine ecology surveys completed in 2001 and 2005 at CMT and compare the results to determine any changed conditions in Iskenderun Bay. The survey was carried out by DOKAY in July 2007 in the vicinity of the BTC Jetty and the coastal zones on both sides of the jetty. The study comprised benthic and water column community assessments, plankton assessments and a fish survey.

In summary, the results of the 2007 survey are similar to findings of the 2005 survey and there was no evidence of significant changes in the marine ecology since 2005. There are differences observed between the 2001 and 2005/2007 surveys but this has been attributed to differences in applied method and season in which the surveys were undertaken.

**Completion Status:** ONGOING

### 3.4 OTHER STUDIES

#### 3.4.1 Georgia

There were four 'Other' studies/surveys carried out in Georgia in 2007:

<b>Study/Survey:</b> Biodiversity Monitoring off FCI-ROW	<b>Expected Timing:</b> 2008
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**Progress:**

BTC committed to undertake a five-year programme for Biodiversity monitoring at off FCI-ROW locations. The programme consists of faunal (including ichthyofauna) and floral (including habitat) components and aims to identify any potential impact caused by pipeline construction and operational activities. It was launched in spring 2004. Activities in 2007 were conducted according to the programme schedule defined at the beginning of the year. Results of 2007 monitoring will be discussed in detail in the Annual Biodiversity Monitoring report which will be submitted to BTC in 1Q-08. Preliminary assessment of 2007 results have shown an overall decrease of any visible impacts on the surrounding environment which might have been caused by pipeline operations. As a part of the ESAP requirement and based on agreement with MoE of Georgia, an invasive species biannual survey was conducted across BTC/SCP ROW in 2007. The survey revealed the presence of two invasions in ROW locations (*Digraphis arundinacea* and *Ambrosia artemisiifolia*). Additional surveys are planned to quantify their presence in 2008 and mitigation plans to be set. In contrast the faunal component of the survey has revealed some positive trends in monitoring of the Caucasian Mud-diver and Snake-eyed Lizard. It is suggested to now remove these species from the faunal monitoring program. Ichthyological surveys were undertaken at 16 major river crossings in 2007 within the BTC/SCP ROW for three major components; macro-invertebrate and periphyton sampling and habitat parameters. Overall quality of many watercourses can be ranked as fair-to-acceptable in terms of macro-invertebrate indices and spawning substrate. Monitoring will be continued in summer 2008.

**Completion Status:** ONGOING

<b>Study/Survey:</b> Landscape Monitoring of FCI-ROW	<b>Expected Timing:</b> Operations
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**Progress:**

BTC committed to undertake landscape monitoring along FCI-ROW. The programme and corresponding methodology aims to record visual changes over time in order to demonstrate progress in restoring the landscape. It was launched in 2005. By having a series of photographs taken at the same locations over the next few years BTC/SCP will have a visible demonstration of the restoration of the landscape. A number of photo sites have been pre-selected by the BTC/SCP Environmental Team for photo logging due to their importance, in the following categories: river and stream crossings; bear crossings; slopes and gullies liable to erosion; seismic faults; areas with high visibility to communities/public; borrow pits; permanent AGIs, including PSGs and Block Valves; temporary AGIs' areas; and road crossings within environmentally/socially sensitive areas. Activities in October 2007 involved photo-archiving of selected sample locations to the photo-referencing system (kept in the Project GIS) for consequent measurement of reinstatement monitoring success. Uploading of vantage point locations into GIS was also undertaken.

**Completion Status:** ONGOING

<b>Study/Survey:</b> Vegetation Cover and Species Diversity Survey of ROW	<b>Expected Timing:</b> Operations
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**Progress:**

The Georgia Vegetation Cover Assessment involved the collection and analysis of high resolution satellite imagery to measure vegetation cover and field surveys to both calibrate the satellite data and to measure species diversity.

From KP	To KP	Length (km)	Data Source
0	250	250	Satellite
31	233	202	Satellite + Ground Survey

### Vegetation Cover Assessment

QuickBird satellite data were acquired over the ROW and timed to coincide as far as possible with peak growing season. This data set was processed to generate a Normalised Difference Vegetation Index (NDVI) at a resolution of 2.4m. The NDVI analysis is a common remote sensing technique used to map vegetation cover and is not an intrinsic physical quantity, but a measure of reflectance over a scale of -1 to +1. It is therefore necessary to calibrate NDVI values using data collected in the field.

To collect this field data, a stratified random sampling approach was used to locate 40 transects across the areas of interest. Percentage vegetation cover was then measured along these transects using a set of quadrats, at approximately the same time as the satellite data was acquired.

Data from the quadrats and corresponding NDVI values were then used to develop a regression model which in turn was used to develop vegetation cover estimates in all non-agricultural areas (including those not sampled in the field) where construction activities caused a disturbance to natural vegetation. The results will be used in future years as a benchmark to assess trends in vegetation re-growth. The result was a set of vegetation cover maps for the 19 different types of habitats of interest, generated from the calibrated NDVI data together with ground survey data.

For more details see Case Study 2 and Section 4.4.

### Species Diversity Assessment

The primary method for determining species diversity was through field sampling. Sampling locations were initially determined randomly, although a proportional representation approach was adopted to ensure appropriate inclusion of all habitats and sensitive areas. The assessment involved the collection of data from 50 transects along the entire pipeline length in Georgia.

The number of sampling sites is being reviewed based on an assessment of the habitat representativeness, specifically in terms of species variability as this is the key factor when relating sample size and statistical significance. Wetlands sample plot sites were excluded from the random selection process due to the absence of those similar to adjacent off ROW areas.

**Completion Status:** ONGOING

#### Study/Survey:

Botanical Survey of South Georgian Wetlands

#### Expected Timing:

2007-2009

#### Progress:

To mitigate pipeline construction related impacts of wetland plots within the BTC/SCP ROW an agreement was reached between BTC and the Ministry of Environment of Georgia. Based on this an alternative compensatory measure was developed - implementation of botanical surveys of wetlands in southern Georgia aimed at identification of a high conservation value site to be proposed to the Ministry for Protection of Environment and Natural Resources of Georgia as a potential protected area. Consequently it was decided to undertake detailed botanical surveys of wetlands in the volcanic plateau of southern Georgia in order to identify a wetland ecosystem of high conservation value within this geomorphological zone.

**Completion Status:** ONGOING

## 3.4.2 Turkey

Eight 'Other' studies were carried out in 2007. A summary of these is as follows:

#### Study/Survey:

Fauna Survey (Caucasian Black Grouse) at ESA1

#### Expected Timing:

Until mid-2008

**Ref:** 2005-Q3 (p3-8), 2005-Q4 (p3-6), 2006-H1 (p3-5), 2006 Annual (p8)

Six monitoring field visits were carried out in 2007. The original purpose of the monitoring<sup>5</sup> was to better understand breeding dynamics during the project identified seasonal constraint period, however the scope of the study has been expanded to cover general behaviour

<sup>5</sup> The first phase of the Fauna Survey (Caucasian Black Grouse) at ESA1 was completed in 2005.

dynamics of the local Black Grouse population. Radio telemetry equipment was used in all of the surveys. This technology has improved the quality of the monitoring programme. Currently it is too early to report on any definitive findings. The surveys will continue until mid-2008. The results will be presented in the 2008 Annual Report.

**Completion Status:** ONGOING

**Study/Survey:**

Vegetation Cover, Vegetation Cover Recovery Trend and Potential Erosion Performance Assessments by satellite imagery and field assessment

**Expected Timing:**

Operations

QuickBird, Ikonos and Spot satellite data were acquired for almost the entire pipeline in 2007 and timed to coincide as far as possible with the peak growing season. Vegetation Cover Assessment, Vegetation Cover Recovery Trend and Potential Erosion Performance Assessments were carried out. Analyses were conducted in non- developed areas (as distinct from agricultural areas).

The study involved two main activities; (1) field measurements in order to calibrate and verify the satellite imagery and (2) image analysis; analysis of high resolution satellite imagery to define vegetation cover.

For further details on the method and results, see Case Study 2. See also Section 4.4.

**Completion Status:** ONGOING

**Study/Survey:**

Soil Fertility Assessment

**Expected Timing:**

Operations

Soil fertility assessments were carried out primarily in ESAs in order to address the concerns raised by the IEC. The survey concluded that the nutrient levels of soils have been reduced at certain locations along the pipeline and some sections would benefit from nutrient supplements.

The analysis prioritized the nutrients and locations and concluded that nitrogen is the most essential nutrient in the initial establishment of vegetation cover. As a result about 70-80 kg/hectare of nitrogen fertilizer will be applied to a total length of about 40 kilometres, primarily in ESAs at about 10 locations.

**Completion Status:** COMPLETED

**Study/Survey:**

Tree and Shrub Survival Monitoring

**Expected Timing:**

Operations

The survey covered the entire pipeline, on a randomly selected sampling basis. All of the offset planting areas and 15 on-ROW sample points (2 locations in Lot A, 4 in Lot B, and 9 in Lot C) in 2006 and 31 (9, 6, 16 in Lot A, B and C, respectively) were monitored in 2007.

The sample sites were distributed across different tree and scrub habitats according to the habitat's relative variability, sensitivity and length.

The following information was assessed:

- The number and type (species) of planted a) trees and b) shrubs;
- The number (and hence percentage) of a) trees and b) shrubs that show clear signs of life (e.g., buds, leaves, evidence of a green vascular cambium);
- Likely reason(s) for plant deaths/success;
- Recommendations for intervention/ plant replacement.

The overall on-ROW tree and shrub survival rate, which was determined on a sampling basis, was about 30%. The major factor negatively influencing the success of planted tree and shrub survival was observed to be stemming from anthropogenic sources or related activities (i.e. grazing, agriculture). Grazing was the major reason for low survival rates in Lot A. Lot C was influenced by grazing, agricultural and other (e.g. access roads) human activities almost equally. In Lot B poor species selection and planting technique (e.g. planting the saplings with their plastic tubes, planting under snow) dominated over other anthropogenic activities in terms of factors contributing to poor survival rates. Relatively harsh climatic conditions in Lot B were determined to be another important factor having a negative affect on survival rates.

The overall off-ROW offset area tree and shrub survival rate was assessed as 70%. These areas are remote from the ROW. The areas which demonstrated the highest success rate are the areas that are protected and maintained by the Ministry of Environment and Forestry. Mitigation measures for on and off-ROW tree and shrub establishment are being considered.

**Completion Status:** ONGOING

**Study/Survey:**

Sediment Quality Survey

**Expected Timing:**

Operations

The annual sediment quality survey at Ceyhan was conducted by DOKAY in July 2007. As per the previous surveys 12 sediment samples were taken and analysed for Total Petroleum Hydrocarbons (TPH), trace metals, benthic populations and other chemical and physical properties. Key results are as follows:

- Concentrations for Hg (mercury), Cd (cadmium), Pb (lead), Cu (copper), Al (aluminium), Cr (chromium) and Zn (zinc) in all of the sediment samples were below the established international and national guideline values and other literature values. Al, Cd, Cr, Pb concentrations were slightly lower than 2006 levels. Hg, Cu, Sn concentrations increased while Fe and Zn concentrations were measured at much the same levels at all stations as in 2006. According to the results, the measured trace metal concentrations in 2007 are close to 2005 measurements.
- Sn (tin), Fe (iron) concentrations of sediment samples were measured above the international guideline values. The main pollution sources of Sn in the marine environment are antifouling materials. The BTC Project does not use anti-fouling paints on the jetty. However ships accessing the port use anti-fouling paints on their hulls. Other sources of Sn pollution may be the agricultural activities in the Cukurova plain and Iskenderun area. The 2004 Sn value is higher than 2005, 2006 and 2007 and Sn concentrations show a decrease since 2004. Higher Fe concentrations were measured at relatively outer parts of the Gulf towards Iskenderun metropolitan. Anthropogenic sources of Fe include industrial effluents (burning of coke and coal). Existing industrial facilities may cause high level of Fe concentrations. These will continue to be monitored.
- Despite the higher measured concentrations for Sn and Fe there is an overall decrease in Trace Metal values.
- When Gasoline Range Organics (GRO) Total Petroleum Hydrocarbon (TPH) measurements for 2007 are compared with the 2005 and 2006 studies there are no significant changes. At all stations TPH GRO was measured at less than 1mg/kg, suggesting little or no GRO TPH pollution.
- The Diesel Range Organics (DRO) TPH limits were measured at less than 10mg/kg at all stations except at two where the limit was at around 16mg/kg. DRO TPH limits were significantly lower than 2005 and 2006 limits at six of the sample stations but this was attributed to the change of sediments at these stations from fine mud clays to calcareous coarse sediments. At the stations where no sediment changes were observed DRO TPH limits were approximately the same as 2006.
- Physical properties of water samples were within normal ranges for this area of the Mediterranean Sea when compared to reference values and guidelines.

**Completion Status:** ONGOING

**Study/Survey:**

Waste Water Feasibility Survey

**Expected Timing:**

Operations

A waste water feasibility study was undertaken by BTC on behalf of BIL by a BP waste water consultant in May 2007. The purpose of the survey was to determine how the Project could improve the operability of the waste water treatment plants to provide more consistent discharge results in accordance with Project standards. This involved a complete review of all waste water treatment plants at each facility location. Three phases of system modifications were recommended after the review to fit within the context of the on-going Project enhancements. Immediate, mid-term and long-term recommendations were made. Immediate improvements included recommendations to improve control of the existing equipment, mid-term improvements considers installation of tertiary treatment systems) and the long-term plan considers the eventual phase out and replacement of existing Waste Water Treatment

Plants. The study report will be finalized in 2008 pending a third-party review. Immediate term actions will be considered under the enhancement programme of 2008 and 2009.

**Completion Status:** COMPLETED

**Study/Survey:**

Ballast Water Management Study

**Expected Timing:**

Operations

TUBITAK MAM was commissioned by the Project to undertake a Ballast Water Risk Assessment (BWRA) for BTC shipping activities at CMT. The EIA committed that the Project would comply with the principles of the IMO Ballast Water Convention, although it is not yet ratified. The Convention requires that ballast water be controlled either through treatment to specified standards or ballast water exchange. Ballast water treatment technology, while established is not yet widely used or available by ships and it is therefore understood that ship ballast water exchange is currently the most effective and cost-efficient means for controlling ballast water.

The BWRA assessed the level of risk for all source ports of ships that used CMT between the dates 4th June 2006 and 28th May 2007 (the former date representing start of Operations and the last the commencement date of the BWRA study). The BWRA was undertaken in accordance with the IMO – GloBallast BWRA Methodology. The study used the GloBallast BWRA database developed by IMO that calculates the relative overall risk of a potentially harmful alien species introduction. To complete the BWRA the initial stage was to determine the source ports of the ships berthing and discharging ballast water at the CMT. At the time of the study 171 ships originating from 54 ports around the world had visited CMT in the previous 12 months. The study established the level of risk from the introduction of alien species from current known source ports of ships using CMT. Risk was determined on a five point scale of highest, high, medium, low and lowest.

Of the 54 ports, 22 were identified as being of a medium to highest level of risk to İskenderun Bay with respect to alien species invasion. The highest risk ports were Ashkelon and Haifa in Israel, Sidi Kerir in Egypt, Tartous in Syria, Fos sur Mer in France and Augusto-Priolo in Italy. All of the highest risk ports are located in the Mediterranean Sea as the key criteria to risk is environmental similarity of ports.

Upon completion of the risk assessment the Project assessed options for ballast water management from the medium to highest risk ports. Feasible management options at this stage only include ballast water exchange as discussed above. Upon assessment however ballast water exchange did not prove to be a viable option either as the journey time and distance from shore of the ships travelling from all of the medium to highest risk ports is not sufficient to complete a full 95% volumetric ballast water exchange without deviating or delaying a ship's voyage. The Convention clearly states that no ships will be required to deviate its course or delay its voyage to meet the requirements of the Convention. The Project is therefore complying with the Convention as per the ESIA requirements. However BTC intends to undertake further studies to determine if there is value in undertaking partial ballast water exchange and/or exchanging ballast water closer than Convention recommended distances from the shore. In addition the Project will continue to update the risk assessment to take account of new source ports of tankers using the CMT facility. If in any case a ship is travelling from a medium to high risk port that meets the criteria for allowing ballast water exchange, this will be enforced by the Project as per the Convention.

**Completion Status:** ONGOING

**Study/Survey:**

Coastal Processes Survey

**Expected Timing:**

Operations

The coastal processes surveys commenced in December 2006 at CMT by DOKAY and continued with two additional surveys in 2007 which were carried out in June and December. The scope of the work was to look for evidence of beach scour and potential changes to the beach profiles in the vicinity of the BTC Jetty since the 2001 EIA baseline study. A summary of results below include a comparison June 2007 survey results with the December 2006 and EIA baseline report:

- The height of the mobile dunes increased from 2 to 23 cm along the entire coast except the sheltered sides of rocky promontories since the December 2006 survey.
- Similarly, benthic sedimentation increased along the entire coast except the sheltered



side of rock promontories. Sedimentation rates reached a maximum 7.5 cm/month at the west of the BTC Jetty and 10cm/month at the Holland and Botaş beaches over the study period.

- The average accretion rate (3 m/year) calculated for December 2006 - June 2007 period at the beach immediately west of Botaş Jetty is in agreement with the average rate for the period 1973-1992 (2.9 m/year).
- 0.6 m/year accretion rate measured at the eastern part of Holland Beach appeared to be slightly lower than the average rate (0.73 m/year) for the period 1973-1992.
- Accretion rates at Botaş Beach couldn't be calculated due to the poor definition of the coastal line as shown on the ortho photograph taken at the time of the EIA baseline study. This was due to the rough sea conditions at the time. An alternative assessment involving a comparison of 1995 and 2002 topographical maps will be undertaken in early 2008.
- Sediments are recharged to the Bay from sandstone and clay soils which are washed to the sea during heavy rainfall periods. The frequency and strength of the winds in the area generate a distinct longshore east south-east current. Sediments are subsequently transported towards the Botaş beach, which explains the accretion of sediments at this location.
- To date there is no apparent impact of the BTC jetty and temporary harbour on coastal processes in the area.

**Completion Status: ONGOING**

## 4 CHANGES

The BTC Project uses a management system process called "Management of Change" (MOC). Proposed changes with potential associated environmental or social impacts are graded by three Classes – I, II or III, as defined in the ESAP. Class III changes are the most significant. Changes are subject to a process of review and approval by BTC, including review and approval by the Lenders for Class III changes. Class I and II changes do not require direct approval by the Lenders, but are assessed as part of the in-country monitoring process by the Lenders' IEC. The following sections summarise BTC approved changes as recorded during 2007.

### 4.1 AZERBAIJAN

There were eight changes in Azerbaijan in 2007.

Asset	Class	Approved Internally	Description of Change
BTC / SCP Az	III	Sept 2007	<b>General Waste</b> This MOC covers the disposal of non-hazardous waste generated by BTC Operations Facilities in a BP dedicated area at the ADES Sumgayit Municipal landfill. (The ADES site is not compliant with EU standards). The operation of the BP area is subject to separate management procedures and controls.
BTC / SCP Az	III	Sept 2007	<b>Medical Waste</b> The Medical Waste MOC covers the use of the Baku Central Clinical Hospital incinerator for the disposal of medical waste until April 2007.
BTC / SCP Az	III	Sept 2007	<b>Oily Waste</b> The Oily Waste MOC covers the interim measure of storage of oily waste at Serenja Waste Management Facility.

Asset	Class	Approved Internally	Description of Change
BTC / Az	III	Sept 2007	<b>Disposal of Waste Pigging Wax</b> This MOC covers the temporary storage of pigging wax generated since 2006. This deviation is required until 4Q 2007. After that date, a new service provider will be appointed following a tender process. Before the service provider is appointed, BTC will submit a further MoC.
BTC / SCP / Az	III	Sept 2007	<b>Sewage Disposal</b> This MOC outlines the justification for the temporary use of the Mingechevir Waste Water Treatment Facility for treatment and disposal of sewage wastes until on-site treatment facilities are operating to required capacity for liquid phase of sewage effluent. It also covers sewage sludge disposal at the Mingechevir Waste Water Treatment Facility until BP AzSPU Facility for Sewage Sludge disposal is operational and compliant with EU requirements.
BTC / SCP / Az	II	Sept 2007	<b>Reinstatement of SPJV Camp at PSA2</b> An MOC was prepared to cover the above-ground and underground communications of the Yevlakh SPJV PSA-2 site being left in place at the landowners' demand. The sites are intended to be used in the future for construction of a cattle farm to support Azerbaijan economic development in the area.
BTC / SCP / Az	II	Sept 2007	<b>Reinstatement of CCIC Camp and PDY at Yevlakh</b> This MOC covers the above-ground and underground communications of the Yevlakh CCIC Construction Camp and Pipe Dump Yard sites being left in place at the landowners' demand. The sites are intended to be used in the future for construction of other camps to support Azerbaijan economic development in the area.
BTC / Az	III	Sept 2007	<b>Interim Routine ROW Access Strategy</b> This MOC details the change in access to the ROW, and is supported by a full BTC ESIA Addendum.

## 4.2 GEORGIA

There were eight changes in Georgia in 2007.

Asset	Class	Approved Internally	Accepted by Lenders	Description of Change
BTC / SCP / Geo	III	April 2007	Sept 2007	<b>Disposal of sewage sludge</b> at the Gardabani Municipal Treatment Plant - Document Number: AGT002-2003-OP-DCN-00007 Sewage sludge from STPs trucked to the Gardabani Sewage Treatment facility for sludge solids stabilization and permanent storage in sludge beds.
BTC / SCP / Geo	III	April 2007	Sept 2007	<b>Continued use of the Central Waste Accumulation Area (CWAA)</b> adjacent to PSG-1 - Document Number: AGT002-2004-PM-DCN-00067 (Document New Number - AGT002-2000-OP-DCN-00012) Continued use of the CWAA for temporary storage of BTC Project and Operational hazardous waste and recyclables prior to disposal by way of export to EU compliant facilities and/or approved local contractors.

Asset	Class	Approved Internally	Accepted by Lenders	Description of Change
BTC / SCP Geo	III	April 2007	Sept 2007	<b>Export of BTC legacy waste</b> - Document Number: AGT002-2000-OP-DCN-00010 BTC committed to the EU compliant disposal of waste arising. It is proposed that hazardous, non hazardous (excluding domestic type waste) and recyclable materials that cannot be disposed of within Georgia be exported and disposed in an EU compliant facility outside of Georgia.
BTC / SCP Geo	II	April 2007	Sept 2007	<b>Continued operation of the Rustavi Pipeyard</b> - Document Number: AGT002-2004-PM-DCN-000XX Document New Number - AGT002-2000-OP-DCN-00008) The Rustavi Pipe yard will be retained to store spare BTC and SCP pipe. It is strategically located next to a rail spur line. It was used as a general pipe lay down area and BTC's Oil Spill Contractor has also been temporarily utilizing this yard. The continued use and eventual dismantling of this facility will comply with ESAP and associated Management Plans.
BTC / SCP Geo	II	April 2007	Sept 2007	<b>Purchase and dismantling of the Marneuli, Tsalka and Akhaltsikhe Camps</b> - Document Number: AGT002-2004-PM-DCN-00073 Purchase and dismantling of the Marneuli, Tsalka and Akhaltsikhe camps for sale to the Egypt BU, at which time it will be demobilised and reinstated in accordance with requirements. Reinstatement of the camps will be performed by the Project using local contractors following reinstatement requirements under supervision of the environmental department
BTC / SCP Geo	II	April 2007	Sept 2007	<b>Purchase and continued operation of the Akhaltsikhe construction camp</b> - Document Number: AGT002-2004-PM-DCN-00072 Purchase and continued operation of the Akhaltsikhe construction camp. It is anticipated the camp will remain open until end 2008, at which time it will be demobilised and reinstated in accordance with requirements.

Asset	Class	Approved Internally	Accepted by Lenders	Description of Change
BTC Geo	II	April 2007	Sept 2007	<p><b>Upgrading and continued use of a Kodiana access road and construction of bypass</b> - Document Number: AGT002-2004-PM-DCN-00067</p> <p>Upgrade the existing construction access track to GB 17 from the public road on the east side of Andeziti up to the point where it crosses the SCP and BTC Pipelines ROW at KP 181+450. From this point the existing ROW running track will be upgraded up to GB 18. A by-pass road will be constructed around GB 18 and the ROW running track will be upgraded to KP 184+460 where the ROW crosses an existing village stoned track.</p>
BTC Geo	II	April 2007	Sept 2007	<p><b>Continued operation of the Andezit pipeyard (also known as Bakuriani pipeyard)</b> - Document Number: AGT002-2004-PM-DCN-000XX (Document New Number - AGT002-2004-PM-DCN-00076)</p> <p>This change addresses continued operation of the Andezit Pipeyard as a temporary project facility to support construction of the remaining Projects. Andezit pipeyard (also known as Bakuriani pipeyard) was initially constructed by SPJV as a pipe storage, laydown and a mechanic yard area. The site was scheduled for reinstatement at the end of the pipeline construction, however its continued use is required for the remaining projects in the Bakuriani area. It is currently used as a batch plant and a laydown area and is expected to be in use until the remaining projects are completed. The continued use and eventual dismantling of this facility will comply with ESAP and associated Management Plans.</p>

### 4.3 TURKEY

A summary of Class I and II changes during 2006 are summarised below. There were no Class III changes in Turkey during 2007.

Asset	Class	Approved Internally	Description of Change
BTC	I	April 2007	<p><b>Operational Cultural Heritage Management Plan and Waste Management Change</b></p> <p>Relatively minor changes to the two operational management plans to reflect operational feasibility and changes in BIL departmental and management structure.</p>

Asset	Class	Approved Internally	Description of Change
BTC	II	June 2007	<p><b>Continued use of Kars and Hanak Camps</b></p> <p>The EIA and supporting Camp Assessment Reports assumed that the camps would operate for the duration of the construction period. Botaş Corporation had stated that they intended to retain the Camps for alternative use. The camps at Kars and Hanak, are both owned by Botaş Corporation. BTC has no legal standing to enforce Botaş to decommission and reinstate the camps sites with immediate effect. Prior to temporary facility handover, the environmental and social aspects of the camps had been managed throughout the construction and transition period to ensure the camps are operating in accordance with Project standards. BTC has requested due diligence reports from Botaş to register the condition of the site at handover. These reports are currently outstanding. Botaş has however undertaken to decommission and reinstate the camps after completion of activities.</p>
BTC	II	June 2007	<p><b>ISO14001 certification</b></p> <p>The Turkey EIA states that ISO certification should be achieved “within 9 months following commencement of operations”.</p> <p>Full ‘commencement of operations’ is considered to be achieved when outstanding works have been completed on BTC construction. Thus, the following dates were targeted - ISO pre-certification audit November 2007 and certification in May 2008.</p>
BTC	II	June 2007	<p><b>Ceyhan temporary harbour</b></p> <p>The original design of CMT did not include the small craft harbour; therefore the EIA did not take account of this facility in the assessment scope.</p> <p>The small craft harbour is not located within the boundary fence of the BTC Terminal Facilities. Botaş has stated that they intend to keep the facilities. BIL concur with this idea, as they are currently using the area as a staging point and storage location for their marine OSR capability. The purpose of the MOC was to ensure that leaving the facilities in place would not bring about additional impacts above those envisaged in the Turkey EIA..</p> <p>An alternatives analysis study was carried out that assessed two options:</p> <ul style="list-style-type: none"> <li>• Keeping the small craft harbour;</li> <li>• Demolishing the small craft harbour.</li> </ul> <p>After consideration of the operational alternatives analysis it was determined that keeping the small craft harbour would not bring about additional impacts.</p>

Asset	Class	Approved Internally	Description of Change
BTC	II	June 2007	<p><b>MARPOL ship's slops handling facility</b></p> <p>There is a requirement under the international MARPOL convention (73/78) and Turkish Regulation on <i>Waste Removal from Ships and Control of Wastes 26.12.2004</i> to provide facilities for tankers to discharge oily water and slops water at receiving jetties. The facilities were not specified in the Lump Sum Turkey Agreement (LSTKA) (2000). BTC decided in early 2006 that the facilities to treat oily water and slops from tankers (as required by the MARPOL Convention) at CMT would not be provided by Botas under LSTKA. BTC Co will design and construct the facility instead. Design is currently on-going and construction is planned for 2009. The new facilities will be operated by BIL under the same arrangement and standard as they operate the Turkey section of the BTC Pipeline.</p>
BTC	II	June 2007	<p><b>Manning of IPT1 and IPT2</b></p> <p>This change addresses the environmental and social impacts of the Operational change to locate staff at Pressure Reduction Station (IPT1) and intermediate pigging station (IPT2). BIL, the Designated Operator, determined a requirement to staff the facilities to undertake Operations in accordance with the Operating Agreement between BIL and BTC. The ESIA did not assess the impacts of these facilities assuming that they were manned. The MOC assessed the E&amp;S impacts of manning the facilities and determined that impacts could be managed satisfactorily in accordance with existing mitigation measures in the EIA as per other manned facilities. In addition a Waste Water Treatment system will be installed at IPT1 and a well will be installed at IPT2, subject to a sustainability study.</p>
BTC	II	June 2007	<p><b>Temporary camp facilities at Above Ground Installations</b></p> <p>The EIA and supporting Camp Assessment Reports assumed that the camps would operate for the duration of the construction period.</p> <p>There is an Operational requirement to continue to use the temporary AGI camp facilities (PT1, PT2, PT3, PT4, IPT1 and CMT) to accommodate staff to support the Operation of the BTC Facilities.</p> <p>BIL has determined that it is not possible to house the number of staff required to operate the facilities at the accommodation provided for in the permanent facilities. As a result they have continued to use the camp facilities to provide accommodation to BIL and contractor staff. Office space is also being utilized at the camp facilities. The MOC process assessed additional E&amp;S impacts from the continued use of the camps and mitigation measures have been identified. The camp aspects and impacts have been included in the BIL ISO Environmental Management System and control measures are being implemented by BIL to manage impacts. BTC Co includes the camps in the scope of their bi-annual E&amp;S assurance audits.</p>

Asset	Class	Approved Internally	Description of Change
BTC	II	September 2007	<p><b>Operations Environmental Emissions Management Plan (EEMP)</b></p> <p>The Operational EEMP was written prior to start of Operations. Changes were required to the Plan to update it in terms of legal updates, feasibility of implementation and current operations. A summary of significant changes are as follows:</p> <ul style="list-style-type: none"> <li>• BIL will not monitor stack/exhaust emissions back-up or emergency engines which have a run-time of less than 500 hours per year, as per Turkish legal standards.</li> <li>• Reference to 110% containment capacity of diesel tank volume has been amended. Due to space constraints it was not always possible to provide 110% containment, but tanks are filled less to ensure 110% is effectively achieved.</li> <li>• Deleted reference to ballast water biological sampling and analysis as it was determined that it would not prove feasible to undertake effective and efficient analysis. Ballast water to be managed in accordance with Ballast Water Convention.</li> <li>• Deleted requirement for ships to discharge their ballast outside of the Designated Operation Zone as this is not feasible due ship handling requirements.</li> <li>• Removed requirement to undertake environmental ambient noise monitoring as it is not considered necessary. The World Bank night-time noise limits were predicted to be met within 50 m of AGI perimeter fence and nearest residential receptor is 1.5 km away.</li> <li>• Originally EIA had determined that IPT1 and IPT2 would not require to be lit permanently. For security reasons this requirement has been revised.</li> <li>• Removed requirement to undertake underwater noise monitoring as it was assessed that impact to marine fauna from underwater noise would be negligible.</li> <li>• Removed requirement to determine one hour average SO<sub>2</sub> ambient air limit at CMT, as the nature of activities are such that they do not have SO<sub>2</sub> peaks.</li> <li>• Removed requirement to monitor PM<sub>10</sub> in ambient air around Ceyhan Marine Terminal as there are only very minimal and periodic PM<sub>10</sub> sources on site.</li> <li>• Removed requirement to monitor for nitrogen and phosphorous in waste water discharge from site as water is not discharging to sensitive water course.</li> <li>• Removed requirement to monitor for fluoride and cyanide from waste water discharge from site as there are no operational sources of fluoride and cyanide.</li> </ul>

#### 4.4 CROSS-COUNTRY CHANGES

Cross country changes were as follows:

Asset	Class	Approved Internally	Accepted by Lenders	Description of Change
BTC / SCP	III	April 2007	May 2007	<p><b>Change of date of ISO14001 Certification</b></p> <p>This MOC covers the timing of certification of BTC and SCP to ISO14001.</p> <p>In Azerbaijan and Georgia the Operations ESAP states that BTC will be certified to ISO 14001 “within 9 months of full handover of the right of way to Operations” whilst in Turkey certification would be “within 9 months following commencement of operations.”</p> <p>The practicality of this objective was reviewed in 2007 taking into consideration a number of factors including operational complexity, project legacy issues. As a consequence it was decided to delay ISO14001 certification until May 2008, a date that brings it in line with the AzSPU external auditing schedule.</p>

Asset	Class	Approved Internally	Description of Change
BTC	II	May 2007	<p><b>Changes to the Project Environmental Investment Plan</b></p> <p>In order to demonstrate the commitment to good stewardship of the environment one of the commitments in the ESAP was the implementation of an Environmental Investment Programme (EIP) that applies to the onshore pipeline projects in Azerbaijan, Georgia and Turkey, including the marine terminal at Ceyhan. A project specific process was developed to define and implement the EIP. The process, key priority themes for intervention and budgets were laid out in the Project Environmental Investment Plan (PEIP) that formed an Annex to the ESAP (Annex D). The change related to items in the PEIP. Cross country and country-specific changes to the PEIPs are summarised as follows:</p> <p><b>Cross-country:</b></p> <ul style="list-style-type: none"> <li>• Re-allocation of the funds for a cross-country project to national projects;</li> </ul> <p><b>Azerbaijan:</b></p> <ul style="list-style-type: none"> <li>• Extension of the implementation timetable.</li> <li>• Not implementing Phase I projects identified through the RFP process under key priority themes identified in the ESAP.</li> <li>• Implementation of Phase II community level environmental projects with an extension to the timetable committed for the Phase I.</li> <li>• Allocation of unspent funds from Phase I and II to be utilised as part of Phase III (currently under development).</li> </ul>



Asset	Class	Approved Internally	Description of Change
			<p><b>Georgia:</b></p> <ul style="list-style-type: none"> <li>• Extension of the implementation timetable.</li> <li>• Implementation of the Ktsia-Tabatskuri Management Planning project under an RFP process rather than as a collaborative project.</li> <li>• No project initiated under the key theme 'Sustainable forest management pilot project'.</li> <li>• Re-allocation of funds from the Sustainable Forestry theme and the Cross-country theme to support further stages of projects undertaken under other key priority themes.</li> </ul> <p><b>Turkey:</b></p> <ul style="list-style-type: none"> <li>• Implementation of a wetlands management project in addition to the projects committed in the PEIP.</li> <li>• Increase in budget to allow implementation of the wetlands management project.</li> <li>• Extension of the implementation timetable.</li> </ul> <p><b>Implementation Review:</b></p> <ul style="list-style-type: none"> <li>• External monitoring undertaken by two independent consultants rather than NGOs;</li> </ul> <p>One mid-term review held instead of more frequently.</p>
BTC/ SCP	II	June 2007	<p><b>Phase 3 Reinstatement / Biorestoration</b></p> <p>The original project requirements stipulated a set of numerical vegetation cover targets. Broadly, these required disturbed areas to achieve 50-70% vegetation cover or 50-70% of the original vegetation cover within 12 months of planting, and Erosion Class 3 or better. These requirements have the following flaws:</p> <ul style="list-style-type: none"> <li>• The 70% and 50% targets that form the mainstay of the vegetation regrowth requirements are arbitrary and have no scientific basis.</li> <li>• The requirements fail to recognise differences in the inherent vegetation regeneration potential of different ecosystems and habitats.</li> <li>• They take no account of natural successional processes that apply when disturbed areas are recolonized (i.e., the broad pattern of: initial flush of ephemeral pioneer species, partial senescence, emergence of annuals, followed by gradual mixing and typically dominance of herbaceous and woody perennials).</li> <li>• They take no account of the pipeline protection zone constraints that apply to an 8m wide corridor above both the BTC and SCP pipelines. This protection zone prohibits the planting and regrowth of trees and inhibits the ability to meet a strict interpretation of the objective 'to restore local ecology'.</li> <li>• Project requirements to demonstrate successful Phase 3 reinstatement/ biorestoration were changed to the following: <ul style="list-style-type: none"> <li>• Increasing trend in vegetation re-growth in all non-agricultural areas requiring full reinstatement and restoration to pre-disturbed conditions.</li> <li>• Increasing trend in species diversity (and specifically species composition) in reinstated areas and nearby areas undisturbed by project activities, as recorded by the percent similarity and commonality indices described in the Vegetation Cover and Species Diversity procedure.</li> </ul> </li> </ul>

Asset	Class	Approved Internally	Description of Change
			<ul style="list-style-type: none"> <li>Increasing trend in the number of areas classified as Erosion Class 3.</li> </ul> <p>It is proposed that a risk-based approach be used to manage the timing and level of intervention along the ROW and at off-ROW sites as necessary.</p>
<b>BTC</b>	<b>II</b>	<b>May 2007</b>	<p><b>Offset Mitigation Programme (OMP)</b></p> <p>During the ESIA process, in cases where significant residual impacts had been identified for critical natural habitat or cultural property, a series of offset mitigation measures were proposed. Collectively these formed the OMP. The OMP was designed to ensure compliance with IFI safeguard policies OP4.04 concerning Natural Habitats and OPN11.03 on Cultural Property. The OMP was described in Annex D7 of the ESAP under a document entitled 'BTC Project and IFC Safeguard Policies OP 4.04 Natural Habitats and OPN 11.03 Cultural Property. April 2003' (termed the Safeguard Policy Requirements – SPR -document).</p> <p>Changes were made to the OMP for each country as follows:</p> <p><b>Azerbaijan:</b></p> <ul style="list-style-type: none"> <li>Re-allocation of funds from the development of a Strategic Environmental &amp; Cultural Management Plan for Proposed Gobustan National Park / Gobustan Cultural Heritage Reserve to key support activities requested by the Ministry of Culture.</li> </ul> <p><b>Georgia:</b></p> <ul style="list-style-type: none"> <li>Expansion of species incorporated into the Rare Floral Species Programme (population enhancement element) and revised re-introduction timing;</li> <li>Extended timetable for Management Planning for Ktsia Tabatskuri Managed Reserve;</li> <li>Definition of the Borjomi Kharagauli National Park Support Zone Programme - Environmentally Sound Livestock Farming (ELF) Project;</li> <li>Early stages of implementation of the Forest Eco-compensation Programme.</li> </ul> <p><b>Turkey:</b></p> <ul style="list-style-type: none"> <li>Extended timetable for Important Plant Areas (IPA) Project;</li> <li>Reduced area for the eco-compensation planting for Posof Wildlife Protection Area; Sarikamis Natural Site Area and miscellaneous forest.</li> </ul>

## 4.5 DESCRIPTION OF ANY MATERIAL AMENDMENT, SUPPLEMENT, REPLACEMENT OR MATERIAL MODIFICATION TO AN ESIA, ESAP, THE RAP, THE ESMS, OR ANY OSRP

### 4.5.1 Azerbaijan

Development of the BTC ESMS continued and in November 2007 the system was subjected to an ISO14001 Pre-Certification audit. Full certification to ISO14001 is expected in 2Q 2008.

Material amendments to the ESIA's are described in Section 3.1. The RAP was amended and disclosed to key stakeholders in 2007 to reflect the ROW access strategy.

The Azerbaijan Oil Spill Response Plan was updated and amended as described in Section 6.3.

#### **4.5.2 Georgia**

The Georgia Oil Spill Response Plan was updated and amended as described in Section 6.3.

#### **4.5.3 Turkey**

There were no material changes to the Source Documents in Turkey other than those described in Section 4.

## **5 COMPLIANCE WITH ENVIRONMENTAL STANDARDS AND APPLICABLE ENVIRONMENTAL LAW**

### **5.1 SUMMARY OF ANY NOTICES OF NON-COMPLIANCE, REMEDIAL ACTION, ANY FINES OR PENALTIES PAID AND FINAL DISPOSITION OF ANY REGULATORY PROCEEDINGS**

All notices of non-compliance served by the IEC in 2007 are detailed in Appendix 3 of this report.

There were no governmental fines or penalties incurred for environmental or social non-compliances, and no material environmental claims were made against BTC during 2007.

### **5.2 MONITORING RESULTS**

During 2007 environmental monitoring of the operation of the BTC Pipeline continued in accordance with the BTC Emissions Management Plans to ensure compliance with project standards as well as to monitor, minimise and where necessary mitigate the environmental impact of pipeline operations.

#### **5.2.1 Azerbaijan**

##### **5.2.1.1 Ambient Air Quality**

Ambient air quality monitoring was carried out twice in 2007. Sampling devices were deployed for 30 day periods during October – November 2007 and also during December 2007 – January 2008 at four locations around PSA2 and at two locations around IPA1. Analyses were carried out for NO<sub>x</sub>, SO<sub>2</sub>, and for benzene at all locations on both occasions.

All results indicate compliance with the ESIA specified limits, except for concentrations of SO<sub>2</sub> recorded at one sampling point: at the PSA2 Security Post slightly elevated concentrations of SO<sub>2</sub> were detected (24 µg/m<sup>3</sup> in Oct-Nov and 33 µg/m<sup>3</sup> in Dec-Jan), compared with a project standard of 20 µg/m<sup>3</sup>). BTC is investigating the significance of this result, along with possible causes. At all other sampling points SO<sub>2</sub> readings were well within the standards.

A summary of monitoring results is provided in Appendix 2.1a

##### **5.2.1.2 Stack Emissions**

Stack emissions monitoring were carried out for the first time in November 2007 at PSA2. Emissions from the MOL Turbines were analysed for NO<sub>x</sub>, CO, and O<sub>2</sub>. The results showed elevated levels of both NO<sub>x</sub> and CO. It is believed that this was due to the fact that at the time of sampling the turbines were operating at below their design load. Although the turbines are fitted with low emission technology, and hence emissions were well below those of conventional turbines, the full benefit of this technology is not achieved unless they are operated at high load. Further data will be gathered at the next monitoring event, scheduled for May 2008, which will further our understanding of this issue. It should be noted that ambient air quality data were

collected at PSA2 at the same time as the stack emissions monitoring, and ambient concentrations of NO<sub>x</sub> were found to be well within the required standards described in the ESIA.

A summary of monitoring results is provided in Appendix 2.1b.

#### **5.2.1.3 Noise**

In 2007 environmental noise monitoring took place at pre-identified receptors around PSA2 and at five block valve stations, at both day time and at night time. All the results indicate compliance with the project standards reported in the ESIA except for one monitoring event, at Block Valve AB4 in September. The elevated noise level was contributed to by a neighbour's dog barking.

A summary of monitoring results is provided in Appendix 2.1c.

#### **5.2.1.4 Effluent**

Throughout 2007, no treated sewage was discharged from BTC Azerbaijan facilities to the environment. All sewage effluent was trucked off-site to a third party sewage treatment works, while the onsite sewage treatment plants underwent upgrades (due for completion 2Q 2008).

Discharges of rainwater runoff and water from retention ponds did occur throughout 2007, and were regularly monitored. All the monitoring results indicate that the discharges were generally in full compliance with project standards. One notable exception is Total Coliforms. According to current procedures, the retention ponds are sampled prior to all planned discharges to the environment. Should concentrations exceed the applicable standards, as has been the case, that water is not discharged. Instead, it is trucked to a third party sewage treatment works.

A summary of monitoring results is provided in Appendix 2.1d.

#### **5.2.1.5 Ground and Surface Waters**

In 2007 surface and groundwater monitoring was carried out in May and in November. Groundwater samples were taken from nine monitoring wells at the Karayazi aquifer and two at PSA2. Surface water samples from five locations around IPA1 and PSA2 in November.

All the results indicate no significant deterioration from pre-project baseline conditions.

A summary of monitoring results is provided in Appendix 2.1e.

#### **5.2.1.6 Waste Management**

During 2007 waste management practices on site were maintained and improvements undertaken to increase awareness of site personnel on waste minimisation and segregation issues. A new fully engineered waste storage and handling area was opened at PSA2 in 2Q 2007. All wastes were handled and disposed of in accordance with BP AzSPU waste management requirements.

A summary of waste generated is provided in Appendix 2.1f.

### **5.2.2 Georgia**

#### **5.2.2.1 Ambient Air Quality**

Measurements were taken at five locations around PSG1 and PSG2. There were four rounds of monitoring (January, March, June and October). However, due to technical difficulties, the results of only three rounds were provided by the vendor company. Also, the results for March and June were incomplete (SO<sub>x</sub> results were missing) and only SO<sub>x</sub> results were provided for October. As a consequence of this poor service the vendor has been changed for 2008.

A review of the monitoring data demonstrate compliance with project standards with the exception of two locations where the levels of SO<sub>x</sub> are slightly higher.

A summary of monitoring results for Ambient Air Quality is provided in Appendix 2.2a.

#### 5.2.2.2 Stack Emissions

All turbine and water bath heater sample ports at both BTC Pump Stations were modified to make them suitable for stack emissions monitoring. A full round of monitoring was conducted in November – December 2007. The results show that none of the turbines meet the project standard for NO<sub>x</sub>. The reasons for this are the same as noted in Section 5.2.1.2. The water bath heater complied with project standards for NO<sub>x</sub> and SO<sub>2</sub>.

The original generator sample ports were incorrectly located and therefore new ports were to be drilled to allow monitoring. However, this was found to be not possible, due to the composition of the material of the generator stacks. It was therefore decided to modify the existing ports to make them suitable for collecting samples.

A full set of results are given in the Appendix 2.2b.

#### 5.2.2.3 Noise

Noise monitoring was carried out at eight locations around PSG1 and at seven locations around PSG2 in January, February, March and July. Noise monitoring was also conducted in July around PSG 1 and 2 camps and Akhaltsikhe camp, each of which are used extensively by BTC staff and related personnel.

The monitoring demonstrated compliance with project standards.

A summary of monitoring results for noise is provided in Appendix 2.2c.

#### 5.2.2.4 Effluent

Samples of treated waste water were taken from the reed beds at PSG1 and PSG2 prior to discharge to the drainage channels and assessed. Retention ponds at PSG1 and PSG2 were also monitored prior to discharge into the drainage channels. Total Suspended Solids slightly exceeded project standards at PSG1 on three occasions and more significantly on two others, while Total Coliforms were high on two sampling occasions at PSG2 (August and September). A programme to upgrade the on-site wastewater treatment process commenced in 2006 and continues.

A summary of monitoring results for effluent discharges at facilities is provided in Appendix 2.2d. It should be noted that data for 1 month is absent (April) as samples were no longer valid for analysis due to delays in custom clearance at the Georgia-Azerbaijan border. Samples at PSG1 for January and November and at PSG2 for January, February, November and December were not taken due to frost at both Pump Stations.

#### 5.2.2.5 Ground and Surface Waters

Two rounds of groundwater and surface water monitoring were conducted in 2007. The results show compliance with the baseline monitoring results.

A summary of monitoring results for Ground and Surface Waters is provided in Appendix 2.2e.

#### 5.2.2.6 Waste

A summary of waste generated in 2007 is given in Appendix 2.2f.

The main waste generation areas are at PSG1 and PSG2. The Central Waste Accumulation Area (CWAA) continues to be utilised by Operations for the management of materials that cannot be recycled or disposed of to appropriate standards. BTC's contractor for waste export, UK company *Veolia* has completed hazardous waste repackaging for the export and has obtained the necessary export permits to transfer the wastes to Germany and the Netherlands. Export is planned to commence in January 2008.

Various waste plans were accepted by Lenders in 2007: Waste Management Plan, Waste Management Implementation Plan, Waste Offset Plan and Waste Projects Plan.

These plans outline particular actions to improve waste management, to develop a new non-hazardous landfill, to close the Level III non-compliance related to BTC's use of lagluja waste disposal site, and to set offset mechanisms for compensation of non-compliant waste disposal.

Following completion of these plans, considerable progress was made on the development of a non-hazardous waste landfill. Specifically, a land parcel for a landfill was acquired and the UK consulting company *Golder Associates* was commissioned to prepare a landfill design and related ESIA. It is anticipated that the BP landfill will begin operation by the end of 2008.

The Waste Projects Plan includes a waste diversion program with the aim of diverting waste from lagluja prior to the completion of the new landfill. The program considers: 1) food waste maceration and disposal via Gardabani sewage treatment plant, 2) General waste compaction and temporary storage (with final disposal at the new landfill once it is operational). It is anticipated that waste will be diverted from lagluja disposal site by no later than June 2008.

### 5.2.3 Turkey

In Turkey, BIL has contracted DOKAY to conduct all environmental monitoring activities at the pipeline facilities. These activities will be conducted in accordance with the project monitoring programme which in turn is based on commitments detailed in the ESAP.

#### 5.2.3.1 Ambient Air Quality

Ambient air quality monitoring is undertaken at CMT. The results are presented in Appendix 2.3a. No ambient air monitoring is required at the Pump Stations as the major sources of emissions (pump drivers and water heaters) run on natural gas and there is little impact on ambient air quality.

In 2007, five surveys were undertaken by DOKAY between January and December. The January 2007 survey commenced in December 2006 and wasn't reported in last year's Annual Report. The results therefore are included in this year's summary. Similarly the results of the last survey in 2007 will be reported in 2008. A summary of the average results from the four rounds of monitoring in 2007 is as follows:

- The average SO<sub>2</sub> and NO<sub>2</sub> values measured in all sampling locations were within the Project limits with the exception of one SO<sub>2</sub> result which was measured at sampling location CMT 3 (located off-site on the far side of the Botaş facility tank farm) in the Fall 2007 monitoring period. The result was slightly higher than the related average baseline concentration value due to a spot increase in the second 15-day sampling period. The spot increase was understood to have arisen from a source off-site as it could not be linked to BTC CMT Operations. Generally, SO<sub>2</sub> concentration values measured in 2007 were higher than the corresponding values measured in 2006. It is understood that the SO<sub>2</sub> concentration value of the region has increased slightly since last year. Conversely, NO<sub>2</sub> concentration values measured during 2007 were lower on average than the concentration values of 2006.
- The average BTEX values measured in all sampling locations were within the project limits and benchmarks (refer to 2006 Annual Report).
- Benzene, toluene and xylene (o-xylene and m/p xylene) values of 2007 were lower than the concentration values of 2006.
- Overall there is no significant difference between ambient air quality in 2006 and 2007.

### 5.2.3.2 Stack Emissions

The flue gases originating from engine stacks (e.g. gas fired reciprocating engines, water heaters, diesel fired generators, LPG fired heaters) is monitored by DOKAY as per the legal and other requirements set out in the ESAP.

Stack emissions monitoring results for 2007 are provided in Appendix 2.3b. The results are generally in compliance. The non-compliant results are being addressed through maintenance. When maintenance is undertaken, BIL advises DOKAY in order that the exhausts can be re-monitored for compliance.

### 5.2.3.3 Noise

Project standards specify a maximum of 45 dBA for night time ambient noise levels at sensitive receptors. Modelling undertaken as part of the EIA process (Volume II, Section 7.9.4) predicted that noise levels 50m from the perimeter fence at each pump station would be within this limit. Given that the closest residential receptor to any of the facilities is 1.5 km monitoring at off-site residential receptors was therefore not considered necessary unless in response to concerns raised by residents. To date there have been no community complaints, nor has there been any other indication to suggest that on-site noise is rising.

### 5.2.3.4 Aqueous Discharges

The aqueous discharges that originate from the facilities (PTs and CMT) and the upstream and downstream water of the receiving surface water bodies are being monitored on a monthly basis. The results for 2007 are shown in Appendix 2.3c.

A waste water feasibility study was undertaken by BTC on behalf of BIL by a BP waste water consultant in May 2007. The purpose of the survey was to determine how the Project could improve the operability of the waste water treatment plants to provide more consistent discharge results in accordance with Project standards. This involved a complete review of all waste water treatment plants at each facility location. Recommended improvements included operational and design modifications. The details of the study can be found in Section 3.4.

### 5.2.3.5 Groundwater

BTC developed a Groundwater Monitoring Strategy on behalf of BIL in 2007 and is implementing it in conjunction with BIL.

### 5.2.3.6 Waste Management

The main waste generation areas of the BTC Turkey section are the PTs and CMT. Waste is collected and segregated at the on-site CWAAs. Waste is reused and recycled where possible. Glass, metal, vegetable oil, paper, battery and other recyclable wastes are sent to Project-approved, third party recycling facilities. Fifteen of these facilities were audited in 2007. All but one was found to be non-compliant with project standards. The non-compliant facility will no longer be used by the project.

In 2007 a total of 1,368 tonnes of solid waste was disposed off-site. Eighty six percent was non-hazardous waste that was re-used or re-cycled. The remainder, comprising 2% hazardous waste and 12% domestic waste, was sent to the Izaydas facility located in Izmit<sup>6</sup>.

Appendix 2.3d provides details of the waste volumes generated.

A Best Practicable Option Study for waste management will be conducted by BIL and BTC in 2008.

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<sup>6</sup> This is the only facility of its kind that meets the Project requirements for hazardous waste in Turkey.

## 5.3 STATEMENT OF COMPLIANCE

BTC and its agents have complied with the development, construction and operation of the BTC Project with the ESAP, applicable Environmental Laws and Applicable Lender Environmental and Social Policies and Guidelines in all material respects during the period covered by this report.

All non-compliances with emissions that have been identified in 2007 are summarized in Chapter 5 and shown in Appendix 2. Non-compliances relating the other audits are given in Chapter 11 (and detailed in Appendices 3 and 4). For all non-compliances identified, corrective actions have been developed and implemented.

## 5.4 CHANGES IN APPLICABLE ENVIRONMENTAL LAW

### 5.4.1 EU Legislation

Changes in EU legislation/regulations in 2006 and 2007 have been reviewed and their potential applicability to BTC Operations will be considered during the ongoing process of implementing the Health, Safety, Social & Environment (HSSE) Compliance Enhancement Programme.

- DIRECTIVE 2005/90/EC, 18/01/2006. Amends the list of carcinogens in Council Directive 76/769/EEC relating to restrictions on the marketing and use of certain dangerous substances and preparations.
- DIRECTIVE 2006/12/EC, 04/05/2006. Makes a number of amendments and clarifications to EU waste management legislation (references Council Directive 75/442/EEC and amendments).
- DIRECTIVE 2006/11/EC, 15/02/2006. Makes a number of amendments and clarifications to EU legislation on dangerous substances discharged to the environment (references Council Directive 75/464/EEC and amendments).
- DIRECTIVE PE-CONS 3658/06, 22/11/2006. On the protection of groundwater against pollution and deterioration.
- DIRECTIVE 2006/44/EC, 09/06/2006. On the quality of fresh waters needing protection or improvement in order to support fish life.
- DECISION 2006/61/EC, 12/02/2006. Approval of the UN-ECE Protocol on Pollutant Release and Transfer Registers. Requires member states to maintain a publicly available national pollutant release and transfer register that is facility specific.
- DECISION 2006/516/EC, 14/10/2004. (Published in OJ 01/08/2006) Approval of the Stockholm convention on Persistent Organic Pollutants. The provisions of the Stockholm convention (if not already applicable to Exports) are now indirectly applicable as the EU has now joined.
- REGULATION EC No. 29/2006, 01/10/2006. Minor amendment to the classification code of Regulation EC 20037/2000 on substances that deplete the Ozone Layer. Replaces Annex IV to the Regulation EC 20037/2000.
- REGULATION EC No. 842/2006, 17/05/2006. Relates to the control of fluorinated greenhouse gases.
- REGULATION EC No. 1013/2006, 14/06/2006. Relates to waste shipments. Amendments to improve compliance with Basel Convention. Includes a number of specific requirements for the control of waste movements including templates for documentation to accompany shipments.



- REGULATION EC No. 1367/2006, 09/06/2006. Relates to the application of provisions of the Aarhus convention. May not be directly applicable to the private sector, but could be construed as being indirectly applicable as private sector may be required to cooperate and support the state in fulfilling its requirements.
- Regulation (EC) No 899/2007, 27/07/2007. Amending Regulation (EC) No 2037/2000 of the European Parliament and of the Council as regards the adjustment of CN codes for certain ozone depleting substances and mixtures containing ozone depleting substances to take account of amendments to the Combined Nomenclature laid down in Council Regulation (EEC) No 2658/87.
- REGULATION (EC) No 1379/2007, 26/11/2007. Amending Annexes IA, IB, VII and VIII of Regulation (EC) No 1013/2006 of the European Parliament and of the Council on shipments of waste, for the purposes of taking account of technical progress and changes agreed under the Basel Convention. Includes documentation requirements for the shipment of waste.
- DIRECTIVE 2006/118/EC, 12/12/2006. On the protection of groundwater against pollution and deterioration (Note that Directive 2000/60/EC sets out general provisions for the protection and conservation of groundwater). Includes a number of requirements regarding ground water quality and its monitoring that could potentially be applicable to the private sector.
- DECISION 18/07/2007. Establishes guidelines for the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council. Provides guidance for the reporting of greenhouse gas emissions some of which are likely to be applicable to AzSPU operations.

#### 5.4.2 Azerbaijani Law

The changes in 2007 in Azerbaijani National legislation which have relevance to BTC were:

- "On construction of the new Baku International Sea Trade Port" – 18 October 2007. According to this Presidential Order, it is planned to build new Sea Port at the Alat Village in Garadagh District of the Baku City. The necessity of this construction proceeds from low turnover capacity of existing Baku Sea Port on the threshold of Baku-Tbilisi-Qars railroad opening and consequent rapid growth of the international transaction and transportation agreements through the Baku Sea Port.
- "On Regulation of Movable List, its arrangement and implementation". – this Presidential Decree brings together all rules requiring Registration of different types of Movable Property (e.g. Vehicles, artworks) in relevant State Bodies in one. 11 April 2007
- Decree of Cabinet of Ministers N63 from 11 April 2007 "About some additions and changes to the Decrees of Cabinet of Ministers". In accordance with this Decree new paragraph has been added to the "Rules for providing of State control on using and protection of water bodies".
- Law "About making changes and additions to "Law of Azerbaijan republic on industrial and utility wastes" N341-IIIQD, dated 22 May 2007. Changes are in: 1) Requirements in relation to design, construction, re-construction, conservation and abatement of enterprises, facilities and other installations, 2) Conditions applicable to wastes processing 3) Requirements on location of wastes 4). Requirements on hazardous wastes management 5) Medical wastes management 6) Oil, gas and power industry waste management 7) Transboundary and transit transportation of waste.

### 5.4.3 Georgian Law

Significant changes to environmental legislation were adopted by the Parliament of Georgia in December 2007, which may have relevance to BTC. In particular, the Law on Environmental Impact Permits was adopted on December 14, 2007, which formally invalidated the 1996 Law on Environmental Permits, as well as Government Resolution No. 154 (dated September 1, 2005) on Terms and Conditions of Issuance of Environmental Impact Permits. On the same date, the Law on Ecological Expertise was adopted, revoking the 1996 Law on State Ecological Expertise. The Law on Environmental Impact Permits and the Law on Ecological Expertise define activities which are subject to mandatory ecological expertise and thus, to environmental impact permit. There are number of changes in the list of such activities established by the new laws, as compared to the previously effective legislation. In addition, the Law on Environmental Impact Permits only regulates certain 'activities', while the Resolution No. 154 also included several 'facilities'. The Law on Environmental Impact Permits also determines rules with regard to carrying out environmental impact assessments.

Other notable changes of the environmental legislation include:

- Law on Environmental Protection Service adopted on December 28, 2007, invalidating the 2005 Law on State Control of Environmental Protection. According to the new law, a new agency – Environmental Protection Service – is established under the auspices of the Ministry of Environmental Protection and Natural Resources. The new agency is to be formed by reorganizing/merging three existing agencies within the system of the Ministry. The Environmental Protection Service shall be authorized to conduct investigations and generally carry out police functions in the environmental field to protect the environment.
- Noteworthy amendments were introduced to the Law on Protection of Atmospheric Air on December 14, 2007. One of the significant novelties of the new amendments is the inclusion of the reference to specific EC Regulations and Directives as guideline instruments for respective Georgian environmental legislation.
- Law on Creation and Management of Borjomi-Kharagauli Protected Territory, dated July 11, 2007.
- Law on Status of Protected Territories, dated November 22, 2007.

### 5.4.4 Turkish Law

In Turkey environmental regulations are governed by an overarching piece of legislation referred to as the Environment Law. This Law describes the environmental legal regime in Turkey and its administration. Minor changes were made to the Environment Law this year. Clause 20 of the Law which defines the penalties was revised to prescribe heavier penalties.

Three new pieces of environmental regulations were passed in 2007 which were relevant to BTC Co Operations as follows:

- Regulation on Control of Packaging Waste (July 2007). The new regulation requires all packaging waste to be segregated at source for re-cycling purposes. This is already a project requirement as stated in the Turkey Waste Management Plan (WMP) and is being implemented and monitored at all facilities.
- Regulation on Transporting Hazardous Materials by Highway (March 2007). The regulation defines the requirements for hazardous materials transportation, loading and unloading operations. BIL have incorporated the legal requirements into their Environmental Management System.

- Regulation on Determining Breaches in Administrative Penalties Imposed upon Environmental Law and Imposing and Collecting Penalty (April 2007). The regulation defines how a breach in environmental law is determined, the responsibilities and authorization of Ministry bodies in relation to defining and managing these breaches and the law on imposing and collecting the penalty incurred for breaking the environmental law.

In addition two changes were made to existing Turkish environmental regulations in 2007 as follows:

- Regulation on Accepting Waste from Ships and Control of Waste was revised in December 2007. The changes did not directly impact BTC Operations or the CMT MARPOL slops handling facility design.
- Regulation on Control of Air Pollution Resulting from Heating was revised in May 2007. This revision did not directly impact BTC Operations.

## 6 OIL SPILL RESPONSE

### 6.1 SUMMARY OF OSRPs COMPLETED, UPDATED OR AMENDED DURING YEAR

The OSRPs for Georgia and Azerbaijan were updated and amended in May 2007, as summarised in Section 6.3.

In addition, an internal audit was undertaken against the Oil Spill Response Plan in Turkey in January 2007. An external audit was then undertaken as part of the Lender audits in June 2007. The findings of both audits are summarised in Chapter 11. The Containment site databases and manuals were updated throughout 2007 and will be finalised in 2008.

Similarly, in Georgia, an audit was carried out in June 2007 to verify compliance against the Oil Spill Response Plans. Audit findings were considered during the update of the OSRPs. A new version of the Oil Spill Response Plan was issued for BTC Georgia Operations (AZSPU-HSSE-DOC-00220-5).

### 6.2 SPILL AND REMEDIATION SUMMARIES

BTC reports any material release that reaches the environment (i.e. is uncontained) or that is greater than 1 barrel, even though it maybe contained. Gas releases are always classified as uncontained. A summary of these releases is given in Table 6.1.

**Table 6.1: BTC Material Releases in 2007**

Asset	Liquid			Gas
	< 1 bbl	> 1 bbl		
	Uncontained	Contained	Uncontained	
BTC Azerbaijan	1	0	0	1
BTC Georgia	0	1	0	0
BTC Turkey	8	5	2	0

Further details on the material release shown in Table 6.1 are given in the following sections:

#### 6.2.1 Azerbaijan

There were two reportable releases recorded for BTC Azerbaijan during 2007:

- **Hydraulic Oil Release (PSA2 – October 2007)**

Approximately 0.2 litres of hydraulic oil was released from a HIAB boom. All of the spilled material was mopped up with absorbent pads and no oil escaped off the spill site.

- **CO<sub>2</sub> gas release (PSA2 - November 2007)**

Approximately 8 m<sup>3</sup> of CO<sub>2</sub> was released to atmosphere when a fire suppression system tripped due to a false alarm.

## 6.2.2 Georgia

There was a single oil spill over 1bbl however this was contained within the secondary structure. Details of the clean up are given below. Several minor spills were also recorded during the year. All of them were contained and therefore not discussed further in this report. None impacted the environment.

### 6.2.2.1 Contained

The following spill was greater than 1bbl. The spill was fully contained:

- **Diesel spill in secondary containment (Tbilisi office – April 2007)**

A leak occurred from the generators' diesel tank located in the Tbilisi office yard. The cause of the leak was a damaged 2" drain main valve situated on the bottom of the tank. In total 290 litres of diesel was spilled into the concrete secondary containment bund. A diesel sheen was observed on the surface of rainwater pools located within the primary containment around the tank. This was due to the poor structure of the bunded area. To prevent small spills out of the containment vessel absorbent padding was placed around the reservoir. The Oil Spill Response contractor was mobilized and clean up work was completed on the same day of the incident.

### 6.2.2.2 Uncontained (Released to the environment)

No uncontained spills were recorded during the year.

### 6.2.2.3 Clean up

Contaminated liquid and solid waste generated from the post incident clean up activities were placed in appropriate hazardous waste containers and transferred to CWAA for the storage prior to final disposal.

## 6.2.3 Turkey

A summary of releases that occurred in Turkey is given in Table 6.2.

**Table 6.2: BTC Turkey Material Releases in 2007**

2007 Material Releases					
Asset	Less than 1 bbl		Greater than 1 bbl		Gas
	Liquid		Liquid		
	Contained	Uncontained	Contained	Uncontained	
BTC Tu	13	8	5	2	0

### 6.2.3.1 Contained

The following spills were greater than 1bbl, but were fully contained:

- **Estimated 1.9 bbls crude oil (PT3 – January 2007)**

A crude oil spill due to an Emergency Shutdown valve problem. The oil spilled onto a hard standing and contained area.

- **Estimated 4.4 bbls engine lube oil (PT1 – May 2007)**

Engine lube oil spilled inside the pump house. The spill was contained inside the building.

- **Estimated 113.2 bbls crude oil (PT1 – June 2007)**

Crude oil spilled during pig launching. The spill was contained in the pig launcher pit..

- **Estimated 6.3 bbls crude oil (PT1 – December 2007)**

Crude oil spilled inside the pump house. The spill was contained inside the building and cleaned up.

- **Estimated 12.6 bbls crude oil (PT3 – December 2007)**

Crude oil spilled inside the pump house. The spill was contained inside the building and cleaned up.

In all cases all of the oil was recovered and re-injected back into the pipeline.

### 6.2.3.2 Uncontained (released to the environment)

All uncontained material releases in 2007 are reported below:

- **Estimated 0.5 bbls crude oil (ROW – March 2007)**

Crude oil spilled to the ground due to an illegal tap. 0.6 tonnes of contaminated soil was removed and shipped to CMT CWAA for storage. After BIL established the contaminated soil temporary storage area at CMT in May 2007 the soil was moved to this area. Ultimately the soil will be bio-remediated at a facility to be established at CMT.

- **Estimated 62.9 bbls crude oil (ROW – March 2007)**

Crude oil spilled to the ground due to an illegal tap. 220 tonnes of contaminated soil was removed and shipped to CMT as above.

- **Estimated 22 bbls crude oil (ROW – April 2007)**

Crude oil spilled to the ground due to an illegal tap. 9.4 bbls of oil was recovered and 15 tonnes of contaminated soil was removed and shipped to PT4 CWAA. The soil was then shipped to CMT contaminated soil temporary storage area as above.

- **Estimated 0.6 bbls crude oil (BVT33 – April 2007)**

Crude oil spilled to the ground at BVT33 due to operator error during maintenance activities. The spill was cleaned up and 1.5 tonnes of contaminated soil and gravel mixture was removed and shipped to PT4 CWAA. The soil was then shipped to CMT contaminated soil temporary storage area as above.

- **Estimated 0.1 bbls crude oil (ROW – June 2007)**

Crude oil spilled to the ground due to an illegal tap. 35 kg of contaminated soil was removed and shipped to CMT contaminated soil temporary storage area.

- **Estimated 0.1 bbls crude oil (CMT On-shore – June 2007)**

Crude oil from the road tanker spilled to the ground. 30 kg of contaminated soil was removed and shipped to the contaminated soil temporary storage area inside the facility.

- **Estimated 0.6 bbls crude oil (ROW – July 2007)**

Crude oil spilled to the ground due to an illegal tap. 750 kg of contaminated soil was removed and shipped to CMT contaminated soil temporary storage area.

- **Estimated 0.5 bbls crude oil (BVT13 – September 2007)**

Crude oil spilled during pressure equalization activities. Area was cleaned and contaminated gravel was removed and shipped to PT2 CWAA. The soil was then shipped to CMT contaminated soil temporary storage area.

- **Estimated 0.4 bbls crude oil (ROW – September 2007)**

Crude oil spilled to the ground due to an illegal tap which was detected during the intelligent pig run. 300 kg of contaminated soil was removed and shipped to CMT contaminated soil temporary storage area.

- **Estimated 0.1 bbls lubricating oil (CMT Marine – October 2007)**

Lubricating oil spilled to the sea from stern tube of a tug boat. The majority of the spill was contained by using booms.

Details on remediation are given in Section 6.2.3.4

### 6.2.3.3 Illegal Taps

In 2007 there was a 43% decrease in the number of illegal taps discovered in Turkey. Only 1 tap was leaking to the environment at the time it was discovered, however in some cases spills had occurred while the tap was being made (refer to Section 6.2.3.2).

BIL has appointed an internationally recognised sub-contractor to undertake the repairs of the illegal taps. All taps had been repaired with the exception of BTC-HT-T5 which has been secured. This tap was discovered in July 2006. There have been several attempts to position and remove the plug for the illegal tap however they have not been realised due to potential risks. An action plan has been developed and the repair activity is scheduled for Q2 2008.

The Turkish government enacted changes to the Petroleum Market Law to deter acts of crude oil theft. Article 142 of the Turkish Criminal Code now includes crude petroleum theft within the scope of "aggravated theft". This re-categorisation of the crime means that penalties are now stricter than before. For individuals the terms of imprisonment can be for up to 5 years and in the case of an organised syndicate, the term of imprisonment can be in excess of 15 years each for the syndicate members. There are additional avenues for prosecution for illegal taps in accordance with the Prohibition of Smuggling Act, also established in 2007. This law recognises crude-oil theft as a potential act of smuggling with a penalty of up to two years imprisonment. Court cases related to some of the illegal taps in Turkey are on-going.

Upon discovery of an illegal tap the BIL Environmental and Social department prepares E&S risk assessment reports which are provided to the On-site Commander, the repair contractor and SESMeke teams prior to the repair activities commencing. These assessments provide essential E&S information and clearly identifies mitigation measures to be implemented both as part of the repair, and in case of a spill, during actual repair activities.

### 6.2.3.4 Remediation

A contaminated soil temporary storage area was constructed at CMT in May 2007. Approximately 220 tonnes of contaminated soil was removed to the location which was generated from uncontained spills (see Section 6.2.3.2). A permanent bioremediation area is being planned at the CMT.

An Oil Spill Clean-up and Remediation Plan has been developed by BTC (for implementation by BIL). The Plan provides clean-up and remediation guidance for the Project and describes the actions to be followed to ensure due process is followed in the event of ground/water contamination from a spill. In particular the document addresses the following:

1. Oil spill clean-up techniques for a specific site early in the response operations;
2. Endpoints for clean-up so that oil spill response personnel are clear when their task has been completed;

3. Demobilization of oil spill response personnel and equipment in a controlled and organized manner;
4. Whether remediation procedures are required on the basis of site-specific risk assessment procedures;
5. The most suitable remediation procedures for particular situations; and
6. Generic procedures to be followed during remediation of oil-contaminated soils or groundwater.

BIL is in the process of developing their own Plans that meets the requirements in the document developed by BTC and addresses the development of the CMT bioremediation area. To date, BIL has held meetings with relevant stakeholders as part of this process. The Plans will be finalised in 2008.

### **6.3 SUMMARY OF MATERIAL MODIFICATIONS TO THE OSRPs**

The OSRPs for Georgia and Azerbaijan were updated and amended in May 2007. The main changes to the existing Plans involved re-structuring into three distinct sections; namely Strategy, Action and Data. This was undertaken to make the Plan more user-friendly, to conform to Industry standard and to make it easier to find relevant information during a response. Information contained within the plans was edited to remove duplication of text and to allow the information to flow in a more logical manner. A new section (Action) was added to the plans and is one of the most important sections for a responder. This section now includes Action Cards or checklists of the roles, responsibilities and action for each key role identified within the Incident Management System manual. In the Data section, some forms have also been included. These are the forms needed most frequently or quickly (during an incident) including external notification forms and Tier 3 mobilization forms.

Some of the Appendices were modified or re-placed as a direct request of the Lenders' Auditors. This includes: the updating of the Wildlife Response Plans; the updating of the Special Response Plan for Tsalka, to include specific reference to the Ktsia – Tabatskuri area; updating the Special Response Plan for Kodiana, to reflect the change in design of the secondary containment basins; the updating and reformatting of the Containment Site Manuals and; the rewriting of Waste Management. A new Appendix, titled, 'Clean-up and Remediation Procedures' replaced 'Remediation after a Spill'.

In addition, an updated version of the Georgian Oil Spill Response Containment Manual was issued in 2007, in English and Georgian languages, for BP Georgia operations.

## **7 CIP AND EIP PROGRAMMING**

Implementation of the BTC Additionality programmes is carried out through a series of regional and community-based projects, designed to conserve biodiversity, to deliver local and long term benefits, and to empower local communities to resolve issues for themselves. The Additionality Programmes were formalised into an Environmental Investment Programme (EIP) and a Community Investment Programme (CIP). CIP and EIP are jointly and equally funded by BTC and SCP in Azerbaijan and Georgia. In Turkey these programmes are 100% funded by BTC.

## 7.1 SUMMARY OF EIP

### 7.1.1 Azerbaijan

A significant milestone was achieved in 2007 with the successful completion of the Green Pack project. This project, which represents the culmination of almost 3 years of intensive work with local and international partners, is a multimedia, interactive educational tool that aims at enhancing environmental knowledge of school teachers and 1-11 grade pupils. The pack contains a teacher's handbook, a textbook for children, DVD film collection, CD-ROM and dilemma game.

The development of the Green Pack was a joint effort requiring cooperation with and assistance from a large group of leading national environmental non-governmental organisations, academic institutions and regulatory bodies. The content of the pack was approved by Azerbaijan's Ministry of Education and Ministry of Ecology and Natural Resources and officially included in the national school curriculum.

The project also provided extensive training for teachers and specialists from regional education departments on the ways to present the Green Pack material effectively to school students.

The project, which was funded by BP and its co-venturers in BTC and SCP together with OSCE's Baku office, was implemented by the Regional Environment Centre for Central and Eastern Europe (Hungary) in collaboration with the Azerbaijani national non-governmental organization For Sustainable Development Society. The total cost of the project is slightly over \$400,000 USD, out of which \$300,000 was contributed by BP and its co-venturers in BTC/SCP. The remaining \$100,000 USD was provided by OSCE Office in Baku.

Another EIP project - Support to Environmental and Energy Initiatives – was also completed in 2007. This project delivered about 13 pilot micro-projects on energy, safety and environment. The project was designed to support improved resource/energy management, promote the use of locally developed alternative energy solutions and reduce environmental degradation in communities primarily along the BTC/SCP Pipelines route. As a result of the programme solar collectors, solar water heaters, biogas units and photovoltaic devices were installed in and handed over to the BTC/SCP communities (see Case Study 3).

The BP flagship Tugay Forest Rehabilitation Project continued in 2007. Major works which included planting of trees, construction of a guardian house, setting up irrigation pump and canals on a 12 ha land plot were successfully completed. The main focus of future works will be on nursing of trees, irrigation, and backfilling as well as protection and control measures.

### 7.1.2 EIP in Georgia

There were three construction phase EIP projects that continued during 2007. One was completed in 2007 while another was initiated. All three projects are due to be completed in 2008. Highlights are as follows:

- **Caucasian Black Grouse Conservation in Georgia (Phase 2)** implemented by Georgian Centre for the Conservation of Wildlife. The project goal is to initiate and promote implementation of the Caucasian Grouse National Action Plan developed during Phase 1 of the project to ensure that the bird population is stable in Georgia and does not decline.
- **Conflict Prevention through Environmental Awareness for Youth** implemented by CARE, and co-funded with BTC, SCP, the Austrian Development Agency and CARE Austria. The object of the project was to empower youth to contribute to the social and environmental development of their communities by increasing their peace building capacities and environmental awareness. A new Nature Club was



established in Tsalka and training was given to 28 teachers and 49 students. Five grants were awarded to small-scale environmental conservation projects. The one year project was completed in May 2007.

- **Management of the Small Grants Programme for NGO Capacity Building (Phase 2)** along the SCP and BTC ROW implemented by Save the Children in partnership with NACRES. First round grants were disbursed to a total of 14 national NGOs from Kvemo Kartli and Samtskhe-Javakheti regions.

The project will be completed in December 2008.

- **Development of a Management Plan for Ktsia-Tabatskuri Managed Reserve** implemented by The World Conservation Union (IUCN). The project is jointly funded by both EIP funds and separate offset funds, and has two main goals:

- 1) Developing a management plan for Ktsia-Tabatskuri Managed Reserve that is endorsed by all stakeholders; and
- 2) Enhancing capacity at site and national levels to implement this management plan.

The project will be completed in July 2008.

Further programmes are being developed for 2008 and will be funded by the construction phase EIP budget. This budget is forecast to run until the end of 2008, although this is somewhat dependent on the rate of disbursed by the Project.

Starting from January 2008 the Operation's phase (**Phase 3**) EIP will commence. This phase will be managed by BP's Community & External Affairs department. The budget allocation is \$300K per year, over three years. . Project activity is expected to commence 2008-Q3.

### 7.1.3 EIP in Turkey

The construction phase EIP projects were completed by the end of 2007, with the exception of several forestation and follow-up activities. These are scheduled to be completed by mid-2008.

In addition to these project activities, the EIP underwent an external evaluation in order to identify the progress against the programme's original objectives. This evaluation fulfilled a commitment contained within the Supplementary Lenders Information Package (SLIP). The findings of the evaluation are summarised in the next section.

#### 7.1.3.1 EIP External Evaluation

The evaluation aimed to provide feed-back to the programme and the individual projects to assist in an effective close-out of the construction phase projects. The external evaluation also provided inputs for the on-going Operations phase projects and for the existing and future strategies of the programme. The section of the external evaluation report regarding the performance against the original Project Environmental Investment Plan objectives is summarised below using direct quotes from the report.

*PEIP Objective One: To provide additional benefits ('additionality') that go further than mitigation of impacts (Rating: High)*

The EIP goes well beyond "mitigating" impacts caused by pipeline construction and operation. EIP has invested in building national and regional capacity to conceive and implement innovative conservation initiatives. Virtually all EIP-I Projects provided strong "additionality".

The only "weakness" to date under Objective One is the ability of EIP to show support for decision-makers to institutionalize best practices (policies and regulations). This will likely come on line during the next few years as capacity building and "baseline" initiatives bear fruit and EIP funds more "on-the-ground" activities.

*PEIP Objective Two: To respond to ongoing initiatives, issues and suggestions raised by stakeholders during the consultation process undertaken as part of the pipeline projects to ensure that they are complimentary and avoid duplication. (Rating: Very High)*

Nearly every EIP project funded to date has been complementary and responsive to stakeholder consultations. EIP Staff have endeavoured to work very closely with the entire conservation community, including Government, NGO's, private sector and communities. They have designed both their program approach and funding strategy to make certain EIP complements on-going and priority conservation initiatives. Almost all stakeholders, including Government officials, stated that EIP has helped them do what they have wanted to do, to do it better, and to do it much sooner than would have otherwise been possible.

Maintaining complementarity under next phases of EIP will present new challenges for the EIP team because there are many more conservation programs and projects underway in Turkey in early 2007 then in 2003.

*PEIP Objective Three: To achieve maximum benefit from the level of financial input.(rating: Very High)*

The finding is that the EIP was very efficient and cost effective with respect to adding value for BTC. For a relatively small amount of funding, EIP has generated tremendous additional value for BTC in several ways.

We have experience with dozens of donor programs similar in size to EIP. This program has achieved a great deal by all comparisons. This success is made all the more impressive because EIP did it building in-country capacity. BTC has made the initial, and most painful, investment in starting the EIP "business," now they need to see greater and greater returns on that investment.

The EIP now represents a very sound "start up venture" for BTC. With relatively little capital, EIP has gone from being a concept to being a full-fledged, operational program with strategic momentum. It is a program poised to provide excellent returns for many years. The longer the program runs, the more "profit" will be made from the original capital invested.

*PEIP Objective Four: To maximize opportunities for wider national and international application of outcomes (Rating: High)*

Even though EIP investments are "limited" to pipeline provinces, EIP is already having national level impacts. EIP's innovative projects are designed as models that will be picked up by national level organizations and replicated in other areas.

*PEIP Objective Five: To include international stakeholders in the development of the EIP and reporting on the outcomes of the actions.(Rating: Medium)*

EIP cooperates very closely with both the UNDP and EU. This includes co-funding and co-implementing projects. Due to their association with EIP grants, The Royal Society for the Protection of Birds, Bird Life International and Tour du Valat are broadly aware of BTC's conservation support. Informal meetings are held periodically between WWF-Turkey and EIP staff.

Although EIP Turkey has likely surpassed the original expectations of international stakeholders, EIP's reporting to international stakeholders appears to be rather opportunistic and could be improved.

*PEIP Principal Objective: Whether the Principal Objective of EIP, composed of the above Specific Objectives, which is the "Delivery of Actions that are of benefit in the promotion and conservation of biodiversity" has been satisfied.(Rating: Very High).*

Every action taken to date by EIP has benefited the promotion and/or conservation of biodiversity.

### 7.1.3.2 Project Status as at End 2007

Two new grant agreements were signed in 2007 as follows:

- **Conservation of the Endangered Plants along the BTC Pipeline Region (Phase 1):** The aim of the Project is to contribute to the sustainable use and conservation of biodiversity by conserving certain endangered plant species in Ardahan and Kahramanmaraş. The project is implemented by Turkish Wildlife Conservation Association.
- **Eastern Mediterranean Marine Wildlife Rehabilitation Centre:** The aim is to establish a rehabilitation centre in order to reduce the death rates of marine animals in Iskenderun Bay which may have become injured or sick due to shipping and industrial activity in the Bay (e.g., boat collision and oil spill).

A summary of key EIP developments in 2007 are as follows:

- **Small Investments Fund:** Eight small grants projects were initiated:
  1. Development of Ecotourism in Kuyucuk Lake, in Akyaka-Kars:
  2. Production of Biogas and Biomass from Systematically Collected Cattle Manure, in Hemite-Osmaniye:
  3. Decreasing the Threats on the Fish Populations in the Rivers of Amanos Mountains, in Dört Yol-Hatay
  4. Development of Ecotourism in Yoğunluk Village, in Samandağ-Hatay:
  5. Sustainable and Effective Usage of Resources in the Production of Local Zerin, Kırık and Şigon Organic Wheat, in Pasinler-Erzurum:
  6. Using Wind Energy for Drinking Water of Kırımıtlı Municipality, in Kırımıtlı-Osmaniye:
  7. Technical feasibility of use of Modern Fish Barriers in the Yelkoma Lagoons, in Yumurtalık-Adana:
  8. Boğatepe Village Sustainability and Life with Plants, in Boğatepe-Kars.
  9. Promoting the Yumurtalık Lagoons for Conservation, in Yumurtalık-Adana: To develop alternative income-generating activities and to establish necessary infrastructure for visitor management.

The SIF project Natural Wastewater Treatment in Karaorgan Village, Kars Province, was extended.

- **Ecological planning and management of Ardahan-Yalnızçam Forests:** The draft forest management plan was approved by both local and national stakeholders including the MoEF. Various training courses were provided to local forestry personnel and other local stakeholders to provide a better understanding of conservation forestry practices and how to implement these practices in a systematic way within the context of the Project. Awareness-raising materials were developed and distributed. Three community development projects which received matching funds from the EU and GEF-SGP were successfully completed.
- **Ekşisu Marshes; for Nature and People:** A Local Steering Committee was established. The second phase of consultations with local stakeholders were initiated to revise the problems and risk analyses and to define the quick impact project opportunities. A visitor strategy was prepared. A cooperation protocol was established with the MoEF. A local endemic species *S. Erzincanicus* was successfully reproduced through its seeds. Hunting was officially made illegal in the area.
- **Conservation Investment Priority Analysis for the Central and Southern BTC Region:** A cooperation protocol between the Implementing Partner and the MoEF was signed to integrate the conservation prioritisation initiatives of the project with those of the Ministry. Extensive ecological and community based field work generated a data set to aid the conservation prioritisation.

- **Developing Yumurtalık Lagoons Wetland Management Plan and Identifying Erzurum Marshes Conservation Zones:** Focus groups were established as part of the Project to address fishery, dunes, animal husbandry and Halep pinewood and meetings were held with these groups. A draft management plan was developed as the outcome of an intensive participatory process. The plan was approved by the Local Wetlands Commission which demonstrates the local ownership of the plan. Government funds were secured for the implementation phase. BTC also committed funds for the implementation phase. The conservation zones were developed for Erzurum Marshes and approved by the government body responsible for management of wetlands.
- **Conservation of the Endangered Plants along the BTC Pipeline:** A greenhouse and garden were established in Ardahan in which the seeds of previously specified endemic plants were established.
- **Kaçkar Mountains Forest Conservation and Sustainable Rural Development Project:** The project is a continuation of the Lesser Caucasus Forest Gap Analysis and aims to demonstrate ecologically-sound community development. The project received a matching fund of \$1,800,000 from EU in late 2006. In 2007 the project was restructured and field surveys were undertaken.
- **Biogas/Fertiliser Generation in Geben-K.Maraş:** Two pilot plants were constructed in a CIP village late 2007. The biogas and fertiliser production will be tested in Q2 2008.

#### 7.1.4 EIP Expenditures, 2007

Table 7.1 shows the amount budgeted for the EIP and the cumulative amount spent since the inception. Table 7.2 and 7.3 shows the breakdown of expenditures for 2007.

The cost effectiveness of projects supported in 2007 greatly exceeded expectations, with a consequence that expenditure over the year was significantly less than planned.

**Table 7.1: Construction Phase EIP Budget and Expenditures (\$), 2003-2007**

	Azerbaijan	Georgia	Turkey	TOTAL
<b>EIP Budget</b>	2,600,000	3,000,000	3,450,000	9,050,000
<b>Total Spent to date (at end 2007)</b>	975,536	2,009,559	3,390,000	6,375,095

**Table 7.2: Summary of EIP (Construction Phase) Expenditures (\$), 2007**

	Azerbaijan	Georgia	Turkey	TOTAL
<b>Planned</b>	–	745,497	991,000	1,736,497
<b>Actual</b>	–	219,559	986,000	1,205,559

**Table 7.3: Summary of EIP (Operations Phase) Expenditures (\$), 2007**

	Azerbaijan	Georgia	Turkey	TOTAL
<b>Planned</b>	1,100,000	0	1,200,000	2,300,000
<b>Actual</b>	188,149	0	1,250,000	1,438,149

### **7.1.5 EIP Budget, 2008**

The full construction phase EIP budget was transferred to the Operations organisation through the Management of Change Process in 2007 and was fully utilised. The EIP will be funded from Operations budget in 2008 and beyond. Budgets for 2008 are currently under review.

## **7.2 SUMMARY OF CIP PROGRAMMING**

The following table summarise the projects being performed across all three countries under the CIP (Table 7.4). This is followed by an outline of project activity in each country.

**Table 7.4: BTC/SCP CIP and Other Investments<sup>7</sup> - Visualising the Benefits (up to end 2007)**

Investment Type	AZERBAIJAN	GEORGIA	TURKEY
<b>Number of communities benefiting</b>	130	79	331
<b>Amount of money invested (US\$)</b>	\$10,08 million <sup>8</sup>	\$3.86 million	\$13,6 million
<b>Implementing Partners (IP)/ Number of local/national NGOs</b>	6 IPs and 1 NGO assisting (a further 4 IPs and 22 NGOs have completed their CIP)	1 IP and 5 NGOs assisting	4 IPs (all national) and many local NGOs/cooperatives assisting
<b>% Women in Community Action Groups</b>	—	22%	Varies from 5% to 100% according to region. (All CIPs have programmes targeting women)
<b>Number of medical facilities improved</b>	42	2	11
<b>Number of education facilities improved</b>	52 (in addition 14 schools have received computers)	5	95 (in addition 622 students applied to open school programme most of whom are girls)
<b>Number of water supply systems improved</b>	75 (potable and irrigation)	8 potable, 4 irrigation	120 potable water 13 irrigation
<b>Km of road upgraded</b>	220,97 km	4km	Road improvements were not incl. in CIP Turkey (except one village road in Ardahan). Construction Contractors upgraded the roads.
<b>% Infrastructure project achieving &gt;25% community contribution</b>	—	100%	95%
<b>Number of medical staff trained</b>	497	0	399
<b>Number of people receiving direct medical support</b>	183,970	0	Over 34,000 (also over 13,000 people received Reproductive Health training from an EU funded project implemented by a CIP IP)
<b>Number of micro loans issued</b>	12,901	2,640	423
<b>% Repayment rate for micro-loans</b>	99%	100%	It is 100% in some villages; however limited in other places. The average in 63%. The new IP in Kahramanmaraş is implementing a strategy to collect repayments.
<b>Average value of micro-loan (US\$)</b>	851 <sup>9</sup>	1,680	750
<b>% Women receiving micro-loans</b>	49.5%	43,7%	8.75%
<b>Number of demonstration farms / agricultural trainers</b>	48 agricultural trainers, 49 demonstration fields and 13 farms	102 demonstration farms / 11 trainers	885 demonstration farms
<b>Number of farmers trained</b>	4,330	636	Over 37,000 (also 791 beekeepers)
<b>Number of livestock vaccinated</b>	—	828	Over 500,000
<b>Weight of high quality seed provided</b>	17,3 tonnes	18,6 tonnes	1,053 tonnes
<b>Number of co-operatives established</b>	1 Development Resource Centre in Yevlakh 4 Agricultural Service Centres 6 Water Purification LLC's	16 co-operatives ( 9 service and 7 producer groups)	82 (24 cooperatives, Village Development Associations and informal CBOs existing cooperatives also included in capacity building programme). These organisations are the backbone of the CIP exit strategy in Turkey.

<sup>7</sup> Total of US\$25 million allocated for BTC and SCP Construction Phase CIP and other community investments for the period 2003 to 2006

<sup>8</sup> Amount invested: till 31<sup>st</sup> 2006-accruals plus amount disbursed, from 1<sup>st</sup> January 2007 – only amount disbursed.

<sup>9</sup> Average value of micro-loan for year 2007 is \$1,338.

## 7.2.1 Azerbaijan

The following activities of note took place in 2007:

- Umid NGO has established **Water Purification Programme Phase II**, which started in the beginning of year 2007, and was targeted on communities along the BTC/SCP route affected by lack of potable water
- Save the Children Foundation (SC) has proceeded to **Consolidation Phase of Future Communities Programme**
- Junior Achievement Azerbaijan has commenced **School Economic and Business Education Programme** to provide necessary skills and knowledge through economic and business trainings for secondary school students and other interested community members who appreciate free market and business values
- Madad continued **School Connectivity and Global Citizenship Programme Phase II** for communities along the BTC/SCP route and started similar programme in 2007 for Baku corridor
- Umid started **Youth Employment and Economic Opportunities Expansion Initiative** to involve youth, living in areas along the Baku corridor to apprenticeship courses and to provide them grants for establishing their own business
- International Medical Corps has continued **Rural Inclusive Education Programme**, targeted on improving of the skills of the district medical and educational staff to assess early childhood development and evaluate the progress
- SC began Phase III of **Community Investment Programme** to enhance positive relations between BP and co-venturers and communities along the pipeline by investing in targeted communities that demonstrate a commitment to becoming models for sustainable community development
- FINCA AZERBAIJAN commenced **Community Investment Program Baku Corridor Microfinance Initiative** to give increased economic opportunity and provide sustainable, equitable economic growth in BP and Partners affected target areas

## 7.2.2 Georgia

### 7.2.2.1 Operations Phase CIP (CIP II) – Year 1

The Operations Phase of the CIP (CIP II) has the goal of enhancing positive relations between BP and communities along the BTC/SCP pipeline route through sustainable socio-economic development. Initially, a one year contract was signed with CARE on carrying out following project themes:

- Community mobilisation
- Infrastructure rehabilitation (Case Study 4)
- Economic development, including agricultural development, support for business start up and provision of micro credit (Case Study 5)
- Education and youth empowerment.

In June 2007 CARE, working with a consortium of 4 national NGOs, successfully completed implementation of the 1<sup>st</sup> year activities for BTC/SCP Operations phase.

### 7.2.2.2 Operations Phase CIP (CIP II) – Years 2-3

In July 2007 a new two year agreement was signed with CARE in relation to the implementation of the 2<sup>nd</sup> and 3<sup>rd</sup> year activities of CIP II. These activities aim to increase the impact of CIP II through:

- Economic development, including support to the agricultural sector through provision of necessary extension services, strengthening associations and service entities, business development, access to micro financing, with the increased focus on the young women.
- Strengthening of Civil Society, including continuation of leveraged grants to CBOs, infrastructure and training support to the schools, ecological education, empowering youth.

In September 2007 CARE proposed set of activities aimed at assisting small farmers in getting their goods to markets. - the “farmers to Markets” proposal with the budget of \$500K over three years 2008 – 2010. This project is due to start in early 2008.

### 7.2.3 Turkey

2007 was a transition year for CIP in Turkey whereby the programme shifted away from a focus on improvement of basic livelihood activities to broader income-generation projects. At the strategic level, the emphasis was on:

- Enhancing production of high economic-value crops;
- Increasing the scale of production to increase profit; and
- Provision of assistance on sales and marketing.

Additionally, as a cross cutting concern in each project, effort was directed towards developing local capacity to ensure the sustainability of the projects after the completion of the CIP. This has entailed less intervention on the part of the Implementing Partners and transference of responsibilities.

Key achievements in 2007 in this regard were as follows:

- In Erzurum the Cattle Breeders Union completed all vaccinations whereas in the previous year they were completed by the Project;
- The Damal Co-operative completed their first milk collection activity resulting in a profit for its members as well as attracting a \$US 30,000 support grant from the sub-governorship for 2008;
- The Erkadin Cooperative, a women’s textile co-operative in Erzincan, completed business development and marketing activities without project intervention;
- A development association in Hemite established a fodder grinding and mixing facility. The Association also won a grant from a joint BTC-UNDP fund to establish a bio-gas facility.
- Farmers in Sivas started organic wheat production and farmers in Erzurum are selling conola to a bio-diesel refinery company in Samsun.

Similarly, each Implementing Partner developed a CIP programme exit strategy. These strategies were based upon the recommendations presented in the Construction Phase CIP Final Evaluation and the outcomes of internal evaluations undertaken by each Implementing Partner. The strategies concentrated on two main areas, income generation and capacity building of local organisations.

### 7.2.4 CIP II Expenditures 2007

Construction phase CIP finished in June 2006 (with carry over of funds until July 2006) and total expenditure was reported in the 2006 Annual Report to the Lenders.

A further programme, CIP II, which commenced in June 2006, was drawn up to cover the period 2006 - 2008. US\$8.25 million was allocated to Azerbaijan, US\$4.9 million to Georgia and US\$6.2 million to Turkey. An increase to the Turkey budget, mentioned in the 2006 Annual Report was realised and the funding was scaled up from \$4,200,000 to \$7,295,000. The increase was provided due to the recognised benefits of extending the timeframe of the development programmes to ensure successful exit and closure. This realisation was supported by positive feedback from external reviewers.



CIP expenditures for the total Operations phase and for the year 2007 are summarised in Tables 7.5 and 7.6.

In Georgia CIP II expenditures for 2007 included expenditures associated with the CIP II 1<sup>st</sup> year contract, which was completed in June 2007 and expenditures for the CIP II two-year contract effective from July 2007.

CIP II 1<sup>st</sup> year contract value was \$1,470,000

CIP II 2<sup>nd</sup> and 3<sup>rd</sup> year contract value is \$2, 390,000.

**Table 7.5: Operations Phase CIP II Budget and Expenditures (\$) 2006-2008 (BTC/SCP only)**

	Azerbaijan	Georgia	Turkey	TOTAL
<b>CIP II Budget</b>	5,623,000	3,900,000	6,200,000	15,723,000
<b>Total Spend up to the end 2007</b>	4,362,000	3,351,000	5,100,000	12,813,000

**Table 7.6: Summary of Operations Phase CIP II Expenditures (\$), 2006 – 2007 (BTC/SCP only)**

	Azerbaijan	Georgia	Turkey	TOTAL
<b>Planned</b>	3,919,000	2,865,000	5,000,000	11,784,000
<b>Actual</b>	4,353,000	3,351,000	5,100,000	12,813,000

Table 7.7 shows the amount from the CIP II budget spent in 2007. Note this includes expenditures for two agreements – Year 1 and Year 2-3 agreements.

**Table 7.7: Summary of BTC/SCP CIP II Expenditures (\$), 2007 only**

	Azerbaijan	Georgia	Turkey	TOTAL
Actual 2007	2,920,000	1,945,000	3,500,000	8,365,000

### 7.2.5 CIP Budget, 2008

The BTC CIP II budget for 2008 is presently under review.

## 8 PROJECT COMMUNICATION

### 8.1 CONSULTATION APPROACH

Consultation and communication with various Project stakeholders, from communities to Government organisations, was ongoing during 2007.

A key objective of Project consultation is to avoid situations that could lead to complaints. Where complaints do arise, as is inevitable for a project of this size and complexity, effort is made to ensure they are resolved promptly. Information on complaints raised by project affected communities is detailed below.

Across the Project, significant efforts are also made to engage other Project stakeholders, such as national NGOs, government ministries and the local and national media. Information on meetings held with key stakeholders in 2006 is provided below.

## 8.2 AZERBAIJAN

### 8.2.1 Project Affected Communities

There were a number of community relations initiatives launched by Operations' Social Team in response to various requests from Project Affected Communities.

There were 5 complaints/requests relating to ROW crossings. Operations social staff worked closely with technical and land teams and, as a result of joint efforts, including the construction of seven additional crossings, all related complaints/requests were resolved to the satisfaction of the community members.

Operations social staff have since taken a proactive approach and have developed an action plan to identify all crossings available, and those that need to be built, on all three pipelines (BTC/SCP/WREP). The crossings data will be communicated through Community Liaison Officers (CLOs) to community members, landowners, operations patrolling and Export Pipelines Protection Department (EPPD) staff. Relevant training will be also delivered to EPPD officers in the regions.

The other initiative developed by the social and security teams involves the formation of the Regulatory and Emergency Response Committees. The goals of these Committees are to facilitate effective community liaison, effective interaction with local regulatory authorities in regards to complaints resolution, and awareness in relation to company activities as well as communication in the case of emergency. A letter from Onshore PU Leader was sent to the Ministry of Energy and Industry with a request to support this initiative at a district level. The Minister of Energy and Industry has sent a letter to each district authority requesting their support in arranging such committees. The committees have now been formed in each district affected by the pipelines.

The handover date of complaints management from the Construction Social Team to the Operations Social Team was 1<sup>st</sup> September 2006. Considerable work was carried out during 2007 to resolve outstanding complaints remaining from the Construction phase. By the end of the year only two remained. Both related to bridge damage in Kurdamir and Samukh. BTC is ready to overtake the maintenance works on both bridges and is currently finalizing an agreement with an assigned contractor.

Table 8.1 summarises the type and status of complaints received during 2007. Two infrastructure related complaints remaining from year 2006 are not included into the second column.

**Table 8.1: Summary of Complaints received by BTC/SCP, 2007 (Azerbaijan)**

Complaint Category	Complaints received	Complaints open at end of 2007
Orphan land cases	2	0
Irrigation	10	0
Damage to infrastructure	3	0
Compensation for land/crop	8	5
Reinstatement	3	0
Land use	4	0
Damage to property	9	1
Access Roads	1	0
<b>TOTAL</b>	<b>40</b>	<b>6</b>

## 8.2.2 NGOs and Technical Organisations

During 2007, regular dialogue with NGOs continued through quarterly “NGO Dialogue Sessions”. During these sessions BP representatives shared information about business developments in Azerbaijan.

Regular meetings were also held with a broad range of national (Madad, GABA, Umid) and international NGOs (Junior Achievement Azerbaijan, Save the Children, FINCA) to discuss ongoing and future community projects.

## 8.2.3 Government

Dialogue continued with government ministries, including the MENR and the Ministry of Emergency Situations. Topics included facility inspections, the Right of Way Access Strategy and BTC expansion.

Winners of the 6<sup>th</sup> Biodiversity competition were announced a ceremony in December. The competition was held in two categories – the best biodiversity project and the best environmental awareness project. A total of 80 entries were received coming from 44 different organisations.

## 8.3 GEORGIA

### 8.3.1 Project Affected Communities

The BTC Community Liaison team continues to work and communicate with local communities on a regular basis. A summary of the main achievements in 2007 is as follows:

- Development of a Community Communications Plan for 2007. This plan included details for meeting village communities on a regular basis.
- Preparation and distribution of a 2007 calendar to all villages along the ROW. The calendar included information about land use restrictions in the vicinity of the pipeline and how to contact Company in the event of queries. A writing competition was conducted amongst school students living in project affected communities based on the theme “BP – Neighbour of Choice”. A committee of Company employees selected the top 12 entries, with the winners and their schools receiving prizes. The winning entries will feature in a 2008 Calendar that will be widely distributed along the ROW.

#### 8.3.1.1 Complaints

The Community Liaison Team, along with the Land Team, implements the Third Party Complaints procedure and addresses disputes from communities. All complaints are received and registered in the Company grievance log. Complaints are either resolved by the Social team, or diverted to other departments for further actions.

In 2007, 110 complaints were considered, including 26 carried over from the Construction phase (Table 8.2).

**Table 8.2 Operations Phase Complaints Log Statistics (as of December 2007)**

Complaint category	Total number received to date	Number of complaints resolved	Total % of complaints resolved	Number of complaints pending
Additional Land	21	21	100%	0
Irrigation	12	10	83%	2
Land Handback	15	12	80%	3
Orphan Land	7	7	100%	0
Other Land Issues	17	16	94%	1

Complaint category	Total number received to date	Number of complaints resolved	Total % of complaints resolved	Number of complaints pending
Parcel Ownership or Size	3	3	100%	0
CBO Compensation	1	1	100%	0
Community Infrastructure	12	8	67%	4
Cracked house	3	3	100%	0
Employment	6	6	100%	0
Household Infrastructure	9	9	100%	0
Nuisance	2	2	100%	0
Miscellaneous	2	1	50%	1
<b>TOTAL</b>	<b>110</b>	<b>99</b>	<b>90%</b>	<b>11</b>

### 8.3.2 National NGOs and Technical Organisations

Throughout 2007, BP continued to engage with the Georgian civil sector through regularly organizing meetings, delivering presentations, responding to queries, providing updates and launching structured programs and projects.

In 2007, a new initiative targeted at strengthening Georgian civil society was launched. From among many concept papers solicited from national NGOs, a concept proposed by Transparency International Georgia (TI) was selected as the best and a full proposal was subsequently developed. The implementation of the one-year project *Promoting Understanding of the Energy Sector in Georgia* started in September. The aim of the project is to increase public awareness of the energy sector in Georgia and to disseminate information throughout the country about related reforms.

BP in Georgia continued engagement with NGOs involved with the Pipeline Monitoring and Dialogue Initiative specifically to review the company's response to the recommendations provided by the NGOs in their audit reports.

### 8.3.3 Government Ministries and Departments

There is a close, constant interaction with Georgian Oil and Gas Corporation and the Government MEP representative, on number of key issues. Regular meetings are also held with the Ministry of Energy in relation to approval of Construction Rights Agreement for State Lands, and issues linked with additional gas supply from Azerbaijan.

BTC Co concluded \$10 million grant agreement with the Ministry of Finance on rehabilitation of certain state roads damaged during the construction.

BTC has also maintained dialogue with the Ministry of the Environment and Rustavi Municipality in relation to plans to development of modern non-hazardous waste landfill. As a result land for the landfill has been secured. Design of the landfill and a related ESIA are now being prepared for submission and approval by Government.

Efforts to improve relationships with the Customs Department with respect to improving the efficiency of clearing imported goods and developing a simplified emergency border crossing protocol, have continued.

### 8.3.4 Media

During 2007, various media activities took place in Georgia including:

- A media round table arranged for local media, covering general BP business activities and social projects

- Press releases and interviews associated with the opening of the BP auditorium at the Georgian National Museum
- Interviews recorded with BP Georgia's country manager, after the signing ceremony held in the ministry of Finance for the rehabilitation of certain state roads
- The 5<sup>th</sup> BP Biodiversity Competition award ceremony involving BP management, Government, scientists, local NGOs and media;
- Print and television interviews given as part of a SME Policy Development Project (RDI/IFC financed) and another SME support project in Borjomi (in partnership with GTZ, a development agency owned by the German government)<sup>19</sup>;

### 8.3.5 Donor Organisations

BTC continued to meet with various development organizations in Georgia including: UNDP, USAID, World Bank, IFC, Millennium Challenge Commission Georgia and several national and international NGOs.

BTC, in collaboration with number of international organizations continues to implement a number of projects in Georgia, including: solid waste management programme as part of the Greater Borjomi Initiative<sup>10</sup> (in association with GTZ); Georgia Enabling Business Environment Project (IFC); Corporate Governance Project (IFC), Business Development project in Borjomi (GTZ), Technical Assistance and Landing Support to Constanta Foundation (EBRD), Technical Assistance to Georgian Oil and Gas Corporation (EBRD and MCC), Engineering Design for Water and Sewage System in Borjomi and Bakuriani (EBRD).

Regular talks with donor organizations continue with the aim of defining potential areas for future engagement.

## 8.4 TURKEY

### 8.4.1 Complaints

During 2007 BIL received 89 complaints. A breakdown of the complaints by category is shown in Table 8.3.

**Table 8.3: Total Number and Category of Operation Complaints received, 2007**

Subject	Number 2006	Number 2007	Residual Open 2007
Employment	24	2	0
Reinstatement	12	37	14
Access to land and other resources	2	0	0
Damage to property, crops and land	2	16	11
Damage to infrastructure and community assets	3	10	2
Dust	1	1	1
Payment to service provider	5	7	1
Local Procurement	3	1	1
Outstanding expropriation payment	0	13	2

<sup>10</sup> The Greater Borjomi Initiative (GBI) was set up by BP under the Regional Development Initiative in 2004, and allocated a budget of approximately US\$4 million. The GBI aims to contribute towards the socio-economic development of the Borjomi region.

Subject	Number 2006	Number 2007	Residual Open 2007
Misconduct of BIL employees	0	1	0
CIP – perceived inequity in distribution of support	0	1	0
<b>TOTAL</b>	<b>52</b>	<b>89</b>	<b>32</b>

During 2006 BIL received 52 complaints from the time Operations commenced (end July 2006) to the end of the year or, on average, about 10 complaints per month. The average number of complaints per month during 2007 has dropped to about seven. All residual Botaş complaints (5 from 2006) were transferred to the BIL system for management and have since been closed.

During their visit in June 2007 the SRAP panel concluded that community complaints were likely under-represented as the BIL Public and Community Relations (PCR) department had not, at the time of the audit, achieved good coverage of all the project affected villages due to lack of vehicles and human resources. In addition, it was understood by the SRAP panel that complaints recorded by other organizations were not being passed to BIL in a systematic way for closure and therefore, were potentially being lost. BIL, in conjunction with BTC has revised their complaints procedure and developed a strategy for maximizing visits to un-visited or under visited communities prior to winter<sup>11</sup>.

The majority of complaints received during the 2007 period related to reinstatement following construction. Many of these can only be closed once reinstatement teams are mobilized to site in the Spring.

Other complaints related to crop and land damage. These represent a combination of residual issues from construction as well as new issues relating to illegal tap repairs. Land repair and compensation for damages resulting from illegal taps have largely been completed by BIL. Some issues cannot be resolved until the Spring.

The third highest category of complaints related to payment for land. At the pump stations the camps continue to be occupied (refer to Section 4) requiring additional agreements and payments for temporary land occupancy. However due to the transition from Construction to Operations, and therefore Botaş to BIL, there wasn't a mechanism in place to make the payments. This process was accelerated as far as possible and these payments have now been made. Open residual complaints relating to this issue, shown above in Table 8.3, relate to a disagreement regarding whether payment is required from the construction period and a delay in payment related to banking administration.

## 8.4.2 Consultation

### 8.4.2.1 BIL

A breakdown of meetings held by BIL in 2007 is shown in Table 8.4.

BIL has allocated BIL PCR experts to sections of the pipeline. There are currently four covering the pipeline and an additional one located in Ceyhan to cover the CMT and IPT1. During the first half of 2007 BIL PCR experts did not have exclusive access to their own vehicles in the field, due to the slow release of vehicles from the Construction phase. After the SRAP audit in June 2007 (see above), BIL PCR experts gained access to their own vehicles and a strategy was put in place to ensure wide coverage of visits to previously un-visited project affected villages.

<sup>11</sup> Despite these changes the number of complaints received over the two time periods, pre-SRAP visit and post SRAP visit, was not greatly different, 40 and 49 respectively. Regardless as BIL continue to improve their coverage in the villages it is recognised that community complaints may continue to rise for a short period before tailing off in subsequent years.

To assist in the consultation process an Operations Community Pamphlet was prepared (as a follow-up to the 2005 pamphlet). This pamphlet provided updated information on BIL (as the Operator of the pipeline,) third-party crossing restrictions, community safety; pipeline security, oil spill response and planning and Project contact information. It was widely distributed to villages and stakeholders.

**Table 8.4: BIL Community Meetings, 2007**

BIL Community Meetings	No. of Village Meetings	Stakeholder Meetings
Introductory meetings	137	39
Regular Meetings (follow-up to introductory meetings)	95	43
ER/Oil Spill Drill Notifications	10	2
Land-use Restriction Notification meetings*	164	14
Women's Meetings	9	-
Third-party crossings*	4	7
SRAP Audit	19	-
Illegal tap consultation meetings/ROW Security	13	2
Other (holiday courtesy visits; response to particular issues etc)	11	34
<b>TOTAL</b>	<b>457</b>	<b>141</b>

\*The scope of introductory and regular follow-up meetings includes land-use restrictions and third-party crossings. These subject specific meetings were held in some cases to re-emphasise these issues where considered necessary.

BIL stakeholder communications included consultation meetings with local Gendarme, Provincial governors, District sub-governors, Mayors, Government utility providers, Government Departments etc. The purpose of these meetings was similar to village level meetings, i.e. to introduce BIL and discuss restrictions regarding land-use and third-party crossings. Throughout the year the PCR Department of BIL also hosted official visitors to CMT including country representatives, government officials and NGO representatives.

#### 8.4.2.2 BTC

In addition to meetings held by BIL, BTC also undertook various stakeholder meetings. The majority of the meetings related to Investment Programmes (EIP, CIP and RDI). Investment stakeholders with whom meetings were held included local, regional and national government representatives, development/doner organisations such as UNDP, NGOs, and to a lesser extent embassies, universities and private businesses. The purpose of the investment stakeholder meetings was to raise awareness and support for the investment activities, understand government and NGO future priorities and strategies, seek additional funds, etc.

BTC also held meetings and other formal communications with the Ministry of Environment and Forestry (MoEF) and Ministry of Energy and Natural Resources (MoENR) with respect to Operations, BTC Expansion, Enhancement Projects, as well as clarifications on environmental legal requirements such as discharge standards and the national EIA process.

A summary of the number of meetings or other formal communications held by BTC is shown in Table 8.5. Note that the number of meetings held does not include meetings held by EIP/CIP Implementing Partners. The Implementing Partners held many district level meetings in addition to those shown in Table 8.5.

**Table 8.5: BTC Stakeholder Meetings, 2007**

Type of Meeting	No. of Consultations*
Donor	17
Government	14
NGO	6
Private companies	2
Vendor	1
University	1
Embassies	2
International Conference	1
<b>TOTAL</b>	<b>44</b>

\* In many cases, consultation can represent a series of meetings on the same subject.

## 9 LAND ACQUISITION AND COMPENSATION

The land acquisition and compensation process, land hand-back and livelihood restoration activities are described in the Resettlement Action Plan (RAP). This section of the report gives a summary of relevant activities conducted in 2007.

### 9.1 AZERBAIJAN

#### 9.1.1 Acquisition and Compensation

The primary land acquisition and compensation process for the pipeline ROW in Azerbaijan is substantially completed (Table 9.1).

**Table 9.1: Land Acquisition Statistics and Data (cumulative up to 31<sup>st</sup> December, 2007)**

Event/Activity	Status	% of Total
<b>Primary Land Acquisition:</b>		
Payments made to owners / users (% of total number of owners / users)	Bank accounts have been established for all people, in all districts, except for 9 unavailable landowners (compensation for these owners has been retained until such time as they are located).	99.9%
<b>Supplementary Land Acquisition Programs:</b>		
• Notification Letters Sent	SLAP1: 4,763 parcels (from a total of 4,838)	98.6%
• Land Use Agreements Extended	SLAP2: 1,365 parcels (from a total of 1,370)	99.2%
• Compensation Paid		
<b>Number of lots reinstated and handed back to owners/users</b>		
	Land Hand-back to landowners, as documented by Exit Agreements, almost completed. 6,646 land plots were handed back to the land owners/users.	99.1 %

During the reporting period there have been no significant issues relating to the primary acquisition and compensation process. Some post agreement cases attributed to technical errors (refer Annual Report 2006) are ongoing.



## 9.1.2 Land Hand-back

In accordance with Land Lease Agreement, Article 2.04 (b) “As soon as practicable after construction of the Pipelines is completed, the State shall ensure that re-cultivation works are carried out and that the Construction Corridor is returned to its original condition”.

- By the end of March 2007, 6,646 land parcels had been handed back to the land owners/users and corresponding Land Exit Agreements signed. Although the signing of the Land Exit Agreements has covered 98.1 % of land parcels, there are a number of cases when the Contractor is not responsible for the signing of the Land Exit agreements.

In addition to the cases mentioned above there are still 31 cases of refusals to sign the land exit agreements. Such cases have been included in the action plan noted above.

Further to SRAP audit (October 2006) recommendation that “the Project is to specifically monitor in the coming months any refusals to sign the land exit protocols”; it is worth underlining that the Project, together with the Contractor, have organised a systematic review of outstanding refusals as well as other pending construction-related grievances. Instances where the Contractor could not manage to obtain a sign off of Land Exit Agreements, the Construction and Operations land team have now done so.

## 9.2 GEORGIA

### 9.2.1 Acquisition and Compensation

All construction activities on BTC and SCP pipelines are 100% complete. Reinstatement of the ROW is also complete. Land use agreements for some off ROW facilities have been extended (camps, yards, helipads etc).

A summary of land parcels for which compensation has been paid is shown in Table 9.2.

**Table 9.2: Number of Land Parcels for which compensation has been paid (to end December 2007)**

District	Private land Parcels		High Mountain Village Land Parcels		State Leased land Parcels	
	Required	Actual	Required	Actual	Required	Actual
<b>Total</b>	3,750	3,703	208	208	239	224
<b>% Complete</b>		99%		100%		95%

### 9.2.2 Land Registration and Ownership

The major issue subject to court consideration continues to be a case of privatisation of Dispute over 78 land parcels which were State owned and were allocated to the Project by the State Authorities remains unresolved.

In the village Tabatskuri compensation has been paid for the original acquisition of the ROW but not for securing servitudes and restrictions. This affects 98 pasture and arable land plots. The situation prevents BTC from completing registration of its ownership over these plots.

Seven title holders cannot be located (mostly because he/she now resides abroad). BTC has applied to Court to obtain “Necessary Right-of-Way” while attempts to locate the absentee landowners continue.

### 9.2.3 RAP Fund

RAP Fund activities in Georgia are totally complete.

### 9.2.4 Land Hand-back

The agreed strategy for the hand back of land use to the original owners and for acquisition of use restrictions within the protection zone is being implemented.

The process has continued in Gardabani, Borjomi Ahaltsihe and Adigeni Districts, with the appropriate information packages and offers distributed to a total of 2585 landowners (approximately 75% of total for entire route). Follow up meetings have taken place, with 1,586 (96%) owners agreeing to the offers. A total of 1,720 (65% of distributed agreements and 50% overall) owners have completed the necessary formal documentation and received payment. The process will continue during 2008.

## 9.3 TURKEY

### 9.3.1 Acquisition and Compensation

The initial land acquisition and payment process continued throughout 2007. Outstanding issues to finalise the initial land acquisition process related to Article 10 cases and misidentification of customary land owners (see 2006 and previous reports). Table 9.3 provides the status as of the end of 2007.

**Table 9.3: Land Acquisition and Compensation Progress (December 2007)**

Indicators	Information Provided by Botaş DSA (DSA MONTHLY REPORT: DECEMBER 2007)	
	Total (by parcel)	Percent Complete
Title Deed Registration (Note. Change in statistics is due to Those subject to transfer, owing to different configurations).	11,735	96.65%
Resolution of Article 10 Cases	4,657	91.58%
Overall Land Acquisition (Excluding item iv and v)	16,798	96.28%
Transfer or Rights to Land Status (Note. Those subject to transfer, owing to different configurations, are c. 18,000)	17,877	90.45%

As part of the re-identification of customary ownership, cadastral surveys were completed in 2006, results disclosed and an evaluation was completed to determine the approach to compensation. BNB (formerly RUDF), on behalf of BTC, has been involved in the independent monitoring of the compensation process during 2007. Compensation was completed in 2007.

Throughout 2007 Botaş/DSA acquired additional land in response to as-built survey results and the pipeline ROW as-built alignment. By the end of 2007, 96.65% of land had been acquired. BTC will continue to monitor this process closely.

### 9.3.2 Land Management during Operations

BIL and Botaş/DSA have developed a Land Management Plan which outlines future roles and responsibilities between DSA and BIL.

### 9.3.3 Land Exit

Land exit was deemed complete by Botaş, with the exception of those Land Exit Agreements that were outstanding due to the misidentification of customary owners. During the customary owner compensation work, further land exits were obtained once the compensation had been made.

### 9.3.4 Transfer of Land Rights

Transfer of Rights activity has been conducted on a District basis using two Official Acts: 1) private/customary owned land; and 2) state/forest owned land. Due diligence reviews, were conducted by BTC representatives prior to the Transfer of Rights process being completed. By the end of 2007, 90% of parcels had been transferred to BTC

### 9.3.5 Misidentification of Customary Owners

Compensation to misidentified customary owners is being performed in a two stage process:

1. First Tranche: Compensation of individual vs state (including forest) cases. During this compensation exercise, consultation will be carried out to test the mitigation measures considered for individual to individual cases. The consultation exercise will be used to evaluate and determine the lowest risk approach between the two options 'direct compensation' or 'loan' assistance.
2. Second Tranche: Compensation of individual vs individual cases will be made according to the findings of the consultation undertaken with landowners.

First tranche payments involved owners of land in 15 villages in LOT A identified as treasury or forest lands during customary ownership identification (priority cadastre works). These owners were compensated by the RAP fund between 26 – 31 March.

Second tranche payments involved owners of lands in 20 villages in LOT A identified as individual to individual cases (primarily) during customary ownership identification (priority cadastre works). This group was compensated by the RAP fund between 14-19 April.

The compensation exercise was executed by a compensation team comprising BTC Co, and third party observers from DSA and BNB.

A summary of the third party observation of both first and second tranche work is provided below.

- The affected persons were satisfied with the compensation payments. Those who received compensation were satisfied with the amounts paid.
- In LOT A, after the payment of the compensation, land exit protocols were signed.
- Customary ownership identification errors which remained on the agenda during the Project's land acquisition process within the range of Tranche 1 and Tranche 2 were resolved with these payments.
- Legal explanations were provided to those people who had requested compensation but were not eligible, providing the reasons for their ineligibility.
- A number of those not yet compensated had either ongoing or awaited priority cadastre works court cases. Following the closure of these court cases the persons were duly compensated. However, because the court process took considerable time, Botaş/DSA continued to stay in contact with the landowners and followed the process to ensure that the compensation payments were provided.
- All landowners have been compensated. This achievement owes much to BTC's commitment to the prescribed criteria in every stage of the Project in compensating the landowners.

A full third party report was made available during the SRAP visit in June 2007. The current status is reported in Table 9.4 below.

**Table 9.4 Customary Ownership Compensation Status Based On Priority Cadastre Work Results**

District	Village	TOTAL	Individual to individual (TRANCHE 2)		State to individual (TRANCHE 1)	
			Parcels	Total	Achieved	Total
Sarikamiş	Akören	17	4	4	13	13
Sarikamiş	Karaorgan	19	6	6	13	13
Sarikamiş	Kurbançayiri	8	4	2	4	4
Sarikamiş	Süngütaşı	8	1	1	7	7
Posof	Kayinli	10	3	3	7	7
Posof	Türkgözü	2	2	2	0	0
Posof	Söğütlükaya	1	1	1	0	0
Susuz	Büyükçatak	76	21	21	55	55
Selim	Başköy	12	4	4	8	8
Selim	Hasbey	1	1	1	0	0
Selim	Darboğaz	24	0	0	24	24
Selim	Tuygun	7	0	0	7	7
Selim	Bozkuş	13	0	0	13	13
Selim	Karakale	3	3	3	0	0
Selim	Beyköy	2	0	0	2	2
Selim	Gürbüzler	14	14	0	0	0
Şenkaya	Kaynak	63	22	19	41	34
Şenkaya	Şenpınar	5	1	1	4	2
<b>TOTAL</b>		<b>327</b>	<b>117</b>	<b>96</b>	<b>210</b>	<b>200</b>

Source: DSA February 2008

The remaining cases are being dealt with on a case-by-case basis by the DSA regional offices. These include:

- For 38 parcels, DSA has compensated the parcels through bank accounts as the owners were absent.
- For 16 parcels compensation payments could not be made as the parcels are disputed.
- For 15 parcels, compensation payments could not be made as there is ongoing court case against Botaş.

### 9.3.6 RAP Monitoring

#### 9.3.6.1 Land Acquisition

BNB has continued to monitor both the land acquisition process and construction impacts on communities during this reporting period.

To date, BNB have conducted about 1170 meetings with communities located adjacent to ROW and AGIs. Please refer to Section 9.3.5 for a summary account of BNBs findings during the customary ownership compensation activity.

#### 9.3.6.2 Household income surveys by Ankara University

Full details of the Household Income Surveys report carried out by Ankara University are given in 2006-H1. This is the first annual replicate household income survey on almost a third of all affected villages.

### 9.3.6.3 Fishermen Monitoring

Two monitoring surveys were undertaken by a third-party consultancy, ISTEM in 2007.

- The fifth monitoring survey was undertaken between the 27th April and the 7th May 2007 and;
- The sixth monitoring survey was undertaken between the 26th November and the 12th December 2007.

The aims of the surveys were to:

- identify whether there is any change in fishing activities (daily catch amounts, types of fish etc) and income levels of the active fishermen and thereby determine the effectiveness of the livelihood restoration plan;
- analyse the changes in the number of active fishermen and boats, and propose the possible reasons for this;
- identify the impact of BTC Operations on fishing activities (whether tanker traffic has an impact on current fishing activities, the impact of implementation of the restrictions around the jetty etc).

ISTEM conducted questionnaires and held face to face meetings with the fishermen in Golovasi to collect data on daily catch stocks, types of fish etc. They also held consultations with tradesmen, fisheries Cooperative management and other relevant local stakeholders (harbour authority, Coast Guard, district agricultural directorate, fisheries department at Cukurova University etc). Due to the on-going court cases (see below), ISTEM noted that during the study data collected from fishermen and other stakeholders could not always be relied upon as objective. ISTEM therefore cross checked this data with other data collected from tradesmen and fish restaurant owners as well as their own direct observations at site.

The main findings of the surveys are summarised below:

- a. There is no significant change in the average catch statistics compared to the baseline information (2003) and therefore no significant impact of BTC Operations on daily /yearly catches
- b. Yearly average catch amounts in 2007 are higher than the baseline (May 2003) conditions including for species with significant commercial value (e.g. shrimps).
- c. Seven new boats were purchased since the fishermen received compensation in 2004. Five of the boats were purchased by previous fishermen and two of them were purchased by two new fishermen.
- d. During 2007 only 20 fishermen out of the original 48 were observed to be actively involved in fishing activities (18 full-time and two part-time). The remainder of the fishermen now reside outside of the village or have found full-time positions in private companies (including BIL sub-contractors). This data was confirmed by tradesmen records.
- e. Average income of the fishermen households increased by approximately 22% in USD compared to the baseline (2003).
- f. There is no discernable impact of the tanker traffic on fishing activities due to the different time schedules of tanker and fishing activities.
- g. In the last 6 months 5 fishermen had to pay fines due to lack of certification and necessary on-board equipment. Fishermen claim that the reason for the increase in the fines levied by the Coast Guard is due to BTC Operations. After inquiries and investigation these claims have not been substantiated.

During 2007 there were a number of developments relating to the Yumurtalık and Golovasi Fishermen Lawsuits. A summary of the lawsuits filed by the fishermen of Yumurtalık is as follows:

- The Yumurtalık Cooperative filed a lawsuit against BTC and Botaş claiming compensation for loss of income from BTC Project impacts on fish stocks (refer to the 2006 Annual Report for full summary).
- The Civil Court has dismissed the lawsuit due to a lack of standing.
- The Plaintiff Cooperative applied to the Court of Appeals.
- The Court of Appeals upheld the verdict of The Civil Court. The Plaintiff applied for a further appeal, however the Court of Appeals rejected the Plaintiff's request for a further appeal. The court decision for the Yumurtalık Co-operative case is final and closed.
- After this decision the 80 fishermen who went to court under the Yumurtalık Cooperative filed a lawsuit against BTC Co and Botaş as a collection of individuals.
- At the last hearing, the expert evaluations could not be undertaken due to the bad weather conditions. The Court determined to re-schedule the expert evaluation to the 12th March 2008. It will be held at CMT.

The lawsuit filed by the Golovasi Cooperative was dismissed by the Court due to lack of standing in line with the Court's previous decision regarding the Yumurtalık Cooperative case. The Plaintiff has not appealed the decision.

## 10 SUMMARY OF KEY HEALTH AND SAFETY STATISTICS

BTC reported two sets of health and safety (H&S) statistics in 2007: Construction and Operations as both sets of activities were evident across the three countries, although work carried out by the construction team was limited.

Whether construction or operations related, H&S performance is reviewed on an ongoing basis and monthly reports are produced for both management and partners

Table 10.1 presents an overview of performance.

**Table 10.1: Comparison of BTC and International Industry Safety Performance**

	BTC Statistics for 2005	BTC Statistics for 2006	BTC Statistics for 2007	IPLOCA Statistics for 2004
Contractors submitting data	9	5	6	56
Total man-hours	23,477,749	3,407,082	2,073,578	650,123,559
Project Reportable Fatality	1	1	0	34
DAFWC	13	1	0	2,247
DAFWCf rate	0.11	0.06	0.00	0.69

*Notes:* IPLOCA – International Pipeline and Offshore Constructors Association  
200,000 man hours is used to calculate DAFWC frequency  
DAFWC: Days Away from Work Cases (frequency)

### 10.1 H&S OUTPUTS (CONSTRUCTION)

A summary of the H&S performance for construction during 2007 is shown in Table 10.2.

**Table 10.2: Project Performance Outputs, 2007**

Project Performance Outputs	Year to Date	Project to Date
Man-hours	2,073,578	112,463,480
Kilometres Driven	564,729	212,341,352
Vehicle Accidents	1	415
Fatalities	0	10
DAFWC	0	56
Medical Treatment and Restricted Work	1	278
Recordable Illnesses	0	287
Total Recordables	1	631
First Aid Cases	1	1,264
Near Misses	10	825

## 10.2 H&S INPUTS (CONSTRUCTION)

Inputs such as STOP observation cards and Safety Observations and Conversation<sup>12</sup> (SOC) far exceeded the target, whilst safety training hours were below target, although given the stage of the project and recruitment activity it was always anticipated that it would be difficult to sustain this target since the vast majority of workers had received their H&S training in earlier year/s (Table 10.3).

**Table 10.3: BTC H&S Performance Against 2007 Targets (Construction Phase)**

Performance Indicator	2007 Target	2007 Actual
<b>Inputs</b>		
Safety Observations and Conversation (SOC)	600	945
STOP Observation	3,000	3,838
Safety Training Hours	4,000	4,030

## 10.3 H&S STATISTICS

A summary of H&S performance during 2007 for Operations is presented in Table 10.4.

**Table 10.4: BTC H&S Performance Against 2007 Targets (Operations Phase)**

Performance Indicator	2006 Target	2006 Performance		2007 Target	2007 Performance	
		BP	BIL		BP	BIL
Man-hours	n/a	1,244,352	1,958,959	n/a	1,260,057	2,635,456
Km Driven	n/a	6,029,156	3,568,746	n/a	6,471,426	6,064,092
<b>Outputs</b>						
Fatality	0	0	0	0	0	0
DAFWC frequency	0.02	0	0	0.02	0	0
RINJ frequency	0.35	0	0	0.28	0.32	0.30
High Potential Incident (HiPo) frequency	0.01	0	0.10	0.02	0	0.08

<sup>12</sup> SOC replaced ASA effective 1 October 2007. Data provided for SOC includes ASA as well, since these programmes are similar.

Performance Indicator	2006 Target	2006 Performance		2007 Target	2007 Performance	
		BP	BIL		BP	BIL
Traffic Vehicle Accident Rate (TVAR)	0.50	0.995	0.56	0.50	1.24	1.48
TVA	n/a	6	2	n/a	8	9

**Red** figures = above target; **Green** figures = below target  
 BP = BP operated section of BTC (Azerbaijan & Georgia) and the BTC Assurance Team in Turkey

## 11 E&S MONITORING PROGRAMME

### 11.1 INTERNAL MONITORING

Internal monitoring takes place as necessary on a daily basis or through theme audits and reviews. In some cases the review might result in actions and recommendations for implementation.

Non-compliances are only raised by BTC or BIL in certain circumstances i.e. for persistent issues that need management attention. If the matter can be rectified in a timely manner through local site intervention, non-compliance is not generally raised. The status of all internal non-compliances raised is given in the relevant country sections in this Chapter.

BTC has also developed a set of tools to assist in the management of E&S issues including detailed monthly reports and quarterly performance reviews.

#### 11.1.1 Azerbaijan

Internal environmental inspections, reviews and audits continued to be carried out at both AGIs and on the ROW. A full summary of internal reviews and audits is given in Table 11.1<sup>13</sup>.

**Table 11.1: Summary of Internal Reviews / Audits, Azerbaijan, 2007**

Audit / Review	Auditor	Auditee	Scope	Findings and/or Recommendations
Reinstatement & Biorestoration	BTC & Consultant AETC	BTC / SCP ROW	Status of reinstatement & biorestoration	<p>A high standard of reinstatement has been achieved over the majority of the pipeline, resulting in high levels of natural re-vegetation. In places it is difficult to distinguish the pipeline route from the surrounding area. A number of high priority areas remaining including Gobustan, Badlands, and various river crossings. Additional biorestoration works including re-seeding are being carried out in these areas.</p> <p>In May 2007 a survey of the <i>Iris acutiloba</i> population detected no growing plants, therefore a number of bulbs were excavated and found to be viable (alive) but dormant. This is normal after transplantation and it is expected that they will grow in Spring 2008.</p>

<sup>13</sup> Note: these are treated separately from environmental monitoring, which is detailed elsewhere in this report.



Audit / Review	Auditor	Auditee	Scope	Findings and/or Recommendations
ISO14001 Health Check Audit	Lead by ERM / With auditors from other (non Az Pipelines) AzSPU assets	BTC / SCP	Status of BTC / SCP readiness for pre-certification	Many commendable environmental management practices were identified, and significant progress since the previous EMS audit was recognised. No major gaps were identified either with respect to the EMS documentation or implementation of the EMS on site. The audit team concluded that BTC / SCP was well positioned for the ISO14001 pre-certification audit in November 2007
Temporary Facility Post-Exit HSE Review	BTC	BTC / SCP	HSE Assurance Inspections of Temporary Facilities	The temporary facilities (construction camps, pipe yards, etc) were subjected to HSE inspections after exit to provide assurance that there were no outstanding HSE issues after handover. No unacceptable HSE risks were identified.
Regular Environmental Inspections	BTC	BTC / SCP	Regular Environmental Inspections of IPA1, PSA2, Block Valves	Weekly and monthly environmental inspections were carried out at all AGIs throughout 2007. No major issues were identified, and all minor issues are closed out as soon as practicable on an ongoing basis.

There was one internal non-compliance raised by BTC during 2007, relating to a maintenance exercise (simulated emergency replacement of a pipe section) which involved driving on the ROW. Corrective actions were implemented.

### 11.1.2 Georgia

Informal environmental inspections continued to be carried out at both permanent and temporary sites along the ROW. A full summary of significant internal reviews and audits is given in Table 11.2.

**Table 11.2: Summary of Internal Reviews/Audits, Georgia, 2007**

Audit / Review	Auditor	Auditee	Scope	Findings and/or Recommendations
Project Biorestation Review	BTC	BTC	Thorough closure of Project Biorestation phase and handover of aftercare and future biorestation to the operations.	The bio-restoration of the ROW is not yet complete. More vegetation restoration works and monitoring of outcomes are proposed for 2008 and depending on survival success evaluation results, in following years.
Review of Complaints Procedure	BTC	BTC	Complaint Procedure	Update of procedure for transition to Operations phase.
OSR Internal review close-out	BTC	BTC / Seacor	Compliance with OSRP	Close-out of 1200 items raised by internal review in 2006 of BTC's OSR capabilities, during 2007.
ISO14001 Internal "Health Check" audit	ERM	BTC/SCP	Assess level of compliance / readiness for ISO 14001 certification.	The Operations EMS is well developed and in good shape for the upcoming ISO14001 Certification audit.

Audit / Review	Auditor	Auditee	Scope	Findings and/or Recommendations
Waste Audit	AzSPU	CWAA	Compliance with Waste Management Plan	Improved management options have been identified by BTC. These need to be followed up and implemented.
Waste Audit	AzSPU	PSG1	Compliance with Waste Management Plan	Good overall performance / waste management. Recommend implementing site waste log.

As part of day to day field environmental inspection and monitoring one internal Level II non-compliance was raised concerning the use of a crusher by a third party contractor at an unapproved site. BTC instructed the contractor to cease any project related use of the site and remove all equipment from the site. Work continues to close out the non-compliance.

There were a total of eight environmental-related incidents in 2007. There was one hydrocarbon spill of over one barrel. A spill in April 2007 resulted in the release of 290 litres of diesel into secondary containment in an office yard. Clean up activities were completed on the day the leak was discovered. The environmental impacts from the remaining seven incidents were negligible or minor.

In November 2007 Moody International conducted a 1st stage (pre-certification) audit of Georgia BTC Operations environmental management system. The objective of the audit was to review the environmental management system to assess whether the system has been fully implemented and determine the readiness of the system for certification. A total of 28 development points were raised during the audit. The recommendation from the auditor was that once the development points raised by the audit team have been effectively addressed then BTC Georgia can go forward for the 2nd stage (certification) audit. The 2nd stage audit is schedule for May 2008.

### 11.1.3 Turkey

In 2007 audits and monitoring were carried out by BTC and BIL to cover Operations, EIP and CIP. The Operations audits were carried out to assess compliance with E&S commitments in the ESIA and Operations ESAP as well as to assess progress towards the development of the BIL ISO14001 certified ESMS. In addition various third-party facility compliance audits were undertaken to determine if the facilities met project standards and could be used by the Project. CIP and EIP monitoring was undertaken to assess Implementing Partner performance and subsequently identify areas of support. A list of environmental and social audits and reviews is given in Tables 11.3 and 11.4 below.

**Table 11.3: Audits/Reviews Conducted by BTC**

Audit / Review	Scope	Findings and/or Recommendations
Pre-Lender Audit – All facilities and the ROW June 2007	<ul style="list-style-type: none"> <li>To follow up on any previously identified BTC and IEC findings.</li> <li>Verify closure of these items where appropriate.</li> <li>Determine the current situation with regards E&amp;S performance on site.</li> </ul>	<p>BTC had 23 non-compliant observations with corresponding corrective actions. Observations and corresponding subject areas are as follows: ROW Patrolling (1); Social Management (2); Emissions Management (19); Waste Management (1).</p> <p>With respect to closure of previous BTC observations (non-compliances and recommendations) 74% of environmental items were closed out and 38% of social items were closed.</p>

Audit / Review	Scope	Findings and/or Recommendations
Oil Spill Response Plan Audit January 2007	<ul style="list-style-type: none"> <li>To review Project compliance with OSRP in Turkey.</li> <li>Follow up on January 2005 OSRP audit.</li> <li>Implementation status of BIL Oil Spill Response Contract.</li> <li>Review BIL and BTC Co Incident Management Systems in relation to BP requirements.</li> </ul>	<p>The audit findings were classified based on priority into High, Medium, Low and Observation. Of the 13 findings, 4 were classified as "High", 2 classified as "Medium", 4 classified as "Low" and 3 were classified as "Observation". The four findings related to:</p> <ul style="list-style-type: none"> <li>Inclusion of containment sites, access roads and equipment storage locations in GIS system.</li> <li>Completion of off-shore oil spill modeling.</li> <li>Implementation of mobile data collection and mapping.</li> <li>Transboundary protocols for rapid movement of equipment with relevant Government Authorities.</li> </ul>
CIP and RDI Internal Evaluation – on-going throughout the year	<ul style="list-style-type: none"> <li>Regular planned visits to each project area and IP.</li> <li>To review IP performance in relation to gant charts and logical framework.</li> <li>Financial reviews</li> </ul>	IPs are making good progress and are generally aligned with gant charts and logical framework. It was determined however that IPs are weaker in terms of local capacity building and marketing strategies. BTC Co will develop a support programme in 2008 to address these issues.
EIP Internal Evaluation – on-going throughout the year	<ul style="list-style-type: none"> <li>EIP performance and areas for improvement</li> </ul>	Reviews recognised need for improving management, skills and implementation in relation to stakeholder engagement, conflict management and social impact mitigation. Identified need to shift focus from species level to ecosystem level. Projects require skills in local capacity building and business development in relation to conservation aims. Programme would benefit from improved integration and lesson sharing from CIP team.

**Table 11.4: Audits Conducted by BIL**

Audit / Review	Auditee	Scope	Findings and/or Recommendations
EU compliance waste facility audits	Izaydas hazardous waste facility at Izmit	Compliance with EU Landfill Directive, EU Hazardous Waste Directive and Waste Incineration Directive	The Izaydas facility was compliant and will therefore continue to be used for the disposal of all Operational wastes.
Waste recycling Companies compliance audit	Multiple glass, metal, paper and vegetable oil recycling companies along pipeline	Project environmental standards	The facilities were compliant with Project HSE standards.
Municipality waste water treatment plants compliance audit	Kayseri, Erzincan and Osmaniye municipality WWTPs	Project environmental standards	Kayseri and Erzincan Municipality WWTPs were compliant with Project environmental standards. Residual chlorine levels were slightly above Project limits at Osmaniye Municipal WWTP. Independent verification monitoring will be undertaken again to determine if it can be used by the Project for waste water disposal.
Hazardous waste transporter audits	Nergiz Tahmil in Adana and Sim in Izmit.	Project health, safety and environmental standards prior to contractual award.	Both companies were compliant with Project HSE standards. Contract was awarded to Nergiz Tahmil.

In addition to the uncontained oil spill incidents described in Section 6.2.3 there were two further environmental incidents in 2007. These both related to a release of glycol from the hot water heating systems at PT3 and PT4. In both cases glycol was not released to the environment as the water was captured in the storm water ponds where the water levels were not high enough to discharge to the environment. Upon the discovery of the leaks the discharge points from the ponds were blocked. Both leaks were about 100 litres. After seeking technical advice regarding the appropriate treatment for the contaminated water it was removed by vacuum truck to the Kayseri WWTP for treatment. As a result of the incident the drains leading from the water heater buildings to the main drains were closed at each of the pump stations. This is expected to prevent re-occurrence of a similar incident.

#### 11.1.4 Cross Country Internal Monitoring and Reviews

Various internal E&S Reviews were carried out during 2007 relating to the expansion of BTC pipeline (see section 3.1.4). A summary is presented in Table 11.5:

**Table 11.5: Cross-country Monitoring**

Audit / Review	Auditor	Auditee	Scope	Findings and/or Recommendations
Peer Review (October)	BP Group	BTC Expansion Team	BTC 1.2 E&S Assessments / Preliminary EIA Report; and BTC 1.2 E&S Compliance report.	Generally satisfactory. More work needed on cumulative impacts sections of the E&S Assessments.

## 11.2 EXTERNAL MONITORING

### 11.2.1 Independent Environmental Consultants

The IEC audit was conducted in June 2007. The IEC visit reports document non-compliances against the ESAP and assigns them a level of importance (Level I, II or III, with III being the most significant). The IEC also verifies closure of BTC's responses to non-compliances as part of subsequent monitoring visits.

A total of 13 non-compliances were raised during the June audit. One Level 1 non-compliance was raised in Azerbaijan, three (2 Level I and 1 Level III) were raised in Georgia, and six in Turkey (4 Level I and 2 Level II). Appendix 3 contains details of these non-compliances along with a summary of actions taken to resolve the issue. Full reports are given on [www.bp.com/caspian](http://www.bp.com/caspian).

### 11.2.2 Social and Resettlement Action Plan (SRAP) Panel

SRAP monitoring aims to provide practical guidance and advice to the Projects' management team on the land acquisition and resettlement process and the management of other social issues, as well as monitoring compliance.

A visit was carried out in May/June 2007. The report from this visit is available on [www.bp.com/caspian](http://www.bp.com/caspian). The results of the SRAP monitoring are given in Appendix 4.

A summary of findings are below in Table 11.6.

**Table 11.6 Summary of SRAP Findings, 2007**

Areas of Good / Improved Performance	Areas for Continued Focus
<ul style="list-style-type: none"> <li>Community Investment Programme (CIP)</li> <li>Reinstatement</li> <li>Awareness of land-use restrictions</li> </ul>	<ul style="list-style-type: none"> <li>Land acquisition closure</li> <li>Operations grievance management</li> <li>Operations community relations resources</li> </ul>

### 11.2.3 Polaris

Polaris audited the Project to assess compliance with requirements of Oil Spill Response Plans on behalf of the Lenders. The audit identified two levels of findings, issues which 'require attention' in order to ensure the ESAP and/or HGA requirements are met and issues which should be implemented to ensure that international best practice is maintained or sustained. The audit took place in June 2007.

Ten issues were identified in Azerbaijan and nine in Turkey. An additional 6 items were identified as being necessary in order to maintain international best practice. More details are given in Appendix 5.

### 11.2.4 Turkey

In addition to Lender audits summarised above, BTC Co and BIL were subject to other external reviews as described in Table 11.7, below.

**Table 11.7: External Audits in Turkey**

Auditor	Auditee	Scope	Findings and/or Recommendations
Independent Consultant	BIL	BIL Operations Environmental and Social Management System ISO14001 pre Certification	Seven non-conformances with the ISO14001:2004 system. Non-conformances related to awareness of responsibilities; documentation of aspects/impacts, responsibilities and operational control procedures and systems; and calibration of equipment.
BP Director of Environmental Operations	BTC Co and BIL	Operations Environmental Management CMT, IPT1 and PT4	<ul style="list-style-type: none"> <li>• Lessons learned and information exchange from other BP environmental operations;</li> <li>• Advice on improvements and enhancement to operations;</li> <li>• 7 site specific findings requiring corrective actions related to chemical management, procedures for valve closure from contained areas and discharge control from site.</li> </ul>
EIP External Evaluation	BTC Co and IPs	EIP Programme to verify if the EIP Plan criteria was being achieved	EIP adds and protects value of BP/BTC and provides excellent returns in terms of reputation and non-mitigation. It was determined that the longer the programme runs the greater will be the returns. EIP however has complex challenges to address conservation problems. It requires careful focus on integration of ecological, regulatory, social and economic factors. IPs also require support and must build capacity to ensure that existing and future integrated conservation programmes deliver positive results and serve as models for national replication. EIP could benefit from a more strategic marketing strategy that reaches target audiences.

### 11.2.5 Host Government Monitoring

#### 11.2.5.1 Azerbaijan

MENR Inspectors conducted a brief visit at PSA2 in October 2007 to view the camp construction site and the reed bed. No issues were raised.

MENR also visited the BTC ROW in the area of Haji Kabul in November 2007, after receiving complaints regarding poor pipeline construction practices in that area. During the site visit it was observed that the damage had been caused by a third party during installation of a new pipeline, and that the reinstatement of the BTC ROW remained at a high standard.

### 11.2.5.2 Georgia

BTC held regular monthly meetings with Government MEP representative- Georgian Oil and Gas Corporation and other Ministries and top officials to discuss the results of Government monitoring as well as raise issues for the Government in a timely to allow them to fulfil their obligations under the HGA. The main topics were closing construction stages for Kodiana projects as per issued permits, BTC 1.2 mmbd expansion permit and related activities and Government actions for state land registration. BTC and MoE discipline heads (emissions, waste, etc) communicate on an as-needed bases and have frequent consultations. MoE conducts physical checks of BTC facilities and in 2007 conducted 26 monitoring trips, mainly along the ROW.

### 11.2.5.3 Turkey

Turkish regulatory authorities visited all the facility sites in Turkey in 2007. The purpose of the visits was generally to verify water and air emission permit application information provided by BIL and therefore, to enable permits to be issued.

## 11.2.6 NGO MONITORING

BTC is facilitating national NGO involvement in the Project in all three countries, although the method of involvement differs.

The background and objectives were described fully in the 2004-Q2 and 2004-Q3 reports. The current status of the NGO programmes in each country is given below or in related links. All reports are published on [www.bp.com/caspian](http://www.bp.com/caspian).

### 11.2.6.1 Azerbaijan

The NGO Monitoring and Audit Programme was successfully completed in November 2006. All NGO recommendations and BP's response can be found:

<http://www.bp.com/genericarticle.do?categoryId=9006625&contentId=7013552>

### 11.2.6.2 Georgia

BP in Georgia continued to engage with NGOs involved with the Pipeline Monitoring and Dialogue Initiative. This initiative was a NGO monitoring program that ran for over two years and concluded in 2006. (See Section 8.3.2)

### 11.2.6.3 Turkey

In Turkey a facilitating/capacity building organisation is not being used as in Azerbaijan and Georgia since many national NGOs are already involved in the Project, their experience is generally greater, and there was a lack of demand for a facilitated scheme. Notwithstanding, BTC and BIL continued to engage both national and regional stakeholders to discuss specific issues on an as needed basis, refer to Section 8.4.

## 11.3 TRAINING

### 11.3.1 Azerbaijan and Georgia

In both Azerbaijan and Georgia, training for BTC Operations focused around ESMS and ISO14001 awareness to Operations staff. Training was also given on key issues such as waste management, emissions management and cultural heritage. Environmental awareness continued to be a component of the induction process for all new staff.

Training in both countries was delivered though a variety of medium ranging from formal classroom training to toolbox talks. Computer based training modules have also been developed for certain subjects, such as ISO14001 awareness. External trainers were contracted for longer courses which included a waste management course and lead auditor training for environmental staff. In Georgia, computer based training modules were distributed to site personnel covering chemical management issues - control of substances hazardous to health management.

### 11.3.2 Turkey

In Turkey, BIL continued to provide environmental and social training to operations and maintenance teams. Training topics were wide in scope and have been tailored to the departmental teams according to their roles. Some topics included Tier 1 spill response, environmental plans and procedures, ROW patrolling, laboratory environmental management, mitigation of operational impacts on the marine environment, and waste minimisation and segregation.

All BIL environmental and social team members participated in ISO14001 lead auditor training. Some BTC environmental staff who had not previously been trained in ISO14001 also participated while a ESMS training course was conducted at the manned AGI sites.

Other training topics for the BIL E&S team members in 2007 included site specific aspects/impacts identification and management, incident investigation and reporting, Traction, Media Relations, IMO Level I and III Oil Spill Response Training, NEBOSH, Medical Waste Management and OHAS18001.

The BTC E&S team participated in BP Environmental Requirements for New Projects training in November 2007. The training provided an overview of the ERNP rationale, process and implementation as well as providing points of contacts for future queries. Other E&S training undertaken by BTC Co E&S team members in 2007 included remote sensing (use of image processing software) and corporate social responsibility.

One-day training was provided to CIP Implementing Partners to raise awareness on EU agricultural policies and Ministry of Agriculture support mechanisms for agricultural initiatives.

## APPENDIX 1

### Annex J of the Construction ESAP – Outline of Project Environmental and Social Monitoring Annual Report<sup>14</sup>

Each annual report will address each of the topics listed below for BTC Co. activities conducted in Azerbaijan, Georgia and Turkey.

- 1 EXECUTIVE SUMMARY**
- 2 ESIAs / EIA AND PERMITTING**
  - 2.1 SUMMARY OF ANY MATERIAL MODIFICATIONS TO THE AZERBAIJANI, GEORGIAN AND TURKISH ESIAs DURING THE YEAR.
  - 2.2 SUMMARY OF MATERIAL PERMITS ISSUED DURING THE YEAR AND ANY APPLICABLE CONDITIONS.
  - 2.3 UPDATE ON STATUS OF PROJECT STATE SPECIFIC REQUIREMENTS FOR FURTHER WORK UNDER THE ESIAs OR PERMITS.
- 3 CHANGES**
  - 3.1 DESCRIPTION OF ANY CHANGES TO AN ESIA DURING THE PERIOD TO REFLECT A CLASS I, II OR III CHANGE.
  - 3.2 SUMMARY OF THE TYPE OF CLASS I CHANGES IMPLEMENTED DURING THE PERIOD, OR A CONFIRMATION OF NO SUCH CHANGE.
  - 3.3 LIST OF ALL CLASS II CHANGES NOTIFIED DURING THE PERIOD, OR CONFIRMATION OF NO SUCH CHANGES.
  - 3.4 SUMMARY OF ALL CLASS III CHANGES DURING THE PERIOD, OR CONFIRMATION OF NO SUCH CHANGES.
  - 3.5 UPDATE ON CONSTRUCTION STATUS IN A CHANGE AREA INCLUDING DESCRIPTION OF ANY IMPACTS OR MITIGATION MEASURES.
  - 3.6 DESCRIPTION OF ANY MATERIAL AMENDMENT, SUPPLEMENT, REPLACEMENT OR MATERIAL MODIFICATION TO AN ESIA, THIS ESAP, THE RAP, THE ESMS, OR ANY OSRP.
- 4 COMPLIANCE WITH ENVIRONMENTAL STANDARDS AND APPLICABLE ENVIRONMENTAL LAW**
  - 4.1 SUMMARY OF ANY NOTICES OF NON-COMPLIANCE, REMEDIAL ACTION, ANY FINES OR PENALTIES PAID AND FINAL DISPOSITION OF ANY REGULATORY PROCEEDINGS.
  - 4.2 SUMMARY OF AIR EMISSIONS.
  - 4.3 SUMMARY OF ENVIRONMENTAL DISCHARGES.
  - 4.4 STATEMENT INDICATING WHETHER BTC CO. AND ITS AGENTS HAVE COMPLIED IN THE DEVELOPMENT, CONSTRUCTION AND OPERATION OF THE BTC PROJECT WITH THIS ESAP, APPLICABLE ENVIRONMENTAL LAWS AND APPLICABLE LENDER ENVIRONMENTAL AND SOCIAL POLICIES AND GUIDELINES IN ALL MATERIAL RESPECTS AND SUMMARY OF ANY (I) MATERIAL NON-COMPLIANCE AND THE STEPS BEING TAKEN TO REMEDY IT AND (II) MATERIAL MODIFICATIONS OF ESIAs, PLANS OR PROGRAMMES MATERIALLY IN CONTRAVENTION OF THE OPERATIONAL POLICIES AND DIRECTIVES LISTED IN THIS ESAP.
  - 4.5 UPDATE ON SIGNIFICANT CHANGES IN APPLICABLE LAW, IF ANY.
- 5 OIL SPILL RESPONSE**
  - 5.1 SUMMARY OF OSRPS COMPLETED, UPDATED OR AMENDED DURING YEAR (AS DESCRIBED IN THIS ESAP).
  - 5.2 SPILL SUMMARIES (AZERBAIJAN, GEORGIA AND TURKEY).
  - 5.3 SPILL RESPONSE AND REMEDIATION SUMMARIES.
  - 5.4 SUMMARY OF MATERIAL MODIFICATIONS TO THE OSRPS DESCRIBED IN THIS ESAP.
- 6 CIP AND EIP PROGRAMMING**
  - 6.1 SUMMARY OF PROGRAMMING FOR THE PAST YEAR.
  - 6.1 COMPARISON OF ACTUAL TOTAL EXPENDITURES AND BUDGETED TOTAL EXPENDITURES.
  - 6.3 DESCRIPTION OF EXPECTED BUDGET AND PROGRAMMING FOR THE COMING YEAR.
- 7 ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMME**
  - 7.1 SUMMARY OF ESMS MONITORING COMMITMENTS COMPLETED DURING THE YEAR, INCLUDING SUMMARY OF RESULTS, COMPARISON OF ENVIRONMENTAL PERFORMANCE TO APPLICABLE ENVIRONMENTAL STANDARDS AND SUMMARY OF PERFORMANCE AGAINST KPIS.
  - 7.2 SUMMARY OF ENVIRONMENTAL AND SOCIAL TRAINING.
- 8 PROJECT COMMUNICATION**
  - 8.1 UPDATE OF ONGOING COMMUNICATION WITH EXTERNAL STAKEHOLDERS.
  - 8.2 UPDATE OF COMMUNITY LIAISON ACTIVITIES.
- 9 SUMMARY OF RESULTS OF RAP MONITORING**
- 10 SUMMARY OF KEY HEALTH AND SAFETY STATISTICS**
  - 10.1 DAYS AWAY FROM WORK CASES.
  - 10.2 INJURIES.
  - 10.3 FATALITIES.
- 11 AUDITS**
  - 11.1 SUMMARY OF THE RESULTS OF BTC CO. AND BOTAŞ'S INTERNAL ENVIRONMENTAL AND SOCIAL AUDIT PROGRAMMES.

<sup>14</sup> Following completion of construction, the annual report will not cover items that are relevant only to construction. In addition, if matters are covered in the Operations ESAP that are not reflected in the contents for the annual report, this Annex will be amended as appropriate to cover these matters.



## Annex H of the Operations ESAP – Outline of Project Environmental and Social Monitoring Annual Report

Each annual report will address each of the topics listed below for BTC activities conducted in Azerbaijan, Georgia and Turkey.

- 1 EXECUTIVE SUMMARY**
- 2 ESIAS / EIA AND PERMITTING**
  - 2.1 SUMMARY OF ANY MATERIAL MODIFICATIONS TO THE AZERBAIJANI, GEORGIAN AND TURKISH ESIAS DURING THE YEAR.
  - 2.2 SUMMARY OF MATERIAL PERMITS ISSUED DURING THE YEAR AND ANY APPLICABLE CONDITIONS.
  - 2.3 UPDATE ON STATUS OF PROJECT STATE SPECIFIC REQUIREMENTS FOR FURTHER WORK UNDER THE ESIAS OR PERMITS.
- 3 CHANGES**
  - 3.1 DESCRIPTION OF ANY CHANGES TO AN ESIA DURING THE PERIOD TO REFLECT A CLASS I, II OR III CHANGE.
  - 3.2 SUMMARY OF THE TYPE OF CLASS I CHANGES IMPLEMENTED DURING THE PERIOD, OR A CONFIRMATION OF NO SUCH CHANGE.
  - 3.3 LIST OF ALL CLASS II CHANGES NOTIFIED DURING THE PERIOD, OR CONFIRMATION OF NO SUCH CHANGES.
  - 3.4 SUMMARY OF ALL CLASS III CHANGES DURING THE PERIOD, OR CONFIRMATION OF NO SUCH CHANGES.
  - 3.5 DESCRIPTION OF ANY MATERIAL AMENDMENT, SUPPLEMENT, REPLACEMENT OR MATERIAL MODIFICATION TO AN ESIA, THIS ESAP, THE RAP, THE ESMS, OR ANY OSRP.
- 4 COMPLIANCE WITH ENVIRONMENTAL STANDARDS AND APPLICABLE ENVIRONMENTAL LAW**
  - 4.1 SUMMARY OF ANY NOTICES OF NON-COMPLIANCE, REMEDIAL ACTION, ANY FINES OR PENALTIES PAID AND FINAL DISPOSITION OF ANY REGULATORY PROCEEDINGS.
  - 4.2 SUMMARY OF AIR EMISSIONS.
  - 4.3 SUMMARY OF ENVIRONMENTAL DISCHARGES.
  - 4.4 STATEMENT INDICATING WHETHER BTC CO. AND ITS AGENTS HAVE COMPLIED IN THE DEVELOPMENT, CONSTRUCTION AND OPERATION OF THE BTC PROJECT WITH THIS ESAP, APPLICABLE ENVIRONMENTAL LAWS AND APPLICABLE LENDER ENVIRONMENTAL AND SOCIAL POLICIES AND GUIDELINES IN ALL MATERIAL RESPECTS AND SUMMARY OF ANY (I) MATERIAL NON-COMPLIANCE AND THE STEPS BEING TAKEN TO REMEDY IT AND (II) MATERIAL MODIFICATIONS OF ESIAS, PLANS OR PROGRAMMES MATERIALLY IN CONTRAVENTION OF THE OPERATIONAL POLICIES AND DIRECTIVES LISTED IN THIS ESAP.
  - 4.5 UPDATE ON SIGNIFICANT CHANGES IN APPLICABLE LAW, IF ANY.
- 5 OIL SPILL RESPONSE**
  - 5.1 SUMMARY OF OSRPS COMPLETED, UPDATED OR AMENDED DURING YEAR (AS DESCRIBED IN THIS ESAP).
  - 5.2 SPILL SUMMARIES (AZERBAIJAN, GEORGIA AND TURKEY).
  - 5.3 SPILL RESPONSE AND REMEDIATION SUMMARIES.
  - 5.4 SUMMARY OF MATERIAL MODIFICATIONS TO THE OSRPS DESCRIBED IN THIS ESAP.
- 6 ADDITIONALITY PROGRAMMING**
  - 6.1 SUMMARY OF PROGRAMMING FOR THE PAST YEAR.
  - 6.2 COMPARISON OF ACTUAL TOTAL EXPENDITURES AND BUDGETED TOTAL EXPENDITURES.
  - 6.3 DESCRIPTION OF EXPECTED BUDGET AND PROGRAMMING FOR THE COMING YEAR.
- 7 ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMME**
  - 7.1 SUMMARY OF ESMS MONITORING COMMITMENTS COMPLETED DURING THE YEAR, INCLUDING SUMMARY OF RESULTS, COMPARISON OF ENVIRONMENTAL PERFORMANCE TO APPLICABLE ENVIRONMENTAL STANDARDS AND SUMMARY OF PERFORMANCE AGAINST KPIS.
  - 7.2 SUMMARY OF ENVIRONMENTAL AND SOCIAL TRAINING.
- 8 PROJECT COMMUNICATION**
  - 8.1 UPDATE OF ONGOING COMMUNICATION WITH EXTERNAL STAKEHOLDERS.
  - 8.2 UPDATE OF COMMUNITY LIAISON ACTIVITIES.
- 9 SUMMARY OF RESULTS OF RAP MONITORING (AS APPLICABLE)**
- 10 SUMMARY OF KEY HEALTH AND SAFETY STATISTICS**
  - 10.1 DAYS AWAY FROM WORK CASES.
  - 10.2 INJURIES.
  - 10.3 FATALITIES.
- 11 AUDITS**
  - 11.1 SUMMARY OF THE RESULTS OF BTC CO. AND BIL'S INTERNAL ENVIRONMENTAL AND SOCIAL AUDIT PROGRAMMES.

## APPENDIX 2: ENVIRONMENTAL MONITORING RESULTS

### APPENDIX 2.1: AZERBAIJAN

Please read this section in conjunction with the commentary in Section 5.2.1.

#### 2.1a – Ambient Air Quality

Pollutant	Standard	Units	Averaging Period
NO <sub>2</sub>	40 (Annual average will reduce by 2 µg/m <sup>3</sup> every year, to reach 40 µg/m <sup>3</sup> by 1 January 2010)	µg/m <sup>3</sup>	Annual mean
SO <sub>2</sub>	20	µg/m <sup>3</sup>	Annual mean
Benzene	5 (Annual average will reduce by 1 µg/m <sup>3</sup> every year from 2006, to reach 5 µg/m <sup>3</sup> by 1 January 2010)	µg/m <sup>3</sup>	Annual mean
PM <sub>10</sub>	20 (30 on 1 January 2005, reducing every 12 months thereafter by equal annual percentages to reach 20 by 1 January 2010)	µg/m <sup>3</sup>	Annual mean

#### PSA2: Round 1

ID	NO <sub>2</sub>	SO <sub>2</sub>	Benzene	Units	Date	Duration
PSA 2 AQ 1p	7.7	5.5	0.81	µg/m <sup>3</sup>	Oct/Nov2007	1 month
PSA 2 AQ 2p	8.5	5.4	0.90	µg/m <sup>3</sup>	Oct/Nov2007	1 month
PSA 2 AQ 3p	16	24	0.93	µg/m <sup>3</sup>	Oct/Nov2007	1 month
PSA 2 AQ 4p	10	1.3	0.91	µg/m <sup>3</sup>	Oct/Nov2007	1 month

#### PSA2: Round 2

ID	NO <sub>2</sub>	SO <sub>2</sub>	Benzene	Units	Date	Duration
PSA 2 AQ 1p	8.2	1.1	1.7	µg/m <sup>3</sup>	Dec2007/Jan2008	1 month
PSA 2 AQ 2p	7.3	<0.79	1.7	µg/m <sup>3</sup>	Dec2007/Jan2008	1 month
PSA 2 AQ 3p	8.8	33	1.7	µg/m <sup>3</sup>	Dec2007/Jan2008	1 month
PSA 2 AQ 4p	16	12	1.7	µg/m <sup>3</sup>	Dec2007/Jan2008	1 month

#### IPA1

ID	NO <sub>2</sub>	SO <sub>2</sub>	Benzene	Units	Date	Duration
IPA 1 AQ 1p	13	3.8	0.67	µg/m <sup>3</sup>	Oct/Nov2007	1 month
IPA 1 AQ 2p	11	18	0.59	µg/m <sup>3</sup>	Oct/Nov2007	1 month

NOTES: Baseline for PSA2 shown in Appendix 2.1a of 2005 Annual Report

Red figures show non-compliance with project standards

#### 2.1b – Stack Emissions Monitoring

##### PSA 2

Equipment	Date tested	Load	Fuel	Concentration at ref conditions		Standards		Mass emissions	
				NOx mg/m <sup>3</sup>	CO mg/m <sup>3</sup>	Nox mg/m <sup>3</sup>	CO mg/m <sup>3</sup>	Nox g/h	CO g/h
MOL Turbine No 1	10/10/2007	–	gas	96.11	2311.08	75	600	2827.36	39758.82
MOL Turbine No 2	10/10/2007	–	gas	98.76	2477.89	75	600	1189.91	17589.34
MOL Turbine No 3	10/10/2007	–	gas	65.93	2311.08	75	600	737.67	67989.94

#### 2.1c – Environmental Noise

	Standard	Units	Period
PSA2 & IPA1	55	dB (A)	Daytime
	45	dB (A)	Night-time

## PSA2

ID	Readings	Units	Date	Time	Duration	Comments
PSA 2 NM 1p	26.6	dB (A)	Aug-2007	13:30	5 min	daytime
PSA 2 NM 2p	32.4	dB (A)	Aug-2007	14:00	5 min	daytime

## Block Valves

ID	Readings	Units	Date	Time	Duration	Comments
AB 3 NM 1p	34,7	dB (A)	Aug-2007	13:40	5 min	daytime
AB 3 NM 1p	30,8	dB(A)	Sep-2007	21:15	5 min	night-time
AB 4 NM 2p	39,2	dB (A)	Aug-2007	13:40	5 min	daytime
AB 4 NM 1p	50,5	dB(A)	Sep-2007	21.30	5min	night-time
AB 15 NM 1p	27,1	dB(A)	Aug-2007	13.40	5min	daytime
IPA 1 NM 3p	43,8	dB (A)	Aug-2007	13:40	5 min	daytime

NOTE: Baseline for PSA2 shown in Appendix 2.1b of 2005 Annual Report

## 2.1d – Effluent Discharge Monitoring Programme

Parameter	Standard	Units	Parameter	Standard	Units
Total coliform bacteria (per 100ml)	<400	MPN/100ml	Ag	0.5	mg/l
pH	6-9		As	0.1	mg/l
Total residual chlorine	0.2	mg/l	Cd	0.1	mg/l
BOD	25	mg/l	Cr (total)	0.5	mg/l
COD	125	mg/l	Cu	0.5	mg/l
Total suspended solids	35	mg/l	Fe	3.5	mg/l
Ammonia NH <sub>4</sub>	10	mg/l	Pb	0.1	mg/l
Total Nitrogen	15	mg/l	Hg	0.01	mg/l
Phenols	0.5	mg/l	Ni	0.5	mg/l
Total Phosphorus	2.0	mg/l	Se	0.1	mg/l
Sulphides	1.0	mg/l	Zn	2.0	mg/l
Oil and grease	10	mg/l			

### IPA1 (Sample Location – IPA1 Retention Pond)

Parameter	Sample ID		
	02-Nov-07	29-Nov-07	17-Jan-07
Total coliform bacteria (per 100ml)	6.9x10 <sup>3</sup>	1600	9.3
pH	8.79	8.32	7.97
Total residual chlorine	<0.02	<0.02	0.07
COD	61	30	3
Total suspended solids	64	90	2
Ammonia NH <sub>4</sub>	0.04	0.05	0.02
Total Nitrogen*	4.4	3.8	4.4
Total Phosphorus**			0.07
Sulphides	40 µg/L	62 µg/L	7 µg/L
Oil and grease	<5		<5
Cd	<0.02	<0.02	<0.02
Cr (total)	<0.03	<0.03	<0.01
Fe	0.07	0.12	0.11
Pb	<0.2	<0.2	0.095
Ni	<0.007	<0.007	<0.007
Zn	<0.01	<0.01	0.02

NOTE: Red figures show non-compliance with project standards

### PSA2 (Sample Location – PSA2 Retention Pond)

Parameter	Sample ID			
	2-Jul-07	26-Jul-07	18-Oct-07	20-Nov-07
Total coliform bacteria (per 100ml)	220	<1600	400	<1600
pH	9	7.84	7.92	7.7
Total residual chlorine	0.1		0.21	0.2
COD	105	1660	56	80.5

Parameter	Sample ID			
	2-Jul-07	26-Jul-07	18-Oct-07	20-Nov-07
Total suspended solids	19	85	19	19
Ammonia NH <sub>4</sub>	0.1	13	2.8	7.7
Total Nitrogen*	14	<25	4.7	13
Total Phosphorus**	0.27	0.69		0.8
Sulphides	24 µg/L	0.552 µg/L	40 µg/L	62 µg/L
Oil and grease	<5	19	<5	
Cd	<0.02	<0.02	<0.02	<0.02
Cr (total)	<0.03	0.63	<0.03	
Cu		0.04		<0.04
Fe	0.17	2.23	0.15	0.34
Pb	<0.2	<0.2	<0.2	<0.2
Ni	0.009	0.028	0.015	0.017
Zn	<0.01	0.14	<0.01	0.03

NOTES: NA - Not applicable (only rainwater discharge)

\* For Total Nitrogen based on the 91/271/EEC no level limits for less than 10,000 population if the receiving water is not "sensitive". No limit below 12°C when 50 mg/l drinking water nitrate limit applies.

\*\* Phosphorus limit applies only if the receiving water is sensitive and eutrophic and accumulating phosphorus.

## 2.1e – Groundwater & Surface Water Monitoring Programme

### Groundwater Monitoring – Karayazi & Around PSA2

Date of sampling		May-07	May-07	May-07	May-07	May-07	May-07
Parameter	Unit	KarM2	KarM3	KarM5	KarM7	KarM8	KarM10
TPH	µg/L	<20	<20	<20	<20	<20	<20
BTEX	µg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
PAHs	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(a)pyrene	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH		7.3	7.6	7.9	7.5	7.6	7.6
Conductivity	mS/cm	4.04	3.27	8.18	0.99	4	10.18
Temperature	°C	15.7	15.3	17.3	12.8	13.6	13.4

NOTE: DRO & GRO are not mentioned if PAH and BTEX are within limits

### Surface Water Monitoring – Around IPA1 and PSA2

Date of sampling		13-May-07	13-May-07	13-May-07	13-May-07
Parameter	Unit	PSA 2 SW 1	PSA 2 SW 2	IPA 1 SW 1	IPA 1 SW 2
TPH	µg/L	<20	22	52	<20
PAHs (sum of 4)	µg/L	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene	µg/L	<0.010	<0.010	0.012	<0.010
BTEX	µg/L	<0.020	<0.020	<0.020	<0.020
pH		8.5	8.4	8.1	8
Conductivity	mS/cm	2.28	1.16	7.15	0.59
Temperature	°C	16.3	17.2	21.4	19.3

### Groundwater Monitoring – Karayazi & Around PSA2, Nov 2007

Date of sampling		Nov-07	Nov-07	Nov-07	Nov-07	Nov-07	Nov-07	Nov-07	Nov-07	Nov-07
Parameter	Unit	KarM1	KarM2	KarM3	KarM5	KarM7	KarM8	KarM10	PSA 2	
									Aran	Yaldili
TPH	µg/L	20	<20	<20	<20	36	<20	<20	<20	23
BTEX	µg/L	<0.020	<0.020	<0.020	<0.020	<0.20	<0.020	<0.020	<0.020	<0.020
PAHs	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Benzo(a)pyrene	µg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
pH		6.9	7.3	7.6	7.5	7.3	7.1	7.4	8.7	9.5
Conductivity	mS/cm	1.16	2.99	2.21	6.16	0.71	2.1	8.66	1.55	0.42
Temperature	°C	19.7	15.3	16.4	15.1	17	16.7	17.3	23.6	23.2

## Surface Water Monitoring – Around IPA1 and PSA2, Nov 2007

Date of sampling	09-Nov-07	09-Nov-07	09-Nov-07	09-Nov-07	09-Nov-07	09-Nov-07	
Parameter	Unit	PSA 2 SW P1	PSA 2 SW P1	PSA 2 SW 3	PSA 2 SW P2	IPA 1 SW P1	IPA 1 SW P2
TPH	µg/L	<20	--	<20	<20	<20	<20
PAHs (sum of 4)	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(a)pyrene	µg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
BTEX	µg/L	<0.020	--	<0.020	<0.020	<0.020	<0.020
pH		7.9	--	7.8	7.3	7.7	7.5
Conductivity	mS/cm	0.97	--	1.11	1.64	0.42	0.44
Temperature	°C	11.1	--	11.8	15.0	13.7	14.0

## 2.1f – Waste

### BTC Waste Volumes: Summary – 2007

	Unit	Value
<b>Hazardous Wastes</b>		
Oily rags	m <sup>3</sup>	14
Oily water	m <sup>3</sup>	672
Oil and diesel (used)	m <sup>3</sup>	98
Sewage wastes (raw)	m <sup>3</sup>	7315
Sewage sludge	m <sup>3</sup>	15.3
Contaminated drums	m <sup>3</sup>	110
Antifreeze	m <sup>3</sup>	3
Chemicals		2
Wax	m <sup>3</sup>	5
<b>Non-hazardous wastes</b>		
Empty drums and cans	m <sup>3</sup>	66
Toner cartridges / Fluorescent tubes	m <sup>3</sup>	1
Insulation material / Construction waste / Pig discs	m <sup>3</sup>	1
Aerosol cans	m <sup>3</sup>	1
Non-recyclable domestic wastes	m <sup>3</sup>	135
Paper	m <sup>3</sup>	38
Wood	m <sup>3</sup>	12
Metal	m <sup>3</sup>	11

## APPENDIX 2.2: GEORGIA

Please read this section in conjunction with the commentary in Section 5.2.2.

### 2.2a – Ambient Air Quality

Pollutant	Standard	Units	Averaging Period
NO <sub>2</sub>	40 (Annual average will reduce by 2 µg/m <sup>3</sup> every year, to reach 40 µg/m <sup>3</sup> by 1 January 2010)	µg/m <sup>3</sup>	Annual mean
SO <sub>2</sub>	20*	µg/m <sup>3</sup>	Annual mean
Benzene	5 (Annual average will reduce by 1 µg/m <sup>3</sup> every year from 2006, to reach 5 µg/m <sup>3</sup> by 1 January 2010)	µg/m <sup>3</sup>	Annual mean
PM <sub>10</sub>	20 (30 on 1 January 2005, reducing every 12 months thereafter by equal annual percentages to reach 20 by 1 January 2010)**	µg/m <sup>3</sup>	Annual mean

\* For the protection of vegetation and ecosystems

\*\* No PM 10 was measured in 2007 due to the system running on natural gas

### PSG1 and PSG2 (January 2007)

Pump Station Location Ref	Start date / End date (NO <sub>2</sub> , SO <sub>2</sub> , Benzene)	Concentration (µg/m <sup>3</sup> )			Approx sampling duration (hrs)
		NO <sub>2</sub>	SO <sub>2</sub>	Benzene	
PSG1-1	04/01/07-06/02/07	7	4.06	N/A*	792
PSG1-2	04/01/07-06/02/07	11	5.44	3.68	792
PSG1-3	04/01/07-06/02/07	14	8.3	0.39	792
PSG1-4	04/01/07-06/02/07	7	3.49	1.3	792

Pump Station Location Ref	Start date / End date (NO <sub>2</sub> , SO <sub>2</sub> , Benzene)	Concentration (µg/m <sup>3</sup> )			Approx sampling duration (hrs)
		NO <sub>2</sub>	SO <sub>2</sub>	Benzene	
PSG1-5	04/01/07-06/02/07	11	2.51	3.69	792
PSG2-1	05/01/07-07/02/07	3	2.58	4.36	792
PSG2-2	05/01/07-07/02/07	4	3.13	0.45	792
PSG2-3	05/01/07-07/02/07	<1	2.53	2.81	792
PSG2-4	05/01/07-07/02/07	2	6.48	4.17	792
PSG2-5	05/01/07-07/02/07	5	15.31	3.55	792

NOTE: \*Tubes displaced

### PSG1 and PSG2 (March 2007)

Pump Station Location Ref	Start date / End date (NO <sub>2</sub> , SO <sub>2</sub> , Benzene)	Concentration (µg/m <sup>3</sup> )			Approx sampling duration (hrs)
		NO <sub>2</sub>	SO <sub>2</sub>	Benzene	
PSG1-1	01/03/07-31/03/07	10	N/A**	0.6	744
PSG1-2	01/03/07-31/03/07	7	N/A**	0.6	744
PSG1-3	01/03/07-31/03/07	19	N/A**	0.4	744
PSG1-4	01/03/07-31/03/07	9	N/A**	0.5	744
PSG1-5	01/03/07-31/03/07	9	N/A**	0.5	744
PSG2-1	01/03/07-31/03/07	1	N/A**	0.9	744
PSG2-2	01/03/07-31/03/07	6	N/A**	0.5	744
PSG2-3	01/03/07-31/03/07	7	N/A**	0.5	744
PSG2-4	01/03/07-31/03/07	7	N/A**	0.6	744
PSG2-5	01/03/07-31/03/07	N/A*	N/A**	0.4	744

NOTE: \* Tubes displaced

\*\*Report not received from contractor laboratory

### PSG1 and PSG2 (June 2007)

Pump Station Location Ref	Start date / End date (NO <sub>2</sub> , SO <sub>2</sub> , Benzene)	Concentration (µg/m <sup>3</sup> )			Approx sampling duration (hrs)
		NO <sub>2</sub>	SO <sub>2</sub>	Benzene	
PSG1-1	01/06/07- 03/07/07	6	N/A*	0.1	792
PSG1-2	01/06/07- 03/07/07	12	N/A*	0.2	792
PSG1-3	01/06/07- 03/07/07	7	N/A*	<0.1	792
PSG1-4	01/06/07- 03/07/07	5	N/A*	<0.1	792
PSG1-5	01/06/07- 03/07/07	4	N/A*	<0.1	792
PSG2-1	01/06/07- 03/07/07	3	N/A*	<0.1	792
PSG2-2	01/06/07- 03/07/07	1	N/A*	<0.1	792
PSG2-3	01/06/07- 03/07/07	3	N/A*	<0.1	792
PSG2-4	01/06/07- 03/07/07	1	N/A*	<0.1	792
PSG2-5	01/06/07- 03/07/07	6	N/A*	<0.1	792

NOTE: \* Report not received from contractor laboratory

### PSG 1 and PSG 2 (October 2007)

Pump Station Location Ref	Start date / End date (NO <sub>2</sub> , SO <sub>2</sub> , Benzene)	Concentration (µg/m <sup>3</sup> )			Approx sampling duration (hrs)
		NO <sub>2</sub>	SO <sub>2</sub>	Benzene	
PSG1-1	05/09/07 – 04/10/07	N/A**	N/A*	N/A**	768
PSG1-2	05/09/07 – 04/10/07	N/A**	29.9	N/A**	768
PSG1-3	05/09/07 – 04/10/07	N/A**	40.76	N/A**	768
PSG1-4	05/09/07 – 04/10/07	N/A**	3.57	N/A**	768
PSG1-5	05/09/07 – 04/10/07	N/A**	N/A*	N/A**	768
PSG2-1	06/09/07 – 05/10/07	N/A**	0.49	N/A**	768
PSG2-2	06/09/07 – 05/10/07	N/A**	N/A*	N/A**	768
PSG2-3	06/09/07 – 05/10/07	N/A**	2.29	N/A**	768
PSG2-4	06/09/07 – 05/10/07	N/A**	0.71	N/A**	768
PSG2-5	06/09/07 – 05/10/07	N/A**	3.05	N/A**	768

NOTE: \* Tubes displaced

\*\*Report not received from contractor laboratory

## 2.2b – Stack Emissions

### PSG 1

Equipment	Date tested	Load	Concentration at ref conditions			Standards			Mass emissions		
			NO <sub>x</sub> mg/m <sup>3</sup>	CO mg/m <sup>3</sup>	SO <sub>2</sub> mg/m <sup>3</sup>	NO <sub>x</sub> mg/m <sup>3</sup>	CO mg/m <sup>3</sup>	SO <sub>2</sub> mg/m <sup>3</sup>	NO <sub>x</sub> g/h	CO g/h	SO <sub>2</sub> g/h
MOL Turbine No 1	27/11/2007	89%	128.48	1958.3	0.47	75	–	35	6790	106882	25.51
MOL Turbine No 2	28/11/2007	89%	195.33	1419.3	0.00	75	–	35	10429	75773.8	0.00
MOL Turbine No 3	30/11/2007	89%	201.8	1138.5	0	75	–	35	11129	62784.3	0.00
MOL Turbine No 4	30/11/2007	89%	135.71	1344.1	0	75	–	35	7475	74034.5	0.00
MOL Turbine No 5	13/11/2007	89%	120.91	1913.3	0	75	–	35	6000	94944.1	0.00
Water Bath Heater	29/11/2007		149.04	3879.3	72.97	460	–	1000	95.66	2489.98	50.88

NOTES: Red figures show non-compliance with project standards

There is no CO standard approved for Turbines and WBH CO monitoring in the emissions management plan due to this parameter being not an environmental pollutant but health one.

### PSG 2

Equipment	Date tested	Load	Concentration at ref conditions			Standards			Mass emissions		
			NO <sub>x</sub> mg/m <sup>3</sup>	CO mg/m <sup>3</sup>	SO <sub>2</sub> mg/m <sup>3</sup>	NO <sub>x</sub> mg/m <sup>3</sup>	CO mg/m <sup>3</sup>	SO <sub>2</sub> mg/m <sup>3</sup>	NO <sub>x</sub> g/h	CO g/h	SO <sub>2</sub> g/h
MOL Turbine No 1	09/11/2007	90%	120.84	1584.3	0.79	75	–	35	6684	87634.55	43.75
MOL Turbine No 2	13/11/2007	90%	129.64	1422.1	0.00	75	–	35	6904.7	75744.34	0.00
MOL Turbine No 3	11/11/2007	90%	109.41	2187.6	0	75	–	35	5322	106406	0
MOL Turbine No 4	10/11/2007	90%	128.13	1155.8	0	75	–	35	6252	56397.3	0
MOL Turbine No 5	13/11/2007	90%	137.21	1001.8	0	75	–	35	7733	56464.1	0
Water Bath Heater	12/11/2007		154.06	4012.2	81.53	460	–	1000	95.07	2475.86	50.31

## 2.2c – Noise

	Standard	Units	Period
PSG1	70	dB (A)	Day and Night-time
PSG2	55	dB (A)	Daytime
	45	dB (A)	Night-time

NOTE: PSG1P7 was not monitored because the area was fenced and locked. Selection of a new site is underway.

### January 2007:

Monitoring point	GPS Coordinate	Date and Time	Noise Readings in dBA	Background noise
PSG1P1	8512250 4589641	15.01.07 13:00	Average 59.8 Peak 61.1	People, vehicles, strong wind
PSG1P2	8512144 4589635	15.01.07 13:20	Average 51.4 Peak 55.7	Strong wind
PSG1P3	8512585 4589592	15.01.07 13:35	Average 48 Peak 55	Light breeze
PSG1P4	8512152 4589439	15.01.07 13:45	Average 62.9 Peak 67.1	Vehicles at camp, 4 camp generators, strong wind
PSG1P5	8512282 4589247	15.01.07 14:05	Average 59.2 Peak 61.1	Passing track, 4 camp generators, people, dogs strong wind

Monitoring point	GPS Coordinate	Date and Time	Noise Readings in dBA	Background noise
PSG1P6	8512360 4589286	15.01.07 14:25	Average 54.2 Peak 54.7	Strong wind close to reeds
PSG1P8	8512232 4589652	15.01.07 14:50	Average 56.4 Peak 57.5	Passing track at main road to PSG1, strong wind
PSG1NV		15.01.07 15:40	Average 55.3 Peak 56.8	Birds, breeze, noise from village
PSG2P1	8450014 4602752	16.01.07 15:30	Average 49.9 Peak 52	People, wind
PSG2P2	8450182 4602742	16.01.07 14:25	Average 52 Peak 53.2	Wind
PSG2P3	8450386 4602697	16.01.07 14:50	Average 50.9 Peak 53.1	Wind, traffic
PSG2P4	8450410 4602631	16.01.07 14:35	Average 55.1 Peak 56.5	Wind
PSG2P5	8450330 4602557	16.01.07 13:30	Average 55.9 Peak 57.1	Wind, plane
PSG2P6	8450010 4602603	16.01.07 12:50	Average 45.3 Peak 46.9	Wind
PSG2P7	8450164 4602509	16.01.07 13:15	Average 53.2 Peak 68.9	Wind

**February 2007:**

Monitoring point	GPS Coordinate	Date and Time	Noise Readings in dBA	Background noise
PSG1P1	8512250 4589641	01.02.07 11:05	Average 58.2 Peak 58.4	People, vehicles (PSG1 car parking area)
PSG1P2	8512144 4589635	01.02.07 11:25	Average 48.3 Peak 49.7	Track (50m), light breeze, birds
PSG1P3	8512585 4589592	01.02.07 11:50	Average 42.6 Peak 43.1	Light breeze
PSG1P4	8512152 4589439	01.02.07 13:00	Average 45.9 Peak 46.7	People
PSG1P5	8512282 4589247	01.02.07 13:25	Average 54.5 Peak 54.7	4 camp generators
PSG1P6	8512360 4589286	01.02.07 14:05	Average 40.7 Peak 42.3	Light breeze, CWAA noise.
PSG1P8	8512232 4589652	01.02.07 14:50	Average 53.5 Peak 54.1	Breeze, birds
PSG1NV		01.02.07 15:40	Average 39.2 Peak 40.7	Birds, small stream
PSG2P1	8450014 4602752	02.02.07 11:15	Average 49.4 Peak 49.5	N/A
PSG2P2	8450182 4602742	02.02.07 11:40	Average 53.1 Peak 54.2	Birds
PSG2P3	8450386 4602697	02.02.07 12:05	Average 44.4 Peak 44.7	N/A
PSG2P4	8450410 4602631	02.02.07 13:25	Average 42.6 Peak 42.7	Birds
PSG2P5	8450330 4602557	02.02.07 13:40	Average 44.6 Peak 44.7	N/A
PSG2P6	8450010 4602603	02.02.07 14.40	Average 52 Peak 52.2	Breeze, birds
PSG2P7	8450164 4602509	02.02.07 15.15	Average 51.5 Peak 51.8	Breeze



**March 2007:**

Monitoring point	GPS Coordinate	Date and Time	Noise Readings in dBA	Background noise
PSG1P1	8512250 4589641	01.03.07 11:05	Average 58.4 Peak 58.7	People, vehicles (PSG1 car parking area)
PSG1P2	8512144 4589635	01.03.07 11:25	Average 47.2 Peak 47.6	light breeze
PSG1P3	8512585 4589592	01.03.07 11:50	Average 43.5 Peak 43.8	Light breeze
PSG1P4	8512152 4589439	01.03.07 13:00	Average 45.7 Peak 46.5	People, light breeze
PSG1P5	8512282 4589247	01.03.07 13:25	Average 53.9 Peak 54.3	4 camp generators. people
PSG1P6	8512360 4589286	01.03.07 14:05	Average 41.3 Peak 41.9	Light breeze
PSG1P8	8512232 4589652	01.03.07 14:50	Average 54.7 Peak 55.2	Light breeze
PSG1NV		01.03.07 15:40	Average 39.4 Peak 39.9	Light breeze, small stream
PSG2P1	8450014 4602752	02.03.07 11:15	Average 51.7 Peak 52.3	Light breeze
PSG2P2	8450182 4602742	02.03.07 11:40	Average 55.2 Peak 55.8	Birds, Light breeze
PSG2P3	8450386 4602697	02.03.07 12:05	Average 45.3 Peak 45.5	N/A
PSG2P4	8450410 4602631	02.03.07 13:25	Average 43.5 Peak 43.8	Birds
PSG2P5	8450330 4602557	02.03.07 13:40	Average 45.3 Peak 45.8	N/A
PSG2P6	8450010 4602603	02.03.07 14.40	Average 51.6 Peak 52.2	Breeze, birds
PSG2P7	8450164 4602509	02.03.07 15.15	Average 51.3 Peak 51.7	Breeze

**June 2007:**

Monitoring point	GPS Coordinate	Date and Time	Noise Readings in dBA	Background noise
PSG1P1	8512250 4589641	09.07.07 13:15	Average 53.5 Peak 54	People, breeze
PSG1P2	8512144 4589635	09.07.07 13:40	Average 52.1 Peak 52.5	People, breeze, traffic
PSG1P3	8512585 4589592	09.07.07 14:05	Average 52 Peak 68.2	Traffic, breeze. Passing vehicle
PSG1P4	8512152 4589439	09.07.07 14:25	Average 52.7 Peak 53.1	Breeze, birds, camp generators
PSG1P5	8512282 4589247	09.07.07 14:40	Average 45.7 Peak 49.2	Strong wind, breeze, traffic
PSG1P6	8512360 4589286	09.07.07 15.10	Average 37.9 Peak 38.8	Light breeze
PSG1P7	8512232 4589652	09.07.07 15.25	Average 54.8 Peak 56.2	People, breeze
PSG1PNV		09.07.07 15.40	Average 37.5 Peak 39.7	Light breeze
PSG1CA MP1		09.07.07 16:00	Average 48.5 Peak 48.9	Wind, frogs
PSG1CA MP2		09.07.07 16:20	Average 45.3 Peak 46	Wind, frogs

Monitoring point	GPS Coordinate	Date and Time	Noise Readings in dBA	Background noise
PSG1CA MP3		09.07.07 16:35	Average 47.2 Peak 47.7	Camp STP, birds, wind
PSG2P1	8450014 4602752	14.07.07 13:15	Average 52.1 Peak 53.3	Light breeze
PSG2P2	8450182 4602742	14.07.07 13:40	Average 52.2 Peak 54.1	Birds
PSG2P3	8450386 4602697	14.07.07 14:05	Average 44.2 Peak 46.3	Birds
PSG2P4	8450410 4602631	14.07.07 14:25	Average 47.4 Peak 49.3	Birds
PSG2P5	8450330 4602557	14.07.07 14:40	Average 44.4 Peak 45.1	Birds
PSG2P6	8450010 4602603	14.07.07 15:10	Average 51.3 Peak 52.0	Birds
PSG2P7	8450164 4602509	14.07.07 15:25	Average 51.7 Peak 52.2	Birds
PSG2C1	8452736 4600534	13.07.07 14:25	Average 40.4 Peak 43.1	Light breeze, birds
PSG2C2	8452688 4600483	13.07.07 14:35	Average 39.5 Peak 40.2	Birds
PSG2C3	8452716 4600378	13.07.07 14:40	Average 53.4 Peak 55.1	Birds. Camp generators within 40m.
PSG2C4	8452758 4600258	13.07.07 15:05	Average 41.5 Peak 52.2	Light vehicle
PSG2C5	8452878 4600279	13.07.07 15:25	Average 42.7 Peak 58.3	Light vehicle
PSG2CNV	8452846 4600390	13.07.07 16:25	Average 39.4 Peak 40.1	People
AKP1	8319207 4609945	12.07.07 10:05	Average 47.4 Peak 57.1	People, light vehicle
AKP2	8334618 4614017	12.07.07 10:15	Average 38.7 Peak 41.2	Birds
AKP3	8334635 4613763	12.07.07 10:30	Average 53.2 Peak 55.1	Traffic
AKP4	8334778 4613668	12.07.07 10:45	Average 42.4 Peak 45.1	Birds, light breeze
AKP5	8334756 4613992	12.07.07 10:55	Average 52.9 Peak 54.3	STP noise within 30m

## 2.2d – Effluent

### PSG 1

Parameters	Standards	Feb	Mar	May	Jun	Jul	Aug	Sep	Oct	Dec
<b>Monthly</b>										
pH	6-9	6.83	6.59	7.26	7.61	7.38	7.63	7.36	7.12	7.02
COD	125	72	60	87	55	63	87	43	56	36
Oil and grease	10	<5	<5	<5	<5	<5	<5	<5	<5	<5
TSS	35	130	44	100	25	18	37	6.4	38	9.3
NH4	1	0.43	4.3	5.6	3.4	2.2	2.4	1.9	0.19	<0.01
Sulphide	<400	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.04
Coliform bacteria		<2	<2	4	<2	<2	5	180	2	2
<b>Quarterly</b>										
BOD	25	8.8	8.4		8			8.9		
Heavy metals	10									
As	0.1	<0.005	<0.005		<0.005			<0.01		
Cd	0.1	<0.001	<0.001		<0.001			<0.001		
Cr (6)	0.1	<0.01	<0.01		<0.01			<0.005		

Cr total	0.5	<0.01	<0.01		<0.01			<0.005		
Cu	0.5	0.01	0.019		0.004			0.011		
Fe	3.5	0.23	0.031		0.026			<0.05		
Pb	0.1	<0.01	<0.01		<0.01			<0.01		
Hg	0.01	<0.00001	<0.00001		<0.00001			0.00015		
Ni	0.5	<0.01	<0.01		<0.01			<0.05		
Se	0.1	0.03	<0.005		0.02			0.01		
Ag	0.5	0.003	<0.001		0.002			0.0019		
Zn	1	0.095	0.024		0.4			0.063		
Phenols	0.5	0.03	<0.03		<0.03			0.01		
Chlorine	0.2	0.1	<0.01		<0.01			<0.01		

NOTE: January and November Retention Ponds were frozen - no monitoring was conducted  
In April due to custom clearance expansion samples' holding time exceeded and no monitoring was conducted

## PSG2

Parameters	Standards	Mar	May	Jul	Aug	Sep	Oct
<b>Monthly</b>							
pH	6-9	7.85	8.42	7.06	7	6.85	6.4
COD	125	20	26	59	60	69	49
Oil and grease	10	<5	<5	<5	<5	<5	<5
TSS	35	<2	3.6	6.9	12	11	6.8
NH4	10	2.9	1.8	2.2	1.4	1.9	0.05
Sulphide	1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Coliform bacteria	<400	<2	2	4	16000	3500	350
<b>Quarterly</b>							
BOD	25	6.9		19		14	
Heavy metals	10	<0.1		<0.1		<0.1	
As	0.1	<0.005		<0.005		<0.01	
Cd	0.1	<0.001		<0.001		<0.001	
Cr (6)	0.1	<0.01		<0.01		<0.005	
Cr total	0.5	<0.01		<0.01		<0.005	
Cu	0.5	0.012		<0.01		0.009	
Fe	3.5	0.029		0.09		0.33	
Pb	0.1	<0.01		<0.005		<0.01	
Hg	0.01	<0.00001		<0.00001		0.00025	
Ni	0.5	<0.01		<0.01		<0.05	
Se	0.1	<0.005		<0.005		<0.01	
Ag	0.5	<0.001		<0.001		0.0092	
Zn	1	0.023		0.01		0.017	
Phenols	0.5	<0.03		<0.03		0.04	
Chlorine	0.2	<0.01		0.02		0.24	

NOTE: In January, February, November and December Retention Ponds were frozen or dry – no monitoring was conducted  
In April due to custom clearance expansion samples' holding time exceeded – no monitoring was conducted

## 2. 2e – Ground and Surface Waters

**LOCATION: Borjomi. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BMW1	BMW1	BMW1	BMW1	BMW1	BMW2	BMW2	BMW2	BMW2	BMW2	BMW3	BMW3	BMW3	BMW3
			Baseline 29/09/05	Round 1 21/07/06	Round 2 22/10/06	Round 3 17/07/07	Round 4 09/10/07	Baseline 15/08/05	Round 1 21/07/06	Round 2 22/10/06	Round 3 17/07/07	Round 4 13/10/07	Baseline 15/08/05	Round 1 21/07/06	Round 2 22/10/06	Round 3 17/07/07
<b>PETROLEUM HYDROCARBONS</b>																
GRO (C4-C12)	10	ug/l	DRY	DRY	DRY	DRY	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	10	ug/l	DRY	DRY	DRY	DRY	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	DRY	DRY	DRY	DRY	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																
Benzo(a)pyrene	0.009	ug/l	DRY	DRY	DRY	DRY	DRY	<0.01	NA	<0.01	<0.009	<0.009	<0.01	NA	<0.01	<0.009
PAH 16 Total	0.027	ug/l	DRY	DRY	DRY	DRY	DRY	<0.01	NA	<0.01	0.14	<0.027	<0.01	NA	<0.01	<0.027
<b>BTEX</b>																
Benzene	1	ug/l	DRY	DRY	DRY	DRY	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	DRY	DRY	DRY	DRY	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	DRY	DRY	DRY	DRY	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	DRY	DRY	DRY	DRY	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	DRY	DRY	DRY	DRY	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>																
Calcium Dissolved	5	ug/l	DRY	DRY	DRY	DRY	DRY	36270	4820	40900	42000	41000	insufficient sample	5320	52650	48000
Magnesium Dissolved	5	ug/l	DRY	DRY	DRY	DRY	DRY	4682	640	5946	5800	5900	insufficient sample	971	9832	8800
Manganese Dissolved	1	ug/l	DRY	DRY	DRY	DRY	DRY	6	<1	<1	2	<1	insufficient sample	<1	<1	1
Iron Total (HNO3 Digest)	5	ug/l	DRY	DRY	DRY	DRY	DRY	2173000	1653000	875700	700000	450	insufficient sample	417300	158900	780000
Total Alkalinity as CaCO3	2	mg/l	DRY	DRY	DRY	DRY	DRY	285	230	205	350	160	insufficient sample	305	210	1300
Potassium Dissolved	0.2	mg/l	DRY	DRY	DRY	DRY	DRY	0.2	0.2	0.2	0.3	0.5	insufficient sample	0.5	0.6	1.1
Sodium Dissolved	0.2	mg/l	DRY	DRY	DRY	DRY	DRY	12.6	12.5	11.9	14.0	12.0	insufficient sample	14.3	18.8	26
Nitrate as NO3	0.3	mg/l	DRY	DRY	DRY	DRY	DRY	1.4	1.7	1.7	1.8	1.1	insufficient sample	3.2	3.9	3.2
Sulphate (soluble)	3	mg/l	DRY	DRY	DRY	DRY	DRY	<3	<3	<3	<3	<3	insufficient sample	<3	<3	<3
Chloride	1	mg/l	DRY	DRY	DRY	DRY	DRY	1	<1	1	1	1	insufficient sample	<1	1	2
pH Value	1	pH units	DRY	DRY	DRY	DRY	DRY	8.13	8.42	8.25	7.93	8.60	insufficient sample	8.25	8.35	8.06

**LOCATION: Borjomi. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BMW4	BMW4	BMW4	BMW4	BMW4	BMW5	BMW5	BMW5	BMW5	BMW5	BMW6	BMW6	BMW6	BMW6	BMW6
			Baseline 14/08/05	Round 1 18/06/06	Round 2 22/10/06	Round 3 14/07/07	Round 4 09/10/07	Baseline 02/09/05	Round 1 19/06/06	Round 2 22/10/06	Round 3 14/07/07	Round 4 09/10/07	Baseline 03/09/05	Round 1 22/06/06	Round 2 23/10/06	Round 3 14/07/07	Round 4 12/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	0.846	<0.01	0.103	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027	0.478	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	34680	37010	39570	44000	48000	31180	41850	44190	48000	52000	61560	57500	61090	65000	7800
Magnesium Dissolved	5	ug/l	8593	8698	9085	10000	9800	3902	3982	4964	4800	5400	13560	14780	15870	17000	2200
Manganese Dissolved	1	ug/l	374	888	364	210	140	152	1	3	2	67	1744	2097	2035	1900	<1
Iron Total (HNO3 Digest)	5	ug/l	26860	16860	88810	53000	78000	40680	3594	46920	180000	48000	15300	27690	71610	65000	<5
Total Alkalinity as CaCO3	2	mg/l	180	225	200	170	190	120	140	135	150	150	335	310	355	360	33
Potassium Dissolved	0.2	mg/l	0.3	0.3	0.3	0.5	0.3	0.5	0.2	0.3	0.3	0.5	0.6	0.3	0.3	0.5	2.3
Sodium Dissolved	0.2	mg/l	10.8	10.1	11.1	11.0	15.0	7.1	4.8	6.2	5.7	8.9	36.8	36.8	34.5	41.0	3.2
Nitrate as NO3	0.3	mg/l	<0.3	0.4	<0.3	0.7	<0.3	2.7	2.4	20.0	6.3	4.0	0.3	1.1	0.5	<0.3	5.7
Sulphate (soluble)	3	mg/l	5	3	5	4	5	<3	<3	10	5	3	6	13	4	5	<3
Chloride	1	mg/l	<1.00	1	<1	1	<1	<1.00	1	3	1	<1	2	2	1	1	<1
pH Value	1	pH units	8.63	8.07	8.53	8.33	7.97	8	8.01	8.39	8.08	7.79	8.03	7.29	8.73	8.51	7.76

**LOCATION: Borjomi. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BMW7	BMW7	BMW7	BMW7	BMW7	BMW8	BMW8	BMW8	BMW8	BMW8	BMW9	BMW9	BMW9	BMW9	BMW9
			Baseline 02/09/05	Round 1 25/06/06	Round 2 24/10/06	Round 3 13/07/07	Round 4 13/10/07	Baseline 02/09/05	Round 1 19/06/06	Round 2 24/10/06	Round 3 13/07/07	Round 4 01/10/07	Baseline 08/09/05	Round 1 21/06/06	Round 2 25/10/06	Round 3 08/08/07	Round 4 02/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	No Access	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	10	ug/l	<10	<10	No Access	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	No Access	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	No Access	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	0.203	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.01	<0.01	No Access	<0.027	<0.027	<0.01	<0.01	<0.01	0.028	0.032	2.553	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	45870	55840	No Access	56000	55000	38330	43260	30410	35000	28000	112500	96160	90010	91000	92000
Magnesium Dissolved	5	ug/l	6783	9380	No Access	10000	10000	8208	10400	7883	9100	7100	22360	20490	20320	20000	19000
Manganese Dissolved	1	ug/l	248	947	No Access	940	970	130	27	78	20	<1	598	487	426	440	450
Iron Total (HNO3 Digest)	5	ug/l	13870	335400	No Access	300000	430000	14120	8239	268800	240000	19000	2241	15000	2101	30000	19000
Total Alkalinity as CaCO3	2	mg/l	205	305	No Access	320	350	275	950	410	770	360	410	400	370	320	390
Potassium Dissolved	0.2	mg/l	1.1	0.6	No Access	1.2	0.9	2.3	1.7	3.0	2.1	1.8	0.8	1.4	1.4	1.4	1.5
Sodium Dissolved	0.2	mg/l	30.8	30.0	No Access	41	40	72.0	84.0	108.8	110.0	130.0	35.8	37.5	35.3	45.0	47.0
Nitrate as NO3	0.3	mg/l	<0.3	0.6	No Access	<0.3	<0.3	<0.3	1.8	<0.3	0.3	2.5	<0.3	0.5	<0.3	<0.3	<0.3
Sulphate (soluble)	3	mg/l	20	7	No Access	4	5	19	26	37	32	42	17	15	16	16	15
Chloride	1	mg/l	7	17	No Access	17	19	3	2	2	2	2	1	2	1	1	1
pH Value	1	pH units	8.48	7.99	No Access	8.39	8.48	8.07	8.27	8.54	8.40	8.32	7.86	7.34	8.12	8.19	7.91

**LOCATION: Borjomi. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BMW10	BMW10	BMW10	BMW10	BMW10	BMW11	BMW11	BMW11	BMW11	BMW11
			Baseline 06/09/05	Round 1 21/07/06	Round 2 25/10/06	Round 3 08/08/07	Round 4 02/10/07	Baseline 06/09/05	Round 1 21/06/06	Round 2 25/10/06	Round 3 08/08/07	Round 4 02/10/07
<b>PETROLEUM HYDROCARBONS</b>												
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	10	ug/l	18	<10	<10	520	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	1500	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>												
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	0.014	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	0.279	<0.01	<0.01	0.8	0.060	<0.01	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>												
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>												
Calcium Dissolved	5	ug/l	27860	30680	43990	60000	48000	5204	4291	6249	7200	9500
Magnesium Dissolved	5	ug/l	24	5956	12630	16000	15000	1175	977	1137	2000	2400
Manganese Dissolved	1	ug/l	<1	11	76	200	57	9	6	8	2	19
Iron Total (HNO3 Digest)	5	ug/l	810	110100	486200	11470000	58000	336600	140700	265600	7900	540
Total Alkalinity as CaCO3	2	mg/l	230	270	805	27000.0	420	515	325	295	140	120
Potassium Dissolved	0.2	mg/l	2.1	3.3	8.3	3.5	2.7	48.0	33.8	2.9	2.1	1.8
Sodium Dissolved	0.2	mg/l	81.0	45.0	46.5	41.0	56.0	75.0	73.5	78	42	43.0
Nitrate as NO3	0.3	mg/l	<0.3	0.3	<0.3	<0.3	1.7	<0.3	0.5	<0.3	2	2.1
Sulphate (soluble)	3	mg/l	12	15	16	12	17	17	15	12	8	8
Chloride	1	mg/l	1	<1	<1	2.00	<1	1	<1.00	<1	2	<1
pH Value	1	pH units	11.47	8.50	8.33	8.21	8.27	8.94	9.08	9.09	8.47	8.35

**LOCATION: Borjomi. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BSW1	BSW1	BSW1	BSW1	BSW1	BSW2	BSW2	BSW2	BSW2	BSW2	BSW3	BSW3	BSW3	BSW3	BSW3
			Baseline 06/09/05	Round 1 17/06/06	Round 2 26/10/06	Round 3 17/07/07	Round 4 29/09/07	Baseline 08/09/05	Round 1 17/06/06	Round 2 22/10/06	Round 3 16/07/07	Round 4 29/09/07	Baseline 01/09/05	Round 1 17/06/06	Round 2 21/10/06	Round 3 13/07/07	Round 4 29/09/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

**LOCATION: Borjomi. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BSW4	BSW4	BSW4	BSW4	BSW4	BSW5	BSW5	BSW5	BSW5	BSW5	BSW6	BSW6	BSW6	BSW6	BSW6
			Baseline 15/08/05	Round 1 17/06/06	Round 2 21/10/06	Round 3 13/07/07	Round 4 29/09/07	Baseline 05/09/05	Round 1 17/06/06	Round 2 21/10/06	Round 3 13/07/07	Round 4 29/09/07	Baseline 15/08/05	Round 1 17/06/06	Round 2 26/10/06	Round 3 13/07/07	Round 4 29/09/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	68	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	1.119	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1



**LOCATION: Borjomi. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	BSW7	BSW7	BSW7	BSW7	BSW7	BSW8	BSW8	BSW8	BSW8	BSW8	BSW9	BSW9	BSW9	BSW9	BSW9
			Baseline 11/09/05	Round 1 17/06/06	Round 2 26/10/06	Round 3 13/07/07	Round 4 29/09/07	Baseline 11/09/05	Round 1 17/06/06	Round 2 26/10/06	Round 3 13/07/07	Round 4 29/09/07	Baseline 05/09/05	Round 1 17/06/06	Round 2 21/10/06	Round 3 13/07/07	Round 4 28/09/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	No Access	No Access	No Access	No Access	<10	No Access	No Access	No Access	No Access	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	No Access	No Access	No Access	No Access	<10	No Access	No Access	No Access	No Access	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	No Access	No Access	No Access	No Access	<10	No Access	No Access	No Access	No Access	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	No Access	No Access	No Access	No Access	<0.01	No Access	No Access	No Access	No Access	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.01	No Access	No Access	No Access	No Access	1.106	No Access	No Access	No Access	No Access	<0.01	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	No Access	No Access	No Access	No Access	<1	No Access	No Access	No Access	No Access	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	No Access	No Access	No Access	No Access	<1	No Access	No Access	No Access	No Access	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	No Access	No Access	No Access	No Access	<1	No Access	No Access	No Access	No Access	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	No Access	No Access	No Access	No Access	<1	No Access	No Access	No Access	No Access	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	No Access	No Access	No Access	No Access	<1	No Access	No Access	No Access	No Access	<1	<1	<1	<1	<1

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed; NDP – No determination possible.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTMW1	KTMW1	KTMW1	KTMW1	KTMW1	KTMW2	KTMW2	KTMW2	KTMW2	KTMW2	KTMW3	KTMW3	KTMW3	KTMW3	KTMW3
			Baseline 21/09/05	Round 1 27/06/06	Round 2 31/10/06	Round 3 19/07/07	Round 4 03/10/07	Baseline 09/09/05	Round 1 27/06/06	Round 2 31/10/06	Round 3 19/07/07	Round 4 03/10/07	Baseline 22/09/05	Round 1 20/07/06	Round 2 31/10/06	Round 3 19/07/07	Round 4 03/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	Dry	<10	<10	<10	No Access	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	Dry	<10	<10	<10	No Access	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	233	Dry	<10	<10	<10	No Access	<10	200	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	Dry	<0.009	<0.009	<0.01	No Access	NDP	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	2.248	<0.01	Dry	<0.027	<0.027	<0.01	No Access	NDP	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	Dry	<1	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	Dry	<1	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	Dry	<1	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	Dry	<1	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	Dry	<1	<1	<1	No Access	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	38860	37590	Dry	47000	60000	61710	No Access	61110	45000	52000	43670	4247	51580	47000	54000
Magnesium Dissolved	5	ug/l	11010	10660	Dry	5500	8200	14370	No Access	10450	11000	13000	8195	829	8578	8200	8200
Manganese Dissolved	1	ug/l	462	2714	Dry	5	2600	282	No Access	402	310	1400	-	53	498	560	400
Iron Total (HNO3 Digest)	5	ug/l	109500	6652	Dry	8200	260000	34900	No Access	84130	290000	180000	-	179500	108600	150000	420000
Total Alkalinity as CaCO3	2	mg/l	4000	165	Dry	160	190	305	No Access	225	260	210	125	145	110	140	130
Potassium Dissolved	0.2	mg/l	0.2	1.7	Dry	0.5	0.6	4.5	No Access	1.5	3.6	3.3	1.5	1.5	1.7	2.0	1.8
Sodium Dissolved	0.2	mg/l	6.6	7.1	Dry	4.7	6.0	11.4	No Access	9.3	8.4	9.9	15.8	17.3	19.5	21.0	26.0
Nitrate as NO3	0.3	mg/l	<0.3	0.3	Dry	<0.3	0.5	<0.3	No Access	0.6	1.9	1.6	<0.3	<0.3	0.4	<0.3	<0.3
Sulphate (soluble)	3	mg/l	3	<3	Dry	<3	<3	7	No Access	5	3	4	20	23	21	21	22
Chloride	1	mg/l	1	<1	Dry	2	<1	1	No Access	<1	2	5	78	70	71	70	74
pH Value	1	pH units	7.77	8.06	Dry	8.27	7.93	8.43	No Access	8.44	7.89	8.12	8.16	8.26	8.29	8.25	8.33

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed; NDP – No determination possible.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTMW4	KTMW4	KTMW4	KTMW4	KTMW4	KTMW5	KTMW5	KTMW5	KTMW5	KTMW5	KTMW6	KTMW6	KTMW6	KTMW6	KTMW6
			Baseline 25/09/05	Round 1 27/06/06	Round 2 31/10/06	Round 3 09/08/07	Round 4 03/10/07	Baseline 25/09/05	Round 1 28/06/06	Round 2 31/10/06	Round 3 09/08/07	Round 4 03/10/07	Baseline 25/09/05	Round 1 28/06/06	Round 2 01/11/06	Round 3 09/08/07	Round 4 03/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	No Access	Decommissioned	Decommissioned	<10	<10	<10	<10	<10	<10	<10	No Access	Decommissioned	Decommissioned
TPH	10	ug/l	<10	<10	No Access	Decommissioned	Decommissioned	<10	<10	<10	<10	<10	<10	<10	No Access	Decommissioned	Decommissioned
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	No Access	Decommissioned	Decommissioned	<10	<10	<10	<10	<10	<10	<10	No Access	Decommissioned	Decommissioned
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	No Access	Decommissioned	Decommissioned	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	No Access	Decommissioned	Decommissioned
PAH 16 Total	0.027	ug/l	<0.01	<0.01	No Access	Decommissioned	Decommissioned	<0.01	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	No Access	Decommissioned	Decommissioned
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	No Access	Decommissioned	Decommissioned	<1	<1	<1	<1	<1	<1	<1	No Access	Decommissioned	Decommissioned
Toluene	1	ug/l	<1	<1	No Access	Decommissioned	Decommissioned	<1	<1	<1	<1	<1	<1	<1	No Access	Decommissioned	Decommissioned
Ethylbenzene	1	ug/l	<1	<1	No Access	Decommissioned	Decommissioned	<1	<1	<1	<1	<1	<1	<1	No Access	Decommissioned	Decommissioned
p/m-Xylene	1	ug/l	<1	<1	No Access	Decommissioned	Decommissioned	<1	<1	<1	<1	<1	<1	<1	No Access	Decommissioned	Decommissioned
o-Xylene	1	ug/l	<1	<1	No Access	Decommissioned	Decommissioned	<1	<1	<1	<1	<1	<1	<1	No Access	Decommissioned	Decommissioned
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	58250	45140	No Access	Decommissioned	Decommissioned	34810	33080	26730	18000	25000	13870	14280	No Access	Decommissioned	Decommissioned
Magnesium Dissolved	5	ug/l	16860	17130	No Access	Decommissioned	Decommissioned	5349	6147	4017	3300	3700	4003	3269	No Access	Decommissioned	Decommissioned
Manganese Dissolved	1	ug/l	1049	1613	No Access	Decommissioned	Decommissioned	74	311	126	2	3	158	331	No Access	Decommissioned	Decommissioned
Iron Total (HNO3 Digest)	5	ug/l	29820	55540	No Access	Decommissioned	Decommissioned	34160	43510	6155	22000	100000	40400	774900	No Access	Decommissioned	Decommissioned
Total Alkalinity as CaCO3	2	mg/l	230	145	No Access	Decommissioned	Decommissioned	115	175	100	110	100	120	335	No Access	Decommissioned	Decommissioned
Potassium Dissolved	0.2	mg/l	2.3	1.5	No Access	Decommissioned	Decommissioned	1.8	1.7	2.3	2.6	2.6	3.2	4.1	No Access	Decommissioned	Decommissioned
Sodium Dissolved	0.2	mg/l	18.0	10.7	No Access	Decommissioned	Decommissioned	6.0	5.1	5.1	5.7	3.9	4.5	5.3	No Access	Decommissioned	Decommissioned
Nitrate as NO3	0.3	mg/l	<0.3	<0.3	No Access	Decommissioned	Decommissioned	3.2	2.3	3.0	3.3	2.3	8.0	6.8	No Access	Decommissioned	Decommissioned
Sulphate (soluble)	3	mg/l	39	<3	No Access	Decommissioned	Decommissioned	5	4	3	4	3	4	4	No Access	Decommissioned	Decommissioned
Chloride	1	mg/l	16	<1	No Access	Decommissioned	Decommissioned	4	3	3	4	3	2	1	No Access	Decommissioned	Decommissioned
pH Value	1	pH units	8.59	8.63	No Access	Decommissioned	Decommissioned	8.35	8.00	8.29	8.32	7.95	7.62	8.05	No Access	Decommissioned	Decommissioned

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed; NDP – No determination possible.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTMW7	KTMW7	KTMW7	KTMW7	KTMW7	KTMW8	KTMW8	KTMW8	KTMW8	KTMW8	KTMW9	KTMW9	KTMW9	KTMW9	KTMW9
			Baseline 25/09/05	Round 1 28/06/06	Round 2 01/11/06	Round 3 11/08/07	Round 4 03/10/07	Baseline 25/09/05	Round 1 28/06/06	Round 2 01/11/06	Round 3 09/08/07	Round 4 03/10/07	Baseline 28/09/05	Round 1 28/06/06	Round 2 01/11/06	Round 3 09/08/07	Round 4 03/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	No Access	<10	<10	<10	No Access	No Access	Decommissioned	Decommissioned	<10	DRY	No Access	DRY	DRY
TPH	10	ug/l	<10	<10	No Access	<10	<10	<10	No Access	No Access	Decommissioned	Decommissioned	<10	DRY	No Access	DRY	DRY
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	No Access	<10	<10	<10	No Access	No Access	Decommissioned	Decommissioned	<10	DRY	No Access	DRY	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	No Access	<0.009	<0.009	<0.01	No Access	No Access	Decommissioned	Decommissioned	<0.01	DRY	No Access	DRY	DRY
PAH 16 Total	0.027	ug/l	<0.01	<0.01	No Access	<0.027	<0.027	<0.01	No Access	No Access	Decommissioned	Decommissioned	<0.01	DRY	No Access	DRY	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	No Access	<1	<1	<1	No Access	No Access	Decommissioned	Decommissioned	<1	DRY	No Access	DRY	DRY
Toluene	1	ug/l	<1	<1	No Access	<1	<1	<1	No Access	No Access	Decommissioned	Decommissioned	<1	DRY	No Access	DRY	DRY
Ethylbenzene	1	ug/l	<1	<1	No Access	<1	<1	<1	No Access	No Access	Decommissioned	Decommissioned	<1	DRY	No Access	DRY	DRY
p/m-Xylene	1	ug/l	<1	<1	No Access	<1	<1	<1	No Access	No Access	Decommissioned	Decommissioned	<1	DRY	No Access	DRY	DRY
o-Xylene	1	ug/l	<1	<1	No Access	<1	<1	<1	No Access	No Access	Decommissioned	Decommissioned	<1	DRY	No Access	DRY	DRY
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	84750	47670	No Access	48000	36000	56870	No Access	No Access	Decommissioned	Decommissioned	55220	DRY	No Access	DRY	DRY
Magnesium Dissolved	5	ug/l	16900	11790	No Access	12000	7800	12060	No Access	No Access	Decommissioned	Decommissioned	8636	DRY	No Access	DRY	DRY
Manganese Dissolved	1	ug/l	255	16	No Access	1	1	811	No Access	No Access	Decommissioned	Decommissioned	736	DRY	No Access	DRY	DRY
Iron Total (HNO3 Digest)	5	ug/l	19750	261800	No Access	33000	450000	446	No Access	No Access	Decommissioned	Decommissioned	23270	DRY	No Access	DRY	DRY
Total Alkalinity as CaCO3	2	mg/l	300	110	No Access	160	140	225	No Access	No Access	Decommissioned	Decommissioned	220	DRY	No Access	DRY	DRY
Potassium Dissolved	0.2	mg/l	1.8	1.5	No Access	1.5	1.5	3.0	No Access	No Access	Decommissioned	Decommissioned	3.2	DRY	No Access	DRY	DRY
Sodium Dissolved	0.2	mg/l	30.0	13.4	No Access	9.6	8.3	18.0	No Access	No Access	Decommissioned	Decommissioned	42.8	DRY	No Access	DRY	DRY
Nitrate as NO3	0.3	mg/l	1.1	1.1	No Access	1.6	2.3	0.4	No Access	No Access	Decommissioned	Decommissioned	6.7	DRY	No Access	DRY	DRY
Sulphate (soluble)	3	mg/l	191	5	No Access	<3	<3	6	No Access	No Access	Decommissioned	Decommissioned	104	DRY	No Access	DRY	DRY
Chloride	1	mg/l	2	<1	No Access	<1	<1	7	No Access	No Access	Decommissioned	Decommissioned	10	DRY	No Access	DRY	DRY
pH Value	1	pH units	8.41	8.38	No Access	8.42	8.14	8.64	No Access	No Access	Decommissioned	Decommissioned	7.76	DRY	No Access	DRY	DRY

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

KEY: DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed; NDP – No determination possible.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTMW10	KTMW10	KTMW10a	KTMW10	KTMW10	KTMW10	KTMW10	KTMW11	KTMW11	KTMW11	KTMW11	KTMW11	KTMW12	KTMW12	KTMW12	KTMW12	KTMW12
			Baseline 28/09/05	Round 1 16/07/06	Round 1 24/07/06	Round 2 01/11/06	Round 3 30/07/07	Round 4 12/10/07	Baseline 21/09/05	Round 1 20/07/06	Round 2 01/11/06	Round 3 09/08/07	Round 4 12/10/07	Baseline 21/09/05	Round 1 20/07/06	Round 2 01/11/06	Round 3 09/08/07	Round 4 12/10/07	
<b>PETROLEUM HYDROCARBONS</b>																			
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	No Access	<10	<10	<10
TPH	10	ug/l	<10	<10	<10	27	<10	<10	<10	<10	15	<10	<10	<10	<10	No Access	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	NDP	<10	<10	<10	No Access	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																			
Benzo(a)pyrene	0.009	ug/l	<0.02	<0.01	<0.01	<0.01	<0.009	<0.009	<0.009	<0.01	<0.01	NDP	<0.009	<0.009	<0.01	No Access	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.06	1.033	2.84	<0.01	<0.027	<0.027	<0.01	<0.01	NDP	<0.027	<0.027	<0.01	No Access	<0.01	<0.027	<0.027	<0.027
<b>BTEX</b>																			
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1
<b>ADDITIONAL</b>																			
Calcium Dissolved	5	ug/l	43680	50020	44430	38110	37000	33000	24330	2135	23530	17000	19000	37570	No Access	27490	23000	26000	
Magnesium Dissolved	5	ug/l	7672	7604	7444	5531	5400	4800	3181	262	2804	2300	2600	7022	No Access	5379	5000	5700	
Manganese Dissolved	1	ug/l	877	229	155	117	<1	2	49	<1	<1	<1	<1	497	No Access	373	640	640	
Iron Total (HNO3 Digest)	5	ug/l	22880	8938	52860	12550	33000	36000	-	9965	326500	1500	4400	-	No Access	25220	390000	330000	
Total Alkalinity as CaCO3	2	mg/l	190	175	225	160	140	160	105	85	105	85	75	130	No Access	125	210	180	
Potassium Dissolved	0.2	mg/l	0.9	0.9	0.6	0.6	0.6	0.8	0.5	0.5	1.5	0.6	0.5	1.5	No Access	1.5	1.4	1.2	
Sodium Dissolved	0.2	mg/l	13.8	11.1	13.1	11.0	13.0	12.0	5.6	7.7	7.4	7.2	7.5	30.0	No Access	9.8	13	9.8	
Nitrate as NO3	0.3	mg/l	1.2	1.0	0.7	2.0	1.5	1.1	5.2	5.0	5.7	6.2	5.3	<0.3	No Access	1.5	<0.3	1.0	
Sulphate (soluble)	3	mg/l	10	<3	<3	<3	<3	<3	4	<3	<3	<3	17	91	No Access	-	4	<3	
Chloride	1	mg/l	1	<1	<1	<1	<1	<1	1	<1	<1	1	<1	1	No Access	<1	1	<1	
pH Value	1	pH units	7.38	8.45	8.19	8.16	7.31	8.34	8.01	7.91	7.87	8.28	8.22	8.25	No Access	8.27	8.07	7.99	

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

KEY: DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed; NDP – No determination possible.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTMW13	KTMW13	KTMW13	KTMW13	KTMW13	KTMW14	KTMW14	KTMW14	KTMW14	KTMW14	KTMW15	KTMW15	KTMW15	KTMW15	KTMW15
			Baseline 25/09/05	Round 1 16/07/06	Round 2 01/11/06	Round 3 30/07/07	Round 4 09/10/07	Baseline 22/09/05	Round 1 16/07/06	Round 2 01/11/06	Round 3 30/07/07	Round 4 05/10/07	Baseline 22/09/05	Round 1 29/06/06	Round 2 01/11/06	Round 3 30/07/07	Round 4 05/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	12	<10	<10	<10	33	<10	<10	<10	<10	<10	12	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	NDP	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	NDP	<0.009	0.010	0.154	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	0.068	<0.027	<0.01	<0.01	NDP	<0.027	<0.027	2.686	<0.01	0.24	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	62460	17400	28670	37000	41000	69570	65260	29260	63000	58000	9608	8964	4521	52000	51000
Magnesium Dissolved	5	ug/l	3612	1033	1169	1500	1500	10130	9066	7961	8400	8500	2318	2028	870	7500	7700
Manganese Dissolved	1	ug/l	246	<1	4	<1	133	<1	<1	<1	6	<1	75	14	13	84	2
Iron Total (HNO3 Digest)	5	ug/l	17740	22670	43390	8800	51000	-	31170	646900	36000	110000	-	138200	165000	22000	120000
Total Alkalinity as CaCO3	2	mg/l	175	60	100	120	130	170	235	145	180	340	1100	205	495	240	470
Potassium Dissolved	0.2	mg/l	1.1	1.2	0.6	0.6	2.7	0.9	0.5	1.1	1.5	1.5	1.4	5.6	3.6	2.9	
Sodium Dissolved	0.2	mg/l	5.4	3.5	3.9	4.2	7.1	33.0	15.0	5.7	22.0	21.0	97.5	88.5	247.5	78.0	74.0
Nitrate as NO3	0.3	mg/l	0.3	0.3	1.1	0.8	0.8	7.0	1.9	2.0	2.2	1.9	5.1	5.9	4.2	17.0	9.5
Sulphate (soluble)	3	mg/l	7	<3	<3	<3	<3	127	<3	<3	<3	<3	3	14	83	12	15
Chloride	1	mg/l	<1.00	<1	<1	<1	<1	2	1	<1	4	1	1	3	6	5	
pH Value	1	pH units	8.54	7.72	7.78	7.65	7.88	8.34	8.27	8.28	7.85	8.27	8.53	8.58	8.83	7.84	8.27

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed; NDP – No determination possible.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTMW16a	KTMW16a	KTMW16a	KTMW16a	KTMW16a	KTMW17	KTMW17	KTMW17	KTMW17	KTMW17
			Baseline 27/09/05	Round 1 17/07/06	Round 2 02/11/06	Round 3 30/07/07	Round 4 06/10/07	Baseline 27/09/05	Round 1 17/07/06	Round 2 02/11/06	Round 3 11/08/07	Round 4 10/10/07
<b>PETROLEUM HYDROCARBONS</b>												
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	No Access	No Access	<10	<10
TPH	10	ug/l	<10	<10	11	<10	<10	<10	No Access	No Access	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	No Access	No Access	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>												
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	No Access	No Access	<0.009	0.009
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	<0.027	<0.027	<0.01	No Access	No Access	<0.027	<0.027
<b>BTEX</b>												
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	No Access	No Access	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	No Access	No Access	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	No Access	No Access	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	No Access	No Access	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	No Access	No Access	<1	<1
<b>ADDITIONAL</b>												
Calcium Dissolved	5	ug/l	44490	32580	30820	31000	28000	32470	No Access	No Access	3900	41000
Magnesium Dissolved	5	ug/l	16560	8281	7921	7900	7600	9018	No Access	No Access	1500	16000
Manganese Dissolved	1	ug/l	85	<1	2	5	<1	189	No Access	No Access	<1	12
Iron Total (HNO3 Digest)	5	ug/l	5102	15150	41430	17000	4300	2300	No Access	No Access	36000	49000
Total Alkalinity as CaCO3	2	mg/l	180	140	140	130	120	195	No Access	No Access	200	200
Potassium Dissolved	0.2	mg/l	1.1	0.9	1.1	1.2	1.1	0.2	No Access	No Access	0.3	0.3
Sodium Dissolved	0.2	mg/l	7.2	4.5	5.4	5.9	6.0	11.4	No Access	No Access	11	15
Nitrate as NO3	0.3	mg/l	1.2	5.4	2.1	2.0	2.2	<0.3	No Access	No Access	0.4	0.3
Sulphate (soluble)	3	mg/l	<3	<3	<3	<3	<3	<3	No Access	No Access	<3	7
Chloride	1	mg/l	1	1	<1	<1	<1	<1	No Access	No Access	<1	<1
pH Value	1	pH units	7.84	8.41	8.40	7.96	8.19	7.76	No Access	No Access	8.58	8.45

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTSW1	KTSW1	KTSW1	KTSW1	KTSW1	KTSW2	KTSW2	KTSW2	KTSW2	KTSW2	KTSW3	KTSW3	KTSW3	KTSW3	KTSW3
			Baseline 21/09/05	Round 1 27/06/06	Round 2 29/10/06	Round 3 19/07/07	Round 4 03/10/07	Baseline 21/09/05	Round 1 19/07/06	Round 2 29/10/06	Round 3 19/07/07	Round 4 03/10/07	Baseline 28/09/05	Round 1 19/07/06	Round 2 29/10/06	Round 3 09/08/07	Round 4 8/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	DRY	<10	DRY
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	DRY	<10	DRY
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	240	<10	<10	<10	<10	<10	<10	DRY	DRY	DRY	<10	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	DRY	DRY	DRY	<0.009	DRY
PAH 16 Total	0.027	ug/l	<0.01	<0.01	0.217	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027	DRY	DRY	DRY	<0.027	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	DRY	<1	DRY
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	DRY	<1	DRY
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	DRY	<1	DRY
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	DRY	<1	DRY
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	DRY	<1	DRY

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**
**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTSW4	KTSW4	KTSW4	KTSW4	KTSW4	KTSW5	KTSW5	KTSW5	KTSW5	KTSW5	KTSW6	KTSW6	KTSW6	KTSW6
			Baseline 10/09/05	Round 1 26/06/06	Round 2 29/10/06	Round 3 09/08/07	Round 4 08/10/07	Baseline 10/09/05	Round 1 26/06/06	Round 2 29/10/06	Round 3 09/08/07	Round 4 12/10/07	Baseline 10/09/05	Round 1 26/06/06	Round 2 29/10/06	Round 3 09/08/07
<b>PETROLEUM HYDROCARBONS</b>																
GRO (C4-C12)	10	ug/l	insufficient sample	<10	<10	DRY	DRY	<10	<10	<10	<10	<10	DRY	<10	DRY	<10
TPH	10	ug/l	insufficient sample	insufficient sample	<10	DRY	DRY	<10	<10	<10	<10	<10	DRY	11	DRY	<10
EPH (DRO) (C10-C40)	10	ug/l	insufficient sample	insufficient sample	<10	DRY	DRY	<10	<10	<10	<10	<10	DRY	<10	DRY	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																
Benzo(a)pyrene	0.009	ug/l	insufficient sample	insufficient sample	<0.01	DRY	DRY	<0.01	<0.01	<0.01	<0.009	<0.009	DRY	<0.01	DRY	<0.009
PAH 16 Total	0.027	ug/l	insufficient sample	insufficient sample	<0.01	DRY	DRY	<0.01	<0.01	<0.01	<0.027	<0.027	DRY	<0.01	DRY	<0.027
<b>BTEX</b>																
Benzene	1	ug/l	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	<1	DRY	<1	DRY	<1
Toluene	1	ug/l	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	<1	DRY	<1	DRY	<1
Ethylbenzene	1	ug/l	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	<1	DRY	<1	DRY	<1
p/m-Xylene	1	ug/l	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	<1	DRY	<1	DRY	<1
o-Xylene	1	ug/l	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	<1	DRY	<1	DRY	<1

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**
**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTSW7	KTSW7	KTSW7	KTSW7	KTSW7	KTSW8	KTSW8	KTSW8	KTSW8	KTSW8	KTSW9	KTSW9	KTSW9	KTSW9	KTSW9
			Baseline 28/09/05	Round 1 26/06/06	Round 2 29/10/06	Round 3 09/08/07	Round 4 08/10/07	Baseline 25/09/05	Round 1 26/06/06	Round 2 29/10/06	Round 3 09/08/07	Round 4 09/10/07	Baseline 22/09/05	Round 1 15/07/06	Round 2 29/10/06	Round 3 09/08/07	Round 4 09/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	DRY	<10	<10	<10	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	DRY	10	<10	<10	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	DRY	<10	<10	<10	DRY	<10	161	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	DRY	<0.01	<0.01	<0.009	DRY	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	DRY	<0.01	<0.01	<0.027	DRY	<0.01	0.237	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTWSW10	KTWSW10	KTWSW10	KTWSW10	KTWSW10	KTWSW11	KTWSW11	KTWSW11	KTWSW11	KTWSW11	KTWSW12	KTWSW12	KTWSW12	KTWSW12	KTWSW12
			Baseline 27/09/05	Round 1 15/07/06	Round 2 28/10/06	Round 3 30/07/07	Round 4 08/10/07	Baseline 27/09/05	Round 1 15/07/06	Round 2 28/10/06	Round 3 24/08/07	Round 4 08/10/07	Baseline 29/09/05	Round 1 17/07/06	Round 2 29/10/06	Round 3 30/07/07	Round 4 06/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	DRY	<10	<10	<10	DRY	<10	<10	<10	DRY	DRY	<10	<10	<10	<10	DRY
TPH	10	ug/l	DRY	<10	<10	<10	DRY	<10	<10	<10	DRY	DRY	<10	<10	<10	<10	DRY
EPH (DRO) (C10-C40)	10	ug/l	DRY	<10	<10	<10	DRY	<10	<10	<10	DRY	DRY	<10	<10	<10	<10	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	DRY	<0.01	<0.01	<0.009	DRY	<0.01	<0.01	<0.01	DRY	DRY	<0.01	<0.01	<0.01	<0.009	DRY
PAH 16 Total	0.027	ug/l	DRY	<0.01	<0.01	<0.027	DRY	<0.01	<0.01	<0.01	DRY	DRY	<0.01	<0.01	<0.01	<0.027	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	DRY
Toluene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	DRY
Ethylbenzene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	DRY
p/m-Xylene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	DRY
o-Xylene	1	ug/l	DRY	<1	<1	<1	DRY	<1	<1	<1	DRY	DRY	<1	<1	<1	<1	DRY

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTWSW13	KTWSW13	KTWSW13	KTWSW13	KTWSW13	KTWSW14	KTWSW14	KTWSW14	KTWSW14	KTWSW14	KTWSW15	KTWSW15	KTWSW15	KTWSW15	KTWSW15
			Baseline 28/09/05	Round 1 17/07/06	Round 2 28/10/06	Round 3 25/07/08	Round 4 06/10/07	Baseline 27/09/05	Round 1 17/07/06	Round 2 28/10/06	Round 3 30/07/07	Round 4 06/10/07	Baseline 09/09/05	Round 1 17/07/06	Round 2 28/10/06	Round 3 30/07/07	Round 4 06/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	DRY	DRY	<10	DRY	DRY	Sample Broken	<10	<10	<10	<10	<10	insufficient sample	<10	<10	<10
TPH	10	ug/l	DRY	DRY	<10	DRY	DRY	Sample Broken	<10	<10	<10	<10	<10	insufficient sample	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	DRY	DRY	<10	DRY	DRY	Sample Broken	<10	<10	<10	<10	<10	insufficient sample	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	DRY	DRY	<0.01	DRY	DRY	Sample Broken	<0.01	<0.01	<0.009	0.009	<0.01	insufficient sample	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	DRY	DRY	<0.01	DRY	DRY	Sample Broken	<0.01	<0.01	<0.027	<0.027	<0.01	insufficient sample	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	DRY	DRY	<1	DRY	DRY	Sample Broken	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	DRY	DRY	<1	DRY	DRY	Sample Broken	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	DRY	DRY	<1	DRY	DRY	Sample Broken	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	DRY	DRY	<1	DRY	DRY	Sample Broken	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	DRY	DRY	<1	DRY	DRY	Sample Broken	<1	<1	<1	<1	<1	<1	<1	<1	<1

**LOCATION: Ktsia / Tabatskuri. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	KTSW16	KTSW16	KTSW16	KTSW16	KTSW16	KTSW17	KTSW17	KTSW18	KTSW18	KTSW19	KTSW19
			Baseline 10/09/05	Round 1 17/07/06	Round 2 28/10/06	Round 3 30/07/07	Round 4 06/10/07	Round 3 09/08/07	Round 4 03/10/07	Round 3 09/08/07	Round 4 12/10/07	Round 3 09/08/07	Round 4 12/10/07
<b>PETROLEUM HYDROCARBONS</b>													
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>													
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.009	<0.009	<0.009	<0.009	DRY	DRY
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	<0.027	<0.027	<0.027	<0.027	<0.027	<0.027	DRY	DRY
<b>BTEX</b>													
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY

**LOCATION: Tsalka. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; \*\* – Error with analytical schedule and sample held beyond holding time. Refer to Duplicate 13 results; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TMW1	TMW1	TMW1	TMW1	TMW1	TMW2	TMW2	TMW2	TMW2	TMW2	TMW3	TMW3	TMW3	TMW3	TMW3
			Baseline 17/08/05	Round 1 08/07/06	Round 2 10/11/06	Round 3 31/07/07	Round 4 18/10/07	Baseline 31/08/05	Round 1 08/07/06	Round 2 11/11/06	Round 3 06/08/07	Round 4 19/10/07	Baseline 16/08/05	Round 1 08/07/06	Round 2 09/11/06	Round 3 06/08/07	Round 4 18/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	DRY	DRY	DRY	DRY	DRY	<10	<10	DRY	DRY	DRY
TPH	10	ug/l	<10	<10	<10	<10	<10	DRY	DRY	DRY	DRY	DRY	<10	<10	DRY	DRY	DRY
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	DRY	DRY	DRY	DRY	DRY	<10	<10	DRY	DRY	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	DRY	DRY	DRY	DRY	DRY	<0.01	<0.01	DRY	DRY	DRY
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	<0.027	<0.027	DRY	DRY	DRY	DRY	DRY	0.091	<0.01	DRY	DRY	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	<1	DRY	DRY	DRY
Toluene	1	ug/l	<1	<1	<1	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	5	DRY	DRY	DRY
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	3	DRY	DRY	DRY
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	6	DRY	DRY	DRY
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	3	DRY	DRY	DRY
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	111300	128700	151200	140000	140000	DRY	DRY	DRY	DRY	DRY	90630	75560	DRY	DRY	DRY
Magnesium Dissolved	5	ug/l	17310	19910	22720	22000	22000	DRY	DRY	DRY	DRY	DRY	35940	19480	DRY	DRY	DRY
Manganese Dissolved	1	ug/l	348	<1	1	<1	<1	DRY	DRY	DRY	DRY	DRY	799	1	DRY	DRY	DRY
Iron Total (HNO3 Digest)	5	ug/l	346500	34450	303800	62000	82000	DRY	DRY	DRY	DRY	DRY	458	24770	DRY	DRY	DRY
Total Alkalinity as CaCO3	2	mg/l	275	390	335	210	270	DRY	DRY	DRY	DRY	DRY	375	500	DRY	DRY	DRY
Potassium Dissolved	0.2	mg/l	0.6	0.8	0.6	0.6	0.5	DRY	DRY	DRY	DRY	DRY	87.0	2.0	DRY	DRY	DRY
Sodium Dissolved	0.2	mg/l	12.5	12.8	13.1	20.0	14.0	DRY	DRY	DRY	DRY	DRY	46.5	17.3	DRY	DRY	DRY
Nitrate as NO3	0.3	mg/l	152.8	161.7	178.9	170.0	170.0	DRY	DRY	DRY	DRY	DRY	21.9	1.9	DRY	DRY	DRY
Sulphate (soluble)	3	mg/l	24	30	32	33	37	DRY	DRY	DRY	DRY	DRY	91	8	DRY	DRY	DRY
Chloride	1	mg/l	42	40	43	45	52	DRY	DRY	DRY	DRY	DRY	88	5	DRY	DRY	DRY
pH Value	1	pH units	7.89	7.87	7.92	7.74	8.10	DRY	DRY	DRY	DRY	DRY	8.80	8.00	DRY	DRY	DRY

**LOCATION: Tsalka. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; \*\* – Error with analytical schedule and sample held beyond holding time. Refer to Duplicate 13 results; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TMW4	TMW4	TMW4	TMW4	TMW4	TMW5	TMW5	TMW5	TMW5	TMW5	TMW6	TMW6	TMW6	TMW6	TMW6
			Baseline 21/08/05	Round 1 08/07/06	Round 2 06/11/06	Round 3 01/08/07	Round 4 17/10/07	Baseline 19/08/05	Round 1 08/07/06	Round 2 05/11/06	Round 3 01/08/07	Round 4 17/10/07	Baseline 21/08/05	Round 1 05/07/06	Round 2 05/11/06	Round 3 01/08/07	Round 4 17/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	405	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	0.099	<0.01	<0.01	<0.027	<0.027	0.492	<0.01	<0.01	0.017	0.140	0.109	<0.01	<0.01	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	89500	91970	87320	90000	91000	42530	36710	49200	50000	53000	64300	136200	75630	66000	70000
Magnesium Dissolved	5	ug/l	23080	24300	22580	24000	25000	11710	9574	12560	13000	13000	11110	15340	10150	11000	10000
Manganese Dissolved	1	ug/l	12	<1	5	2	9	259	94	15	47	99	129	14	1	8	1
Iron Total (HNO3 Digest)	5	ug/l	272000	24590	960800	150000	58000	249400	29000	45580	71000	18000	6445	8314	37600	17000	45000
Total Alkalinity as CaCO3	2	mg/l	275	355	425	260	200	195	245	225	250	200	235	210	280	220	240
Potassium Dissolved	0.2	mg/l	0.8	0.6	0.9	0.6	0.6	1.7	2.4	0.9	1.5	1.4	1.4	0.3	0.6	1.1	0.9
Sodium Dissolved	0.2	mg/l	10.2	9.2	10.2	16.0	11.0	24.8	17.3	13.5	20.0	14.0	9.2	5.3	5.6	11.0	6.9
Nitrate as NO3	0.3	mg/l	10.9	10.1	8.5	8.5	7.6	6.4	4.9	9.8	11.0	8.8	16.2	15.0	15.3	13.0	13.0
Sulphate (soluble)	3	mg/l	36	12	-	11	13	30	7	7	7	7	10	10	10	7	10
Chloride	1	mg/l	6	5	4	4	4	2	1	1	2	1	1	<1.00	<1	<1	1
pH Value	1	pH units	8.33	7.86	8.09	7.79	7.85	8.44	8.30	8.50	8.01	8.08	8.26	8.31	8.21	8.41	7.83

**LOCATION: Tsalka. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; \*\* – Error with analytical schedule and sample held beyond holding time. Refer to Duplicate 13 results; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TMW7	TMW7	TMW7	TMW7	TMW7	TMW8	TMW8	TMW8	TMW8	TMW8	TMW9a	TMW9a	TMW9a	TMW9a	TMW9a
			Baseline 24/08/05	Round 1 05/07/06	Round 2 05/11/06	Round 3 02/08/07	Round 4 17/10/07	Baseline 24/08/05	Round 1 24/07/06	Round 2 10/11/06	Round 3 03/08/07	Round 4 16/10/07	Baseline 07/09/05	Round 1 05/07/06	Round 2 09/11/06	Round 3 03/08/07	Round 4 16/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	DRY	<10	13	<10	28	DRY	DRY	<10	No Access	Decommissioned	Decommissioned
TPH	10	ug/l	<10	20	53	<10	DRY	<10	13	<10	28	DRY	DRY	<10	No Access	Decommissioned	Decommissioned
EPH (DRO) (C10-C40)	10	ug/l	1652	<10	<10	<10	DRY	<10	<10	<10	<10	DRY	DRY	<10	No Access	Decommissioned	Decommissioned
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	DRY	<0.01	<0.01	Insufficient sample	<0.009	DRY	DRY	<0.01	No Access	Decommissioned	Decommissioned
PAH 16 Total	0.027	ug/l	0.176	<0.01	<0.01	<0.027	DRY	<0.01	<0.01	Insufficient sample	<0.027	DRY	DRY	<0.01	No Access	Decommissioned	Decommissioned
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	DRY	<1	<1	<1	<1	DRY	DRY	<1	No Access	Decommissioned	Decommissioned
Toluene	1	ug/l	<1	<1	<1	<1	DRY	<1	12	<1	24	DRY	DRY	<1	No Access	Decommissioned	Decommissioned
Ethylbenzene	1	ug/l	<1	<1	<1	<1	DRY	<1	<1	<1	<1	DRY	DRY	<1	No Access	Decommissioned	Decommissioned
p/m-Xylene	1	ug/l	<1	<1	<1	<1	DRY	<1	<1	<1	<1	DRY	DRY	<1	No Access	Decommissioned	Decommissioned
o-Xylene	1	ug/l	<1	<1	<1	<1	DRY	<1	<1	<1	<1	DRY	DRY	<1	No Access	Decommissioned	Decommissioned
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	76090	176600	88870	85000	DRY	17060	32430	Insufficient sample	38000	DRY	DRY	144200	No Access	Decommissioned	Decommissioned
Magnesium Dissolved	5	ug/l	14210	34550	16500	16000	DRY	2045	4665	Insufficient sample	5800	DRY	DRY	18460	No Access	Decommissioned	Decommissioned
Manganese Dissolved	1	ug/l	103	131	1	49	DRY	137	3165	Insufficient sample	4200	DRY	DRY	22	No Access	Decommissioned	Decommissioned
Iron Total (HNO3 Digest)	5	ug/l	5070	1694	4724	36000	DRY	1121	2081000	Insufficient sample	260000	DRY	DRY	357600	No Access	Decommissioned	Decommissioned
Total Alkalinity as CaCO3	2	mg/l	250	205	255	310	DRY	125	290	Insufficient sample	140	DRY	DRY	260	No Access	Decommissioned	Decommissioned
Potassium Dissolved	0.2	mg/l	2.6	1.4	1.7	2.3	DRY	5.6	4.7	Insufficient sample	2.4	DRY	DRY	4.2	No Access	Decommissioned	Decommissioned
Sodium Dissolved	0.2	mg/l	12.5	7.2	7.7	7.7	DRY	23.3	34.5	Insufficient sample	4.4	DRY	DRY	13.4	No Access	Decommissioned	Decommissioned
Nitrate as NO3	0.3	mg/l	51.7	55.6	44.6	40.0	DRY	6.3	<0.3	Insufficient sample	<0.3	DRY	DRY	32.0	No Access	Decommissioned	Decommissioned
Sulphate (soluble)	3	mg/l	17	32	19	20	DRY	8	<3	Insufficient sample	<3	DRY	DRY	<3	No Access	Decommissioned	Decommissioned
Chloride	1	mg/l	7	14	12	12	DRY	3	1	Insufficient sample	3	DRY	DRY	4	No Access	Decommissioned	Decommissioned
pH Value	1	pH units	8.03	8.24	8.37	8.17	DRY	8.22	7.44	Insufficient sample	7.45	DRY	DRY	8.50	No Access	Decommissioned	Decommissioned



**LOCATION: Tsalka. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; \*\* – Error with analytical schedule and sample held beyond holding time. Refer to Duplicate 13 results; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TMW10	TMW10	TMW10	TMW10	TMW10	TMW11	TMW11	TMW11	TMW11	TMW11	TMW12	TMW12	TMW12	TMW12	TMW12	TMW13	TMW13	TMW13	TMW13	TMW13	
			Baseline 24/08/05	Round 1 05/07/06	Round 2 05/11/06	Round 3 03/08/07	Round 4 16/10/07	Baseline 18/08/05	Round 1 13/07/06	Round 2 10/11/06	Round 3 03/08/07	Round 4 16/10/07	Baseline 31/08/05	Round 1 13/07/06	Round 2 11/11/06	Round 3 3/08/07	Round 4 16/10/07	Baseline 25/08/05	Round 1 22/07/06	Round 2 11/11/06	Round 3 04/08/07	Round 4 04/10/07	
<b>PETROLEUM HYDROCARBONS</b>																							
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	No Access	DRY	DRY	<10	<10	No Access	<10	<10	
TPH	10	ug/l	<10	<10	48	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	No Access	DRY	DRY	<10	<10	No Access	<10	780	
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	No Access	DRY	DRY	2109	<10	No Access	<10	1300	
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																							
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	DRY	DRY	No Access	DRY	DRY	<0.01	<0.01	No Access	<0.009	<0.009	
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	<0.027	<0.027	0.384	<0.01	<0.01	<0.027	<0.027	DRY	DRY	No Access	DRY	DRY	0.627	0.437	No Access	<0.027	<0.027	
<b>BTEX</b>																							
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	No Access	DRY	DRY	2	<1	No Access	<1	<1	
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	No Access	DRY	DRY	2	<1	No Access	<1	<1	
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	
<b>ADDITIONAL</b>																							
Calcium Dissolved	5	ug/l	68840	163800	68720	87000	80000	27810	24060	24490	21000	26000	DRY	DRY	No Access	DRY	DRY	17960	59000	No Access	92000	84000	
Magnesium Dissolved	5	ug/l	14840	39320	13670	19000	18000	4439	3971	3859	3700	3600	DRY	DRY	No Access	DRY	DRY	3785	10640	No Access	16000	16000	
Manganese Dissolved	1	ug/l	41	4	<1	5	<1	30	10	4	1	160	DRY	DRY	No Access	DRY	DRY	61	481	No Access	750	1400	
Iron Total (HNO3 Digest)	5	ug/l	1065	16410	37330	100000	4200	206500	13000	142600	32000	27000	DRY	DRY	No Access	DRY	DRY	228100	23880	No Access	13000	30000	
Total Alkalinity as CaCO3	2	mg/l	280	290	240	270	290	85	70	160	70	75	DRY	DRY	No Access	DRY	DRY	10750	245	No Access	440	300	
Potassium Dissolved	0.2	mg/l	0.2	<0.2	<0.2	0.3	0.2	0.8	0.6	0.8	0.9	0.8	DRY	DRY	No Access	DRY	DRY	6.8	1.7	No Access	3	3.3	
Sodium Dissolved	0.2	mg/l	12.6	15.0	10.8	15.0	14.0	7.5	6.2	6.8	6.8	8.0	DRY	DRY	No Access	DRY	DRY	85.5	12.3	No Access	22	27	
Nitrate as NO3	0.3	mg/l	1.0	0.4	0.9	0.9	<0.3	26.1	20.7	15.0	15.0	11.0	DRY	DRY	No Access	DRY	DRY	<0.3	2.2	No Access	<0.3	0.6	
Sulphate (soluble)	3	mg/l	28	24	31	27	16	11	15	12	10	9	DRY	DRY	No Access	DRY	DRY	32	<3	No Access	10	<3	
Chloride	1	mg/l	6	4	8	10	7	4	4	3	3	3	DRY	DRY	No Access	DRY	DRY	13	<1	No Access	1	1	
pH Value	1	pH units	8.21	8.34	8.52	8.01	7.56	7.98	8.04	7.83	7.93	7.83	DRY	DRY	No Access	DRY	DRY	8.34	8.15	No Access	8.13	8.17	

**LOCATION: Tsalka. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; \*\* – Error with analytical schedule and sample held beyond holding time. Refer to Duplicate 13 results; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TMW14	TMW14	TMW14	TMW14	TMW14	TMW15	TMW15	TMW15	TMW15	TMW15	TMW16	TMW16	TMW16	TMW16	TMW16	TMW17	TMW17	TMW17	TMW17	TMW17	
			Baseline 27/08/05	Round 1 09/07/06	Round 2 11/11/06	Round 3 04/08/07	Round 4 04/10/07	Baseline 21/08/05	Round 1 05/07/06	Round 2 05/11/06	Round 3 01/08/07	Round 4 17/10/07	Baseline 22/08/05	Round 1 05/07/06	Round 2 05/11/06	Round 3 01/08/07	Round 4 17/10/07	Baseline 19/08/05	Round 1 05/07/06	Round 2 06/11/06	Round 3 02/08/07	Round 4 18/10/07	
<b>PETROLEUM HYDROCARBONS</b>																							
GRO (C4-C12)	10	ug/l	<10	<10	No Access	<10	DRY	<10	<10	<10	<10	<10	DRY	<10	<10	<10	<10	<10	No Access	<10	<10	<10	
TPH	10	ug/l	12	<10	No Access	<10	DRY	<10	29	82	<10	<10	DRY	<10	<10	26	<10	<10	No Access	<10	<10	<10	
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	No Access	51	DRY	<10	<10	<10	540	DRY	<10	<10	<10	<10	<10	<10	No Access	<10	<10	<10	
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																							
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	No Access	<0.009	DRY	<0.01	<0.01	<0.01	<0.009	DRY	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	No Access	<0.01	<0.009	<0.009	
PAH 16 Total	0.027	ug/l	<0.01	<0.01	No Access	<0.027	DRY	0.473	<0.01	<0.01	0.037	DRY	<0.01	<0.01	<0.01	<0.027	<0.027	0.126	No Access	<0.01	<0.027	<0.027	
<b>BTEX</b>																							
Benzene	1	ug/l	<1	<1	No Access	<1	DRY	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	
Toluene	1	ug/l	<1	<1	No Access	<1	DRY	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	
Ethylbenzene	1	ug/l	<1	<1	No Access	<1	DRY	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	
p/m-Xylene	1	ug/l	<1	<1	No Access	<1	DRY	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	
o-Xylene	1	ug/l	<1	<1	No Access	<1	DRY	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	
<b>ADDITIONAL</b>																							
Calcium Dissolved	5	ug/l	16780	11000	No Access	30000	DRY	48800	87710	48440	55000	DRY	35800	41780	36800	43000	43000	81260	No Access	76560	89000	87000	
Magnesium Dissolved	5	ug/l	5275	3169	No Access	4100	DRY	11160	24240	14410	15000	DRY	9071	7161	7308	9100	9100	10560	No Access	10580	12000	11000	
Manganese Dissolved	1	ug/l	29	7	No Access	220	DRY	115	3	<1	330	DRY	114	<1	<1	790	3	284	No Access	403	370	38	
Iron Total (HNO3 Digest)	5	ug/l	15480	22730	No Access	100000	DRY	71920	4165	6449	17000	DRY	82500	260500	4831	63000	25000	51970	No Access	455300	460000	330000	
Total Alkalinity as CaCO3	2	mg/l	85	65	No Access	840	DRY	190	185	195	250	DRY	160	225	145	270	170	1775	No Access	265	220	450	
Potassium Dissolved	0.2	mg/l	2.6	2.1	No Access	3.6	DRY	0.9	0.8	0.9	1.7	DRY	1.1	0.5	0.3	1.2	0.8	1.1	No Access	1.1	1.2	1.4	
Sodium Dissolved	0.2	mg/l	8.0	5.0	No Access	6.2	DRY	6.3	6.2	6.2	18.0	DRY	10.7	7.5	7.1	17.0	8.3	17.3	No Access	15.8	16	20	
Nitrate as NO3	0.3	mg/l	6.4	6.2	No Access	<0.3	DRY	6.1	8.9	13.1	6.3	DRY	4.2	5.2	5.8	4.6	4.2	0.3	No Access	0.4	1.1	20	
Sulphate (soluble)	3	mg/l	3	6	No Access	4	DRY	6	13	13	10	DRY	6	7	5	5	4	10	No Access	4	5	7	
Chloride	1	mg/l	1	<1.00	No Access	3	DRY	2	2	2	2	DRY	1	<1.00	<1	1	1	<1	No Access	<1	<1	<1	
pH Value	1	pH units	7.43	7.63	No Access	7.82	DRY	8.44	8.60	8.64	8.52	DRY	8.52	8.53	8.50	8.34	8.02	8.37	No Access	8.06	7.87	7.96	

**LOCATION: Tsalka. SAMPLE TYPE: Groundwater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; \*\* – Error with analytical schedule and sample held beyond holding time. Refer to Duplicate 13 results; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TMW18**	TMW18	TMW18	TMW18	TMW18	TMW19	TMW19	TMW19	TMW19	TMW19	TMW20	TMW20	TMW20	TMW20	TMW20
			Baseline 19/08/05	Round 1 09/07/06	Round 2 06/11/06	Round 3 01/08/07	Round 4 18/10/07	Baseline 31/08/05	Round 1 09/07/06	Round 2 11/11/06	Round 3 03/08/07	Round 4 18/10/07	Baseline 26/08/05	Round 1 09/07/06	Round 2 09/11/06	Round 3 03/08/07	Round 4 16/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	No Access	<10	No Access	<10	<10	DRY	DRY	DRY	DRY	DRY	<10	No Access	No Access	DRY	DRY
TPH	10	ug/l	No Access	<10	No Access	<10	<10	DRY	DRY	DRY	DRY	DRY	<10	No Access	No Access	DRY	DRY
EPH (DRO) (C10-C40)	10	ug/l	No Access	<10	No Access	<10	<10	DRY	DRY	DRY	DRY	DRY	<10	No Access	No Access	DRY	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	No Access	<0.01	No Access	0.019	<0.009	DRY	DRY	DRY	DRY	DRY	<0.01	No Access	No Access	DRY	DRY
PAH 16 Total	0.027	ug/l	No Access	<0.01	No Access	0.036	<0.027	DRY	DRY	DRY	DRY	DRY	0.661	No Access	No Access	DRY	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	No Access	<1	No Access	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	No Access	No Access	DRY	DRY
Toluene	1	ug/l	No Access	<1	No Access	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	No Access	No Access	DRY	DRY
Ethylbenzene	1	ug/l	No Access	<1	No Access	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	No Access	No Access	DRY	DRY
p/m-Xylene	1	ug/l	No Access	<1	No Access	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	No Access	No Access	DRY	DRY
o-Xylene	1	ug/l	No Access	<1	No Access	<1	<1	DRY	DRY	DRY	DRY	DRY	<1	No Access	No Access	DRY	DRY
<b>ADDITIONAL</b>																	
Calcium Dissolved	5	ug/l	No Access	59170	No Access	61000	63000	DRY	DRY	DRY	DRY	DRY	42480	No Access	No Access	DRY	DRY
Magnesium Dissolved	5	ug/l	No Access	14250	No Access	15000	15000	DRY	DRY	DRY	DRY	DRY	10600	No Access	No Access	DRY	DRY
Manganese Dissolved	1	ug/l	No Access	<1	No Access	2	<1	DRY	DRY	DRY	DRY	DRY	101	No Access	No Access	DRY	DRY
Iron Total (HNO3 Digest)	5	ug/l	No Access	7638	No Access	2600	25000	DRY	DRY	DRY	DRY	DRY	494	No Access	No Access	DRY	DRY
Total Alkalinity as CaCO3	2	mg/l	No Access	365	No Access	140	250	DRY	DRY	DRY	DRY	DRY	330	No Access	No Access	DRY	DRY
Potassium Dissolved	0.2	mg/l	No Access	0.2	No Access	0.5	0.3	DRY	DRY	DRY	DRY	DRY	2.0	No Access	No Access	DRY	DRY
Sodium Dissolved	0.2	mg/l	No Access	8.4	No Access	15	11	DRY	DRY	DRY	DRY	DRY	11.0	No Access	No Access	DRY	DRY
Nitrate as NO3	0.3	mg/l	No Access	23.3	No Access	20	<0.3	DRY	DRY	DRY	DRY	DRY	1.5	No Access	No Access	DRY	DRY
Sulphate (soluble)	3	mg/l	No Access	6	No Access	<3	<3	DRY	DRY	DRY	DRY	DRY	12	No Access	No Access	DRY	DRY
Chloride	1	mg/l	No Access	3	No Access	3	3	DRY	DRY	DRY	DRY	DRY	2	No Access	No Access	DRY	DRY
pH Value	1	pH units	No Access	8.33	No Access	8.53	8.17	DRY	DRY	DRY	DRY	DRY	8.31	No Access	No Access	DRY	DRY

**LOCATION: Tsalka. SAMPLE TYPE: Surface water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW1	TSW1	TSW1	TSW1	TSW1	TSW2	TSW2	TSW2	TSW2	TSW2	TSW2	TSW3	TSW3	TSW3	TSW3	TSW3
			Baseline 16/08/2005	Round 1 08/07/06	Round 2 09/11/06	Round 3 31/07/07	Round 4 18/10/07	Baseline 19/08/05	Round 1 12/07/06	Round 2 06/11/06	Round 3 01/08/07	Round 4 17/10/07	Baseline 17/08/05	Round 1 10/07/06	Round 2 06/11/06	Round 3 31/07/07	Round 4 18/10/07	
<b>PETROLEUM HYDROCARBONS</b>																		
GRO (C4-C12)	10	ug/l	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	No Access	<10	<10	<10	<10
TPH	10	ug/l	DRY	<10	52	<10	<10	<10	<10	<10	<10	<10	<10	No Access	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	DRY	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	No Access	<10	<10	<10	390
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																		
Benzo(a)pyrene	0.009	ug/l	DRY	<0.01	<0.01	0.063	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	No Access	<0.01	<0.01	<0.009	<0.009	
PAH 16 Total	0.027	ug/l	DRY	<0.01	<0.01	0.47	<0.027	0.101	<0.01	<0.01	<0.027	<0.027	No Access	<0.01	<0.01	0.074	<0.027	
<b>BTEX</b>																		
Benzene	1	ug/l	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	<1
Toluene	1	ug/l	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	<1
Ethylbenzene	1	ug/l	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	<1
p/m-Xylene	1	ug/l	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	<1
o-Xylene	1	ug/l	DRY	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	No Access	<1	<1	<1	<1

**LOCATION: Tsalka. SAMPLE TYPE: Surface water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**
**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW4	TSW4	TSW4	TSW4	TSW4	TSW5	TSW5	TSW5	TSW5	TSW6	TSW6	TSW6	TSW6	TSW6
			Baseline 17/08/05	Round 1 10/07/06	Round 2 06/11/06	Round 3 31/07/07	Round 4 18/10/07	Baseline 17/08/05	Round 1 14/07/06	Round 2 05/11/06	Round 3 01/08/07	Baseline 24/08/05	Round 1 10/07/06	Round 2 05/11/06	Round 3 03/08/07	Round 4 16/10/07
<b>PETROLEUM HYDROCARBONS</b>																
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	DRY	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	38	DRY	10	<10	Insufficient Sample	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	DRY	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	DRY	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	0.129	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	DRY	0.299	<0.01	0.031	<0.027	<0.027
<b>BTEX</b>																
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	DRY	<1	<1	<1	<1	<1

**LOCATION: Tsalka. SAMPLE TYPE: Surface water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**
**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW7	TSW7	TSW7	TSW7	TSW7	TSW9	TSW9	TSW9	TSW9	TSW9	TSW10	TSW10	TSW10	TSW10	TSW10
			Baseline 18/08/05	Round 1 10/07/06	Round 2 09/11/06	Round 3 03/08/07	Round 4 16/10/07	Baseline 25/08/05	Round 1 07/07/06	Round 2 11/11/06	Round 3 03/08/07	Round 4 04/10/07	Baseline 25/08/05	Round 1 07/07/06	Round 2 11/11/06	Round 3 03/08/07	Round 4 04/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	DRY	<10	No Access	DRY	DRY	<10	<10	No Access	DRY	DRY
TPH	10	ug/l	<10	<10	51	<10	<10	DRY	<10	No Access	DRY	DRY	<10	<10	No Access	DRY	DRY
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	DRY	362	No Access	DRY	DRY	<10	<10	No Access	DRY	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	DRY	<0.01	No Access	DRY	DRY	<0.01	<0.01	No Access	DRY	DRY
PAH 16 Total	0.027	ug/l	0.106	<0.01	<0.01	<0.027	<0.027	DRY	<0.01	No Access	DRY	DRY	<0.01	<0.01	No Access	DRY	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	DRY	DRY
Toluene	1	ug/l	<1	<1	<1	<1	<1	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	DRY	DRY
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	DRY	DRY
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	DRY	DRY
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	DRY	DRY

**LOCATION: Tsalka. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW11	TSW11	TSW11	TSW11	TSW11	TSW12	TSW12	TSW12	TSW12	TSW12	TSW13	TSW13	TSW13	TSW13	TSW13
			Baseline 25/08/05	Round 1 07/07/06	Round 2 11/11/06	Round 3 03/08/07	Round 4 04/10/07	Baseline 31/08/05	Round 1 14/07/06	Round 2 11/11/06	Round 3 04/08/07	Round 4 04/10/07	Baseline 01/09/05	Round 1 14/07/06	Round 2 11/11/06	Round 3 04/08/07	Round 4 04/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	DRY	<10	No Access	DRY	DRY	<10	<10	No Access	<10	<10	<10	<10	No Access	<10	<10
TPH	10	ug/l	DRY	<10	No Access	DRY	DRY	<10	<10	No Access	<10	<10	<10	<10	No Access	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	DRY	<10	No Access	DRY	DRY	<10	<10	No Access	<10	<10	<10	<10	No Access	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	DRY	<0.01	No Access	DRY	DRY	<0.01	<0.01	No Access	<0.009	<0.009	<0.01	<0.01	No Access	<0.009	<0.009
PAH 16 Total	0.027	ug/l	DRY	<0.01	No Access	DRY	DRY	<0.01	<0.01	No Access	<0.027	<0.027	<0.01	<0.01	No Access	<0.027	<0.027
<b>BTEX</b>																	
Benzene	1	ug/l	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
Toluene	1	ug/l	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
Ethylbenzene	1	ug/l	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
p/m-Xylene	1	ug/l	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
o-Xylene	1	ug/l	DRY	<1	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1

**LOCATION: Tsalka. SAMPLE TYPE: Surface water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW14	TSW14	TSW14	TSW14	TSW14	TSW16	TSW16	TSW16	TSW16	TSW16	TSW17	TSW17	TSW17	TSW17	TSW17
			Baseline 01/09/05	Round 1 14/07/06	Round 2 11/11/06	Round 3 04/08/07	Round 4 04/10/07	Baseline 27/08/05	Round 1 07/07/06	Round 2 11/11/06	Round 3 04/08/07	Round 4 04/10/07	Baseline 25/08/05	Round 1 12/07/06	Round 2 06/11/06	Round 3 02/08/07	Round 4 19/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	DRY	DRY	No Access	DRY	DRY	<10	<10	No Access	<10	<10	<10	<10	<10	DRY	DRY
TPH	10	ug/l	DRY	DRY	No Access	DRY	DRY	<10	<10	No Access	<10	<10	<10	<10	<10	DRY	DRY
EPH (DRO) (C10-C40)	10	ug/l	DRY	DRY	No Access	DRY	DRY	<10	<10	No Access	<10	<10	<10	<10	<10	DRY	DRY
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	DRY	DRY	No Access	DRY	DRY	<0.01	<0.01	No Access	<0.009	<0.009	<0.01	<0.01	<0.01	DRY	DRY
PAH 16 Total	0.027	ug/l	DRY	DRY	No Access	DRY	DRY	<0.01	<0.01	No Access	<0.027	<0.027	<0.01	<0.01	<0.01	DRY	DRY
<b>BTEX</b>																	
Benzene	1	ug/l	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	<1	DRY	DRY
Toluene	1	ug/l	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	<1	DRY	DRY
Ethylbenzene	1	ug/l	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	<1	DRY	DRY
p/m-Xylene	1	ug/l	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	<1	DRY	DRY
o-Xylene	1	ug/l	DRY	DRY	No Access	DRY	DRY	<1	<1	No Access	<1	<1	<1	<1	<1	DRY	DRY

**LOCATION: Tsalka. SAMPLE TYPE: Surface water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**
**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW18	TSW18	TSW18	TSW18	TSW18	TSW19	TSW19	TSW19	TSW19	TSW19	TSW20	TSW20	TSW20	TSW20	TSW20
			Baseline 17/08/2005	Round 1 08/07/06	Round 2 06/11/06	Round 3 31/08/07	Round 4 18/10/07	Baseline 24/08/05	Round 1 09/07/06	Round 2 09/11/06	Round 3 19/08/07	Round 4 16/10/07	Baseline 24/08/05	Round 1 12/07/06	Round 2 09/11/06	Round 3 19/08/07	Round 4 16/10/07
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH	10	ug/l	<10	<10	<10	<10	<10	<10	<10	15	<10	<10	<10	<10	13	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	210	<10	202	<10	<10	<10	1137	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	0.4	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	0.170
<b>BTEX</b>																	
Benzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toluene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	9	<1	<1	<1	<1
Ethylbenzene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
p/m-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
o-Xylene	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

**LOCATION: Tsalka. SAMPLE TYPE: Surfacewater. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**
**KEY:** DRY – Location dry at time of sampling; "<" – Concentration less than method detection limit; no access – Sampling location inaccessible; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	TSW21	TSW21	TSW21	TSW21	TSW21	TSW22	TSW22	TSW22	TSW22	TSW22
			Baseline 25/08/05	Round 1 13/07/06	Round 2 11/11/06	Round 3 19/08/07	Round 4 04/10/07	Baseline 30/08/2005	Round 1 13/07/06	Round 2 11/11/06	Round 3 19/08/07	Round 4 04/10/07
<b>PETROLEUM HYDROCARBONS</b>												
GRO (C4-C12)	10	ug/l	<10	<10	No Access	<10	<10	<10	<10	No Access	<10	<10
TPH	10	ug/l	<10	<10	No Access	<10	<10	<10	<10	No Access	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	No Access	<10	<10	<10	<10	No Access	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>												
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	No Access	<0.009	<0.009	<0.01	NA	No Access	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.01	<0.01	No Access	<0.027	<0.027	<0.01	NA	No Access	<0.027	<0.027
<b>BTEX</b>												
Benzene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
Toluene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
Ethylbenzene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
p/m-Xylene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1
o-Xylene	1	ug/l	<1	<1	No Access	<1	<1	<1	<1	No Access	<1	<1

**LOCATION: PSG1. SAMPLE TYPE: Groundwater & Surface Water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY: "<" – Concentration less than method detection limit; NA – Not analysed.**

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	PSG1MW1	PSG1MW1	PSG1MW1	PSG1MW1	PSG1MW1	PSG1MW2	PSG1MW2	PSG1MW2	PSG1MW2	PSG1MW2	PSG1MW3	PSG1MW3	PSG1MW3	PSG1MW3	PSG1MW3
			Baseline 09/07/05	Round 1 13/06/06	Round 2 17/11/06	Round 3 09/07/07	Round 4 22/10/07	Baseline 09/07/05	Round 1 13/06/06	Round 2 17/11/06	Round 3 07/07/07	Round 4 22/10/07	Baseline 09/07/05	Round 1 13/06/06	Round 2 17/11/06	Round 3 09/07/07	Round 4 22/10/07
<b>METALS</b>																	
Arsenic Dissolved	1	ug/l	<1	3	1	3	<1	2	3	3	<1	<1	2	7	2	2	<1
Barium Dissolved	1	ug/l	3	32	19	36	34	13	21	19	21	26	13	18	15	16	18
Boron Dissolved	10	ug/l	145	851	903	900	750	656	1309	1115	1300	1100	939	1517	1476	1500	1300
Cadmium Dissolved	0.4	ug/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	1.5	<0.4	<0.4
Calcium Dissolved	5	ug/l	29,020	228600	220100	210000	210000	201,600	290,000	208,100	230,000	200,000	295,900	349,800	314,900	260,000	270,000
Chromium Dissolved	1	ug/l	<1	2	<1	3	3	<1	<1	<1	7	2	<1	4	3	4	2
Copper Dissolved	1	ug/l	<1	6	<1	4	<1	3	4	<1	5	2	4	4	2	6	1
Iron Dissolved	5	ug/l	35	NA	NA	NA	NA	14	NA	NA	NA	NA	24	NA	NA	NA	NA
Iron Total (HNO3 Digest)	5	ug/l	NA	<835	8279	9500	14000	NA	12250	119500	9500	2500	NA	10880	2181	4200	19000
Lead Dissolved	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1	<1
Magnesium Dissolved	5	ug/l	5,146	40740	41910	40000	32000	36,330	50160	38980	42,000	30,000	56,320	60880	60120	51,000	41,000
Manganese Dissolved	1	ug/l	162	5	5	2	3	1010	144	222	24	300	468	18	42	3	380
Nickel Dissolved	1	ug/l	2	4	8	4	7	6	4	7	22	560	10	5	69	21	580
Selenium Dissolved	1	ug/l	5	18	12	17	12	18	29	25	22	14	26	40	32	27	22
Mercury Dissolved	0.05	ug/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Alkalinity as CaCO3	2	mg/l	485	1110	300	620	350	210	355	535	450	260	175	170	220	210	350
Potassium Dissolved	0.2	mg/l	6	4.5	4.5	5.4	4.8	8.1	6.2	7.8	6.6	6.2	9.3	7.2	7.2	6.6	7.1
Sodium Dissolved	0.2	mg/l	285	258.0	258.8	310.0	330.0	607.5	510	465	530	520	750	615	585	680	610
Sodium Total	0.2	mg/l	360	NA	NA	NA	NA	442.5	NA	NA	NA	NA	67.5	NA	89.7	NA	NA
Nitrate as NO3	0.3	mg/l	<0.3	29.4	34.0	36.0	33.0	1.7	34.4	51.7	53	48	1.1	28	89.7	76	74
Sulphate (soluble)	3	mg/l	864	800	755	710	700	1793	1405	1198	1200	1000	2260	1743	1594	1500	1400
Chloride	1	mg/l	173	155	197	170	170	302	243	213	220	200	354	279	300	240	270
Total Cyanide	0.05	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Free Cyanide	0.05	mg/l	<0.05	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	<0.05	NA	NA	NA	NA
pH Value	1	pH Units	7.87	7.93	7.83	7.88	7.75	8.07	8.01	8.08	7.97	7.85	8.15	8.00	8.11	8.16	7.73
<b>PETROLEUM HYDROCARBONS</b>																	
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Benzene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Toluene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Ethyl benzene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
m & p Xylene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
o Xylene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TPH (Total C5-C35)	10	ug/l	<10	54	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	95	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	NA	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																	
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<0.01	<0.009	<0.009	<0.01	<0.01	<10	<0.009	<0.009	<0.01	<0.01	<0.01	<0.009	<0.009
PAH 16 Total	0.027	ug/l	<0.01	<0.01	<0.01	<0.027	<0.027	0.769	0.615	<10	<0.027	<0.027	<0.01	<0.01	<0.01	<0.027	<0.027
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>																	
<b>Phenols:</b>																	
2-Chlorophenol; 2-Methylphenol; 2-Nitrophenol; 2,4-Dichlorophenol; 2,4-Dimethylphenol; 2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol; 4-Chloro-3-methylphenol; 4-Methylphenol; 4-Nitrophenol; Pentachlorophenol; Phenol																	
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>Phthalates</b>																	
Bis(2-ethylhexyl) phthalate	1	ug/l	<1	<1	<1	<2	<2	<1	<1	<1	<2	<2	<1	<1	<1	<2	<2
Butylbenzyl phthalate	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Di-n-butyl phthalate	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Di-n-Octyl phthalate	1	ug/l	<1	<1	<1	<5	<5	<1	<1	<1	<5	<5	<1	<1	<1	<5	<5
Diethyl phthalate	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dimethyl phthalate	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>Other Semi-volatiles</b>																	
1,2-Dichlorobenzene; 1,2,4-Trichlorobenzene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; 2-Nitroaniline; 2,4-Dinitrotoluene; 2,6-Dinitrotoluene; 3-Nitroaniline; 4-Bromophenylphenylether; 4-Chloroaniline; 4-Chlorophenylphenylether; 4-Nitroaniline; Azobenzene; Bis(2-chloroethoxy)methane; Bis(2-chloroethyl)ether; Carbazole; Dibenzofuran; Hexachlorobenzene; Hexachlorobutadiene; Hexachlorocyclopentadiene; Hexachloroethane; Isophorone; N-nitrosodi-n-propylamine; Nitrobenzene																	
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
<b>VOLATILE ORGANIC COMPOUNDS</b>																	
Dichlorodifluoromethane; Chloromethane; Vinyl Chloride; Bromomethane; Chloroethane; Trichlorofluoromethane; trans-1,2-Dichloroethene; Dichloromethane; Carbon Disulphide; 1,1-Dichloroethene; 1,1-Dichloroethane; Methyl Tertiary Butyl Ether; cis-1,2-Dichloroethene; Bromochloromethane; Chloroform; 2,2-Dichloropropane; 1,2-Dichloroethane; 1,1,1-Trichloroethane; 1,1-Dichloropropene; Benzene; Carbon tetrachloride; Dibromomethane; 1,2-Dichloropropane; Bromodichloromethane; Trichloroethene; cis-1,3-Dichloropropene; trans-1,3-Dichloropropene; 1,1,2-Trichloroethane; Toluene; 1,3-Dichloropropane; Dibromochloromethane; 1,2-Dibromoethane; Tetrachloroethene; 1,1,1,2-Tetrachloroethane; Chlorobenzene; Ethylbenzene; p/m-Xylene; Bromoform; Styrene; 1,1,2,2-Tetrachloroethane; o-Xylene; 1,2,3-Trichloropropane; Isopropylbenzene; Bromobenzene; 2-Chlorotoluene; Propylbenzene; 4-Chlorotoluene; 1,2,4-Trimethylbenzene; 4-Isopropyltoluene; 1,3,5-Trimethylbenzene; 1,2-Dichlorobenzene; 1,4-Dichlorobenzene; sec-Butylbenzene; tert-Butylbenzene; 1,3-Dichlorobenzene; n-Butylbenzene; 1,2-Dibromo-3-chloropropane; 1,2,4-Trichlorobenzene; Naphthalene; 1,2,3-Trichlorobenzene; Hexachlorobutadiene																	
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1



**LOCATION: PSG2. SAMPLE TYPE: Groundwater & Surface Water. SAMPLING DATES: Sept/Oct 07. SAMPLING ROUND: Round 4.**

**KEY:** "<" – Concentration less than method detection limit; NA – Not analysed.

Analyte	Method Detection Limit	Sample Reference Date Sampled / Units	PSG2MW1	PSG2MW1	PSG2MW1	PSG2MW1	PSG2MW1	PSG2SW1	PSG2SW1	PSG2SW1	PSG2SW1	PSG2SW1	PSG2SW2	PSG2SW2	PSG2SW2a	PSG2SW2	PSG2SW2	PSG2SW3	PSG2SW3	PSG2SW3	PSG2SW3	
			Baseline 10/07/05	Round 1 14/06/06	Round 2 16/11/06	Round 3 16/07/07	Round 4 19/10/07	Baseline 10/07/05	Round 1 14/06/06	Round 2 16/11/06	Round 3 16/07/07	Round 4 19/10/07	Baseline 10/07/05	Round 1 14/06/06	Round 2 16/11/06	Round 3 16/07/07	Round 4 19/10/07	Baseline 10/07/05	Round 1 14/06/06	Round 2 16/11/06	Round 3 16/07/07	Round 4 19/10/07
<b>METALS</b>																						
Arsenic Dissolved	1	ug/l	<1	<1	<1	<1	<1	<1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Barium Dissolved	1	ug/l	2	15	9	16	10	3	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Boron Dissolved	10	ug/l	<10	93	61	27	<10	<10	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Cadmium Dissolved	0.4	ug/l	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Calcium Dissolved	5	ug/l	19170	125100	101700	97000	99000	8903	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Chromium Dissolved	1	ug/l	2	<1	<1	2	7	<1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Copper Dissolved	1	ug/l	<1	<1	<1	6	<1	1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Iron Dissolved	5	ug/l	12	NA	NA	NA	NA	16	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Iron Total (HNO3 Digest)	5	ug/l	NA	<1	116	78	<5	NA	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Lead Dissolved	1	ug/l	<1	<1	<1	1	<1	<1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Magnesium Dissolved	5	ug/l	5250	32910	30890	32000	30000	1209	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Manganese Dissolved	1	ug/l	<1	3	1	1	<1	<1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Nickel Dissolved	1	ug/l	<1	1	3	2	1	<1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Selenium Dissolved	1	ug/l	<1	158	<1	<1	3	<1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Mercury Dissolved	0.05	ug/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Total Alkalinity as CaCO3	2	mg/l	325	415	385	200	400	160	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Potassium Dissolved	0.2	mg/l	0.2	1.1	0.8	0.8	1.2	1.4	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Sodium Dissolved	0.2	mg/l	20.3	NA	18	21	36	9.9	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Sodium Total	0.2	mg/l	8.9	15.8	NA	NA	NA	5.1	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Nitrate as NO3	0.3	mg/l	2.8	19.2	21.9	22.0	22.0	3.3	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Sulphate (soluble)	3	mg/l	10	14	16	14	14	7	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Chloride	1	mg/l	14	13	10	11	10	2	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Total Cyanide	0.05	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
Free Cyanide	0.05	mg/l	<0.05	NA	NA	NA	NA	<0.05	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
pH Value	1	pH Units	<1	8.31	8.30	8.52	8.44	8.65	NA	NA	NA	NA	DRY	NA	NA	NA	NA	No Access	NA	NA	NA	NA
<b>PETROLEUM HYDROCARBONS</b>																						
GRO (C4-C12)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
Benzene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
Toluene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
Ethyl benzene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
m & p Xylene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
o Xylene	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
TPH (Aliphatics and Aromatics C5-C35)	10	ug/l	<10	125	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
EPH (DRO) (C10-C40)	10	ug/l	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DRY	DRY	<10	DRY	DRY	No Access	<10	<10	<10	<10
<b>POLYCYCLIC AROMATIC HYDROCARBONS</b>																						
Benzo(a)pyrene	0.009	ug/l	<0.01	<0.01	<1	<0.009	<0.009	<0.01	<0.01	<1	<0.009	<0.009	DRY	DRY	<1	DRY	DRY	No Access	<0.01	<1	<0.009	<0.009
PAH 16 Total	0.027	ug/l	0.096	<0.01	<1	<0.027	<0.027	<0.01	<0.01	<1	<0.027	<0.027	DRY	DRY	<1	DRY	DRY	No Access	<0.01	<1	<0.027	<0.027
<b>SEMI-VOLATILE ORGANIC COMPOUNDS</b>																						
<b>Phenols:</b>																						
2-Chlorophenol; 2-Methylphenol; 2-Nitrophenol; 2,4-Dichlorophenol; 2,4-Dimethylphenol; 2,4,5-Trichlorophenol; 2,4,6-Trichlorophenol; 4-Chloro-3-methylphenol; 4-Methylphenol; 4-Nitrophenol; Pentachlorophenol; Phenol																						
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	<1	DRY	DRY	No Access	<1	<1	<1	<1
<b>Phthalates</b>																						
Bis(2-ethylhexyl) phthalate	1	ug/l	<1	<1	<1	<2	<2	<1	<1	<1	<2	<2	DRY	DRY	<1	DRY	DRY	No Access	<1	<1	<2	<2
Di-n-Octyl phthalate	1	ug/l	<1	<1	<1	<5	<5	<1	<1	<1	<5	<5	DRY	DRY	<1	DRY	DRY	No Access	<1	<1	<5	<5
Butylbenzyl phthalate; Di-n-butyl phthalate; Di-n-Octyl phthalate; Diethyl phthalate; Dimethyl phthalate																						
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	<1	DRY	DRY	No Access	<1	<1	<1	<1
<b>Other Semi-volatiles</b>																						
1,2-Dichlorobenzene; 1,2,4-Trichlorobenzene; 1,3-Dichlorobenzene; 1,4-Dichlorobenzene; 2-Nitroaniline; 2,4-Dinitrotoluene; 2,6-Dinitrotoluene; 3-Nitroaniline; 4-Bromophenylether; 4-Chloroaniline; 4-Chlorophenylether; 4-Nitroaniline; Azobenzene; Bis(2-chloroethoxy)methane; Bis(2-chloroethyl)ether; Carbazole; Dibenzofuran; Hexachlorobenzene; Hexachlorobutadiene; Hexachlorocyclopentadiene; Hexachloroethane; Isophorone; N-nitrosodi-n-propylamine; Nitrobenzene																						
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	<1	DRY	DRY	No Access	<1	<1	<1	<1
<b>VOLATILE ORGANIC COMPOUNDS</b>																						
Dichlorodifluoromethane; Chloromethane; Vinyl Chloride; Bromomethane; Chloroethane; Trichlorofluoromethane; trans-1,2-Dichloroethene; Dichloromethane; Carbon Disulphide; 1,1-Dichloroethene; 1,1-Dichloroethane; Methyl Tertiary Butyl Ether; cis-1,2-Dichloroethene; Bromochloromethane; Chloroform; 2,2-Dichloropropane; 1,2-Dichloroethane; 1,1,1-Trichloroethane; 1,1-Dichloropropene; Benzene; Carbontetrachloride; Dibromomethane; 1,2-Dichloropropane; Bromodichloromethane; Trichloroethene; cis-1,3-Dichloropropene; trans-1,3-Dichloropropene; 1,1,2-Trichloroethane; Toluene; 1,3-Dichloropropane; Dibromochloromethane; 1,2-Dibromomethane; Tetrachloroethane; 1,1,1,2-Tetrachloroethane; Chlorobenzene; Ethylbenzene; p/m-Xylene; Bromoform; Styrene; 1,1,2,2-Tetrachloroethane; o-Xylene; 1,2,3-Trichloropropane; Isopropylbenzene; Bromobenzene; 2-Chlorotoluene; Propylbenzene; 4-Chlorotoluene; 1,2,4-Trimethylbenzene; 4-Isopropyltoluene; 1,3,5-Trimethylbenzene; 1,4-Dichlorobenzene; sec-Butylbenzene; tert-Butylbenzene; 1,3-Dichlorobenzene; n-Butylbenzene; 1,2-Dibromo-3-chloropropane; 1,2,4-Trichlorobenzene; Naphthalene; 1,2,3-Trichlorobenzene; Hexachlorobutadiene																						
ALL PARAMETERS	1	ug/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DRY	DRY	<1	DRY	DRY	No Access	<1	<1	<1	<1



## 2.2f – Waste

### Total Figures, 2007

TYPE OF WASTE (m <sup>3</sup> )	PSG1 (site and camp)	PSG2 (site and camp)	SES Tsalka	SES Borjomi	BVs	SES Rustavi and Tbilisi Office
<b>Hazardous waste disposed offsite</b>						
Oily solids	22.0	14.2	2.0	3.0	0.6	1.3
Oily liquids	13.4	25.2	0	0	1.4	0
Sewage sludge	436	199	0	0	5.0	0
Wax	0	0	0	0	0	0
Other	19.7	28.9	0.9	1,6	1.2	1.2
<b>Non-hazardous waste disposed offsite</b>						
Glass	0	0	0	0	0	0
Plastic	0	0	0	0	0	0
Paper	0	0	0	0	0	0
Metal /(Concrete)	0	0	0	0	0	0
Organic Wastes (food wastes)	28.7	63.2	0	0	0	0
General	523.2	287.5	13.8	4.9	6.3	70.9
<b>Non-hazardous waste re-cycled/recovered offsite</b>						
Glass	2.5	5.0	0	0	0	0
Plastic (stored)	58.5	19.9	7.7	13.6	0	8.7
Paper	107.4	12.4	8.3	8.8	0	8.7
Metal (stored)	5.2	3.5	0	0	0	0
Timber (stored)	5.0	8.3	0	0	0	0

## APPENDIX 2.3: TURKEY

### 2.3a – Ambient Air Quality

#### Air Quality Standards for Ground Level Concentrations (µg/m<sup>3</sup>)

Parameter	Project Standards (Turkey)	Averaging Period
VOCs	Benzene: 5	Annual average by 2010 (Note: A limit value of 10 µg/m <sup>3</sup> (100%) must be met on 13 December 2000, reducing on 1 January 2006 and every 12 months thereafter by 1 µg/m <sup>3</sup> to reach 0% (5 µg/m <sup>3</sup> ) by 1 January 2010).
Oxides of Nitrogen (NO <sub>x</sub> )	40	Annual average by 2010
Sulphur Dioxide (SO <sub>2</sub> )	20*	Annual mean

### Ceyhan Marine Terminal - Averages of 2007 Measurements

No.	Monitoring Date	Average Ambient Concentrations ( $\mu\text{g}/\text{m}^3$ )						
		SO <sub>2</sub>	NO <sub>x</sub>	Benzene	Toluene	Ethyl Benzene	o-xylene	mp-xylene
CMT 1	Jan-Apr-July-Sep 2007	6,93	14,59	1,19	0,8	0,31	0,21	0,36
CMT 2		6,18	13,72	0,95	0,85	0,32	0,18	0,44
CMT 3		15,49	11,8	0,84	2,69	0,54	0,42	1,23
CMT 4		4,45	8,9	1,03	0,86	0,29	0,28	0,62
CMT 5		6,82	15,43	0,95	0,97	0,25	0,18	0,41
CMT 6		8,38	12,65	1,03	6,65	0,3	0,38	0,71
CMT 7		6,38	9,16	0,89	0,76	0,29	0,16	0,37
CMT 8		6,48	11,8	0,58	0,71	0,16	0,15	0,22
CMT 9		7,31	11	0,85	1,5	0,44	0,5	1,11
CMT 10		7,09	9,11	1,01	0,73	0,26	0,15	0,31

### 2.3b – Stack Emissions

#### Stack Emission Standards

Emission stream sources	Parameters	Project Specified Standard
5 MW Reciprocating engines (gas fired) (PTs 1, 2, 3 and 4)	NO <sub>x</sub>	500 mg/Nm <sup>3</sup> (5% Volumetric O <sub>2</sub> )
	SO <sub>2</sub>	60 mg/Nm <sup>3</sup> (5% Volumetric O <sub>2</sub> )
	CO	650 mg/Nm <sup>3</sup> (5% Volumetric O <sub>2</sub> )
	PM	130 mg/Nm <sup>3</sup> (5% Volumetric O <sub>2</sub> )
Water Heaters (diesel fired) (Wax Handling Boilers at CMT, IPT1 and IPT2)	NO <sub>x</sub>	460 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )
	SO <sub>2</sub>	1.000 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )
	CO	150 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )
	Soot	2
Water Heaters (gas and LPG fired) (CMT, PTs 1, 2, 3 and 4)	NO <sub>x</sub>	320 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )
	SO <sub>2</sub>	100 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )
	CO	100 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )
	PM	10 mg/Nm <sup>3</sup> (3% Volumetric O <sub>2</sub> )

NOTE: Figures in red show non-compliance with project standards

## Stack Emission Monitoring Results for Pump Stations and Intermediate Pigging Stations 1 &amp; 2

Facility	Parameter	Emission Source							
		Driver Engine 1	Driver Engine 2	Driver Engine 3	Driver Engine 4	Driver Engine 5	Water Heater 1	Water Heater 2	Water Heater 3
<b>PT1</b>									
Date of monitoring		n/a since wasn't in the programme					Apr '07		
Monitoring result	NO <sub>x</sub>	n/a					137	127	134
	SO <sub>2</sub>						0	0	0
	PM						0,26	1,09	26,58
	CO						0	0	134
Date of monitoring		Oct '07							
Monitoring result	NO <sub>x</sub>	270	160	207	103	223	91	74	94
	SO <sub>2</sub>	8	0	0	0	0	0	0	0
	PM	4,13	5,03	3,28	3,05	3,34	0,23	0,17	0,29
	CO	62	90	60	31	69	0	150	0
<b>PT2</b>									
Date of monitoring		n/a since wasn't in the programme					Apr '07		
Monitoring result	NO <sub>x</sub>	n/a					69	152	92
	SO <sub>2</sub>						3	0	0
	PM						0,48	0,35	0,22
	CO						3	0	0
Date of monitoring		Oct '07					Oct '07		
Monitoring result	NO <sub>x</sub>	274	748	279	267	92	93	97	
	SO <sub>2</sub>	0	0	0	0	0	0	0	
	PM	2,45	1,41	1,48	3,78	0,49	0,49	0,35	
	CO	34	35	38	28	27	0	0	
<b>PT3</b>									
Date of monitoring		n/a since wasn't in the programme					Apr '07		n/a since wasn't operating
Monitoring result	NO <sub>x</sub>	n/a					107	105	n/a
	SO <sub>2</sub>						12	2	
	PM						2,34	0,37	
	CO						0	0	
Date of monitoring		Oct '07							
Monitoring result	NO <sub>x</sub>	226	233	225	236	255	88	77	98
	SO <sub>2</sub>	0	0	0	0	10	0	0	0
	PM	1,91	2,17	7,31	2,21	2,31	0,4	0,58	0,4
	CO	46	59	93	96	86	0	0	0
<b>PT4</b>									
Date of monitoring		n/a since wasn't in the programme					Apr '07		
Monitoring result	NO <sub>x</sub>	n/a					56	148	148
	SO <sub>2</sub>						30	0	0
	PM						14,44	2,3	0,67
	CO						228	3	0
Date of monitoring		Oct '07							
Monitoring result	NO <sub>x</sub>	1.992	355	159	248	38	83	75	
	SO <sub>2</sub>	0	0	0	0	0	0	0	
	PM	13,47	2,39	0,63	1,57	1,51	0,24	4,11	
	CO	105	44	17	64	315	0	0	

## Stack Emission Monitoring Results for Intermediate Pigging and Pressure Reduction Station

Facility	Parameter	Emission Source	
		Water Heater	Diesel Generator
<b><i>IPT1</i></b>			
Date of monitoring		Apr '07	n/a since runs < 500 hrs/year
Monitoring result	NO <sub>x</sub>	112	n/a
	SO <sub>2</sub>	4	
	soot	not monitored	
	CO	0	
Date of monitoring		Oct '07	n/a since runs > 500 hrs/year
Monitoring result	NO <sub>x</sub>	122	n/a
	SO <sub>2</sub>	0	
	soot	not monitored	
	CO	0	
<b><i>IPT2</i></b>			
Date of monitoring		Apr '07	n/a since wasn't in the programme
Monitoring result	NO <sub>x</sub>	164	n/a
	SO <sub>2</sub>	0	
	soot	not monitored	
	CO	0	
Date of monitoring		n/a since wasn't operating	Oct '07
Monitoring result	NO <sub>x</sub>	n/a	662
	SO <sub>2</sub>	n/a	156
	soot	n/a	not monitored
	CO	n/a	593

## Stack Emission Monitoring Results for Ceyhan Marine Terminal

Facility	Parameter	Emission Source		Parameter	Emission Source			
		Process Area Wax Handling Boiler (diesel)	Metering Wax Handling Boiler (diesel)		General Facilities Water Heater 1 (LPG)	General Facilities Water Heater 2 (LPG)	Housing Compound Water Heater (LPG)	Process Area Water Heater (LPG)
<b><i>CMT</i></b>								
Date of monitoring		Jan '07			Jan '07	n/a since wasn't in the programme		
Monitoring result	NO <sub>x</sub>	122	162	NO <sub>x</sub>	139	n/a		
	SO <sub>2</sub>	365	186	SO <sub>2</sub>	3			
	soot	not monitored	not monitored	PM	0			
	CO	146	1	CO	2			
Date of monitoring		Apr '07			Apr '07			
Monitoring result	NO <sub>x</sub>	103	129	NO <sub>x</sub>	144	152	161	134
	SO <sub>2</sub>	13	166	SO <sub>2</sub>	0	2	12	1
	soot	not monitored	not monitored	PM	0	0	0	0
	PM	40	92	CO	0	0	35	0
Date of monitoring		Oct '07			Oct '07			
Monitoring result	NO <sub>x</sub>	105	108	NO <sub>x</sub>	145	40	131	130
	SO <sub>2</sub>	13	71	SO <sub>2</sub>	0	0	0	0
	soot	not monitored	not monitored	PM	2,51	2,99	0,45	0,84
	PM	37	137	CO	0	451	0	0

## 2.3c – Aqueous Discharges

### Aqueous Discharge Standards

Waste stream sources	Parameters	Project Specified Standard
	All limits 95 <sup>th</sup> percentiles of annual operational hours.	
Aqueous discharges to surface and marine waters from oily water separators	pH	6 – 9 for fresh water and 5-9 for marine water
	Oil and grease	10 mg/l
	Total suspended solids	35 mg/l
	<i>Metals</i>	
	Heavy metals, total	10 mg/l
	Cd	0.05 mg/l
	Cr total	0.5 mg/l
	Cu	0.5 mg/l
	Pb	0.5 mg/l
	Hg	0.01 mg/l
	Ni	0.5 mg/l
	Zn	2 mg/l
	NH <sub>4</sub>	10 mg/l
	Phenols	0.5 mg/l
Sulphur	1 mg/l	
Aqueous discharges to surface waters from sewage treatment plants	pH	6-9
	BOD	25 mg/l
	COD	125 mg/l
	Oil and grease	10 mg/l
	Total suspended solids	35 mg/l
	Chlorine, total residual	0.2 mg/l
	Coliform bacteria	<400MPN/100ml

NOTE: Figures in red show non-compliance with project standards

**Table Notes:**

1. When it is stated that there is 'no discharge' it means that the water was sampled but not discharged since the final effluent was not compliant with the project standards. In this case non-compliant waste water was re-cycled or when the capacity of the plant was exceeded it was disposed of at a project approved Municipal WWTP. At sites where there is a construction phase WWTP still in place, the waste water was transferred to this plant for treatment if it was operating in compliance with Project Standards.

2. When it is stated that there is 'no flow' it means that the water could not be sampled since there was no flow at the time of monitoring.

**PT1 Aqueous Discharges Monitoring Results**

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>Ops WWTP</b>												
pH	No discharge	7,58	7,45	No discharge	6,43	No discharge		8,01	No discharge			7,77
BOD (mg/l)		8	6		12,4			20				11
COD (mg/l)		15,2	20,3		20,3			54,5				51,8
Oil and grease (mg/l)		8	7		3,4			4,4				2,2
TSS (mg/l)		14	18		16,8			2				33,2
Total residual chlorine (mg/l)		0,02	0,09		0,17			0,12				0,03
Coliform bacteria		0	0		0			0				0
<b>Storm Water Pond (SWP)</b>												
pH	No discharge	7,33										
BOD (mg/l)		12										
COD (mg/l)		44,6										
Oil and grease (mg/l)		4,8										
TSS (mg/l)		6,4										
Total residual chlorine (mg/l)		0,05										
Coliform bacteria		<240										
<b>OWS</b>												
pH	No flow				6,08	8,1	7,4	7,44	8,87	9,91	9,94	8,74
Oil and grease (mg/l)					3,2	15,6	16,3	3,2	2	<1,5	3,6	3
TSS (mg/l)					2,4	7	4,5	7,2	<1	21	26	6
Heavy metals, total (mg/l)											<0,027	n/a since wasn't in the programme
Cd (mg/l)											<0,0005	
Cr total (mg/l)											0,005	
Cu (mg/l)											<0,005	
Pb (mg/l)											<0,001	
Hg (mg/l)					n/a since wasn't in the programme						<0,0002	
Ni (mg/l)											<0,005	
Zn (mg/l)											0,01	
NH4 (mg/l)											0,25	
Phenols (mg/l)											<0,0016	
Sulphur (mg/l)											0,5	

## PT2 Aqueous Discharges Monitoring Results

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	
<b>Ops WWTP</b>													
pH	7,57	7,51	8,17	8,16	No discharge								
BOD (mg/l)	20	4	4	4									
COD (mg/l)	33,9	7	4	5									
Oil and grease (mg/l)	3	6,2	1,8	2,6									
TSS (mg/l)	1,2	1,2	1,6	1,4									
Total residual chlorine (mg/l)	0,18	0,01	0,09	0,11									
Coliform bacteria	0	0	0	0									
<b>Construction WWTP</b>													
pH	No discharge	7,42	No discharge		Not operational								
BOD (mg/l)		4											
COD (mg/l)		6											
Oil and grease (mg/l)		3											
TSS (mg/l)		2,2											
Total residual chlorine (mg/l)		0,01											
Coliform bacteria		<240											
<b>Storm Water Pond (SWP)</b>													
pH	No discharge	8,35	8,42	8,85	No discharge								
BOD (mg/l)		4	4	4									
COD (mg/l)		6	13,6	11,9									
Oil and grease (mg/l)		5,8	0,2	3,4									
TSS (mg/l)		1,8	13,6	1,6									
Total residual chlorine (mg/l)		0	0,01	0,03									
Coliform bacteria		0	0	0									
<b>SWP upstream</b>													
pH	No flow		8,57	No flow		7,86	8,4	No flow			8,54	8,3	8,46
BOD (mg/l)			4			5,12	75				<4	<4	<4
COD (mg/l)			4			7,06	<5,2				<20	41	<20
Oil and grease (mg/l)			3,2			4,2	36				3,6	3,4	5,6
TSS (mg/l)			7,6			565	1				2	15	<1
Total residual chlorine (mg/l)			0,03			0,08	<0,06				0,01	0	0,01
Coliform bacteria			75			4.800	4.800				4.800	>1.100	2.400
<b>SWP downstream</b>													
pH	No flow		8,63	No flow		7,91	8,4	No flow			8,16	8,27	8,36
BOD (mg/l)			4			4	60				<4	<4	<4
COD (mg/l)			4			5	14,1				22,1	24,8	22
Oil and grease (mg/l)			2,6			4,2	<2				5	3,2	<1,5
TSS (mg/l)			2,2			10,15	6				3	2	<1
Total residual chlorine (mg/l)			0,01			4,2	<0,06				0	0,09	0,04
Coliform bacteria			>1.100			4.800	4.800				>4.800	>1.100	>4.800

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>OWS</b>												
pH						8			8,87	8,83	8,33	7,41
Oil and grease (mg/l)		No flow					No flow		5,6	6,8	3,4	5,2
TSS (mg/l)						4			21,6	9	9	8
Heavy metals, total (mg/l)										<0,047		
Cd (mg/l)										<0,0005		
Cr total (mg/l)										<0,005		
Cu (mg/l)										<0,005		
Pb (mg/l)										<0,001		
Hg (mg/l)										<0,0002		
Ni (mg/l)										<0,005		
Zn (mg/l)										0,03		
NH4 (mg/l)										0,5		
Phenols (mg/l)										0,0236		n/a since wasn't in the programme
Sulphur (mg/l)										1		

**PT3 Aqueous Discharges Monitoring Results**

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>Ops WWTP</b>												
pH	7,6	8,07		8,05			8					
BOD (mg/l)	10	6		>4			16,6					
COD (mg/l)	15	25,2		>5			30					
Oil and grease (mg/l)	3,4	6	No discharge	3,4	No discharge		<2			No discharge		
TSS (mg/l)	3,2	1,4		1,33			6					
Total residual chlorine (mg/l)	0	0,1		0,15			<0,06					
Coliform bacteria	93	0		0			37					
<b>Storm Water Pond (SWP)</b>												
pH		8,11	8,15	8,55								
BOD (mg/l)		10	8,1	6,75								
COD (mg/l)		59,8	19,6	21,5								
Oil and grease (mg/l)	No discharge	4,8	2	7				No discharge				
TSS (mg/l)		10	2,2	11,6								
Total residual chlorine (mg/l)		0	0,15	0,05								
Coliform bacteria		0	0	0								
<b>OWS</b>												
pH	6,69	8,03	7,93	8,61	8,05	7,10	7	7,59	8,32	7,57	8,49	7,74
Oil and grease (mg/l)	10,6	5,4	2,4	4,2	3	<2	<2	8,4	4	5,4	<1,5	2
TSS (mg/l)	25,6	21,6	3,2	6,67	2,2	13	13,15	36	15,8	10	7	<1
Heavy metals, total (mg/l)										<0,037		
Cd (mg/l)										<0,0005		
Cr total (mg/l)										0,013		
Cu (mg/l)										<0,005		
Pb (mg/l)										<0,001		
Hg (mg/l)										<0,0002		n/a since wasn't in the programme
Ni (mg/l)										0,007		
Zn (mg/l)										0,01		
NH4 (mg/l)										<0,15		
Phenols (mg/l)										0,2097		
Sulphur (mg/l)										0,2		



## PT4 Aqueous Discharges Monitoring Results

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	
<b>Ops WWTP</b>													
pH	No discharge	7,47	No discharge	7,98	No discharge		7,8	No discharge			8,21	No discharge	
BOD (mg/l)		0		8			17,56				>4		
COD (mg/l)		21,6		12,2			39,5				32,9		
Oil and grease (mg/l)		7,8		7,2			<2				2		
TSS (mg/l)		3,8		15,2			9				1		
Total residual chlorine (mg/l)		0,06		0,12			5				0,1		
Coliform bacteria		>1,8		<1,8			<1,8				24		
<b>Storm Water Pond (SWP)</b>													
pH	No discharge	7,47	No discharge	7,92				No discharge					
BOD (mg/l)		11		23,56									
COD (mg/l)		32,8		27,7									
Oil and grease (mg/l)		6,2		9,2									
TSS (mg/l)		13,6		28,4									
Total residual chlorine (mg/l)		0,01		0,17									
Coliform bacteria		>1,8		<1,8									
<b>OWS</b>													
pH	No flow	7,34	7,73	No flow	7,3	No flow	7,85	8,04	7,93	8,26			
Oil and grease (mg/l)		3,2	4,8		<2		2,2	12,8	1,8	<1,5			
TSS (mg/l)		38,8	8,4		20		20,4	5	11	28,8			
Heavy metals, total (mg/l)	n/a since wasn't in the programme									<0,03	n/a since wasn't in the programme		
Cd (mg/l)										<0,0005			
Cr total (mg/l)										<0,005			
Cu (mg/l)										<0,005			
Pb (mg/l)										<0,001			
Hg (mg/l)										<0,0002			
Ni (mg/l)										0,009			
Zn (mg/l)										0,01			
NH4 (mg/l)										<0,15			
Phenols (mg/l)										0,1603			
Sulphur (mg/l)										<0,2			

**IPT1 Aqueous Discharges Monitoring Results**

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>OWS</b>												
pH			7,53		7,06	8	8	8,08		7,6	7,15	7,33
Oil and grease (mg/l)	No flow		3	No flow	1,2	47	35,9	11,6	No flow	10	2,2	4,2
TSS (mg/l)			9		2,4	1,5	0,5	2,80		19	4	10,4
Heavy metals, total (mg/l)										<0,058		
Cd (mg/l)										<0,0005		
Cr total (mg/l)										<0,005		
Cu (mg/l)										<0,005		
Pb (mg/l)										0,002		
Hg (mg/l)										<0,0002		
Ni (mg/l)										<0,005		
Zn (mg/l)										0,04		
NH4 (mg/l)										<0,15		
Phenols (mg/l)										0,0342	n/a since wasn't in the programme	
Sulphur (mg/l)	n/a since wasn't in the programme									<0,2		

**IPT2 Aqueous Discharges Monitoring Results**

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>OWS</b>												
pH	6,25		6,86					7,38	7,63	8,63	8,33	7,84
Oil and grease (mg/l)	5,6	No flow	4,6		No flow			0,8	2	1,5	2,4	4,2
TSS (mg/l)	9,6		14					2,2	3,6	3	1	2,4
Heavy metals, total (mg/l)										<0,106		
Cd (mg/l)										<0,0005		
Cr total (mg/l)										<0,005		
Cu (mg/l)										<0,005		
Pb (mg/l)	n/a since wasn't in the programme									0,01	n/a since wasn't in the programme	
Hg (mg/l)										<0,0002		
Ni (mg/l)										<0,005		
Zn (mg/l)										0,09		
NH4 (mg/l)										0,19		
Phenols (mg/l)										<0,0016		
Sulphur (mg/l)										0,5		

**CMT Aqueous Discharges Monitoring Results**

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>Ops WWTP</b>												
pH	7	7,01	7,95	7,8								
BOD (mg/l)	5	10	4	4								
COD (mg/l)	40,6	86	37,1	75,1								
Oil and grease (mg/l)	5	1,8	4,2	4,4								
TSS (mg/l)	21,6	11,4	11,6	25,2								
Total residual chlorine (mg/l)	0,18	0,18	0,2	0,17								
Coliform bacteria	<400	<400	<400	<400								

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>Construction WWTP</b>												
pH	7,18	6,78	7,83	7,74	7,8	7,80	No discharge					
BOD (mg/l)	15	10	1	5	4	15						
COD (mg/l)	37,6	53	55,4	20,9	21,4	27,7						
Oil and grease (mg/l)	5,8	2,8	5,6	1,8	2	6,2						
TSS (mg/l)	8	17,2	22,8	1,6	28,7	1						
Total residual chlorine (mg/l)	0,09	0,2	0,19	0,09	0,12	0,05						
Coliform bacteria	<400	<400	<400	<400	15	21						
<b>Storm Water Pond (SWP)</b>												
pH	7,61	7,74	6,9	8,4	8,25	9	No discharge			8,97	No discharge	
BOD (mg/l)	10	8	10	12	21	14				20		
COD (mg/l)	49,9	46	26,6	97,6	88,1	12,5				89,6		
Oil and grease (mg/l)	4,8	1	5,6	2,6	3,8	4,8				9,2		
TSS (mg/l)	6,4	8	5,6	15	2,4	21				0,21		
Total residual chlorine (mg/l)	0,19	0,2	0,07	0,07	0,04	0,05				0,2		
Coliform bacteria	<400	<400	<400	<400	<400	0				53		
<b>SWP upstream</b>												
pH	No flow	6,83	7,68	No flow						7,53	7,62	
BOD (mg/l)		2	5							4	<4	
COD (mg/l)		25	16,3							32,9	24,8	
Oil and grease (mg/l)		2,6	5							<1,5	6,4	
TSS (mg/l)		7	3,6							0,08	3,2	
Total residual chlorine (mg/l)		0,02	0,1							0,04	0,01	
Coliform bacteria		2.900	<400							29.000	<400	
<b>SWP downstream</b>												
pH	No flow	7,13	No flow						8,14	7,43		
BOD (mg/l)		4							5,5	6,7		
COD (mg/l)		21							20	57,2		
Oil and grease (mg/l)		3,6							4,8	7,4		
TSS (mg/l)		14							21	68		
Total residual chlorine (mg/l)		0,04							0,02	0,02		
Coliform bacteria		1.500							110.000	<400		
<b>OWS 1&amp;2 (office and housing compounds)</b>												
pH	7,73	6,75	7,98	7,85	No flow				8,54	No flow		
Oil and grease (mg/l)	5	2,6	2,8	5,2					6			
TSS (mg/l)	4,6	11,2	3,4	18,5					3			
Heavy metals, total (mg/l)	n/a since wasn't in the programme							<0,027	n/a since wasn't in the programme			
Cd (mg/l)								<0,0005				
Cr total (mg/l)								<0,005				
Cu (mg/l)								<0,005				
Pb (mg/l)								0,001				
Hg (mg/l)								<0,0002				
Ni (mg/l)								<0,005				
Zn (mg/l)								<0,01				
NH4 (mg/l)								0,2				
Phenols (mg/l)								<0,0016				
Sulphur (mg/l)								<0,2				

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	
<b>OWS 3 (process area)</b>													
pH	No flow										7,65	No flow	
Oil and grease (mg/l)											3,8		
TSS (mg/l)											1		
Heavy metals, total (mg/l)	n/a since wasn't in the programme										No flow	n/a since wasn't in the programme	
Cd (mg/l)													
Cr total (mg/l)													
Cu (mg/l)													
Pb (mg/l)													
Hg (mg/l)													
Ni (mg/l)													
Zn (mg/l)													
NH4 (mg/l)													
Phenols (mg/l)													
Sulphur (mg/l)													
<b>OWS 4 (tank farm)</b>													
pH	No flow	6,66	7,61	No flow						7,38	No flow		
Oil and grease (mg/l)		2,4	3,4							4,4			
TSS (mg/l)		2,4	16,6							1			
Heavy metals, total (mg/l)	n/a since wasn't in the programme										No flow	n/a since wasn't in the programme	
Cd (mg/l)													
Cr total (mg/l)													
Cu (mg/l)													
Pb (mg/l)													
Hg (mg/l)													
Ni (mg/l)													
Zn (mg/l)													
NH4 (mg/l)													
Phenols (mg/l)													
Sulphur (mg/l)													
<b>OWS 5 (metering area)</b>													
pH	No flow	7,6	7,61	8,05	7,11	8,4	7,7	No flow				8,12	No flow
Oil and grease (mg/l)		3,2	5	2,4	2,2	10,6	<2					13,2	
TSS (mg/l)		1,2	2,4	0,6	2,6	3	0					5	
Heavy metals, total (mg/l)	n/a since wasn't in the programme										No flow	n/a since wasn't in the programme	
Cd (mg/l)													
Cr total (mg/l)													
Cu (mg/l)													
Pb (mg/l)													
Hg (mg/l)													
Ni (mg/l)													
Zn (mg/l)													
NH4 (mg/l)													
Phenols (mg/l)													
Sulphur (mg/l)													

	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07
<b>OWS 6 (jetty 1)</b>												
pH			7,2			7,5	7,2				7,3	
Oil and grease (mg/l)	No flow		3,2	No flow		60	42,7	No flow			3,8	No flow
TSS (mg/l)			7			7	88				5	
Heavy metals, total (mg/l)	n/a since wasn't in the programme									No flow	n/a since wasn't in the programme	
Cd (mg/l)												
Cr total (mg/l)												
Cu (mg/l)												
Pb (mg/l)												
Hg (mg/l)												
Ni (mg/l)												
Zn (mg/l)												
NH4 (mg/l)												
Phenols (mg/l)												
Sulphur (mg/l)												
<b>OWS 6 (jetty 2)</b>												
pH			7,37			7,5	7,7				7,28	
Oil and grease (mg/l)	No flow		3,4	No flow		79,8	40,3	No flow			5,8	No flow
TSS (mg/l)			23,33			2	18				4	
Heavy metals, total (mg/l)	n/a since wasn't in the programme									No flow	n/a since wasn't in the programme	
Cd (mg/l)												
Cr total (mg/l)												
Cu (mg/l)												
Pb (mg/l)												
Hg (mg/l)												
Ni (mg/l)												
Zn (mg/l)												
NH4 (mg/l)												
Phenols (mg/l)												
Sulphur (mg/l)												

## 2.3d – Waste

### Total Waste Volumes, 2007

<i>All figures are in tonnes</i>	Jan 07	Feb 07	March 07	April 07	May 07	June 07	July 07	Aug 07	Sep 07	Oct 07	Nov 07	Dec 07	<b>TOTAL</b>
<b>PT1&amp;IPT2</b>													
Hazardous waste disposed offsite	0	0	0	1,8	4	0	0	0	0	0	0	3,3	<b>9,2</b>
Non-hazardous solid waste disposed offsite	1,6	1	2,7	2,8	4,6	2,3	2,6	3,5	1,8	3	2,4	1,7	<b>30</b>
Waste water disposed in 3 <sup>rd</sup> party WWTP	20	20	15	20	25	10	15	10	20	10	15	5	<b>185</b>
Non-hazardous waste re-used & re-cycled	0,5	1	1,5	2	2,9	1,6	1,5	2,2	1,3	1,5	1,1	0,4	<b>17,4</b>
<b>PT2</b>													
Hazardous waste disposed offsite	0	0	0	0	6,4	0	0	0	0	0	0	5,2	<b>11,6</b>
Non-hazardous solid waste disposed offsite	4,1	6,2	3,8	7,6	2,4	2,7	3,2	3,1	5	2,9	4,6	4,8	<b>50,4</b>
Waste water disposed in 3 <sup>rd</sup> party WWTP	15	40	15	40	20	97	18	33	10	45	65	60	<b>458</b>
Non-hazardous waste re-used & re-cycled	0,8	4,1	3,3	4,6	1,6	1,3	2,4	2	3,6	1,4	3,6	1,8	<b>30,4</b>
<b>PT3</b>													
Hazardous waste disposed offsite	0	0	0	0	3,2	0	0	0	0	0	0	1,9	<b>5,2</b>
Non-hazardous solid waste disposed offsite	6,9	3,4	3	4,6	7,2	3,7	3,1	4,4	1,9	4	2	2,4	<b>46,5</b>
Waste water disposed in 3 <sup>rd</sup> party WWTP	40	15	15	15	10	10	10	10	10	10	5	5	<b>155</b>
Non-hazardous waste re-used & re-cycled	2,8	2	2,8	2,5	6,5	3,2	1,6	2,9	1,2	2,3	0,8	1,5	<b>30</b>
<b>PT4</b>													
Hazardous waste disposed offsite	0	0	0	0	2,4	0	0	0	0	0	0	0,8	<b>3,2</b>
Non-hazardous solid waste disposed offsite	3,4	4,2	7,2	2,3	4	3,3	2,6	3,1	4,3	2	2,6	1,7	<b>40,8</b>
Waste water disposed in 3 <sup>rd</sup> party WWTP	0	15	0	120	0	30	15	45	30	30	15	15	<b>315</b>
Non-hazardous waste re-used & re-cycled	0,9	2,5	6,8	1,5	1,7	2,6	0,9	1	3,5	0,6	2	0,8	<b>24,8</b>
<b>IPT1</b>													
Hazardous waste disposed offsite	0	0	0	0	0,6	0	0	0	0	0	Not counted		<b>0,6</b>
Non-hazardous solid waste disposed offsite	2,3	2,6	2	1,7	4,7	1,8	1,6	0,8	2,2	0,2			<b>19,8</b>
Waste water disposed in 3 <sup>rd</sup> party WWTP	675	575	950	750	700	580	540	400	700	98			<b>5.968</b>
Non-hazardous waste re-used & re-cycled	1,6	1,7	1	1	4,2	1,8	1	0,8	2	0,2			<b>15,1</b>
<b>CMT</b>													
Hazardous waste disposed offsite	0	0	0	0	0	0	0	0	0	0	0	3,6	<b>3,6</b>
Non-hazardous solid waste disposed offsite	42,2	42,5	41,7	42	34,8	45,3	33,4	26,8	13,5	27,3	19,3	776,8	<b>1.145,5</b>
Waste water disposed in 3 <sup>rd</sup> party WWTP	0	0	0	0	0	0	0	0	25	10	10	0	<b>45</b>
Non-hazardous waste re-used & re-cycled	35,7	30,7	41,7	33,5	27,8	36,3	22,9	13	13,5	17,4	11,4	769,2	<b>1.053,2</b>

<b>TOTAL 2007 (in tonnes)</b>	
Hazardous waste disposed offsite	<b>34</b>
Non-hazardous solid waste disposed offsite	<b>1.335</b>
Waste water disposed in 3rd party WWTP	<b>7.156</b>
Non-hazardous waste re-used & re-cycled	<b>1.172</b>

## **APPENDIX 3: CLOSE OUT STATUS OF ACTIONS RELATED TO NON-COMPLIANCES RAISED THROUGH IEC MONITORING**

Appendix 3 contains BTC's response and progress towards implementing and effectively closing out the non-compliances raised by IEC. Items that remain open are reported in the BTC E&S Reports until they have been closed. Items that have been closed do not appear in subsequent reports. In adopting this approach, the Project aims to provide the transparency and assurance that measures are being taken to ensure follow-up and close out of all actions to address the non-compliances.

## APPENDIX 3A – AZERBAIJAN ACTION STATUS AGAINST AUDIT NON-COMPLIANCES AND RECOMMENDATIONS

Ref. No.	Date of finding	Category	Description of Finding	Level of Non-Compliance	Recommendation for Improvement	Action Taken	Closure Status
2.3.1	June 2007	Infra-structure and Services	Potable water quality  Overall, the test results over the past year indicate that the H&S staff has actively worked to resolve water quality problems.	I	Continue to monitor and maintain the procedures and the systems are in place such that Project staff can have a high level of confidence that the potable water they use for drinking, shower, etc. is pure and safe.	Consumption of drinking water was switched from dispensers to bottled water only; Water quality improvement plan was developed ; As a part of the plan, new effective granulated chlorine-containing disinfectant is used for regular disinfection of potable water substituted for previously used liquid short shelf life disinfectant highly sensitive to parameters of environment; accuracy of chlorination is checked and confirmed in situ by potable test kit; Continuous monitoring of bacterial and chemical quality of potable water is carried out as per water quality assurance schedule.	CLOSED

## APPENDIX 3B – GEORGIA ACTION STATUS AGAINST AUDIT NON-COMPLIANCES AND RECOMMENDATIONS

Ref. No.	Date of finding	Category	Description of Finding	Level of Non-Compliance	Recommendation for Improvement	Action Taken	Closure Status
3.4.1	June 2007	Waste Management	Final disposal of non-hazardous, non recycled/re-usable domestic waste.	III	This Level III will remain in effect as long as the Project continues to use the lagludja facility.	A site for a new non-hazardous waste landfill has been acquired. Temporary disposal options are being investigated, to divert non-hazardous waste from lagludja prior to the new landfill being constructed.	OPEN
3.5.1	June 2007	Camps	Portions of the old PSG-1 camp that are not being used require some cleanup. As an example, the OWS that was associated with the vehicle maintenance area next to the WWTPs were not cleaned up and some small areas with soil contamination from spills were observed. This non-compliance is essentially a residual condition related to construction; therefore reference is made to the construction-phase Pollution Prevention Plan.	I		Contaminated areas at the PSG1 camp have been cleaned up. The old OWS (currently disused) has been completely cleaned up and sludge removed to CWAA for further disposal.	CLOSED



Ref. No.	Date of finding	Category	Description of Finding	Level of Non-Compliance	Recommendation for Improvement	Action Taken	Closure Status
3.5.1	June 2007	Emissions Management	Stack emission monitoring	I	The non-compliance will remain in effect until PSGs generators existing sample ports are modified to make them suitable for monitoring.	Existing ports on turbines and water bath heaters have been modified to make them suitable for stack emissions monitoring. A full round of monitoring has been conducted at both PSGs turbines and water bath heaters.	OPEN

### APPENDIX 3C – TURKEY ACTION STATUS AGAINST AUDIT NON-COMPLIANCES AND RECOMMENDATIONS

Ref. No.	Date of finding	Category	Description of Finding	Level of Non-Compliance	Recommendation for Improvement	Action Taken	Closure Status
4.7.1	June 2007	ROW Maintenance	Lack of maintenance was observed at several locations visited throughout the entire length of the pipeline in Turkey.	II	Develop a clear and auditable ROW Maintenance Strategy.	BTC document "Project Right of Way Maintenance Plan" was sent to IEC.  Tender process is underway by BIL.	OPEN
4.7.3	June 2007	Reinstatement	Lack of clarity with regard to final reinstatement of project access roads in compliance with ESAP commitments.	II	Develop and implement an Access Road Closure and Maintenance Strategy involving a final inventory of project access roads (with special focus on Lot B) including their status, location, length, rationale for being kept open.	BTC documents "Combined Access Road Register", "Created Access Roads, Stockyards, Borrow Pits and Quarries" and "Residual List" were sent to IEC; awaiting for response.	OPEN
4.7.2	June 2007	Reinstatement	Reinstatement of NGPL (Natural Gas Pipeline).	Rec.	BTC should ensure adequate NGPL reinstatement, as per Project commitments and undertake the following: a) develop compliance and sign-off procedures for the agreed SoW prior to completion b) provide assurance that the contractor is fully aware and compliant with Construction ESAP commitments (e.g., have an E&S team reporting to Botaş and BTC) and c) that Botaş monitors these commitments and provides BTC with monthly progress reports, including NCRs, MoCs, complaint register and KPIs.	NGPL Reinstatement Works Completed and Close-Out Report sent to IEC.	CLOSED

Ref. No.	Date of finding	Category	Description of Finding	Level of Non-Compliance	Recommendation for Improvement	Action Taken	Closure Status
4.5.1	June 2007	Waste Management	Inconsistent emission and waste monitoring registers.	I	Improve the format and structure of the two registers and ensure that they report consistent data/information.	Emissions monitoring register and waste log were developed by BTC; shared with BIL to be replaced by the old ones used at facilities. IEC to verify during the next visit.	OPEN
4.5.4	June 2007	Environmental Emissions Management Plan	Analyses are incomplete for the oil water separator (OWS) discharges (as per the list of parameter indicated in Table 5.3 of the BIL EEMP), and not all OWS have been tested yet.	I	Undertake a complete analysis of OWS performance, including testing of parameters not yet tested and implementation of technically adequate techniques to measure all OWS discharge points.	All OWSs at facilities were monitored by Dokay, monitoring contactor of BIL, when there is flow. In addition one round of heavy metal analysis was also conducted in Oct 2007 except for 5 OWSs at CMT as there was no flow during the time of monitoring. Dokay scheduled the next monitoring of these 5 OWSs for Jan 2008. IEC to verify during the next visit.	OPEN
4.6.1	June 2007	Environmental Emissions Management Plan	An air emissions register is maintained and stack emission ports have been installed at the CMT and Pump Stations, however data reporting is inconsistent.	I	Ensure that consistent and complete stack emission monitoring is undertaken at all emission sources on a regularly scheduled based, compliant with the Operations ESAP EEMP. BTC should provide evidence that non-compliant stack emissions have been brought into compliance.	Emissions monitoring register was developed by BTC; shared with BIL to be replaced by the old one used at facilities. Monitoring of stacks is being done in accordance with the ESAP EEMP. The results are generally in compliance. The non-compliant results are being addressed through maintenance. Dokay scheduled the next monitoring of the non-compliant engines for April 2008. IEC to verify during the next visit.	OPEN
4.7.1	June 2007	Reinstatement	No measurable work has been initiated for temporary erosion control at the construction camp locations, especially at locations where a visual impact is apparent	I	Review the implementation of temporary erosion control measures for those construction camps that will continue to be used during Operations, or transferred to other contractors.	Management of all reinstatement work at the camps will form part of normal operations activity.	CLOSED

Ref. No.	Date of finding	Category	Description of Finding	Level of Non-Compliance	Recommendation for Improvement	Action Taken	Closure Status
4.7.1	June 2007	Reinstatement	IEC remains concerned that many punch list items are still not closed and this situation is further complicated due to pending conclusion of the warranty period	Rec.	BTC should develop a management strategy and action plan to close out remaining punch list items within a specified time period. As IEC will no longer be conducting quarterly audits of the ROW, BTC should also provide a complete photo coverage of the areas in the punch list (especially the karst areas of Lot B) after repairs are complete and final closure has been signed off.	BTC has provided a document entitled 'Residual Actions List' dated December 2007. This document details all remaining assurance and physical works planned for 2008.	OPEN
1.8.2	June 2007	Reinstatement	Given that BIL and STA/PLL/Botaş are also conducting their own ground based biorestitution monitoring programs, there is a need to improve the coordination of monitoring efforts.	Rec.	BTC should develop a coordinated biorestitution monitoring plan involving BIL and assist in the development of a centralized ROW monitoring database.	Biorestitution monitoring procedures and results have been provided in report and presentation form to IEC.	CLOSED

## APPENDIX 4: STATUS OF RECOMMENDATIONS RAISED THROUGH SRAP MONITORING

Appendix 4 contains the following for Azerbaijan, Georgia and Turkey:

- Status of key recommendations raised during previous SRAP visits that were open at the time of the 2006 annual report (see Table A4.1); and
- All new recommendations raised by SRAP in their visit in May/June 2007 Financial Closure monitoring visit (see Table A4.2).

The tables provide a transparent mechanism to demonstrate follow-up and close out of all actions to address the recommendations.

Table A4.1 shows recommendations from Part A (all three countries) of the SRAP Audit report. This table shows all actions from previous SRAP reviews that were shown as open in the 2006 annual report. Full reports from the SRAP audits are available on [www.bp.com/caspian](http://www.bp.com/caspian).

**Table A4.1: Tracking of Recommendations from Previous Reviews**

No	Date	Recommendation	Status as of end December 2007
1	September 2006	BTC to update impact tables of the three respective RAPs to reflect final actual impacts on land and population resulting from project construction, using a format similar to that below in each of the three countries (carried over from previous review).	Azerbaijan – Completed Georgia – Completed Turkey – Ongoing
2	September 2006	BTC to carry out a final check and review of additional land acquisition in terms of meeting RAP process and principles	Completed
3	September 2006	In all three countries, BTC to pay special attention to vulnerable groups during the land exit process (this is a recommendation repeated from previous review).	Completed
4	September 2006	BTC to reiterate avenues for contacting the Project and making a complaint after the land exit agreement has been signed.	Completed
5	September 2006	In all three countries, BTC to review resources required for on-going land administration at Operations phase (carried over from previous review). This is already being carried out in Georgia.	Completed
6	September 2006	Third party agricultural specialists to be used on an as-needed basis in assessing reasons for any crop impairment, advising on remedial measures and in valuing any crop reduction or loss (carried over from previous review).	Completed
7	September 2006	Country livelihood restoration assessments to pay particular attention to the situation of vulnerable and marginalised groups.	Azerbaijan – Ongoing Georgia – Completed Turkey – Ongoing
8	September 2006	BTC to carry out a village by village review of status of community infrastructure as a part of completion of Constructions.	Completed
9	September 2006	BTC, BP and Botaş/BIL to make sure that Operations phase staff have a good understanding of how to receive and record a complaint, and manage the grievance system.	Completed

No	Date	Recommendation	Status as of end December 2007
10	September 2006	BTC to make stakeholders aware of avenues available to lodge complaints during Operations (carried over from previous review).	Azerbaijan – Ongoing Georgia – Completed Turkey – Ongoing
11	September 2006	BTC, BP to explore avenues for more widely disseminating experience of the CIP.	Azerbaijan – Ongoing Georgia – Completed Turkey – Ongoing
12	September 2006	BTC to identify areas where continued support is needed (health insurance scheme in Azerbaijan for example), and to make provisions in the Operations CIP for such support. (carried over from previous review).	Azerbaijan – Completed Georgia – Completed Turkey – Ongoing
13	September 2006	BTC to undertake a pragmatic social risk assessment for the Operations phase, and to design within the Operations CIP, proactive measures to address identified risks, particularly – but not only – in communities located near permanent installations such as pumping stations and terminals (carried over from previous review).	Completed
14		BTC to develop Operations consultation plans for Georgia and Azerbaijan.	Completed
15	September 2006	BP to provide refresher training to be given to security forces in Georgia and Azerbaijan on conduct along the pipeline as well as general human rights issues.	Completed
16	September 2006	BTC, BP and Botaş/BIL to review over the next few months, adequacy of resources to complete RAP compliance requirements and to address ongoing social program demands.	Completed
17	September 2006	BTC and Botaş to consider mechanisms to retain institutional knowledge developed during Construction Phase so that it is available for Operations Phase.	Turkey – Completed
18	September 2006	BP and BIL to ensure that Operations Phase staff has the right training and skills to carry out village level interactions.	Turkey – Ongoing
19	March 2006	BTC to hold in Azerbaijan and Georgia a formal review of outstanding cases with CLEE and APLR respectively on a six-monthly basis, to monitor the total number of outstanding land compensation cases on a six-monthly basis and get this number approved by CLEE and APLR respectively.	Completed
20	March 2006	In Georgia, BTC to identify landowners in the vicinity of Above-Ground Installations that may have been affected by more significant and permanent land impacts, and to monitor all of them for livelihood restoration.	Georgia – Ongoing
21	March 2006	BTC Project to develop clear and documented procedures to: <ul style="list-style-type: none"> <li>• Survey &amp; delimit extent of project damaged roads</li> <li>• Agree reinstatement strategy, roles and responsibilities (contractor versus government authorities)</li> </ul> Conduct final inspection and community/ authority acceptance.	Azerbaijan- Completed as part of the Land Exit Georgia – Completed Turkey – Completed as part of Land Exit

No	Date	Recommendation	Status as of end December 2007
22	March 2006	BTC Project to take all reasonable measures to ensure that commitments to reinstate project affected roads are delivered in a timely manner, either directly through construction contractors or, through agreements with responsible government authorities.	Completed.
23	March 2006	BTC (all countries) to establish grievance task forces with Contractors to resolve as many grievances as possible before Contractors pull out, to consolidate and reconcile grievance logs (Georgia), to identify and deal with the backlog of grievances left pending by the Contractor, and to plan the roll-over of these into Operations.	Completed.
24	March 2006	BTC to undertake independent final evaluations of the CIP in all three countries.	Completed
25	March 2006	For future CIP extension, BTC to look at procurement approaches that ensure continuity of implementing partners, where appropriate.	Azerbaijan – Completed Georgia – Completed
26	September 2005	Where land exit will not occur by 31 December 2005, project affected people need to be informed as early as possible before the end of the year.	Completed
27	September 2005	The three countries to adopt a common approach on acceptable reinstatement and condition at hand-back of contractor-acquired lands such as pipe dumps, construction camps, borrow areas, access roads and the like.	ROW reinstatement signed off as part of completion audit.
28	September 2005	BTC to ensure that it receives from its contractor's inventories of all additional land utilized for the project, with clear documentation and record keeping covering lease agreements, condition at time of hand-back and hand-back acceptance by owner/leaseholder.	Completed.
29	September 2005	Annual replicate income-expenditure surveys to be superseded by a one-off income-expenditure survey to be designed and overseen by the SRAP Panel, and conducted as part of the resettlement completion audit.	Ongoing (Action on SRAP)
30	September 2005	All countries to pay particular attention to monitoring livelihood status of households affected by permanent loss of land. Annual income-expenditure surveys recommended.	Azerbaijan – Ongoing Georgia – Ongoing Turkey – Completed
31	September 2005	Construction teams to roll-over grievance logs (including records of grievances yet to be resolved) to the Operations teams, with associated budget provision.	Completed
32	September 2005	To avoid ad hoc or piecemeal development assistance, BP Business Unit to look at designing the CIP strategy within a broader framework such as national poverty strategies (to the extent that these provide clear direction), or within a context of district or sub-district development plans.	Turkey – Ongoing
33	September 2005	BTC to give consideration to adopting a labour standard based on an internationally recognized code or standard, to be applicable to all supply chain contracts with regular monitoring of compliance.	Ongoing

No	Date	Recommendation	Status as of end December 2007
34	September 2005	BTC to adopt a systematic approach and develop guidelines and capacity to monitor, audit and otherwise address supply chain labour and employment standards.	Azerbaijan – To do Georgia – Completed Turkey – Completed
35	September 2005	BTC to monitor outcomes of project related arrests, convictions and incarcerations.	Azerbaijan and Georgia – Completed Turkey – Completed (no arrests in Turkey)
36	March 2005	BTC to look at avenues to incorporate small scale procurement and supply opportunities (e.g. incentives or quotas fostering village level content, re-bundling of procurement contracts) for villages in Georgia and Azerbaijan as part of its Operations Phase procurement strategy.	Ongoing
37	February 2004	BTC to continue to reinforce its anti-corruption stance with all levels of government.	Ongoing
38	February 2004	As early as possible after Operations Team mobilization, BTC to review pipeline and pump station operations and identify opportunities for village people to be recruited or to provide goods and services through outsourcing.	Completed
39	February 2004	BTC to explore opportunities for construction phase CIP small enterprise development initiatives to facilitate villager involvement in bidding for operations phase local procurement tenders.	Azerbaijan – Completed Georgia – Completed Turkey – Ongoing
40	August 2003	BTC to look at measures to improve Contractors' performance with respect to local procurement.	Completed

**Table A4.2: Recommendations of the May/June 2007 Review**

Key recommendations arising from the May/June 2007 SRAP review of the BTC project are tabulated below. Recommendations are prioritised as follows:

<b>High</b>	Actions that are critical to ensure compliance with commitments contained in the RAP, ESAP or World Bank OD 4.30
<b>Medium</b>	Actions desirable to comply with social or resettlement good practice or to address actual or potential areas of social risk
<b>Low</b>	Important actions that are less time critical

Issue	Project Principles	Performance	Recommendation	By	Priority
<b>LAND ACQUISITION</b>					
Land hand back and restrictions of use	Land to be reinstated to original condition. Land use restrictions to be applied to the pipeline corridor to ensure integrity of pipeline and for public safety	All three countries have fully developed information material. Special care needs to be taken to ensure that all groups are fully informed.	a. BTC to update impact tables of the three respective RAPs to reflect final actual impacts on land and population resulting from project construction, using a format similar to that below in each of the three countries (carried over from previous review).- Ongoing	BTC	Medium
			b. BTC to update tabulations of project affected landowners and users experiencing permanent loss of land and for each affected owner/user, to define the extent of those losses relative to his or her total landholding. - Ongoing	BTC	
			c. SRAP Panel to provide a cross country framework for livelihood restoration surveys to assure a level of consistency in approach.	SRAP Panel	
			d. BTC to undertake a survey of households affected by permanent loss of land in 2008 to verify whether or not each household has been able to restore its income. In the case of Georgia, a strategy should at least be in place by 2008 for doing this. - Ongoing	BTC/ BP	
			e. BTC to consider additional livelihood restoration measures for permanent land losers if the survey above establishes that livelihoods are not adequately restored. - Ongoing	BTC/ BP	
			f. In all three countries, BTC to develop action plans to address/manage situations in which the landowner refuses to sign the land hand-back agreements. – Completed	BTC	



Issue	Project Principles	Performance	Recommendation	By	Priority
			g. In all three countries, BTC to develop a management plan that will ensure that land acquisition in Operations phase is also carried out following World Bank Group OD 4.30 principles. Ongoing	BTC	
<b>LIVELIHOOD RESTORATION</b>					
The need to restore livelihoods of project affected people.	To restore livelihoods of project affected households to at least pre-project levels.	Quality of reinstatement can only be fully assessed after the first harvest post-reinstatement.	a. Country livelihood restoration assessments to pay particular attention to the situation of vulnerable and marginalized groups. – Ongoing	BTC/ BP	High
<b>COMMUNITY INVESTMENT PROGRAMME</b>					
CIP transfer to Operations Phase	Provide benefit sharing opportunities for project affected communities	The CIP needs to be maintained beyond construction for benefits to communities to become sustainable.	<p>a. BTC to identify areas where continued support is needed (health insurance scheme in Azerbaijan for example), and to make provisions in the Operations CIP for such support. (Carried over from previous review). - Completed</p> <p>b. Regular checks to be made on CIP I infrastructure to ensure that they are being properly managed and maintained. - Ongoing</p> <p>c. BTC to undertake a pragmatic social risk assessment for the Operations phase, and to design within the Operations CIP, proactive measures to address identified risks, particularly – but not only – in communities located near permanent installations such as pumping stations and terminals (carried over from previous review) - Ongoing</p>	BTC	Low
<b>SECURITY OF PIPELINE</b>					
Security	Reputation risk management	Complaints received in Azerbaijan and Georgia regarding interaction between community and security forces.	a. BTC /BP to provide training to security force patrol staff in Georgia and Azerbaijan on conduct along the pipeline as well as general human rights issues. - Completed	BTC, BP, Botaş, BIL	Medium

## APPENDIX 5: CLOSE OUT STATUS OF ACTIONS RELATED TO ACTIONS AND RECOMMENDATIONS RAISED THROUGH POLARIS MONITORING

Appendix 5 contains a summary of Polaris audit findings in relation to Oil Spill Readiness. Polaris Applied Sciences Inc undertook the audit on behalf of the Lenders in June 2007. Table 5.1 below lists the findings in Azerbaijan and Georgia (audited together), and in Turkey and provides a status against the findings as at end 2007.

The Polaris audit identified two levels of findings, issues which 'require attention' (RQ) in order to ensure the ESAP and/or HGA requirements are met and issues which should be implemented to ensure that international best practice (BP) is maintained or sustained.

**Table A5.1: Recommendations of the May/June 2007 Review for Azerbaijan/Georgia**

Ref Number	Recommendation for Improvement	Status end Dec 2007
RQ – A	Development and implementation of an annual completion schedule for review and updates of Oil Spill Response Plans.	COMPLETED
RQ – B	Review and completion of Containment Manual revisions.	OPEN
RQ – C	Documentation of notifications for spills and exercises.	OPEN
RQ – D	Development and implementation of approved strategy to replace MAN trucks.	OPEN
RQ – E	Finalization of the cleanup standards report.	COMPLETED
RQ – F	Approved completion of OSR Base for Zone 3 (PSG-1).	OPEN
RQ – G	Plan and schedule for transboundary exercises.	COMPLETED
RQ – H	Implementation of the Wildlife Response Plan and rehabilitation resources and capabilities.	COMPLETED in Azerbaijan On-going in Georgia.
RQ – I	Assurances that steps and procedures are in place to ensure continued OSR readiness for personnel and equipment.	OPEN
RQ - J	Completion of revised plans and construction at Kodiana.	Plans COMPLETED Construction in progress
BP – A	Additional and continued IMT training for BTC managers, including greater participation of IMT support in field, with particular emphasis on Community Liaison Officers (CLOs) and Environmental Unit staff and IMT on-site participation with OSR contractors.	OPEN
BP – B	Instructors for training courses must have appropriate level of expertise and approved curriculum and field participation with OSR contractors	COMPLETED
BP – C	Approved response strategy plan with implementation schedule for Azerbaijan following OSR workshop in Baku	COMPLETED

Ref Number	Recommendation for Improvement	Status end Dec 2007
BP – D	Continued field training from GIS with OSR contractors (Briggs and SESI) and coordination with GIS for development of OSR maps.	OPEN
BP – E	Inclusion of deployment photos in Containment Manual and high-flow tactics for Georgia.	In progress
BP – F	Implement approved schedule and plan for adoption of Georgian OSR strategies workshop for winter operations.	In progress
BP – G	Development of in-country waste disposal plan and implementation schedule.	COMPLETED for Georgia In progress for Azerbaijan

**Table A4.2: Recommendations of the May/June 2007 Review for Turkey**

Ref Number	Recommendation for Improvement	Status end Dec 2007
RQ - 1	Development and implementation of an annual completion schedule for review and updates of Oil Spill Response Plans.	OPEN: An annual completion schedule has been developed. The Plan will be updated in 2008.
RQ - 2	Development and implementation of update for revision and update of Containment Manuals.	OPEN: Programme for updates completed. Containment manual will be updated in 2008.
RQ - 3	Require Wildlife Response Procedure, training and rehabilitation resource schedule.	OPEN: Training scheduled for 2008. EIP programme established to develop a Wildlife Rehabilitation Centre in the vicinity of CMT. The centre is scheduled to be operative by September 2008. Wildlife Response Procedure will be developed post training.
RQ - 4	Develop schedule for GIS data layers and software to be fully operational.	COMPLETED.
RQ - 5	Determine a programme including a schedule for transfer of all relevant documents to BIL.	COMPLETED.
RQ - 6	Require a programme for the completion and finalisation of the Oil Spill Clean-up standards Report.	COMPLETED.
RQ - 7	Develop a plan and schedule for field exercises to demonstrate the feasibility and adequacy of transboundary response operations and equipment transfers. Require a tabletop exercise to demonstrate proficient management interactions.	COMPLETED.
RQ - 8	Define the process by which the Project will monitor and maintain IMT and Oil Spill Response Contractor readiness.	COMPLETED.

<b>Ref Number</b>	<b>Recommendation for Improvement</b>	<b>Status end Dec 2007</b>
RQ - 9	Plan and schedule to comply with new Turkish regulation relating to Risk Assessment of Onshore Facilities.	OPEN: Awaiting clarifications re: requirements of updated law.
BP1	Develop an IMT training and refresher training programme.	COMPLETED.
BP2	Develop a vehicle replacement plan for MAN trucks or that leased vehicles can be ready within timeframe required by OSRP.	OPEN: Consideration of replacement of trucks on-going.
BP3	Training in and update of Oil Spill Trajectory Model.	OPEN: Training to be undertaken in 2008.
BP4	Completion of Communications Study with a timeline for implementation of recommended actions.	OPEN: To be completed in 2008.
BP5	Completion of an annual remote area and winter logistic exercise involving external logistics, support services and/or contractors.	COMPLETED.
BP6	Development and implementation of appropriate strategy to encourage mandatory boom deployment during loading.	COMPLETED

## SUPPORTING CULTURAL HERITAGE AWARENESS AND CONSERVATION, AZERBAIJAN

Post-excavation activities relating to sorting, analysing reporting and conserving artefacts continued during 2007.

The Azerbaijan Institute of Archaeology and Ethnography (IoAE) together with the international archaeologists have been working on reporting, logging and laboratory work related to artefacts unearthed along the BTC/SCP route in Azerbaijan. As part of the conservation programme a conservation laboratory was set up for use by IoAE. About 21 archaeological objects excavated during the BTC/SCP construction underwent special conservation treatment. An American conservator provided a monthly, on-job training for the IoAE staff. Topics included basic archaeological conservation techniques, procedures and ethics.

In a related initiative discussions are underway with the World renown Smithsonian Institution concerning a BTC/SCP Cultural Heritage public outreach and capacity building programme for the Gobustan National State Reserve and Azerbaijan Institute of Archaeology and Ethnography. Expected benefits outcomes are:

- ✓ Technical reports and analyses of BTC/SCP archaeological findings.
- ✓ Publication of a book and development of a website describing the archaeological sites and artefacts discovered in the three countries along BTC/SCP pipelines route.
- ✓ Organisation of an International conference to give the archaeologists involved in the BTC/SCP project, experts from the three Host countries, the USA, and possibly elsewhere, the opportunity to review and discuss the BTC/SCP findings in a manner consistent with international practice.
- ✓ Training of personnel from the Gobustan National State Reserve, Azerbaijan Institute of Archaeology and Georgia National Museum through internships provided by Smithsonian Institution. Training topics are expected to include: museum management; artefacts management and rock arts damage assessment; documentation and registration of monuments; storage and protection of materials; application of computer technologies; management of collections of scientific, literary and historical value; exhibitions management; and sustainable tourism development.
- ✓ Flora and fauna survey of Gobustan National State Reserve, in cooperation with Azerbaijan local institutions. A flora and fauna register will be developed.



*Samples of the BTC/SCP archaeological findings after conservation treatment*



# MONITORING BIORESTORATION AND EROSION RISK, AZERBAIJAN, GEORGIA & TURKEY

The most important mitigation of environmental impacts on a pipeline project is arguably successful reinstatement and biorestorement of the project footprint. Biorestorement is important for restoration of habitat, landscape, drainage patterns and for the prevention of soil erosion. Done well, land is restored to its pre-construction state and the project footprint is barely noticeable. Done badly, it remains a landscape scar with a lasting impact on communities, the environment and company reputation, as well as posing a potential threat to pipeline integrity.

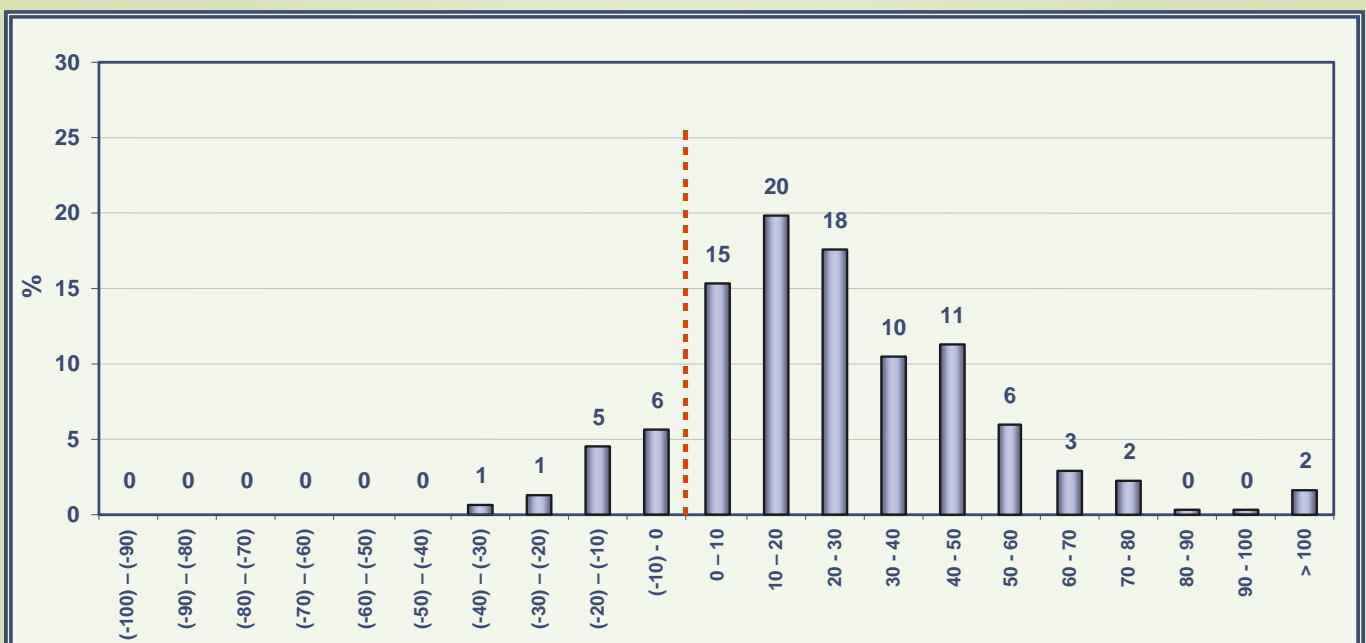
The BTC pipeline project team recognised the importance of biorestorement and established ambitious targets for revegetation (and biodiversity) during the environmental and social impact process. The target of 70% revegetation cover after one year played a large role in motivating the construction teams to safeguard topsoil through good management practises. The post-construction challenge was balance pragmatism and science to monitor the revegetation performance of the 1780 km of reinstated pipeline corridor.

Satellite imagery is now being used to monitor vegetation re-growth along the Right of Way (Figure 1). The results are then been used in combination with a Geographical Information System to identify areas of high risk of erosion and importantly, where on-the-ground intervention is necessary (Figures 2, 3 & 4).

This combination of satellite and information technology, along with ground back-up is proving to be an accurate and cost effective method of meeting a fundamental project commitment of restoring the environment, as well as enhancing the long term integrity of the pipeline.

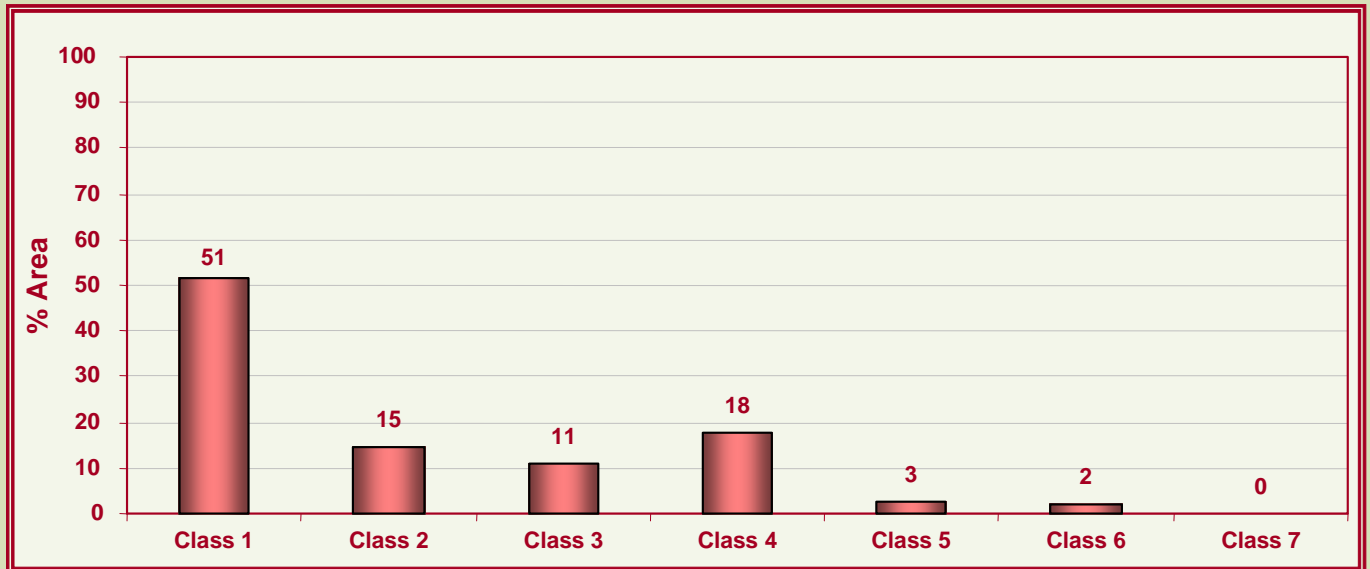
**Figure 1: Vegetation Re-growth Trend: The change in vegetation cover in Lot B from 2006 to 2007.**

The graph shows that, for example, for about a fifth (18%) of the area covered by the Lot B the amount of vegetation cover has increased from between 20 and 30% over the period 2006/7. Conversely, vegetation cover over 6% of the Lot B ROW has decreased from between 0 and 10%.



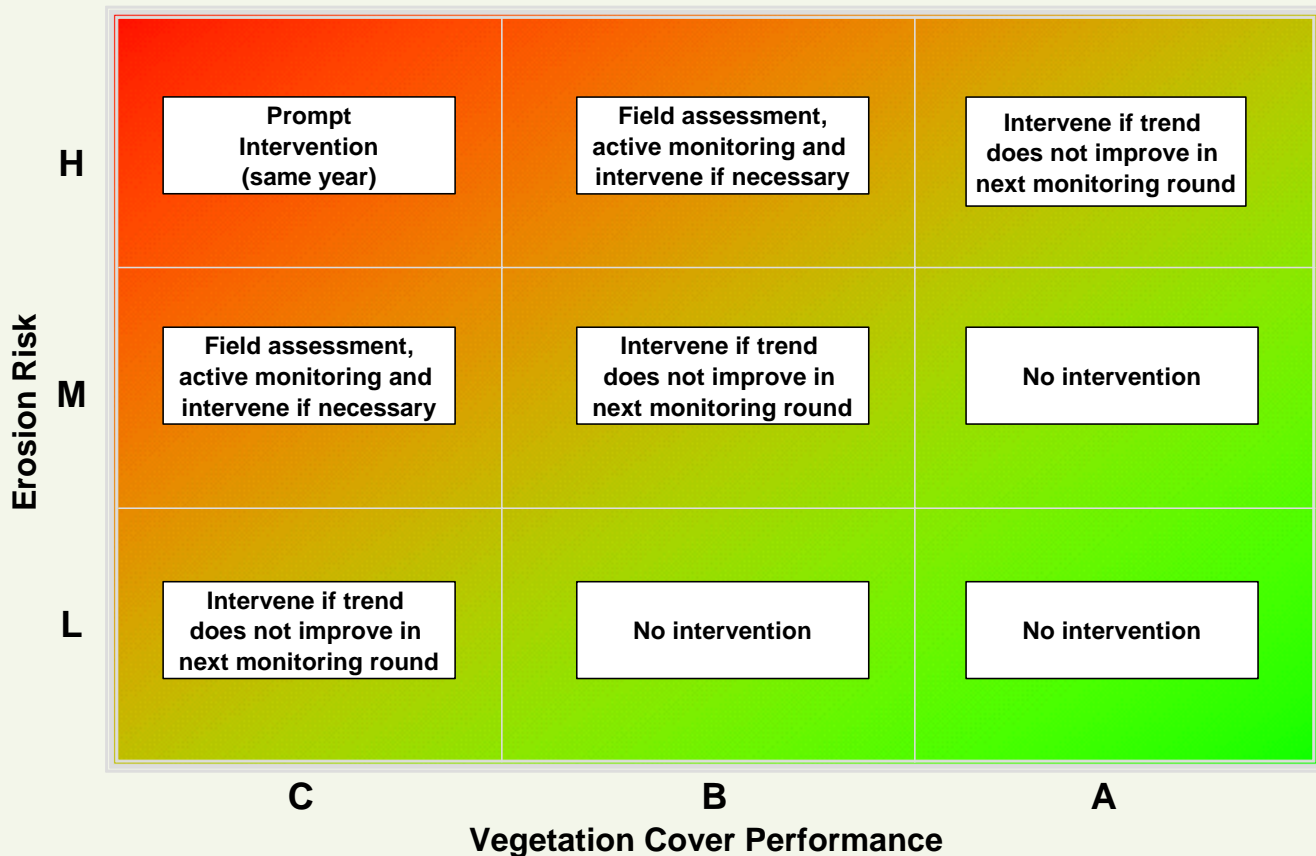
# MONITORING BIORESTORATION AND EROSION RISK BY SATELLITE

*Figure 2: Erosion Performance, 2007.*  
 (Class 1: very slight; Class 2: slight; Class 3: moderate;  
 Class 4: high; Class 5: severe; Class 6: very severe; Class 7: catastrophic)



*Figure 3: Intervention Matrix.*

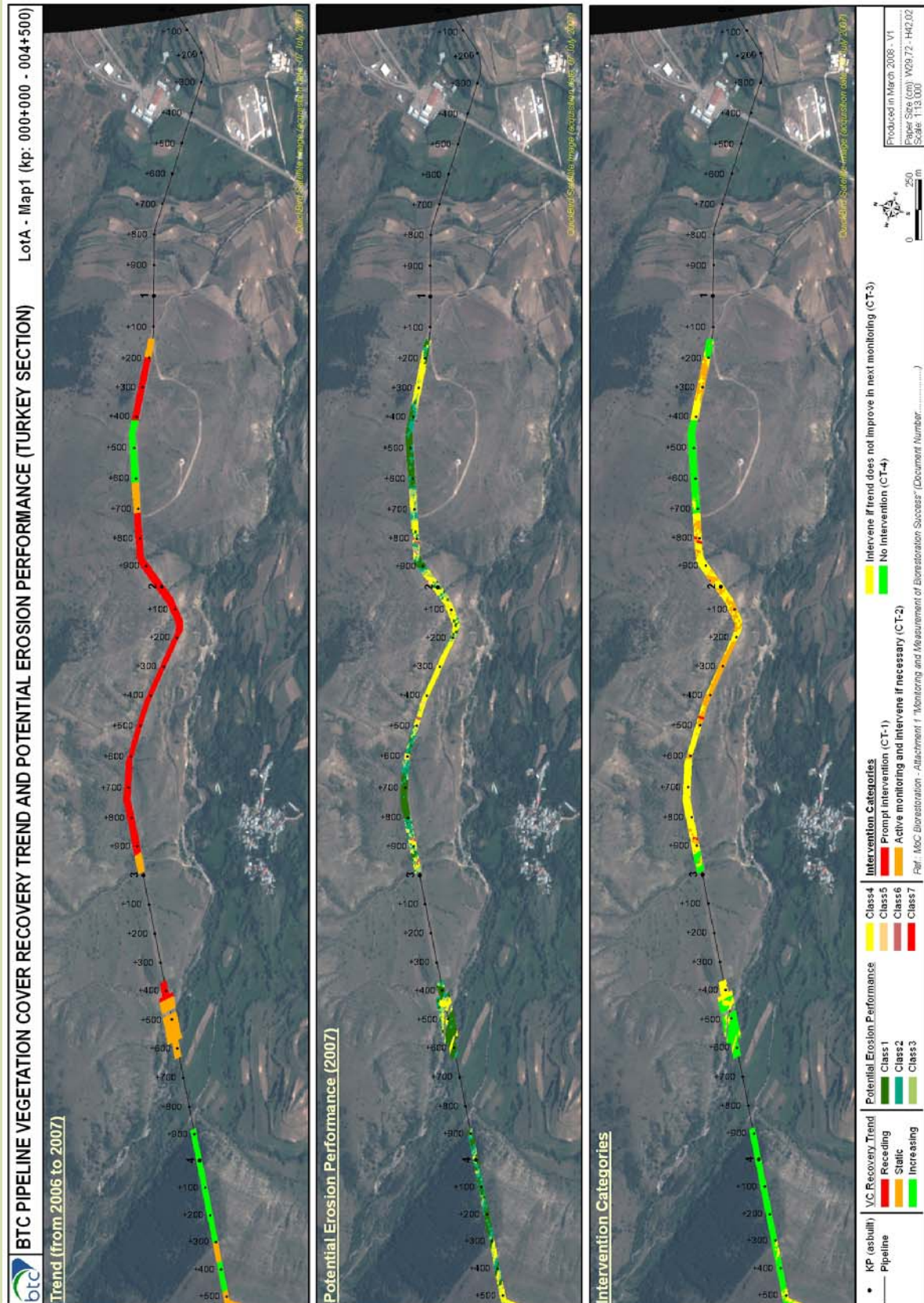
The matrix shows how erosion risk and vegetation regrowth trends are used to determine the most appropriate level of intervention, where L=Class 1-3, M=Class 4-5, H=6-7; C= receding vegetation cover, B = static vegetation cover, A= increasing vegetation cover).





# MONITORING BIORESTORATION AND EROSION RISK BY SATELLITE

**Figure 4: Re-growth Trend, Erosion Performance and Intervention, Lot A.**  
 The first caption of the figure shows the change in vegetation growth from the previous year (as per Figure 1).  
 The second caption shows erosion class for 2007 (as per Figure 2).  
 The third caption shows different levels of intervention based on Figure 3.





## GIVING GAS AND HOT WATER TO EYVAZLILAR COMMUNITY, AZERBAIJAN

It is a well-known fact that some of the remote communities in Azerbaijan still experience difficulties with gas and hot water supplies. For people living in those areas they remain an eternal and almost unrealizable dream.

As part of the alternative energy, safety and environment programme which consists of 13 pilot micro-projects, BP

has conducted a project that helped to realize dreams of people from one of such communities in Goranboy region. A total of 12 solar water heaters and a biogas unit with a solar panel were installed in Eyvazlilar community farm. This farm was considered to be ideal for the project as it accommodates about 50 people and supports about 100 cattle.

With the help of the project the Eyvazlilar farmers have access to hot water and can cook on an environmentally friendly BIOgas. "In the farm, we have always been in need of hot water and gas for our daily activities. These problems were really

disturbing for a long time. To get hot water, we used electricity and firewood, which resulted in huge energy expenses. We were dreaming of such an energy source which could be obtained in an environmentally friendly way and at the same time utilizing the locally available resources. Yes, that was our long-standing dream. Now we can say that the project was a success both for our health and comfort" – says Yahya Mamedov, member of Eyvazlilar community.



*Solar batteries for the water heater in Eyvazlar farm*



*Water tank for hot water*



*Biogaz unit with solar panel*



## HELPING TO BUILD A BETTER FUTURE: INFRASTRUCTURE REDEVELOPMENT, GEORGIA

In 2006, CARE International in the Caucasus was awarded a grant from BP and its partners to continue a CIP project for a three-year period in 77 rural communities along BTC/SCP pipeline.

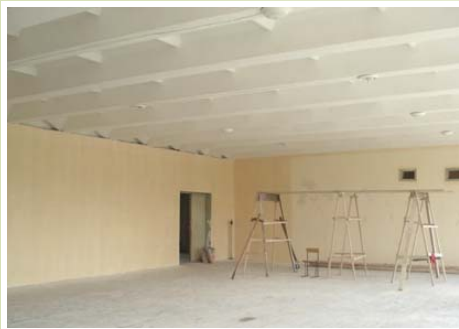
An important component of the CIP is working with youth and education and in support of this endeavour, the programme aims to help school Boards of Trustees (BoT) improve their managerial / administrative skills and assist them in upgrading school infrastructure.

Marneuli School #6, located in the Kvemo-Kartli region of Georgia, was identified as one that met the programme's eligibility criteria. Just under a thousand children attend this school, most of them ethnic Azeri. The CIP has stepped into the school by providing training to BoTs and offering them a school rehabilitation grant.



The major priority for the school BoT was to rehabilitate the assembly hall. The grant amount was around \$12,000. In addition to this amount, the school contributed 27%, including both labour and cash. As a result of the project, the assembly hall was rehabilitated and equipped (furniture, TV, music centre, etc.).

During the interviews with the members of the school BoT, teacher Lia Chikhashvili noted that Georgian and Azeri students were working side by side during the project: "students were helping each other and doing the job with great enthusiasm; this finally brought about a successful project". The project has attracted additional funding from the Sakrebulo district, in the form of a 5000 GEL. This has enabled corridor/entrance to the assembly hall to be rehabilitated. "The grant received from CIP, influenced the decision of the local municipality to co-fund the project", noted Sonia Kupatadze, teacher of physics and mathematics.



In June, Azeri and Georgian students were celebrating their 2007 graduation ceremony at the new assembly hall: "We did our best to put in all efforts and finish the project before the graduation day, which was the first event at the new place. It looked very impressive", said Sonia Kupatadze.

Lia Chikhashvili expressed her opinion on the benefits of the school project: "Now I can work on theatre performances. I discussed this opportunity with my students, and they got very excited and started discussing themes for the upcoming play".

As part of the benefit package delivered to each target school in Kvemo-Kartli, members of the BoT were introduced to conflict sensitivity training by Partners-Georgia. "After the training I have learned very important and practical tools on how on to communicate with my students and colleagues to prevent conflict and build good relations with them". Among the series of trainings provided to members of BoTs, were project writing/proposal development, procurement and financial handling of grants, etc.

Izolda Kupatadze, Dean of the school: "Our teachers gained project writing skills and are more motivated to seek additional funding as well as implement various types of school projects. Being involved in school rehabilitation was a significant experience for our teachers. I think there is still much to be done at our school. With CIP, we have gained trust among students, their parents and now it will become easier for us to work on new opportunities and attract funds for such purposes."





## SECURING INCOME FROM AGRICULTURAL PRODUCTION, GEORGIA



One feature of the CIP is its work on providing new opportunities to farmers along BTC and SCP pipelines, for example in Samtskhe-Javakheti and Kvemo-Kartli regions of Georgia. CARE International, one of the CIP Implementing Partners, believes that one of the most effective methods to spread new agricultural technologies among farmers is through on-farm demonstrations. Accordingly the CIP has supported the development of around 100 demo-farms, involving up to 500 farmers throughout the target area.



One such farm is run by Almaz Abasov's and his family in the Gardabani district. Almaz lives together with his wife, son, daughter in law and grandchildren in Nazarlo village, a village that is famous for vegetable growing and cattle breeding. The only source of income for the family is their farm, as is the case for most ethnic Azeri households in Nazarlo.

Almaz owns a 0.15ha greenhouse, where he grows tomatoes and cucumbers. Before the project, Almaz was not using sufficient agricultural inputs and the land was suffering from various agricultural diseases. Due to lack of inputs, vegetables were hardly surviving and the only source of income for the family was disappearing in front of their eyes.

"The project stepped into our family at the right moment. Agricultural specialists studied the problem and provided us with all necessary inputs and recommendations to survive the upcoming harvest", noted Almaz.



Almaz has already started selling some tomatoes and cucumbers at the market. The major markets for households in Nazarlo village are Gardabani and Tbilisi. The family sold around 75 kg tomatoes for 80 Tetri per kg and around 200 kg of cucumbers for 70 Tetri per kg. As Almaz says, this year they will receive around 1.2 tons of tomatoes and around 1 ton of cucumbers.



"CIP has also provided us with 12.5 kg of hybrid corn, which we have planted on 0.2 hectares of land. During the harvest we should receive around 1.5 tons of maize. Market price for hybrid maize varies between 45 – 60 Tetri per kg. Nearly half of our harvest will be used for feeding our cows and the other half we will sell on the market", says Almaz.



One of the requests the project has of demo-farmers is to spread the knowledge and skills they have gained from the project among their neighbours, friends and relatives. During the theoretical and practical training provided by CIP agricultural specialists, Almaz called on his neighbours to participate and get familiar with the new methods and technologies.



After seeing the result of new technologies on Almaz's farm, neighbours are often asking him for advice and try to replicate the models that will bring benefit to their farms. "For many years I was saving money by not buying different types of inputs for my farm as they are quite expensive. However, this year I could have lost everything if I had not used them. Now I believe that by saving money on your farm you are putting at risk all your efforts and you may lose the whole harvest", says Almaz.

The project believes that people like Almaz can help replace traditional agricultural practices with modern/widely used technologies to enable economic development of their communities.

