REPORT OF THE POST-FINANCIAL CLOSE INDEPENDENT ENVIRONMENTAL CONSULTANT (IEC) BAKU-TBILISI-CEYHAN (BTC) PIPELINE PROJECT

NINTH SITE VISIT, JUNE 2007

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EXECUTIVE SUMMARY

This report presents the results of the ninth post-financial close field visit of the Independent Environmental Consultant (IEC) to Azerbaijan, Georgia and Turkey, between June 13 – 23, 2007 to monitor compliance with BTC Project Environmental and Social (E&S) commitments. The IEC team conducted the visit as two teams; one focused on Project activities in Turkey and the other in Azerbaijan and Georgia.

This visit was conducted differently from the previous eight visits, because the transition from the construction phase to Operations is essentially complete. Accordingly, this IEC audit was conducted as a combination of the first annual BTC Operations audit and the E&S Completion audit, as defined in the ESAP. Monitoring was, therefore, carried out to support the Lender's completion process.

Recognizing that the scope of the two audits is not the same, the IEC has combined tasks to the best extent practical, as required in the ESAP. Annual verification represents the continuation of an ongoing monitoring process initiated during the construction phase and continued during Operations. The Operations audits will focus on the operations team and ongoing operations activities. The reference documents for the Operations audits are the Operations ESAP and the relevant management plans. In contrast, the Completion Audit focuses on open issues from the construction phase, verifies their closure, and identifies potential non-compliant conditions that will have to be considered for the Completion Certificate. Accordingly, the completion verification needs to concentrate on the current status of the open issues and the remedial/corrective actions planned by BTC. It should be noted that open issues from the construction phase are inherited by Operations.

This report identifies the non-compliances as encountered in the field, but also focuses on the main issues requiring resolution prior to the issuance of the Completion Certificate. This may involve immediate action to achieve compliance, or could involve the development of an agreed action plan and its subsequent implementation to achieve compliance.

These main issues are not necessarily existing non-compliances with the ESAP, as in some cases (e.g., construction of an access track along the pipeline right-of-way in Azerbaijan) the potentially non-compliant actions have not yet taken place. This Executive Summary departs from the IEC's previous format and does not summarize

the details of the findings on the basis of topics, but focuses on the primary issues on a country-by-country basis.

Azerbaijan

The most significant issue for Azerbaijan is the proposed future access strategy for the right-of-way which allows for driving along most of the ROW (non-critical areas – about 380 kilometers) at least to the end of 2008. Vehicular traffic is however currently taking place along much of the ROW, and has caused damage in critical areas, including the sensitive Gobustan Desert area. This traffic relates primarily to requirements of the Export Pipelines Protection Department (EPPD) of the Azeri Government, which requires that the ROW be accessible for security patrols, and also because the means for accessing the ROW exclusively with horse patrols has proved inadequate for BTC/SCP Operations, at least in the short term. The change in Project strategy to account for the need for EPPD and BTC/SCP Operations to have increased vehicular access is a breach with principles of the ESAP, which defines the general principle of "No Vehicle Access on the ROW". The Project is developing a strategy to minimize impacts to the right-of-way that will be based on an environmental and social impact assessment (ESIA). The ESIA will need to carefully document the potential impacts and proposed mitigations, including the repair of the damage that has already taken place in sensitive areas.

Georgia

The most significant issue in Georgia is the disposal of the non-recyclable/re-useable portion of their non-hazardous solid waste. BTC estimates that since 2003 a total of about 1,830 tons of this waste has been disposed under conditions that have not been in compliance with ESAP requirements. This is assigned a Level III non-compliance. BP-GEO is currently planning on constructing an EU-compliant, non-hazardous waste landfill for its ongoing disposal of this waste stream. In terms of developing an appropriate completion for the BTC construction phase, the current plans for developing an EU-compliant non-hazardous waste landfill do not compensate for the non-compliant disposal of all non-hazardous waste since the start of construction. From the standpoint of achieving an acceptable completion, a compensation for the non-compliance by means of an offset mechanism could be considered. IEC is willing to review a proposed offset to be developed by BTC/BP.

Turkey

The most significant issues in Turkey relate to the ROW Punch List items which are not completely closed and are complicated by the pending conclusion of the warranty period and transition to BIL operations. BTC should develop a management strategy and action plan to close out remaining punch list items within a specified time period. In addition, there is little or no maintenance or permanent erosion control measures on the pipeline ROW, resulting in erosion, and potential risks to pipeline

integrity. This issue should be resolved through the development of a clear and auditable ROW Maintenance Strategy.

NGPL reinstatement was still to be started at the time of the visit, although a contractor has been appointed. BTC should develop compliance and sign-off procedures for the agreed to contractor scope of work for NGPL reinstatement, prior to financial completion.

Finally, there still remains a lack of clarity over final reinstatement of project access roads, in compliance with ESAP commitments. To resolve this ongoing issue, BTC should provide an Access Road Closure and Maintenance Strategy.

1 INTRODUCTION

D'Appolonia S.p.A.(D'Appolonia), located in Genoa, Italy, has been appointed as the post-financial close Independent Environmental Consultant (IEC)[1] to the Lender Groups for the Baku-Tbilisi-Ceyhan (BTC) Pipeline Project (BTC Project).[2] D'Appolonia has also served in the role of IEC for the Azeri, Chirag and deepwater Gunashli (ACG) Phase 1 Project (Phase 1 Project),[3] the upstream component to the BTC Project. The BTC Project is owned by BTC Company, a company formed by a consortium of the Main Export Pipeline Participants (MEPs)[4]. Construction of the BTC Project is now complete in Azerbaijan, Georgia and Turkey and Operations have initiated.[5]

The overall role of D'Appolonia within the BTC Project is to assess and report to the Lender Group on the compliance with the environmental and social provisions contained within the project Environmental and Social Action Plan (ESAP), the associated Contractor Control Plans (CCPs), and BTC Management Plans and with

[1] IEC Team members: Roberto Carpaneto , Paolo Lombardo , Miles Scott-Brown , William J. Johnson

[2] The Lender Group for the BTC Project (BTC Finance Parties) comprises the International Finance Corporation ("IFC"), the European Bank for Reconstruction and Development ("EBRD"), Compagnie Française d'Assurance pour le Commerce Extérieur ("COFACE"), Her Majesty's Secretary of State acting by the Export Credits Guarantee Department ("ECGD"), Euler Hermes Kreditversicherungs-AG ("Hermes"), Japan Bank for International Cooperation ("JBIC"), Nippon Export and Investment Insurance ("NEXI"), Overseas Private Investment Corporation ("OPIC"), Servizi Assicurativi del Commercio Estero ("SACE"), the Export-Import Bank of the United States ("US EXIM") and any other export credit agencies and commercial lenders and any other providers of debt financing or political risk insurance for the BTC Project, in their capacity as the providers of debt financing or political risk insurance for the BTC Project, including, for the avoidance of doubt, the Sponsor Senior Lenders.

[3] The Lender Group for the Phase 1 Project (Phase 1 Finance Parties) means IFC and EBRD.

[4] Also termed the "BTC Sponsors" includes Amerada Hess Corporation, BP International Limited, BP Corporation North America, Inc. ConocoPhillips, ENI International, B.V., INPEX Corporation, ITOCHU Corporation, SOCAR, Statoil ASA, TOTAL, S.A., Türkiye Petrolleri A.O. and Union Oil Company of California.

[5] The parties to the PSA at the date of the CTA, also termed the "PSA Parties" includes Amoco Caspian Sea Petroleum Limited, Amerada Hess (ACG) Limited, BP Exploration (Caspian Sea) Limited ("BP Exploration"), Devon Energy Caspian Corporation, Exxon Azerbaijan Limited, INPEX South West Caspian Sea, Limited, ITOCHU Oil Exploration ("Azerbaijan") Inc., Statoil Aspheron a.s., Turkiye Petrolleri A.O. ("TPAO") and Unocal Khazar, Ltd.

HSE management systems. This report summarizes the results of D'Appolonia's ninth field visit held between June 13– 23, 2007 for the BTC Project.

The primary objective of D'Appolonia's monitoring visits with respect to the BTC Project has been to verify the implementation of BTC Project commitments at the end of the construction phase. These commitments are established in the Environmental & Social Action Plan (ESAP),, finalized at the time of financial closure (February 2004), and supporting documents developed to assure implementation of the ESAP including Contractor Implementation Plans and Procedures (CIPPs) and associated Method Statements and Procedures. D'Appolonia's review has included the environmental and social (E&S) and health and safety (H&S) management activities of BTC, the Turkish State Petroleum Pipeline Corporation (BOTAŞ – transitioned to BIL for the Operations phase) in the case of Turkey. For the most part, the individual Engineering, Procurement and Construction (EPC) Contractors that have been a primary focus of the IEC monitoring are now demobilized.

This IEC audit was conducted as a combination of the first annual BTC Operations audit and the E&S Completion audit. As indicated in Section 8.2 of the ESAP, an annual verification visit can be combined with the Stage 2 Completion audit. Recognizing that the scope of the two audits is not the same, the IEC has combined tasks to the best extent practical, as required in the ESAP. Annual verification represents the continuation of an ongoing monitoring process initiated during the construction phase and continued during Operations. The Operations audits will focus on the operations team and ongoing operations activities. The reference documents for the Operations audits are the Operations ESAP and the relevant management plans. In contrast, the Completion Audit focuses on open issues from the construction phase, verifies their closure, and identifies potential non-compliant conditions that will have to be considered for the Completion Certificate. Accordingly, the completion verification needs to concentrate on the current status of the open issues and the remedial/corrective actions planned by BTC. It should be noted that open issues from the construction phase are inherited by Operations.

Most of the findings identified in this report have been based on field observations, and interactions with the individuals actually responsible for the field implementation of the ESAP. Social and community relations aspects have only been addressed based on documentation review and management interviews, but no field audits and potentially affected community meetings have been held, as the latter are responsibilities of the SRAP Panel, as dictated by the ESAP. Similarly, review of BTC oil spill response plans (OSRPs) and related issues are not included in the IEC scope of work as they form part of the work scope of the OSRP expert (Polaris).

The IEC team conducted the visit as two teams; one focused on Project activities in Turkey and the other in Azerbaijan and Georgia.

Subsequent sections of this report provide the following:

- Section 2 presents the review of the Project in Azerbaijan
- Section 3 presents the review of the Project in Georgia
- Section 4 presents the review of the Project in Turkey
- Appendix A presents the trip itinerary
- Appendix B presents lists of non-compliances with the ESAP, with relevant observations and recommendations.

2 AZERBAIJAN

The BTC Project in Azerbaijan includes 443 km of pipeline extending from the first pump station (PSA1) in Sangachal Terminal, to the border with Georgia. The corridor followed by the pipeline is close to the existing Western Route Export Pipeline (WREP) and is also the corridor that is followed by the South Caucasus Pipeline (SCP), which transports gas from the Shah Deniz field to the Georgian/Turkish border in a separate, related project. The BTC Project in Azerbaijan includes several permanent Above Ground Installations (AGIs) including an Intermediate Pigging station (IPA1) near KP 125, and a second Pump Station (PSA2) near KP 245, as well as necessary block and check valves. PSA1 at the Sangachal Terminal is not within the scope of the BTC audit in Azerbaijan.

ACG first Oil in Azerbaijan was celebrated on May 25, 2005. The entire BTC pipeline became operational on June 5, 2006 with the first shipment from Ceyhan, Turkey. At the time of the visit, the BTC pipeline was transporting approximately 900,000 bpd and this flow required the startup of PSA2, which took place in February 2007. At the time of the visit, the SCP was also fully operational, having initiated operations in November 2006.

The BTC Project in Azerbaijan used two prime Contractors, Consolidated Contractors International Company (CCIC) responsible for pipeline construction and valves and Spie-Capag Petrofac Joint Venture (SPJV), responsible for the main AGIs. SPJV is fully demobilized, whereas only a few workers from CCIC are still present to manage the last stages of the demobilization process.

In addition to the permanent facilities, the pipeline was associated with several temporary facilities during construction, which included:

- Construction camps (for CCIC: Mugan near KP 65, being used only for equipment storage; Kurdamir near KP 130, closed; Yevlakh near KP 240, closed; Tovuz near KP 380, closed. For SPJV: Kurdamir for IPA1 near KP 126, closed; Yevlakh PSA-2 camp near KP 244 is closed.

- Dump Yards for pipe, which include (Umbaki near KP 0; Mugan near KP 65; Kurdamir near KP 129; Yevlakh near KP 235; Ganja on the north east edge of the town of Ganja; Agstafa next to the town of Agstafa near KP 400; Beyuk Kassik next to the Georgia border near KP 440) are closed, reinstated to the satisfaction of the landowners and relinquished to the landowners.

This mission represents the final IEC visit associated with BTC construction. As such the trip focused on a review of issues related to the completion of the construction phase of the BTC pipeline, in particular as presented to the IEC in the form of Management of Change documents in the weeks immediately preceding the

mission. In particular, this site visit focused on the status of reinstatement of the pipeline and a revised access strategy being developed by BTC Operations, closure and reinstatement of temporary facilities, waste management, wastewater treatment, and emissions monitoring.

2.1 CONSTRUCTION STATUS

Current (June 2007) construction progress is as follows:

- *Facilities* – Construction of Pump Stations PSA-1 at Sangachal Terminal and PSA-2 is complete and both are operational; Intermediate Pigging station IPA1 is also operational. Construction still pending relates to improvements at PSA2 of the main oil-water separators, redesigned facility sewage treatment plant and associated infrastructure and PSA2 camp.

- *Pipeline* – Pipeline construction for both the BTC and SCP projects is complete to the Georgian border (443 km) and the only remaining aspect of construction still not complete is the installation and commissioning of the cathodic protection system. Reinstatement and biorestoration are complete and current activities relate primarily to the identification of critical areas where long-term monitoring and maintenance will be required.

All major river crossings were complete for both BTC and SCP projects at the time of the mission. During the visit, the reinstatements of the crossings at Kura West, (KP 411) and Hasan Su (KP 398) were reviewed in the field.

2.2 ENVIRONMENTAL MANAGEMENT ORGANIZATION AND RESOURCES

2.2.1 Resources and Organization - Observations

The transition from Construction to Operations is complete. The environmental responsibilities for the BTC pipeline fall within the responsibilities of the Azerbaijan Pipelines Asset Environment Team. This implies that the Operations environmental staff also has responsibilities for the SCP, Western Route and Northern Route Pipelines. As organized, the Environmental Team Leader is supported by permanent positions covering the topics of Senior Environmental Advisor – ROW; ESMS Advisor; Senior Environmental Advisor – Compliance; and a position of Environmental Advisor – Assurance, as well as temporary positions for reinstatement, environmental and environmental engineering specialists. The Senior Environmental Advisor – Compliance position is supported by an Environmental Monitoring Advisor and is also responsible for cultural heritage activities. The Environmental Advisor – Assurance position is supported by rotating Facilities Environmental Advisors.

The staffing for the ongoing activities appears to be sufficient. Except for the Environmental Team Leader, the responsible individuals in permanent positions are Azeri nationals and all have transitioned with individuals with experience gained during the construction phase. The temporary advisory positions are filled with individuals who have had a long-term involvement with the BTC/SCP projects.

2.2.2 Resources and Organization - Recommendations

1. The organization is in place, but Operations staff needs to make sure that the data available from the construction phase is readily available such that Operations activities do not damage sensitive resources previously identified during construction (see discussion of ROW reinstatement).

2.2.3 Management of Change (MOC) - Observations

Over the past four months the IEC has reviewed several environmental and social MOC documents prepared by BTC. These documents outline procedures for various topics that deviate from procedures defined in the ESAP to varying degrees. Most of the MOCs define minor changes to procedures that the IEC has already found materially compliant with ESAP. In other cases, the proposed changes are significant and these topics were the focus of the field trip.

A summary of the recent MOC documents for the three countries with the IEC responses is summarized in Table 1.

2.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, borrow pits and irrigation systems. At this point in time, as most of the facilities are no longer operational, the IEC visit focused on reinstatement of some of these facilities.

2.3.1 Construction Camps, Infrastructure, and Services - Observations

The construction camps and pipe yards are no longer operational, with the exception that Mugan Camp facilities (KP 20) is still being used for equipment storage until the demobilization of CCIC is complete, so the mission focused on reinstatement of these facilities and their turnover to the landowners. In some cases, the facilities were not returned to the landowners in a greenfield condition, but the land was returned to the landowner in a condition reported to be satisfying the landowner.

The Yevlakh PSA2 facilities (camp, pipe yard and double joint facility) were the subject of MOCs to document that the sites were returned to the landowner without complete reinstatement, but to the landowner's satisfaction. Based on ESAP

requirements, it is permitted that facilities can be turned over without complete reinstatement, provided that their respective owners have signed an acceptance and that the relevant government authorities are satisfied. The ESAP states that "*following removal of temporary camps, the site will be reinstated to at least the condition existing prior to establishment of the camp, to the satisfaction of the owner and/or relevant authority*." Given that the satisfaction of the owner and government is a condition of reinstatement, these conditions appear to have been met. The IEC did have contact with the landowner at the Yevlakh PSA2 facilities, who indicated satisfaction with the site conditions at the time of the turnover.

One issue with respect to the turnover of the sites is ground contamination and health and safety hazards. It cannot be expected that a landowner will have a full appreciation of the potential adverse consequences of ground contamination and health and safety hazards so it is expected that property will not have been turned over where such situations could be present, e.g. contaminated soil from spills, leaking USTs, waste pits, unsecured open pits and manholes. It is understood that the Project has conducted auditable due diligences/closure of the punch lists to ascertain the lack of these immediate risks, directly associated to the Project use of the facilities, before handing them over to the owners. The last remaining component of Kurdamir camp to be decommissioned is the Central Waste Accumulation Area (CWAA). It is understood that CCIC removed an underground storage tank (UST) without documenting if the UST had leaked contamination (the contaminants of concern are lead and antimony). BTC has inspected the UST and found it to be in good condition, but plans to verify ground conditions on the basis of 12 borings from which soil samples will be obtained and tested. If there is visual evidence of soil contamination, the borings will be converted into groundwater monitoring wells and groundwater samples also obtained and tested. The IEC also observed that the former fueling area within the Kurdamir camp presumably was not properly reinstated prior to turnover, as there was visible soil contamination from fuel spills and the OWS system had not been removed. At the time of the IEC visit, an individual who presented himself as the landowner indicated that he was already satisfied with the condition of the Kurdamir site.

During the visit potable water quality data were also reviewed. At the time of the last visit in June 2006 some non compliant conditions were encountered, most commonly with respect to Total Viable Bacterial Counts - TVC from project taps and several of the water dispensers (PSA-2 kitchen, site office and camp, and IPA-1). These problems did not immediately disappear after June 2006. The test results indicate that the supplier of bottled water was changed in July 2006, but TVC problems persisted and the notes to the test results indicate that the dispenser disinfection procedures were reviewed until the dispensers were completely removed at the end of November 2006. An exception to this appears to be the Yevlakh Kainat Hotel, where high TVC levels are reported for the most recent test results from samples taken on April 17, 2007. The test results also indicate that the potable water treatment system have had similar problems to the dispensers, as elevated TVC

levels were also encountered at the taps within PSA2 and IPA1 into the beginning of 2007. The notes to the test results indicate that a new filtration unit was added to the treatment plant at PSA2 in January 2007, which may explain why the quality of the treated water at PSA2 has been acceptable since February 2007. It is understood that a plan is in place to replace the potable water treatment units at the facilities. Overall, the test results over the past year indicate that the H&S staff has actively worked to resolve water quality problems, but that their actions have not fully prevented exposure to potable water of inadequate quality, either from dispensers or from the treatment plants. *Level I Non-Compliance, CCP Infrastructure and Services, Commitment ID: 528, 628, 1130; CCP Construction Camps, Commitment ID: 308.*

2.3.2 Construction Camps, Infrastructure, and Services - Recommendations

1. Review closure HSE documentation particularly where CCIC and SPJV have turned over property to landowners without fully reinstating the property to the degree practical with landowner permission. Ensure that all actions aimed at bringing the sites to acceptable HSE conditions have been implemented.

2. Decommission the Kurdamir CWAA carefully and thoroughly, especially taking into account that there may be some environmental contamination associated with the operation of the incinerator and also because the local residents are now becoming sensitive to their local environment.

3. Continue to monitor and maintain the procedures and the systems in place such that Project staff can have a high level of confidence that the potable water they use for drinking, showers, etc. is pure and safe.

2.4 WASTE MANAGEMENT

A Five Year Execution Plan that defines the strategy for waste management in Azerbaijan is now completed and in force. The completion of this strategic plan is considered a significant achievement by the IEC. The following sections describe briefly the strategies and the actions being implemented by BP.

2.4.1 Non-Hazardous Waste – Observations

At the time of the last visit, a dedicated BP waste cell with a 48,000 m^3 capacity had been filled at Sumgayit and an identical cell was under construction. This second cell is currently being used. These two dedicated cells at Sumgayit are not EU compliant, but are considered to represent a safe temporary solution until the construction of a new EU compliant landfill. The plan for having a dedicated BP non-hazardous landfill in Azerbaijan at Sumgayit is now significantly advanced. Groundbreaking for a new EU-compliant non-hazardous waste landfill (one cell) began in September 2006 and it is currently expected that it will be complete by September 2007. This landfill should be sufficient for BP needs in Azerbaijan for

the next five years, but the site is sufficiently large such that it could be expanded in the future in case additional capacity is necessary.

2.4.2 Hazardous Waste – Observations

At the time of the June 2006 visit, hazardous waste was still being stored at Kurdamir Camp or at the AMSCO waste management facility (Temirmash Waste Storage Area) located in Baku. As the Temirmash facility is no longer being used by the Project, the Level I non-compliance for aspects of its operation are considered rescinded. Since that time, the hazardous waste has been consolidated at the BP-owned Hazardous Waste Management Facility (HWMF) in Serenja.

The management of medical waste has been the responsibility of a sub-contractor where the waste was incinerated at the Baku Central Clinical Hospital (CCH) Incinerator until April 2007. This practice was discontinued after an audit showed this facility not to be EU-compliant and BP started to temporarily store the material at the Serenja HWMF. BP has established a new contract for the management of medical waste to a subcontractor who has purchased a new incinerator from the U.K., although additional work is still required to assure that this facility will be fully EU-compliant. These works are underway and it is expected that this facility will be operational by the end of 2007 and capable of handling the estimated 8 m^3/yr medical waste stream. Medical waste was the subject of an MOC to allow for its temporary storage at the Serenja HWMF. The IEC considers this temporary storage to be acceptable, as it is a situation consistent with waste management procedures defined in the ESAP.

Two other special waste streams are currently being stored at the Serenja HWMF: oily waste consisting primarily of oily rags, spent filters and other material contaminated with oil (sands, soil and sludges); and pigging wax. BP reports that some 37m^3 of pigging wax was generated in 2006 due to start-up and commissioning operations, but that treatment systems were not operational which did not allow wax re-injection. Pigging wax removed from the pig receiver at that stage can not be reinjected as it may create process disturbance. This pigging wax is currently being accumulated and stored at the Serenja HWMF and BP reports that they have developed an agreement a local contractor affiliated with SOCAR, the State Oil Company of Azerbaijan, to identify a permanent EU-compliant solution for this waste. BP continues to look for disposal solutions for the oily waste while this waste continues to be stored at the Serenja HWMF. These two waste streams were the subject of MOCs to allow for their temporary storage at the Serenja HWMF. Again, temporary storage is acceptable under the ESAP.

A major change with respect to the management of hazardous waste in Azerbaijan has been the decision to construct a new BP-dedicated hazardous waste landfill. In June 2006 it was expected that the hazardous waste would eventually be placed in the newly constructed Sumqayit Hazardous Waste Landfill at the National Waste

Management Site, designed to be compliant with EU regulations (constructed by the Azerbaijan Government using funding provided by the World Bank), and operated by a government owned company. BP has since made a major decision not to use the national facility, but to construct its own dedicated EU-compliant hazardous waste landfill at Sumqayit. This landfill will have a capacity of 55,000 m^3 and is expected to be completed in the first half of 2008. This landfill will be able to accept all of the BTC legacy waste, as well as satisfy its primary goal of safely disposing of the largest hazardous waste stream, represented by the treated drill cuttings produced by the ACG Project.

2.4.3 Wastewater Management - Observations

At the time of the last IEC mission to Azerbaijan in June 2006, sewage effluent from PSA-2 and IPA1 was being trucked to the Sahil Municipal Plant, although the Project was about to switch to the Mingechevir Municipal Plant, neither of which was compliant with Project standards. The commitment made by the Project environmental staff at the time of the June 2006 IEC mission was that the entire WWTP system was going to be upgraded with the construction of new sewage treatment plants and reed beds and the non-compliant discharge to the municipal facilities would be stopped. Because of these commitments, the continued use of non-compliant municipal plants was assigned only a Level I Non-Compliance, CCP Waste Management Plan, Commitment ID: 553.

The Project has continued to use the Mingechevir Municipal Plant, but new treatment plants are currently under construction at PSA2 and IPA1. IEC observed that the construction of the new treatment plant at PSA2 along with a reed bed tertiary treatment system is well underway and is expected to be complete in August 2007. Given that there is tangible progress in arriving at a final solution to the management of sewage effluent, the previous Level I non-compliance assigned during the June 2006 visit is rescinded. The Mingechevir municipal treatment system was also visited by the IEC during this mission. The Mingechevir facility was a Soviet state-of-the-art treatment plant when it was constructed in 1978, but since the end of Soviet occupation, there have been limited resources for maintaining this facility. The plant presumably does not achieve EU standards, but it is still a functioning plant due mainly to the capabilities of the biological engineers that work at the plant. BP has supported the operations of this facility with some operation training, management assistance, laboratory supplies and PPE, but at the time of the visit it did not appear that very much of these supplies are still available for use. BP has paid for the treatment of sewage at the Mingechevir facility, but the disposal costs are significantly smaller when compared to costs that would typically be associated with an EU-compliant facility.

2.4.4 Wastewater Management – Recommendations

1. BTC should review their past activities at Mingechevir and plan for new assistance and supplies before the new construction precludes the need for using this facility, especially considering that the services provided have represented a substantial cost savings to BTC.

2.5 POLLUTION PREVENTION

2.5.1 Observations

As previously noted in the June 2006 trip report, one issue common to both Georgia and Azerbaijan has proven to be related to the main oil-water separators (OWSs) designed to clean up surface water from the pump stations and IPA1. The design of these systems was flagged as a possible concern at the time of the construction of the pump stations, and the conclusion of the BTC staff is that the systems are undersized for the loads they could potentially face. The current problems with the OWSs do not constitute a non-compliance (their problems relate mainly to their inefficiency), but their performance could potentially be compromised under emergency loadings (large quantities of oily water to be treated). These systems were redesigned in 2005, but the modifications have yet to be completed. It is understood that the construction effort at PSA2 will commence after the new WWTP has been constructed in about August 2007. It is also understood that the PSA2 retention pond is the only pond with a complete concrete liner in Azerbaijan and Georgia. The lack of a liner could be a contaminant pathway where groundwater is shallow and without concrete it is very difficult to clean out bottom sludge.

Stack emissions testing has not been completed at PSA-2, because the facility did not start operations until early 2007, but it should also be noted that the sampling ports for emissions testing have not been properly constructed similar to the situation in Georgia at PSG-1 and PSG-2. It is recognized that it is unlikely that air emissions represent a significant adverse environmental impact, as ambient air monitoring has been conducted and shows no apparent anomalies above background.

2.5.2 Pollution Prevention – Recommendations

1. Accelerate the programs to repair the facility OWS systems. Consider lining the bottom of the retention ponds with concrete, especially where groundwater is shallow. PSA2 could be the model for the retention ponds.

2. Make the appropriate modifications to the sampling ports and conduct the stack emissions monitoring as soon as practical.

2.6 ROW MANAGEMENT

2.6.1 Observations

The proposed MOC related to ROW access strategy prepared by BP describes the current status of the ROW as follows:

> *" ..With the exception of certain areas requiring biorestoration, the reinstatement of the RoW has been completed. ...the monitoring and patrolling of the RoW has shown deterioration of some sections in terms of restoration of ground cover....there is not doubt that this has been exacerbated by the additional wear and tear due to regular driving on the reinstated RoW."* BTC - MOC, Access Strategy Azerbaijan, May 2007.

Based on the few locations observed along the ROW during this short visit, IEC confirms this assessment of the current status of ROW reinstatement.

The reinstatement of the ROW is essentially complete, except where local conditions dictate that more time will be required for vegetation to recovery, in particular the Gobustan Desert area. The Project has made a concerted effort with a survey in the spring of 2007 to identify those areas that will require additional effort to achieve complete reinstatement. Those areas have been listed in a dedicated punch list that is the basis for the development of the maintenance and repair activities planned to be performed before the next winter season and for additional biorestoration activities.

The IEC was able to observe the ROW at several locations, both in "*critical"* and "*non-critical*" areas according to the proposed environmental and social criteria described in the proposed Access Strategy. Those areas designated as "critical areas" (a total of 63 km of the ROW - ~15%) include areas with protected status (Gobustan, areas of ecological value, areas of erosion class 4, 5, and 6). The remaining portion (380 km of ROW - ~85%), including naturally saline and grazing lands, has been considered to be non-critical.

In the non-critical areas, the IEC can confirm that the best means of reinstatement takes place when farmers are allowed to plant their crops over the ROW, but in any case the reinstatement is essentially complete in these areas. The IEC also observed some of the critical areas, in particular the Hasan Su River crossing area with steep slopes, and portions of the Gobustan Desert area, in particular Mud Volcano Ridge. As previously mentioned, the reinstatement program in these critical areas is jeopardized by current vehicular traffic.

This traffic relates primarily to requirements the Export Pipelines Protection Department (EPPD) of the Azeri Government, which requires that the ROW be accessible for security patrols, and also because the means for accessing the ROW with only horse patrols has proved inadequate for BTC/SCP Operations, at least in the short term. Based on conditions observed by the IEC, vehicular traffic currently

taking place along much of the ROW represents a significant impact along the ROW and is unequivocally causing damage in critical areas, including the sensitive Gobustan Desert area. IEC observed significant damage to the ROW in the area of Mud Volcano Ridge (KP 26 – 28) cause by EPPD patrols, but also because of an incident that took place in May 2007 as a training exercise for BTC/SCP Operations, where the responsible staff for the exercise apparently was not aware of the environmental sensitivity of the area. A problem recognized by BP when evaluating aspects and impacts associated with the development of an ISO 14001 program is the lack of awareness of environmental sensitivities among the pipeline technicians and a lack of environmental presence on site when activities take place along the ROW. The damage produced by that training exercise had just been reinstated at the time of the IEC visit.

The proposed MOC related to the revised access strategy to account for the need for EPPD and BTC/SCP Operations to have increased vehicular access is a break with principles of the ESAP, which defines as a base case the general principle of "No regular Vehicle Access on the ROW". It is recognized that this base case was tempered by the need for Operations to have some access for maintenance and emergency situations. It is understandable why Government requirements would not be accounted for when BTC/SCP originally made the commitment to restrict access, given that the EPPD formed after completion of the ESIA. The underestimation of in-house requirements by BTC/SCP Operations is not as understandable, but it is accepted that an MOC document is needed to reflect actual operational conditions, which require the possibility of driving along the ROW in non-critical areas until the end of 2008.

BTC/SCP Operations is in the process of undertaking a comprehensive review of the various options that could be followed to appropriately manage the increased environmental and social impact caused by the increased access to the ROW. It is understood that an Addendum to the BTC and SCP ESIAs will be prepared as part and support to the MOC to address the environmental and social impacts of the revised access strategy and also define the mitigation and monitoring measures that are being put in place to manage the impacts of the revised strategy. In addition, a report is being produced that will identify areas where repair is required, or where additional erosion control measures need to be installed because of the new strategy. This report will be followed up with a Work Plan for Repair of Current ROW Damage that will define the scope of both short- and long-term remediation. In principle, the overall Plan being proposed is to prohibit vehicular access in critically sensitive areas. Access along the non-critical portions of the ROW would be temporarily allowed over a 6 meter wide corridor. By the end of 2008 vehicular traffic would be phased out and horse patrols would replace vehicles. The approach, however, is not yet final as negotiations with the EPPD are still ongoing.

At this point in time, the IEC can only state that BTC appears to be headed in the right direction in terms of preparing the appropriate comprehensive documentation to

support the proposed MOC, but the overall program still needs to be finalized with the EPPD. Before the final assessment of the MOC it will be necessary for the IEC to review the Addendum to the ESIA where environmental and social impacts are quantified and documented, as well as review the Work Plan for Repair of Current ROW Damage.

2.6.2 Recommendations

1. Improve the training of the Operations field personnel in terms of their awareness of environmental and social sensitivities and improve the environmental/social presence on site when field activities take place.

2. Take the time necessary to prepare a comprehensive ESIA for the increased environmental and social impacts caused by creating an access track along the ROW. From an environmental and social standpoint, the ESIA will need to reflect the potential impacts not limited to the biorestoration of the ROW, as there is also potential impact for other environmental (e.g. endangered wildlife) and social aspects.

3. Reconsider the requirement for the road dimension within the 6 meter proposed corridor and evaluate the possibility of reducing the need of the road where adjacent existing roads may be available (limit the footprint).

2.7 ECOLOGICAL MANAGEMENT

2.7.1 Observations

The two programs initiated at the beginning of construction to manage rare and endangered species and reinstate them along the pipeline ROW have started. Specifically for fauna, a number of spur-thighed tortoises (*Testudo graeca*) and European marsh turtles (*Emys orbicularis*) were collected and relocated in appropriate habitats distant from the pipeline in accordance with the Project requirements. The IEC was not provided information regarding the status of the tortoise translocation program, but it can be noted that two *Testudo graeca* were encountered by the IEC near the Hasan Su River crossing (KP 398).

A second program involved the collection of approximately 24,900 individuals of the endangered plant *Iris Acutiloba* from the pipeline ROW and their translocation at a designated desert habitat in the Mardakan Arboretum operated by the Azerbaijan Institute of Botany (IoB). In addition, 8,105 individuals of *Iris* were replanted adjacent to pipeline area. These individuals of *Iris Acutiloba* were replanted primarily in the Gobustan Desert area with the planting program ending on September 30, 2006. The results of this planting were observed in October 2006 to be positive, with the plants beginning to sprout after rainfall. Unfortunately, a survey by an independent consultant, RSK Carter Ecological Ltd., in May 2007 observed that none of the plants have survived, although some specimens were encountered in

the area of off-ROW planting, and it is possible that viable rhizomes exist in the soil. Information was not provided to the IEC to determine if the Project has plans for any additional efforts to repopulate *Iris Acutiloba.* It should be noted that a major commitment of the MOC for Monitoring and Measurement of Biorestoration Success is "*…to reinstate the variety and distribution pattern of the original plant species with the long-term objective of reinstating the local ecology…".* To date and for this critical habitat, this commitment, apparently, is not being achieved.

2.7.2 Recommendations

1. Conduct a comprehensive evaluation of the program for *Iris Acutiloba* and develop an action plan to mitigate the impact generated due to the reported failure of the replanting program along the ROW and reinstating the local ecology. If necessary, develop an offset mitigation to promote the conservation of this endangered species.

2.8 CULTURAL HERITAGE MANAGEMENT

2.8.1 Observations

Cultural heritage management has fully transitioned to Operations. The work remaining to complete the construction-related activities is associated with Phase 5 (analysis of finds associated with the archaeological sites excavated during Phases 3 and 4 and archiving and reporting of the results). A positive aspect of this ongoing work is that BTC continues to support the Institute of Archaeology and Ethnography (IoAE) under the Azerbaijan National Academy of Sciences in their efforts to preserve archaeological finds by setting up a conservation lab and bringing in a professional conservator who can conduct workshops and training. This individual is also in the process of developing a conservation treatment plan to better define the requirements for managing the archaeological discoveries obtained by the BTC/SCP Projects.

A UK-based consultancy, Landsker Archaeology, has been contracted for collation of results of analyses of special samples to include: radiocarbon dating (40 samples); charcoal analysis (24 samples); obsidian characterization (50 samples); and analysis of human remains (75 samples). BTC's senior field archaeologist from the construction phase is currently employed at Landsker Archaeology, which also allows Landsker Archaeology to effectively serve in a review capacity for the reports currently being prepared by IoAE. In total 54 reports are expected to be issued on the archaeological excavation activities conducted as part of BTC construction. The level of reporting depends on the nature and importance of the archaeological excavations and are divided as follows: summary reports (14 reports); short reports (23 reports); and long reports (17 reports). Draft reports are prepared by IoAE and reviewed by Landsker Archaeology. Given the volume of the material being

produced, the logistics of translation and data processing control the completion schedule. Nevertheless, the overall process is working towards completion.

As part of the completion of Phase 5 in Azerbaijan, a significant part of the program to disseminate the archaeological findings of the BTC/SCP Projects has been assigned to the Communication and External Affairs management where responsibilities include:

- Website for three countries;
- Exhibit at BP Sangachal Terminal Visitor Center;
- Exhibit in Baku at Institute of Archaeology and Ethnography Facility; and
- "Coffee-table Book" on Archaeology for Three Countries.

In addition to the above activities, significant effort has been expended to train Operations personnel in the procedures that need to be followed to protect cultural heritage along the ROW. This has involved the integration of archaeological site information within the Project GIS and defining procedures to manage cultural sites. Nevertheless, a problem recognized by BP when evaluating aspects and impacts associated with the development of an ISO 14001 program is the lack of awareness of cultural heritage sensitivities among the pipeline technicians and that the potential exists for damage to archaeological sites during erosion control works, pipeline repair, etc.

2.8.2 Recommendations

1. Improve the training of the Operations field personnel in terms of their awareness of cultural heritage sensitivities and make sure that there is cultural heritage presence on site when field activities take place in potentially sensitive areas as should already be part of the Project GIS system.

2. Re-evaluate if the division of Phase 5 responsibilities between Operations and Community and External Affairs management is the best means to finalize the construction phase cultural heritage program.

3. Ancient cultures did not follow modern borders. Consider holding a cross-country workshop to compare analytical procedures, curation practices and findings across the three countries (repeat recommendation).

2.9 ENVIRONMENTAL INVESTMENT PROGRAMME

During the mission, the IEC did not conduct a detailed review of the Environmental Investment Programme (EIP) in Azerbaijan and the EIP has been reviewed on the basis of limited information provided by BTC.

The program is broken into Phase I and Phase II projects. The Phase I projects have been the subject of discussions the Ministry of Ecology and Natural Resources (MENR) of Azerbaijan such that the overall effort can be achieved as a partnership achieve the EIP goals. Six Phase I projects were selected as being technically compliant with the goals of the EIP Program (including alignment with international and national biodiversity conventions) as listed below.

- NABU: Kura-Araz Lakes System - Conservation of Wetlands Biodiversity in Azerbaijan
- United Nations Development Programme (UNDP): Desert Conservation Demonstration Project
- Azerbaijan Society of Geographers: Desertification Prevention Project
- Azerbaijan Society of Zoologists: Conservation Management of Persian Gazelle Subgutturosa
- Azerbaijan Society for the Protection of Animals (AzSPA): Humane Environmental Education of Children and Youth
- ECOS - Biodiversity Conservation Awareness Raising Project

BTC continues to be unable to obtain ministerial support for any of these Phase I projects. This impasse has resulted in a re-evaluation of the EIP program for Azerbaijan. The focus has moved away from large scale biodiversity projects, implemented by local and international NGOs and requiring MENR support, towards smaller scale, community focused projects addressing local environmental needs (Phase 2 projects).

BTC continues to implement Phase 2 (community driven small grants program), which does not require the same level of regulatory support, does not present a significant financial risk, but should result in real and measurable benefits to the environment and the potentially affected communities. Projects completed under Phase 2 include:

- An Environmental Awareness and Improvement Programme (EAIP) run by a local NGO (HAYAT). The goals of the EAIP were to improve environmental awareness and environmental conditions for the Project Affected Communities (PACs) through community driven interventions, as well as to ensure the sustainability of those interventions. Activities included education of communities by providing training, organizing Green Days, and tree planting exercises; and implementation of 29 community driven Medium-Sized Projects (EIP contribution $566,896).
- Drilling of an artesian well and planting of a fruit orchard in Sarytepe, Shamkir (EIP contribution $11,262).

Ongoing projects include:

- The *Green Pack* – an environmental education tool. The project is being implemented by the Regional Environmental Center for Central and Eastern Europe (REC) and aims to provide information regarding the environment and sustainable development for teachers and students (EIP contribution $113,609).

- The *Energy Bus* – A vehicle for promoting awareness of, and providing practical advice on, community energy issues (Phase 1 of the project was co-funded by EIP and CIP. The EIP contribution that has been committed is $279,716. The EIP contribution for Phase 2 is $368,427).

3 GEORGIA

The BTC Project in Georgia encompasses 249 km of pipeline extending from Azerbaijan-Georgia border in the Gardabani District and finishing in the Akhaltsikhe District at the Turkish border. The corridor followed by the pipeline is close to the existing Western Route Export Pipeline (WREP) for a short distance from the Georgia – Azerbaijan border until the BTC pipeline deviates towards Turkey at KP 19. The BTC pipeline also shares the same corridor with the SCP pipeline, which is a subsequent separate related project that has also been completed and transports gas from the Shah Deniz field offshore Azerbaijan to the Georgian/Turkish border. The BTC Project includes several permanent Above Ground Installations (AGIs) including two pump stations, PSG-1 located at KP 3.8 and PSG-2 located at KP 88, as well as block and check valves.

In addition to the permanent facilities, the pipeline was associated with several temporary facilities during construction, which included:

- Temporary construction camps (Marneuli at KP 53, not occupied, but continuing to be used by SPJV for demobilization activities; Tsalka at KP 123, partially decommissioned). The camps at PSG-1 and PSG-2 and Akhaltsikhe are being used by Operations.

- Temporary pipe yards for pipe: Gatchiani, also called Rustavi (used by Operations for storage); Marneuli (closure nearly complete); Tetritskaro (reinstated and returned to the owner); Tsalka 2 (reinstated and returned to the owner); Andeziti (used as laydown area for Kodiana Projects) and Akhaltsikhe (reinstated and returned to the owner).

During this ninth mission, a helicopter fly-over along most of the pipeline ROW from near the border with Azerbaijan westward to near the Turkish border at Area 80 of the SCP Project was conducted. Furthermore, spot checks on the ground were conducted to review the reinstatement of the pipeline from about KP 240 to KP 4. Some of the off-ROW (construction camps, pipe and mechanical yards, access roads, borrow pits, batching plants, and rock disposal sites) were also visited to observe the reinstatement status. The Central Waste Management Area (CWAA) at PSG-1, the Iagludja municipal waste disposal site, a candidate site for an EU-compliant non-hazardous waste landfill, and the construction site of the Emergency Drain Down Facility (EDDF) Kodiana Project were also visited.

3.1 CONSTRUCTION STATUS

The entire BTC pipeline became operational on June 5, 2006 with the first shipment from Ceyhan, Turkey. At the time of the visit, the BTC pipeline was transporting approximately 900,000 bpd and the SCP was also fully operational, having initiated

operations in November 2006. Georgia began receiving the benefits of offtake gas from the SCP Project in January 2007.

Current (June 2007) construction progress is as follows:

- *Facilities* – All AGIs (PSG1 and PSG2) are fully operational. Construction still pending relates to improvement of the main oil-water separators, redesigned facility sewage treatment plant and associated infrastructure.

- *Pipeline* – Pipeline construction for both the BTC and SCP projects is complete to the Turkish border (249 km). Reinstatement is complete and current activities relate primarily to the identification of critical areas where long-term monitoring and maintenance will be required.

Throughout the construction phase the BTC Project used a single foreign EPC Contractor, Spie-Capag Petrofac Joint Venture (SPJV), for both pipeline and AGI construction. SPJV maintains only a limited presence associated with final decommissioning activities. Since 2006, BP Operations and Projects have established a working relationship with a large number of Georgian and regional contractors.

3.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

3.2.1 Resources and Organization - Observations

The transition from Construction to Operations is complete. The single point of accountability for environmental management in Georgia is the Georgia Asset Environmental Manager, who is supported by teams covering emissions management; ecological management and EIPs; ESMS implementation and compliance; waste management; GIS; cultural heritage; remediation management; and Projects. The Projects team covers the Kodiana Projects and remaining 'legacy' projects and is managed by a Project Environmental Team Leader, who is supported by a dedicated senior environmental advisor for the Kodiana Projects, as well as three environmental field officers, a biorestoration and environmental advisor and a biorestoration field officer. The overall group is staffed approximately 80% with Georgian nationals. The resources and the personnel dedicated to the management of the E&S system appear sufficient with some of the key individuals responsible for management of environmental and social programs during construction having transitioned to Operations.

Now that construction activities are almost completed and SPJV is essentially demobilized (complete demobilization expected by the end of June 2007), the Operations organization is effectively responsible for monitoring and controlling the local contractors involved in the ongoing Projects, specifically the Kodiana projects

(see Section 3.6), the decommissioning of the remaining off-ROW facilities and the final reinstatement of the ROW.

3.2.2 Resources and Organization - Recommendations

1. The organization is in place; Operations staff needs to make sure that the data available from the construction phase is readily available such that Operations activities do not damage sensitive resources previously identified during construction.

3.2.3 Non-Conformance Records (NCR) Register

The NCR Register was provided by the Project during the June 2007 visit. Based on the information provided, the following issues appear to be open with contractors at the time of the visit:

- CAR 00004 issued to Geo-Engineering concerning waste segregation;
- CAR 00006 issued to Geo-Engineering concerning incomplete access road reinstatement.

According to the information provided to the IEC, all these issues are expected to be closed as soon as practical during the next few weeks.

3.2.4 Management of Change - Observations

Over the past four months the IEC has reviewed several environmental and social MOC documents prepared by BTC. These documents outline procedures for various topics that deviate from procedures defined in the ESAP to varying degrees. Most of the MOCs define minor changes to procedures that the IEC has found materially compliant with ESAP. In other cases, the proposed changes are significant and these topics were the focus of the field trip.

A summary of the recent MOC documents for the three countries with the IEC responses is summarized in Table 1.

3.3 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services has typically focused on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, borrow pits and irrigation systems. At this point in time, with the exception of the Kodiana Projects, most of the facilities originally part of the BTC Project are no longer operational, and the IEC visit focused on reinstatement of some of these facilities.

3.3.1 Observations

BTC/SCP Operations have essentially taken over responsibilities from SPJV for the closure of the camps and pipeyards and most of the camps are still being used by Operations for various purposes. Most of the pipeyards have been reinstated and returned to the landowners, but two of the pipeyards, Rustavi (Gatchiani) and Andezit (Bakuriani) have been retained by Operations for continued usage. The remaining off-ROW facilities have been reinstated to varying degrees. If a site has been returned to the landowner in other than a fully reinstated condition, it has been to the satisfaction of the landowner. Details of the condition of these off-ROW facilities are as follows:

Camps

- *PSG1 Camp* – Transferred to Operations under a formal MOC to support commissioning staff and construction of the SCP Off take line (now complete);
- *Marneuli Camp* – Delayed reinstatement covered under an MOC to allow the SPJV to stage demobilization activities - reinstatement assumed by BTC using local contractors to be completed prior to October 2007;
- *PSG2 Camp* – Transferred to Operations under an MOC to provide accommodation for commissioning personnel;
- *Tsalka Camp* – Partially decommissioned in late autumn 2006 - reinstatement assumed by BTC using local contractors to be completed prior to October 2007;
- *Akhaltsikhe Camp* - Transferred to Operations under an MOC to provide accommodation for commissioning personnel.

Pipeyards

- *Rustavi (Gatchibani) Pipeyard* – Transferred to Operations under an MOC to provide logistical storage;
- *Akhaltsikhe. Tetritskaro, and Tsalka Pipe Yards* – reinstated and returned to the landowner;
- Marneuli Pipeyard – reinstatement nearly complete, but final closure of the site awaiting SPJV departure and removal of various equipment/containers - to be returned to pre-existing condition and handed back to the landowner prior to October 2007.
- Andezit Pipeyard / Bakuriani Mechanical Yard – retained temporarily for use as a laydown area and batch plant facility to support Kodiana Projects, under MOC - reinstatement assumed by BTC using local contractors.

Other facilities

- *Tsalka Mechanic Yard* - cleaned up, – reinstated and returned to the landowner;
- *Akhaltsikhe Mechanic Yard* – pre-existing facilities upgraded, cleaned of project wastes and handed back to the leaseholder for continued operation as a non-project third party site;
- *Rustavi Mechanic Yard* - final closure of the site awaiting SPJV departure – to be returned to pre-existing conditions and returned to landowner prior to October 2007;
- *Akhaltsikhe and PSG1 Batch Plants* – pre-existent site utilized by project, cleaned of project wastes and returned to the leaseholder for continued operation as a non-project third party site;
- *Andezit (Geo-Tek) Batch Plant* – site in the process of being cleaned of project wastes, improved facilities have been handed back to the leaseholder for continued operation as a non-project third party site;
- *PSG2 Batch Plant* – pre-disturbed site, reinstated and returned to the owner.

Since IEC's third mission in October 2004, BTC's Core Management Team (CMT) has dedicated specific resources to the survey of third-party sources of supplies, in particular aggregate and cement/concrete. During this field trip several gravel pits/quarries were visited.

The Atskuri gravel pit previously visited and found to have Level I non-compliances was visited and found to be fully reinstated. The Level I non-compliance is rescinded. A gravel pit near KP240 that was reported to have been operated in a manner similar to the Atskuri pit was also found to be fully reinstated. A third-party operating gravel pit being used by the Project at Kashuri was also visited and improvements to the operation of this facility provided by the Project were observed, such as PPE and management of sedimentation pond for washwater runoff. The Project was also able to demonstrate that it had audited this facility in the past and found operations to be generally acceptable.

The Kodiana projects have a requirement for substantial amounts of aggregate. BTC has not made a final determination as to where they will obtain this aggregate in the long-term, but the possibilities of using a semi-abandoned rock quarry at Andeziti or use the Kashuri borrow pit with a relatively long haul distance are being considered. The IEC also visited the Andeziti quarry and observed that BTC would have significant social interaction should this quarry be made operational and that most of the equipment at this facility is no longer operational. Substantial site improvements would be required before this facility could meet Project standards and there would undoubtedly be labor issues, as well as the potential for residents to be affected by

noise, dust, etc. Nevertheless, the community has the potential to receive substantial benefit by means of jobs, an improved access to their town and improved quarry conditions. The Kashuri borrow pit site has the advantage that startup would not be required, but the relatively long haul is itself a potential HSE issue.

3.3.2 Recommendations

1. In making a decision regarding the aggregate source for the Kodiana projects, prepare a decision matrix that accounts for social and environmental factors, as well as the cost-benefit of development. Do not underestimate the social and environmental benefits that could be achieved with the development of the Andeziti quarry location.

2. Should the Kashuri borrow pit be selected for the long-term aggregate supply for the Kodiana projects, IEC recommends continuing ongoing efforts at towards the capacity-building of this enterprise with monitoring and support as required.

3.4 WASTE MANAGEMENT

3.4.1 Non-Hazardous and Hazardous Waste – Observations

Non Hazardous waste

Since the start of construction, BTC has adopted several methods to dispose of non-recyclable/re-usable non-hazardous waste, none of which have been compliant with ESAP requirements. Historically, BTC began to dispose of non-hazardous construction waste with an incinerator operated at PSG1 Central Waste Accumulation Area (CWAA) (December 2003). This incinerator did not achieve compliance with EU standards as required in the ESAP. The use of this incinerator was eventually supplemented with a third-party incinerator at Sarini. The Sarini incinerator was not designed to be EU-compliant and although had a permit to operate the Georgian Government did not allow this permit to be extended for the disposal of BTC waste and its use was discontinued. By October 2004 BTC made the decision to use a 3rd party municipal disposal dump site (Iagludja) and offered a Conditioning Plan for this facility as an offset for its use. The Conditioning Plan intent was to improve conditions at the Iagludja site in line with landfill closure requirements within the EU. The IEC approved the scope of this Plan. For a limited time BTC operated the PSG1 incinerator and disposed of waste at Iagludja, but by February 2005 the use of the incinerator was abandoned. BTC has since continued to dispose of non recyclable/re-useable non-hazardous waste at Iagludja but was never able to make any significant changes to the site that improved its operations. After determining that the environmental improvements to the Iagludja site could not be implemented because of safety concerns, the fact that the site had expanded beyond its limits and the Municipality's intention to keep using and extending the site, BTC ceased implementing the Conditioning Plan by June 2006. The testing of surface

water from the Iagludja site reported in May 2007 confirms that the waste at the site does impact surface water directly at the foot of the landfill.

In parallel with using the Iagludja facility, BTC has been in the process of planning to construct a new EU-compliant municipal non-hazardous landfill. In April 2005 BP committed to assist the Government of Georgia with the development of an EU compliant non hazardous waste solution for BP and Georgia. BP and its Partners have allocated up to $5 million to support the integrated waste management strategy for both BP and the Government of Georgia. In parallel, BP and it Partners plan to work with the Government in determining possible funding mechanisms with financial institutions to supplement the contribution made by BP and its partners. It was anticipated that this EU-compliant solution would provide a separate BP dedicated cell for both Project (during Operations) and a separate facility for Government of Georgia's use.

BTC hired a consultant to look for a landfill location in lieu of Tbilisi Municipality securing an agreement for a facility. This study was completed in October 2006 and conceptually identified a design for a new municipal landfill that would include a separate cell dedicated for Project waste. The development of this project would allow, if desired, for the Municipality of Tbilisi to cease/decrease dumping waste at the Iagludja site and the Project could also cease using this facility.

In April 2007, according to BP information, the Tbilisi municipality has planned to continue to use existing waste sites like Iagluja in association with a Japanese company.

BP has developed a plan to construct a new BP-dedicated EU-compliant non-hazardous waste landfill cell. The initial cell is designed to have a five-year filling capacity, but with a potential for future expansions over the decades BP expects to operate in Georgia. In parallel, BP is considering an EU-compliant incinerator should the permitting process for the landfill prove to be significantly delayed. It is understood that the incinerator is a fallback option, only, and that a dedicated landfill is the preferred option. BP plans to complete a site selection and ESIA for the new landfill cell by the end of 2007 and construct the facility before the end of 2008. In June 2007, the Government of Georgia indicated a renewed interest in developing a joint facility but in support of the Rustavi and Gardabani Municipalities which currently do not operate their own facilities. BP plans to assess this option as a parallel process such that it does not hinder delivery of the dedicated BTC cell. BTC is also reviewing the other initiatives for interim compliance such as storage of non-hazardous waste or the export of non hazardous waste to a compliant facility outside of Georgia.

During this mission the IEC visited the Iagludja disposal site and can confirm that it continues to operate as an open-air dump. The preferred location for a new dedicated BP landfill cell was also visited at a location near Rustavi on the opposite side of the

Kura River from the Iagludja facility. The site is a greenfield location, that based on preliminary information, appears to be acceptable from a technical point of view.

In summary, BP appears to be on the right track for arriving at an ESAP-compliant solution for the management of non-hazardous waste that will be generated in the future. Nevertheless, the BTC project has disposed of a portion of its non-hazardous waste stream in a manner inconsistent with the commitments of the ESAP. This non-compliance began in December 2003 and is still to be resolved. IEC believes this situation represents is a Level III Non-Compliance *(CCP Waste Management Plan, Commitment ID: J1, J16, J18 (N15))*. This Level III will remain in effect as long as the Project continues to use the Iagludja facility.

The current plan for developing an EU-compliant dedicated cell however does not compensate for the non-compliant disposal of the non-hazardous waste disposed at Iagludja since the start of construction in December 2003. From the standpoint of achieving an acceptable completion, two possibilities can be identified, although there may be others to be considered:

- Remediate the Iagludja disposal site such that it can function as an engineered landfill – IEC recognizes that this may be an unrealistic option in light of the desire from the Municipality to keep utilizing and expanding this facility;

- Compensate for the non-compliance by means of an offset mechanism.

BTC reports that to date approximately 1,830 tons of non-hazardous solid waste were disposed by the Project in either the Iagludja facility or at the Sarini or PSG1 incinerators from 2003 through May 2007. IEC is willing to review a proposed offset to be developed by BTC/BP.

Hazardous waste

The final solution for the disposal of hazardous waste stored at the Central Waste Accumulation Area (CWAA) at PSG-1 based on international export and final disposal in EU-compliant facilities appears to be imminent. A specialized contractor Veolia ES (UK) has been retained to repackage and export the stored hazardous waste, as well as some non hazardous recyclable materials that cannot be recycled in Georgia in an EU compliant manner. Veolia has already started repackaging the waste at the CWAA to UN shipping standards and this effort is reported to be 85% complete. The remaining waste will be repackaged prior to shipment following permitting finalization. Disposal sites in Europe have been identified for the different waste streams and contracts are in place for transport and disposal. The Georgian MoE has been supportive of this effort and the process of approvals within the Basel Convention has started. The current schedule is for the export of waste to start in September 2007 and be completed by March 2008. The export of waste will include the stockpiled medical waste, as well as some non-hazardous waste streams

for which recycling options have not been identified in Georgia (e.g., plastic bottles that have been crushed and are accumulating at the CWAA).

During the mission the CWAA was visited and the effort to start to repackage the waste was evident. At the time of the visit it was noted that some improvements were still needed with respect to pollution prevention systems and fire protection, the details of which were identified with the individuals responsible for the management of the facility. The construction of a roof over the storage area is still pending, awaiting engineering approval.

One waste stream for which there have been many delays in achieving a final solution has been used oil. The Government of Georgia has given approval for the disposal of the remaining 70 m^3 that have been filtered and are currently stored at CWAA. BTC is in the process of conducting its own technical and legal review of the use of the BTC pipeline, but it is expected that all remaining waste oil will have been injected by the end of 2007.

Wastewater Treatment

The Project has continued sewage treatment at Operations sites through the camp wastewater treatment plants (WWTPs) with discharges through reed beds. In general, these plants are functioning in compliance with recommended ESAP limits, although there have been some excursions to which the Project has shown a reaction. For example, in April 2007 the PSG2 camp the level of coliforms was tested to be 1,600 MPN. Upon further investigation it was determined that the coliforms most likely originated from an outside source, where domestic wastewater directly entered the reed bed or from runoff from an adjacent (5-6 m distance) animal pen recently constructed next to the reed bed by a local farmer. The Project has reacted by disconnecting the drainage channel from the reed bed and starting a reed bed drainage upgrade plan.

The spent sewage sludge from the PSG1 and PSG2 facility WWTPs and the camp WWTPs has been used as fertilizer on the ROW, but is currently being sent to the Gardabani municipal WWTP for final disposal. This subject was reviewed by the IEC in our October 2006 visit and is also the topic of an MOC regarding the disposal of sewage sludge at the Gardabani Municipal Treatment Plant - Document Number: AGT002-2003-OP-DCN-00007 – Class III change. In essence, the IEC has indicated acceptance of this MOC, as long as the Project is able to demonstrate continued support and capacity-building to the facility. The Project has been able to demonstrate its support, as confirmed by the results of audits where it was found that the facility has improved its operations.

PSG1 and PSG2 both have WWTPs that were not designed to treat the volumes of sewage produced at these locations, similar to the pump stations in Azerbaijan, which have identical problems. Control is based on sampling and manual management (transfer and treatment at camp WWTP) of sewage effluent and waste sludge.

Current plans are for new WWTPs to be constructed that will also be associated with new reed beds, again similar to the construction that is ongoing at PSA2 in Azerbaijan.

3.4.2 Non-Hazardous and Hazardous Waste - Recommendations

1. The site shown to the IEC as the prime candidate for a non-hazardous waste cell appears to be technically acceptable, but a site selection process that demonstrates that a brownfield site is not a practical option should be provided within the content of the dedicated ESIA report that is under development.

2. Given that BP plans to operate in Georgia over a period of many decades, BP should demonstrate that the proposed option for final non-hazardous waste disposal is also a medium to long-term waste solution. The ESIA should also demonstrate that the proposed site has suitable expansion capabilities.

3. The offset for non-compliant disposal of waste should be within the field of waste management.

3.5 POLLUTION PREVENTION

3.5.1 Observations

As the BTC pipeline is now operational, pollution prevention issues relate primarily to erosion and sediment control along the pipeline ROW and these are discussed in Section 2.5. Furthermore, as most of the camps are being decommissioned, the pollution prevention systems at these locations were not a focus of this IEC mission, but some observations were made at the former PSG1 camp. 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 (*Level I Non-Compliance, CCP Pollution Prevention Plan, Commitment ID: H42*).

As previously noted in the June 2006 trip report, one issue common to both Georgia and Azerbaijan has proven to be related to the main oil-water separators designed to clean up surface water from the pump stations. The design of these systems was flagged as a possible concern at the time of the construction of the pump stations, and the conclusion of the BTC staff is that the systems are undersized for the loads they could potentially face. The current problems with the OWSs do not constitute a non-compliance (their problems relate mainly to their inefficiency), but their performance could potentially be compromised under emergency loadings. These systems were redesigned in 2005, but the modifications have yet to be completed. The actual schedule for constructing the improvements to the OWS system was not provided to the IEC, but it is understood that a schedule is being established. It is understood that

the retention ponds at PSG1 and PSG2 are not fully lined as PSA2 in Azerbaijan is the only retention pond with a complete concrete liner in Azerbaijan and Georgia. The lack of a liner could be a contaminant pathway where groundwater is shallow and without concrete it is very difficult to clean out bottom sludge.

Stack emission monitoring started at PSG2 on December 12, 2006 with the testing of MOL Turbine No. 2 with diesel used as the fuel. MOL Turbine No. 1 was tested at PSG1 on March 3, 2007. In both cases, the only parameter that did not pass Project standards was carbon monoxide (CO). Stack emission testing is still limited due to design problems of the sampling ports, a situation expected to be resolved the third quarter 2007. Monitoring ports have not been correctly installed on the stacks of MOL Turbines No 1, 3, 4 & 5, Water Bath Heater, Crude Topping Unit, which is being discussed to be decommissioned in 2008, and Generators at PSG2 and a similar situation exists at PGG1. The stack emissions monitoring has therefore been incomplete and the environmental loadings determined to be acceptable on the basis of fuel use and run hours data, as well as the ambient air monitoring. Ambient air monitoring began in August-September 2005 and has continued through to January 2007 with EU ambient air quality standards being achieved for all the monitored parameters at all of the sampling locations, except for SO_2 as measured at PSG1 in March 2007. The SO_2 was thought to have originated from the camp generator. The incomplete emissions monitoring at all of the required sampling locations is considered a Level I non-compliance (*Emissions Management Plan - BTC Operations – Azerbaijan & Georgia, Commitment ID: Y14)*.

A means of verifying if there has been any leakage from the pipeline or any discharge from the pump station has been the monitoring of groundwater and surface water. Consistent with commitments in the ESIA and agreements with the Government of Georgia, this monitoring has focused on ecologically and socially sensitive areas and the AGIs. In the Borjomi area (KP 178-200) 11 groundwater monitoring wells and 9 surface water sampling points have been identified; in the Ktsia-Tabatskuri portion (KP 156-178) there are 17 groundwater monitoring wells and 16 surface water sampling points; in the Tsalka portion (KP 96-156) 20 groundwater monitoring wells and 22 surface water sampling points are installed; PSG2 has 1 groundwater monitoring well and 3 surface water monitoring points; and PSG1 has 5 groundwater monitoring wells and 1 surface water monitoring points with an additional groundwater monitoring well at the CWAA. Baseline conditions for this monitoring were established in 2005 and the testing results from 2006 sampling are consistent with the baseline results. The sampling program for 2007 is being discussed with the Government of Georgia from the standpoint of sampling frequency, as many of the monitoring points are not accessible during the winter season.

3.6 ROW MANAGEMENT

3.6.1 ROW Reinstatement - Observations

Much of the time spent by the IEC team in the field was dedicated to the visit along the ROW including a second fly-over exercise from the Azerbaijan border (PSG-1) westward to SCP Area 80, next to the Turkish border. The primary scope of the survey was to observe final reinstatement across the combined BTC/SCP corridor. During the visit specific spot checks on the ground were conducted, especially in the highlands where active reinstatement was undergoing during the October visit by IEC.

A fundamental observation is that the erosion and sediment control efforts appear to have been generally successful over the past winter season. Vegetation has not appeared over the entire ROW, but it must be recognized that some areas reinstated in the fall have not yet had enough time for plants to grow, considering that highland portions are still recovering from winter. The reinstatement process appears to be consistent with the stages of recovery that relate to when the reinstatement activities were complete. Planting and seeding activities were observed at one of the more difficult reinstatement locations (KP 176) and the overall process appears to be going well. Punch list of ROW conditions is being prepared to define areas that require special attention based on a walkover, a process that started May 15 and is expected to end by about the end of July.

One concern to the reinstatement process is the presence of motorized vehicles along the ROW. This is an issue that has been flagged by the environmental management in Georgia when evaluating aspects and impacts associated with the development of an ISO 14001 program. Motorized surveillance, monitoring and inspections by BTC Operations/Contractors are considered to represent a "significant" risk based on the aspects and impacts classification system. The risk from Government of Georgia security patrols is assigned a higher significance, with the risk being greater when these security patrols go off-ROW. The risk is considered to be greatest where there may be sensitive flora and fauna sites, considering the high frequency of vehicular access. When compared with the situation in Azerbaijan as discussed in Section 2.6, ROW access in Georgia does not appear to be as critical a problem, but it is recognized as being a "significant" issue. This is a subject that the IEC will continue to monitor in future missions.

3.6.2 Off-ROW Reinstatement – Observations

During past IEC visits, one of the main concerns in Georgia was the reinstatement of the off-ROW project footprints, in particular the camps, pipe yards, borrow pits and access roads. At this stage of the Project, the process of off-ROW reinstatement is nearly complete. Exceptions are the reinstatement of Tsalka and Marneuli camps, expected to be complete by October 2007, as discussed in Section 3.3. Section 3.3

also outlines the reinstatement status of other off-ROW facilities actively occupied during construction.

The reinstatement of borrow pits is complete. At the time of the October 2006 IEC mission, three borrow pits remained to be reinstated: KP 107 Bedeni; KP 176 unnamed; KP 93 Ivanovka. The Ivanovka borrow pit is now reinstated. The Bedeni and KP 176 borrow pits were also used for rock disposal and in this case the rocks have been left in a state such that they can be utilized by the landowner. The degree of reinstatement at these facilities has been approved by the Georgian MoE. The IEC reviewed the status of these three facilities during the ROW flyover and considers their reinstatements to be complete.

The disposal of excess rock is a process now complete. BTC reports the final amount of excess rock to have been 907,000m^3. 66% is reported to have been reused as intimate backfill, rip-rap, sent to rock crushing plants for use as aggregate, gabions, access control barriers or landscaping with 34% transported to rock disposal sites. The end result has been an acceptable management of excess rock.

In October 2006 the Project reported that a total of 75 Km (43 roads) were created/widened by the Project, of which 20 of them were planned to continue to be used during Operations to access block valves and the Security Base. Reporting in June 2007 is that a total 103 access roads were used by the Project, of which 47% have been returned to pre-existing conditions (as roads); 30% have been retained or improved for access for Operations; 20% are reinstated; and 3% are being reviewed. The discrepancy between reporting in October 2006 and June 2007 is not clear, but the IEC did observe in the field where access roads have been reinstated and it is expected that the closure process for access roads is nearly complete.

3.6.3 ROW and Off-ROW Reinstatement - Recommendations

1. IEC recommends monitoring the conditions of the off-ROW footprint be conducted at with the same degree of vigilance as the ROW where greenfield sites were utilized.

3.7 KODIANA PROJECTS IN THE BORJOMI AREA

3.7.1 Observations

The Borjomi Work Region extends from about KP 176 to KP 196. This area is one of the most significant parts of Georgia in terms of environmental, economic, cultural and aesthetic considerations. The area is part of the catchment of Borjomi Mineral Water, which is one of the most significant private developments in Georgia. Communities in this area are hopeful that tourism will be redeveloped and are concerned that the Project will adversely impact the landscape and their prospects for tourism.

The Kodiana area is where the Government of Georgia has requested that BTC implement special protective measures, including: temporary secondary containment, permanent secondary containment, a drain down tank, and construction of a security base for a patrolling security crew (the "Kodiana Project"). Critical issues will include landscape alteration and aesthetics, potential impacts from altering the local hydrology, construction impacts taking also into account the presence of an archaeological site at one location, potential social consequences (especially from the stationing of about 200 soldiers at the security base), management issues during operation (e.g. waste management, pollution prevention requirements), access control (especially the Tori site location), ecology, and identification of relevant mitigation measures.

The Project has committed to strictly following best practices with multiple lines of protection and redundancy in design and operations on the pipeline to achieve as close to "zero risk" of an oil spill or leak as practical. At the time of the October 2006 IEC mission, the construction for all of the Kodiana Projects was scheduled to be complete by October 2007. As of June 2007, the completion of all projects is anticipated to be by the end of 2007, except for one of the secondary containments, expected to be completed in 2008. At the time of the mission the design issues of the secondary containment structures not resolved with the Georgian government at the time of the October mission had been finalized.

According to the information provided during the visit, the status of the Kodiana Projects construction works is as follows:

- *Secondary Containment Sites*: the ESIA and design basis of these structures has been approved by the Georgian government and the construction permits are considered imminent; construction awards are underway and four sites are scheduled for completion in the 4th Quarter 2007 with the 5th scheduled for completion in 2008.
- *Emergency Drain Down Facility (EDDF)*: the construction permit was received early October and the contractor (Ergil Avraysia) continued construction through the winter. Construction is expected to be complete by the end of 2007.
- Temporary Bypass Road (KP 181-184): This is still an operational road. The IEC did observe that most of the trees planted along this access road last fall appear to have survived the winter.
- Security Base: construction is well underway with Georgian contractors (GeoEngineering and Nola) on site; completion is forecasted for the end of 2007.

The EDDF was visited by the IEC at a time when sheet-piling was being installed such that the excavation could be deepened without increasing the construction footprint. The visit to the EDDF provided confirmation that the Kodiana Projects by themselves represent major construction with special considerations in an area with significant environmental and social sensitivities. Good sediment control and topsoil

management was observed at the EDDF and the environmental aspects of the construction appear to be well managed.

3.7.2 Recommendations

1. IEC acknowledges the efforts being made to bring local contractors into ESAP compliance. This effort has produced good results at the EDDF. Make sure that this effort is maintained with the new contractors that will start with the construction of the secondary containment structures.

3.8 ECOLOGICAL MANAGEMENT

BTC Ecological Management Plan Commitment F16/D6 defines the Project's responsibility to "*…Promote and undertake a wildlife monitoring programme in forest areas and wetlands to promote the conservation of endangered species…*" The Project has fulfilled commitment F16/D6 through the development and implementation of a Biodiversity Monitoring Programme approved by the Government of Georgia in May 2004.

The Biodiversity Monitoring Programme consists of five years of monitoring selected floral and faunal species of concern, the first of which was conducted in 2004. The floral component of the Biodiversity Monitoring Programme focuses on four habitats (wetlands, forests, high mountain meadows, and *Rhododendron* scrub), as well as on individual species of high conservation value. For the faunal component, multi-taxa monitoring is conducted with emphasis on IUCN and Georgia Red-listed species that occur in the vicinity of the ROW (as determined by the ESIA and as confirmed by the pre-clearance surveys).

During the current visit to Georgia, the IEC did not specifically review the ecological management programs in the field, but was provided with the 2006 biodiversity monitoring reports for both floral and faunal components and additional information to update the observations made during the October 2006 mission, in particular to describe the follow-up to recommendations made by the IEC during the October 2006 mission.

3.8.1 Biodiversity Monitoring

In previous reports the IEC recommended that the Project prepare a separate document that includes justifications for all indices, site selection, sampling protocols, and statistical tests (specific to the populations in question); citations for methods; all available baseline data in a concise format so that an independent reviewer will be able to verify the results; separate figures that clearly show the monitoring design at the different sites; and, clear explanations of why a particular method was chosen (supported with citations, when necessary). At the time of the October 2006 mission this information had been provided only for the floral

component. A current audit also confirms that the faunal component report provides this backup information.

Faunal Monitoring

Amphibian monitoring

Reproductive Syrian spadefoot toads (*Pelodytes syriacus* [IUCN Near Threatened and Georgia Red List]) were identified at one of the monitoring sites (KP 11) in 2005, but no individuals were located at the KP 40 monitoring site. In 2006 adult toads were recorded in early April in the channel at KP 40 but not at KP 11. Regarding the Caucasian mud-diver (*Pelodytes caucasicus* [IUCN Data Deficient/Georgia Red List]), consistent with IEC recommendations, new habitats (two compensatory ponds) for mud-divers have been found and are currently being monitored. The 2006 monitoring survey findings with regard to these artificial compensatory breeding ponds for the Caucasian mud-diver confirm that at these locations the population of this frog seems to be rapidly recovering after destruction of several breeding pools along the ROW between KP 181-185.

Reptile monitoring

Three species of concern were included – the snake-eyed lizard (*Ophysops elegans*), the European marsh turtle (*Emys orbicularis*), and the Caspian terrapin (*Mauremis caspica*). In response to IEC concerns, BTC has endeavored to demonstrate some improvement to the means by which the snake-eyed lizard has been monitored. Student's t-test methodology has been used to determine if differences between the monitoring and control sites are significant. Details are given in Appendix II of the report. The overall observation form the monitoring of this species is that there has been no measurable variations in abundance of this species since the start of monitoring and no differences in lizard abundance were recorded between the monitoring and control sites in any year. On this basis, the conclusion is that there is no evidence of significant negative influence on the population of the snake-eyed lizard in the vicinity of the ROW resultant from pipeline construction activities and the removal of this species from the further monitoring program may be considered.

Monitoring of the European marsh turtle and the Caspian terrapin took place in two monitoring locations and two "control" sites, one of the monitoring locations being the stream at KP 11 (also used for monitoring of the spadefoot toad). Turtle and terrapin numbers did not differ significantly between monitoring and "control" sites or to the 2004 monitoring data. In contrast with the previous years (2004-2005), some parts of the swampy channel (north of KP 11) held water by the end of May in 2006, but the water level appeared to be lower than before 2004, and the section south of KP 11 was still dry and there are still statistically fewer turtles in this area. The 2006 annual report again proposes to investigate further to understand if construction activities were indeed not responsible for the current conditions of the

channel at KP 11, investigate the channel's hydroperiods, and develop mitigation measures, if necessary. The IEC continues to support these recommendations.

Avian monitoring

The project's avian monitoring efforts continue to be extensive including the monitoring of wintering waterfowl, resident waterfowl, nesting populations, breeding pairs, and the Caucasian black grouse (*Tetrao mlokosiewiczi*). Following IEC recommendations, the monitoring has improved in terms of stated goals and means of analysis. Generally, for faunal species migrating across the pipeline ROW, population numbers appear to depend primarily on external environmental factors rather than the direct impacts of the ROW, as some species have apparently increased while others have decreased. The monitoring report indicates that further monitoring is necessary for all avian species and the IEC concurs with this recommendation.

Mammalian monitoring

A number of bat species, Brandt's hamster (*Mesocricetus brandti*), and the common otter (*Lutra lutra* [IUCN Near Threatened]) were included for the mammalian monitoring effort. The 2006 monitoring report describes an improved methodology for monitoring and improved statistical analysis of comparative trends from test and control sites. The most significant find is the continued decline of bat species, especially in the Tskhratskaro-Kodiana area (KP 180 – 185). This decline is attributed to the destruction of the broadleaf forest fragments only partially associated with pipeline construction, but recommends that mitigation measures be urgently undertaken including installation of dozens of artificial shelters for bats on the remaining trees. The negative trend recorded between 2004 and 2005 for Brandt's hamster was again observed in some, but not all, of the survey areas. In general, there was no significant decrease of the number of hamster burrows throughout the study area between 2005 and 2006 that could be associated with the pipeline operation activities, but the 2006 monitoring report recommends that monitoring be continued. Some indications of the presence of the common otter were recorded at three out of the four monitoring sites in 2006, but the results are not considered conclusive and the report recommends continuing the monitoring surveys to confirm that all four otter habitats are still appropriate and inhabited by the otters. The areas at the Potskhovi River are interpreted to be of special concern, with the floodplain forest along the banks requiring rehabilitation upstream from the river crossing (vicinity of KP 239-240). It is recognized that a one-year observation cannot support or reject appropriateness of a site for otters and further clarification or monitoring is needed provide a sound basis for decision-making.

Aquatic monitoring

Dragonflies and damselflies (two suborders within the order *Odonata*) continue to exclusively being used as indicator taxa. IEC's previous recommendation was to adopt a more sophisticated approach using at the least multiple taxa, and including

some measure of overall benthic macroinvertebrate richness. BTC recognizes that exclusive use of *Odonata* as indicators for aquatic monitoring is controversial (in some case it is effective, whereas in other cases it is not), also noting that there is limited expertise in Georgia for the monitoring of other aquatic invertebrates. Results through 2006 continue to show that species diversity and abundance varied between monitoring and "control" sites providing no clear trends in either direction.

Regarding the ichthyology component, BTC provided a statement that the ichthyology is considered to be incorporated in 2006 biodiversity annual report following reconsidered/improved methodology, whereas it was previously omitted due to poor data quality 2004 and 2005. The IEC did not encounter any reference to the ichthyology component in the 2006 annual report.

Floral Monitoring

Based on IEC review, of the Annual Biodiversity Monitoring Program – Floral Component for 2006, the floral biodiversity monitoring continues to represent a significant achievement of the Project. Some concerns identified in the October 2006 IEC report related to invasive species and the potential impact to mountain wetlands.

The 2006 annual floral monitoring report notes the continued spread of the potentially invasive reed canary-grass (*Digraphis arundinacea*), although considered in Georgia as noxious weed, rather than an invasive plant. The annual monitoring report recommends that if the population of Canary-grass continues to be found within the monitoring plots during the follow up surveys, a separate study will be commissioned to better understand the invasive nature of this species and elaborate preventive measures to prevent its further dispersal. IEC was informed that an invasive species biannual survey is now being incorporated in the annual biodiversity monitoring scope based upon an agreement with Georgian government (MoE). The scope of this effort has been defined and the methodology will be reviewed with the MoE.

The 2005 report discussed a number of impacts to the hydrology and species composition of several wetlands along the ROW and the IEC has previously recommended that biorestoration of wetland sites be conducted to ensure the rehabilitation of the original hydrological regime and proper regrowth of native vegetation, in particular in the mountainous areas. The IEC was informed that a three year scope for high mountain wetland communities' botanical inventory/eco-compensation study was agreed with Georgian government in May 2007. Consistent with IEC recommendations, the publication of this effort in a peer-reviewed journal is being discussed as a potential way forward to strengthen the body of literature available in this unique region.

3.8.2 Recommendation

1. The biodiversity monitoring reports provide a thorough review of the ecological management program, but the reports lack an executive summary whereby the major findings can be highlighted. It is recommended that such a summary be part of the monitoring reports.

2. The annual biodiversity monitoring reports contain several recommendations with which the IEC is in agreement: continue monitoring, especially in areas where the results are inconclusive; compensate for habitats that have been impacted by construction (e.g., bat roosts in the Tskhratskaro-Kodiana area); further evaluate current hydrological conditions of the channel at KP 11 and develop mitigation measures, if construction appears to have had an adverse impact and carefully monitor invasive plant species and develop a mitigation plan, if appropriate.

3.9 OFFSET MITIGATION AND ENVIRONMENTAL INVESTMENT PROGRAMS

During the mission, the IEC was updated on the status of the Offset Mitigation Measures and the Environmental Investment Programme (EIP) in Georgia. Implementation of the EIP projects committed in 2006/2007 has continued into the Operations phase. The EIP budget for 2007 is $450,000, which is the leftover from the EIP construction phase budget. The following table presents the information provided by the Project for the components of the EIP that are being actively implemented.

- **Caucasian Black Grouse (CBG) Research, Monitoring and Conservation Management –** The Lead I/O is the Georgian Center for the Conservation of Wildlife (GCCW) and the project goal is to initiate and promote implementation of Caucasian Grouse National Action Plan that was developed within the project "Caucasian Grouse research, monitoring and conservation management" during 2004-2005. The goal of this Action Plan is: Caucasian Grouse population is stable in Georgia and does not decline. The current budget is $250,000 for the period July 2006 – February 2008. As a first step, the program intends to develop a Management Plan Guidelines, which would serve as a starting point for relevant fundraising and for establishment of Kazbegi National Park. It will also be evaluated the feasibility to submit documentation to UNESCO to grant the World Heritage Site status to Kazbegi. The draft Management Plan has been prepared and a stakeholder meeting conducted in March 2007. Awareness training to reduce the pressures from poaching started in 2007. Land has been purchased and the design started for a Nature Conservation Centers ("Grouse House") in Kazbegi.

- **Small Grants Programme for NGO Capacity Building – Phase II –** I/O Save the Children – This project has now entered Phase II, which started in March

2007 and is scheduled for completion in December 2008 with a budget of $510,000. The project goal is to develop NGOs' capacities to engage citizens in environmental awareness and public education. Progress for Phase II has been reported and data are available. The MoE will be informed regarding in country EIP activities for further engagement into the process.

- **Conflict Prevention through Environmental Awareness for Youth (COPE)** – This is a project not previously reported by the IEC with CARE Caucasus as the I/O and the overall objective is to empower youth to contribute to the social and environmental development of their communities by increasing peace building capacities and environmental awareness of young leaders. The specific objective is to influence attitudes, values and patterns of behavior towards conflict prevention / peace building and the natural environment among school youth and teachers. The direct beneficiaries of the project are 22 teachers and 650 students. This project is scheduled for May 2006 – May 2007 and has a budget of $30,000. Progress has been reported and data are available. A final report is anticipated to be provided by end of July 2007, which will summarize project completion/implementation success. The MoE will be informed regarding in country EIP activities for further engagement into the process.

- **Management Planning for Ktsia Tabatskuri Managed Reserve**. This activity intends to conduct baseline studies and develop a Baseline Study Report summarizing the bio-geographic, historic-cultural, and socio-economic characteristics of the Ktsia-Tabatskuri Managed Reserve area. The following activities have recently taken place:
  - IUCN- The World Conservation Union has been selected as the Implementing Organization (I/O).
  - The baseline study report production is in progress. Due to winter season there was no access to the site and no field studies are conducted, but is expected to be completed in Q2 2007.
  - Management Plan preparation has started.
  - Regarding the Public Consultation and Awareness Program, because the baseline study is not complete, a decision was made to postpone the production of printed materials and web-site until the completion of studies.

  Since the baseline study is not completed yet and boundaries and category of the Ktsia-Tabatskuri Protected Area are not defined at a state level, it was decided to postpone production of printed materials and web-site until required studies are completed and the PA boundaries and category are defined.

3.10 CULTURAL HERITAGE MANAGEMENT

Cultural heritage management for the BTC Project is now organized under BP-GEO Operations with four national cultural heritage team members and one team leader reporting to the Georgia Asset Environmental Manager. The team leader provides overall supervision for Operations and Projects cultural heritage issues. Two cultural

heritage team members are advisors dedicated to the Kodiana Projects and remaining 'legacy' projects, governed by the BTC Project Cultural Heritage Management Plan. A third advisor and coordinator are dedicated to Operations compliance and other projects managed by BP in Georgia. The governing procedures are now defined in the BP-GEO Operations Cultural Heritage Management Plan (CHMP) completed May 2007, which focuses on the main issues of cultural heritage that could be faced by Operations:

- Damage to heritage resources as a result of earthwork associated with maintenance, inspection, or other common operational activities on the ROW or associated facilities;
- Contamination or damage to heritage resources as a result of oil spill and subsequent clean up activities;
- Damage to heritage resources as a result of soil erosion; and
- Damage to heritage resources as a result of looting.

Work to date for the BTC Project has been with the Centre for Archaeological Studies (CAS), an organization within the Otar Lordkipanidze Institute of Archaeology (IoA), the Georgian government's cultural properties review and compliance agency, as specified in the *Georgian Law on Cultural Protection*. In May 2007, the structure of the cultural heritage authorities in Georgia changed with a new *Georgian Law on Cultural Heritage*. The executive authority for archaeological resources and above-ground monuments is the Ministry of Culture, Sport and Monuments Protection of Georgia (incorporating the former Department of Monument Protection). The IoA/CAS is no longer a legal authority and as a contractor has been merged with the Georgia National Museum (GNM). The working relationship between the newly-merged archaeological contractor will and the BP-GEO Cultural Heritage Field Team (CHFT) is still being developed.

3.10.1 Observations

Cultural heritage management has transitioned to Operations but retains accountability from Projects for BTC-related construction activities. Looking back on the entire project, the work has represented a major contribution to Georgian archaeology, especially from the standpoint of developing a linear sampling across the entire country. Operations staff now participates in a training program specifically oriented to familiarize personnel with the Operations Heritage Protection Program, including heritage site risks and mitigation measures and the roles and responsibilities with respect to heritage site protection. BP-GEO has worked with Georgian heritage authorities to categorize the ROW and off-ROW facilities in terms of their likelihood for encountering cultural remains and this information was in the process of being fully uploaded to the Operations GIS system at the time of the IEC visit.

The work remaining to complete the construction-related activities is primarily associated with the analysis of finds associated with the archaeological sites excavated during construction and archiving and reporting of the results. Reporting is approximately 85% complete and BP-GEO expects CAS to submit the draft reports for 2005 excavations by the end of June 2007. Since February 2006 the heritage staff has worked actively in a capacity-building role with CAS to improve the technical quality of the reports. An additional positive aspect of this reporting process is the internal capacity building for BP-GEO national team member(s) who are facilitating the delivery of these reports. An issue to consider is that the reporting process has improved with heritage staff involvement over time. BTC excavation reports of 2004 excavations might not be as comprehensive as the reports of excavations that were undertaken later when the SCP crossed the same archaeological site. Carbon-14 dates are still not available to allow for the results to be placed within chronometric timeframes.

Georgia is unique among the three countries traversed by the BTC Project in that there is still ongoing BTC-related construction, specifically the Kodiana Projects (EDDF, security base, etc.), as well as the permanent access/community roads program for upgrades. The fourth heritage field advisor was retained through a service contract and is on-site in Bakuriani to monitor construction activities in this region and Akhaltsikhe.

At the time of the October 2006 IEC visit, negotiations with CAS for compensation for damages associated with ROW and off-ROW archaeological sites were ongoing. These discussions are still ongoing, but resolution is expected in the near future. The recent reorganization of heritage authorities by the Georgian government has delayed resolution of these sites. For sites on the ROW, CAS asked for additional excavations to be conducted for seven sites. BTC has followed the IEC recommendation to propose that damaged sites along the ROW be effectively preserved in situ, recommending that compensatory funding for damages be directed toward additional laboratory analyses and improving laboratory/storage facilities for cultural materials from major archaeological sites recorded in association with BTC/SCP construction. The status of negotiations is that CAS has generally accepted this approach and there is only one site under dispute. The same situation has taken place with respect to the off-ROW sites. BTC has agreed to fund mitigation excavations at two of the off-ROW sites that were damaged early in the construction phase, Tetriskaro-Tsalka road (Site IV-154) described in the October 2006 IEC report and a second site at the Darakov borrow pit in Tsalka (Site IV-302), because these locations retain a high risk for additional damage due to their exposure.

A second component to closing out the construction claims process has been with respect to 22 monuments located near project activities and considered to be at risk by the former Department of Monument Protection. Subsequent to site inspections completed jointly with BP-GEO cultural heritage coordinator in May 2007, the current monuments authority within the Ministry of Culture found no evidence of

damages and has relinquished any future claims of damage due to construction activities.

It was understood from briefings in Azerbaijan that a significant part of the program to disseminate the archaeological findings of the BTC/SCP Projects has been assigned to the Communications and External Affairs management in Baku where responsibilities include certain aspects applicable to all three countries:

- Website for three countries;
- "Coffee-table Book" on Archaeology for Three Countries.

3.10.2 Recommendations

1. Finalize closure of the sites where damage by construction has been claimed by the former heritage authority CAS. If compensation is offered, it is recommended that the compensation be associated with improving the capability of GNM/CAS to curate, interpret, and report the findings from the main archaeological sites identified during construction, rather than initiating new excavations at the sites potentially impacted by access road construction (repeat recommendation).

2. Continue to work in a capacity-building role with CAS to assure the appropriate management and presentation of the major findings associated with construction. In particular, make sure that additional laboratory analyses, such as carbon-14 dating, meet at least good standard practice.

3. Consider report presentations where BTC and SCP data are combined for the same sites and the older BTC excavation information is incorporated into the site-specific reports.

3.11 MEETING WITH GOVERNMENTAL OFFICIALS

A meeting was held between the IEC and representatives from the Georgian Ministry of Environmental Protection and National Resources (MoE) and the Georgian International Oil Corporation (GIOC) on June 15, following a request by MoE to BTC. This was the fifth meeting held between the IEC and the MoE/GIOC, and MoE/GIOC was able to voice their concern, satisfactions and priorities about several environmental and social issues associated with the BTC project.

- Conditions for the approval of the BTC OSRP;
- Environmental sensitivity within the OSRP,
- Reinstatement;
- Biodiversity Monitoring Program (Biodiversity Monitoring Report – Floral and Faunal Component - 2006);

- Waste Management Plan;
- Rock disposal;
- Forestry - Eco-compensation Programme;
- Environmental Management Plans for Operations;
- Environmental Investment Plan (EIP);
- Compensation damage for Ichthyofauna.

The IEC is pleased to report that both MoE/GIOC and BP-GEO representative report that their working relationship has substantially improved since the last IEC mission.

4 TURKEY

The BTC Project in Turkey encompasses 1,075 km (according to as-built information) of pipeline extending from the Georgia - Turkey border in the Posof District to the Ceyhan Marine Terminal (CMT) on the Mediterranean Sea. From the Georgian border, the pipeline Right-of-Way (ROW) crosses the provinces of Ardahan, Kars, Erzurum, Erzincan, Gumushane, Sivas, Kayseri, Kahramanmaras, Osmaniye and Adana, terminating at Ceyhan. The BTC Project runs approximately parallel to the existing East Anatolian Natural Gas Pipeline (NGPL, completed in 2001) for about 30% of its length (approximately 330 km), between the cities of Erzurum and Sivas (Lot B). The BOTAŞ Gas Pipeline is parallel to the BTC pipeline at the Georgian border, where it connects to the South Caucasus Pipeline (SCP), but diverges until it terminates in Horasan.

During the construction phase, the BTC Project in Turkey has been broken down into three Lots from the Georgian border to Ceyhan: Lot A (278.0 km), Lot B (465.4 km) and Lot C (332.8 km):

Lot A: KP 0 – 278

Block valves: 15
Major crossings: 3 rivers, 6 roads, 3 railways
Camps: 3, main at Kars at KP 115 (no longer in use), 2 spread camps at Hanak (transferred to the BOTAŞ Gas Pipeline project) and Köprüköy (decommissioned and reinstated).

Lot B: KP 278 – 744

Block valves: 24
Major crossings: 9 rivers, 13 roads, 3 railways
Camps: 1 main (Kova at KP 527 in Spread 1 – still open), 4 spread camps: Iliça – (decommissioned) and Çadırkaya in Spread 1 (decommissioned); Koyunkaya and Sivritepe in Spread 2 (decommissioned).

Lot C: KP 744 – 1076

Block valves: 13
Major crossings: 10 rivers, 6 roads, 1 railway
Camps: 1 main (Azizli at KP 1037, decommissioned), 3 spread camps (Andirin, Yesilkent, Orensehir, decommissioned).

Pump Stations

Four Pump Stations: PT1 at KP 21.3
PT2 at KP 278

PT3 at KP 442 and
PT4 at KP 744
Two Intermediate Pigging Stations: IPT1 at KP 944
IPT2 at KP 108

The BTC pipeline terminates at the Ceyhan Marine Terminal (CMT), which includes 2.6 km long jetty and offshore loading facility, seven one-million barrel storage tanks, a central control building, housing compounds and administration, and a fiscal metering system.

The June 2007 audit consisted of a site visit of selected sections of the pipeline right-of-way (ROW) in all three Lots and selected fixed facilities, complemented by a review of documentation pertaining to environmental, social and health and safety management as provided to IEC by BTC.

Specific comments relating to the data are provided in each of the relevant sections that follow.

4.1 PROJECT STATUS

BTC Co. (BTC) provided the following summary of project status, relative to IEC's scope of work, as of June 2007.

- Provisional acceptance was signed on 29th July 2006;
- A number of outstanding punch list items still remain (some 62 for fixed facilities and 745 on the ROW were outstanding at the time of the visit);
- BOTAŞ is focused on addressing ROW punch list items in Lot B;
- A contract for NGPL reinstatement, as per ESAP commitments, was awarded to a Turkish contractor (Tekimas) on 6 June 2007; BOTAŞ reported that work completion is expected by the fall of 2007.

4.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT ORGANIZATION AND RESOURCES

4.2.1 Observations

In Turkey, a turnkey contract was signed between BTC and BOTAŞ who subsequently awarded EPC contractors the construction work in each of the three Lots, the Pump Stations, and at the CMT. BTC maintains an assurance role over both BOTAŞ and the EPC contractors through to Work Completion by BOTAŞ.

BOTAS International Limited (BIL) is the Designated Operator of the Turkish section of the BTC pipeline. BTC maintains an assurance role over BIL in fulfillment of Operations ESAP commitments in Turkey.

BTC

The BTC E&S organization has been restructured to reflect changes necessary for E&S assurance during operations, while maintaining an assurance role during the completions phase at the close of construction.

An E&S Manager currently oversees three groups: Environmental and Social Management (Construction), Environmental and Social Management (Regional Sustainable Development - RSD - programme) and Environmental and Social Management (Operations). Organization of each group is as follows:

- The Environmental and Social Management (Construction) group consists of one Construction E&S Advisor, one GIS and Remote Sensing specialist and one advisor.

- The Environmental and Social Management (RSDP) group consists of an environmental coordinator and two advisors (also in partial support of construction), a regional development initiative (RDI) coordinator and a Community Investment Programme (CIP) Coordinator; and

- The Environmental and Social Management (Operations) group consists of an Operations E&S coordinator, an operations environmental advisor and two E&S field advisors (also in partial support of construction and investment).

IEC observes that the BTC assurance role continues to be maintained at the close of the construction period and onset of operations.

BOTAŞ

BOTAŞ maintains a smaller E&S team to close out remaining issues at the close of the construction period. As determined from the most recent organization chart available, an HSEC Manager oversees a CR Manager, a Health and Safety Engineer and an Environmental Expert.

In addition, an Environmental Supervisor, responsible for ROW reinstatement and repairs reports to the Project Manager, Pipeline and Stations.

A BOTAŞ field crew is currently completing works associated with punch list items in Lot B, and an additional crew is reportedly covering issues in Lot A and C.

BIL

Since the June 2006 field visit and October 2006 information review, IEC notes that the BIL E&S teams are fully operational, although reporting to differing departments.

Environmental Team

An environmental manager reports to the HSE Director, and oversees three environmental supervisors as follows:

- An environmental supervisor, two environmental engineers and a backup HSE engineer at the CMT;
- An environmental supervisor – pipeline and seven (one vacancy) pipeline HSE engineers (rotating); and,
- An environmental supervisor - EMS, an environmental engineer and a permits expert.

An environmental advisor provides technical assistance to BIL on ROW management and reinstatement issues and a third party environmental consultant, Dokay Engineering, is retained to provide environmental monitoring and additional technical advice.

Public and Community Relations (PCR) Team

A Public and Community Relations (PCR) chief, who reports to the Human Resource (HR) Director, heads the PCR team. The PCR chief oversees a PCR Supervisor, a land supervisor and five PCR experts (one for km 0-164 and PT-1, one for km 164-594, PT2 and PT3, one for km 594-843 and PT4 and two staff for km 843-1075, including the CMT).

As reported by the SRAP Panel, and noted by IEC in the field, the CR organization of BIL appears to be insufficient to handle the significant amount of work needed to maintain good community relations across the length of the BTC ROW in Turkey.

In addition to capacity issues, the lack of mobility of E&S personnel is impacting their effectiveness. There are no dedicated vehicles for either the Environmental or PCR teams. Instead, they rely on the availability of pooled vehicles for transport to the field.

4.2.2 E&S Management Organization and Resources - Recommendations

1. BOTAŞ should ensure that sufficient resources are dedicated to resolve all outstanding reinstatement related and land exit issues through to Work

Completion. In particular, sufficient resources should be dedicated to the outstanding work items and outstanding warranty items, and supervision of NGPL reinstatement works (see Section 4.7).

2. BIL environmental and PCR team leads report to differing managers in differing departments (Environmental to HSE, PCR to Human Resources). Given that many environmental and social issues overlap, and in order to ensure a coordinated response, BIL should consider reorganization of both teams which could include a single point of reporting to senior management.

3. The BIL E&S team is fully operational but is limited by capacity and mobility constraints. The capacity issues appear to be more applicable to the PCR team and involve limited ability for continuity and follow-up during leave time of staff in the field. BTC should verify that BIL has adequate staffing of PCR personnel (one PCR expert always present in each of 4 stations and CMT) and that provisions are made for continuity and attention to CR issues during staff leave time in the field.

4. There is a lack of vehicle resources for BIL HSE and PCR personnel that limits their effectiveness in the field. BTC should work with BIL/BOTAŞ regarding vehicle transfer and provision of dedicated vehicles for the BIL HSE and PCR team. A vehicle should be available to each EHS & PCRE positions, which require mobility in the field. Vehicles should be assigned for each environmental, PCR and land supervisors working along the ROW.

4.3 ENVIRONMENTAL ACTION TRACKER AND ENVIRONMENTAL ASPECTS AND IMPACTS REGISTERS

4.3.1 Observations

BIL has developed an Environmental Action Tracker to replace the NCR register during Operations. The Action Tracker includes information on environmental incidents, non-conformances and audit/inspection actions.

In addition, BIL have developed an Environmental Aspects and Impact register for block valves, CMT, fixed facilities and subcontractors. The intent of the Environmental Aspects and Impact Register is to record environmental management system performance in advance of application for ISO 14001 certification, anticipated in May 2008.

IEC notes the following:

- The format of the registers is not always consistent;

- Required actions for non-compliances are identified, but they are not specific and do not appear to be binding;

- Responsibilities for action are not identified; and
- Measures for follow-up and verification are not identified.

4.3.2 Recommendations

1. BTC should work with BIL to improve the consistency of both registers in relation to cross-referencing of non-compliances, including a standardized numbering system for recording non-compliances.
2. BTC should also work with BIL to improve the Environmental Aspects and Impacts Register, as part of their ISO 14001 certification.
3. Measures should be adopted for measuring the severity of operational non-compliances, consistent with previous standards implemented during construction (e.g. Level 1, 2, 3 etc.).
4. Binding and corrective measures to non-compliances should be fully identified in the Environmental Action Tracker, similar to the Construction Non-conformance Register, including clear identification of responsibilities and sign-off measures to confirm implementation.

4.4 CONSTRUCTION CAMPS, INFRASTRUCTURE AND SERVICES

The review of construction camps, infrastructure and services focuses on construction operations that potentially have an impact to surrounding infrastructure, natural resources, and community and household assets, including land, roads, and irrigation systems. In addition, the review of this topic includes camp potable water supplies and general aspects of camp management.

At the close of the construction phase, camps are still being used across the Project (e.g. Pump Station locations). The Contractor Control Plan, Construction Impacts – Turkey defines the temporary nature of campsites. Commitment R19 states that "*camps will consist of pre-fabricated modules that will be brought in by trailer. They will remain in place for 6 to 9 months and then be disassembled and removed*."

In October 2006, IEC reported on the status of camps across the project based on the BTC Construction Camp Status Report (October 2006). At that time, it appeared that several camps (Kars, Kova, Yesilkent, Andirin, and Azizli-Kosreli) had not been surveyed nor reassessed since the last IEC site visit of June 2006. As of June 2007, a decision still needs to be made with respect to the decommissioning and final reinstatement of some remaining construction camps. The operation of the pump station camps has been extended to at least 2011, under a Management of Change (MOC) process.

4.4.1 Construction Camps – Current Conditions

In June 2007, BTC provided IEC with an update of camp status across the project as noted in the Off-ROW Punch List, dated 6 June 2007. The document provides adequate information on the status of the camps, their reinstatement and any open issues.

Hanak and Kars camps in Lot A have not been decommissioned and have been transferred to BOTAŞ General Directorate to be used for future activities. An MOC request has been submitted for a modification of the ESAP commitments to decommission and reinstate them at the end of the BTC construction phase. For both camps, a due diligence closure report is not available.

After the June 2006 visit, where the Yesilkent camp in Lot C and the Cadirkaya camp in Lot B were found to be inadequately decommissioned, with community safety and environmental pollution concerns, BTC has worked with BOTAŞ to fully reinstate both camps to its original condition. Although the fences are still in place, IEC observed that the land has been returned to agriculture (Cardikaya) or to a memorial forest (Yesilkent) and appears to have been adequately cleaned and reinstated.

Kova Camp (Lot B) is still standing, unoccupied. The camp is to be decommissioned and reinstated in compliance with ESAP commitments, and a due diligence should be conducted.

In regard to existing construction camps at fixed facilities (pump stations, IPT1 and CMT), a BTC MOC was approved to allow for the continued operation of these camps until 2011. Although approved, IEC has ongoing concerns about operation of these camps in this interim period, in compliance with Project ESAP commitments (see recommendation #3 below).

4.4.2 Construction Camps – Recommendations

1. Agreement on the final status of several construction camps has not been reached between BTC and BOTAŞ. Furthermore, final due diligence closure reports have not been completed by BOTAŞ. Both parties should come to agreement on the remaining closure issues and provide due diligence closure reports for all decommissioned camps.

2. In regards to Kova camp, IEC requests that BOTAŞ and BTC provide confirmation that an adequate due diligence process is in place with respect to fulfillment of ESAP commitments, and that a time bound plan be provided for its decommissioning, reinstatement and final closure with respect to all land exit agreements.

3. Although an MOC regarding the ongoing operation of construction camps at fixed facilities, until at least 2011, has been approved, BTC and BIL should provide confirmation with regard to the following:

    - Plans and procedures for compliance to project standards with respect to operation of camp potable water supplies, WWTPs (CMT currently only in operation) and CWAAs;

    - Completion and future implementation of landscape plans to be implemented following decommissioning and reinstatement;

    - Settlement of all outstanding landowner complaints regarding land rental; and

    - Establishment of formal decommissioning and reinstatement plans, including a final date and a due diligence procedure for closure of each site as part of decommissioning and reinstatement activities.

4. The Project should provide confirmation of adequate reinstatement of all access roads to all reinstated camp locations, as part of the closure of the reinstatement punch list.

4.4.3 Aggregate and Excess Material Management - Observations

An Off ROW punch list has been developed by BTC which provides details of the status of borrows pits as of June 6, 2007. IEC makes the following observations as presented in the punch list:

- At the time of the June 2007 visit, reinstatement has not been completed and/or inspected in some cases;

- Pre-construction and post-construction assessment reports have been requested by BTC to verify that reinstatement and other commitments are complete and consistent with established aggregate management procedure;

- In Lot A, two borrow pit/quarry locations may have been erroneously designated in the punch list and have already been closed out by BTC;

- In Lot B, the six borrow pits and quarries designated for reinstatement require final close out; a number of unregistered aggregate extraction sites were recorded during punch listing; and

- Reinstatement of pipe storage areas in Lot A, B and C requires sign-off and close out by BOTAŞ and BTC.

The IEC visited the excess material dump sites at PT3 (DS1, DS4 and DS5). IEC recognizes the efforts of the Project to reinstate these three sites and observed the following:

- DS1: good recontouring and some revegetation noted. The access road to the site remains open. It is understood that Başköy community requested not to reinstate this access road in order to access to DS1 area, where they plan to cultivate an orchard;
- DS4: the site appears to be well recontoured and adequately reinstated, drainage appears to have been well reestablished; and
- DS5: the site has been reinstated and shows initial regrowth of vegetation, slopes appear to be stable.

4.4.4 Aggregate and Excess Material Management - Recommendations

1. Based on the Off ROW punch list, IEC observes that there is a level of uncertainty regarding the final reinstatement status of borrows pits, quarries, dump sites, PSAs and extra land-take areas across the entire pipeline in Turkey. BTC should provide evidence of joint sign off at each outstanding site in the punch-list and a verification that reinstatement commitments as per the ESAP are met.

2. Monitoring of slope stabilization and biorestoration success should continue at the PT3 dumpsites, taking into consideration that the sites are located in or next to an environmentally sensitive area, as defined in the Environmental Impact Assessment.

3. The Project should confirm the final status of the access road to DS1, which is located within an ESA. BTC should document if the site is being used by the community and/or there is still a community will to develop the area. BTC should also assess the current re-establishment of natural vegetation with potential presence of endemic species and discuss the status of this area with the community.

4.5 WASTE MANAGEMENT

4.5.1 Non-Hazardous and Hazardous Waste – Observations

In June 2006, IEC visited the construction-phase CWAAs at the CMT, PT2 and PT4 and noted two non-compliances. A Level II Non Compliance, *(CCP Waste Management, Commitments ID: APC3E34, APC3E45, APC3E46, APC3E55)* was issued for the CWAA at CMT and a Level I Non Compliance (*CCP Waste Management, Commitments ID: APC3E48)* was issued for CWAA at PT2.

In June 2007, IEC visited the CWAAs at the CMT and PT2 and noted the following:

- A new site for the Operations CWAA has been identified, approximately 200-250 m from to the BIL administrative complex. This site is an alternate to a previously selected site, adjacent to the existing construction-phase CWAA, that proved unsuitable, as it was found to be a former landfill location (reportedly unrelated to the Project), and now deemed as a contaminated site;

- The construction phase CWAA at the CMT continues to operate for the Project until the new Operations CWAA is operational. Although the site is not a permanent facility, conditions at the site were found to be remarkably improved over the June 2006 visit and the Level II non-compliance issued at that time is rescinded;

- IEC observed that the Operations CWAA at PT2 is still not operational and that operations waste disposal is directed in the interim to the existing CWAA in the construction camp. Conditions at this CWAA have improved greatly since the June 2006 visit and the area immediately outside of the CWAA that previously contained large amounts of waste and scrap materials had been cleaned up. Based on these observations, the Level I non-compliance issued in June 2006 is rescinded;

- IEC was informed that the PT2 Operations CWAA construction is designated as an enhancement project, whilst the CMT CWAA is designated a construction project under the LSTKA (lump sump turnkey agreement); and

- IEC was informed that no definitive timetable for construction and implementation of Operations CWAAs at the fixed facilities will be finalized until final construction details of the facilities are agreed to. However, the Project anticipates this facility to be completed in 2007.

IEC reviewed the waste and emission monitoring registers, provided by BIL during the June 2007 visit. IEC noted some discrepancies between the two registers with regard to hazardous waste. e.g. hazardous waste was registered as disposed of only in PT1; some hazardous waste was registered as stored in PT4; some hazardous waste registered was recorded as transferred to PT1 in IPT2; there is a missing register for IPT1; and no hazardous waste was registered for PT2 and PT3 *(Level I Non-Compliance, BIL Waste Management Plan, Commitment ID: CH9E33)*.

The Project informed the IEC that it has established a 6-month time limit for the storage of hazardous waste at CWAAs. However, it is important to note that there is commitment to minimize storage time for waste in the BTC facilities: "*The time period in which wastes are stored will be kept to a minimum. This is both good housekeeping and, in the case of hazardous wastes, reduces the risks associated with the storage of large quantities of hazardous material*" (BIL Waste Management Plan).

IEC was informed that the Izaydas waste facility continues to accept hazardous and non-hazardous waste from the Project. Non-hazardous waste shipments are sent to Izaydas approximately every four weeks. Data evaluation suggests that hazardous waste has been disposed of only once since beginning of 2007, in late May / June. This is reportedly due to the current conditions of Izaydas, which is the only EU compliant facility in Turkey. A verbal agreement has been reached between BIL and Izaydas that Project hazardous wastes will be accepted as a priority at least every six months. Non-hazardous wastes will continue to be sent regularly to Izaydas, as there is no limitation of waste disposal capacity.

The Project has informed the IEC that they will continue to look for waste disposal options for both hazardous and non-hazardous waste during BIL operations, based on an ESAP commitment to use only EU compliant facilities for final disposal of both waste types. BTC reported the commencement of a Regional Development Initiative project at Antakya waste disposal facility, which aims to assist implementing operational management practices to international standards, at this EU designed facility.

4.5.2 CMT Narlik Inert Material Disposal Site – Observations

In October 2005, IEC raised a repeat Level II non-compliance because of the possible uncontrolled dumping of Project waste at the Narlik Inert Material Disposal site *(Level II non-compliance CCP Waste Management Turkey, APC1E69, APC3E41*). The repeat Level II non-compliance was raised due to a failure of the project to confirm that only inert waste materials were disposed at the Narlik site.

In June 2006, IEC visited the Narlik site to find out that it had been fenced by the Kurtkulagi municipality and that plans were in place to construct a senior citizens facility. In October 2006, IEC reviewed additional information provided by the Project but, based on the material provided, could not conclude that only inert materials were only disposed of at the Narlik site.

In June 2007, IEC received a BOTAŞ report (Doc. No. BOT-REP-ENM-TRG-003, Environmental Status Report for Excess Inert Material Disposal Area at Narlik). The report concludes the following (direct quotes indicated in italics):

- Inert materials were sent to the Narlik site including concrete, tile and brick (357 tonnes), grit (60 tonnes);
- No contaminated waste was sent to the Narlik site and no suspicious waste was reported to the environmental representative of Tekfen;
- A permit to dump was received from the competent authority (Kurtkulağı Municipality);

- Only clean and inert wastes were sent to the area; in case of suspicion of contamination either from visual inspection or from knowledge of the origin of the waste, these wastes were not allowed to be sent to the area, or if any irrelevant wastes were observed at the disposal area, that kind of wastes were cleaned up and removed from the site. Those wastes were categorised in other type of wastes accordingly and were disposed as per the Site-specific Waste Management Plan (TKF-PLN-ENM-TRG-105). BOTAŞ Environmental Representative would be contacted in case of encountering suspicious situations.

- At the request of the Municipality, the site has been recontoured. A rest home and rehabilitation centre has started to be constructed by the Municipality; and

- The Municipality has sent a letter to Tekfen confirming that recontouring and reclamation is complete according to their evaluation, and absolves Tekfen of any further liability associated with the material dumping.

4.5.3 Non-Hazardous and Hazardous Waste – Recommendations

1. Although operating conditions at construction CWAAs have improved since the June 2006 visit, BTC and BIL should provide a timeline for construction of the Operations CWAAs, designed as permanent facilities according to Project specifications and in compliance with Operations ESAP commitments.

2. As indicated above, IEC found some discrepancies in the waste and emissions monitoring registers provided during the June 2007 visit, particularly in relation to hazardous waste. In addition, the format of the waste register between fixed facility locations is not consistent. BTC should work with BIL to improve the format and structure of the waste register. It is also recommended that any aspects pertaining to waste management should be removed from the emissions monitoring register and only recorded in the BIL waste register.

3. Although internal audits are periodically performed, BTC should promote an independent review of waste management practices at permanent facilities across the project, including:

   - Assurance that waste disposal is compliant with ESAP commitments;

   - Assurance that wastewater disposal is compliant with ESAP commitments;

   - Assurance that waste transport is conducted according to ESAP commitments; and

   - List of approved waste disposal facilities for Operations.

4. The information provided to addresses previous concerns about characterization and transport of waste materials to the Narlik inert waste dump and that no residual liability rests with the Project, is considered adequate, with the following clarification needed. IEC notes that, as per the waste register provided, 60 tonnes of "grit" were disposed at the Narlik site, but that grit is not listed in the CCP Waste Management Plan as an inert waste. BTC should confirm the characteristics of the "grit" disposed at the Narlik site and that its categorization as an inert material complies with Turkish regulations and EU Landfill Directive 1999/31/EEC. Once this is confirmed, the Level II non-compliance can be rescinded.

4.5.4 Wastewater Management - Observations

IEC reviewed the Emissions Monitoring Register for wastewater disposal at fixed facilties and noted the following:

- With the exception of the CMT, all construction camp WWTPs have been decommissioned;
- Some non compliant conditions are reported in the BIL register for WWTPs and stormwater ponds at the pump stations. Non-compliances are reported for a variety of parameters – pH, BOD, TSS, oil and grease, chlorine, and coliforms. BIL reported that in case of non-compliant conditions, the treated wastewater is not discharged to the environment;
- There is co-mingling of WWTP and stormwater runoff discharges and subsequent contamination of stormwater ponds at some locations (e.g. PT2), although the Project has recognized this and is implementing measures to segregate the wastewater and stormwater streams;
- Analyses provided were found to be incomplete for the oil water separator (OWS) discharges (as per the list of parameters indicated in Table 5.3 of the BIL EEMP) *(Level I Non-Compliance, BIL Environmental Emissions Management Plan, Commitments ID: CH4E55 and CH4E57)*; and
- There is a lack of control valves at the main outlets from the stormwater ponds to prevent accidental discharges of non-compliant effluents to the environment. This lack was also identified by BTC and included as a current punch list item. After the June 2007 visit, the IEC was informed that BOTAS has procured valves and penstocks and that their installation is planned to commence shortly.

4.5.5 Wastewater Management – Recommendations

1. There are numerous examples of non-performance of the WWTPs, for a variety of parameters, although wastewater is reportedly not discharged in case of non-compliant conditions. After the June 2007 visit, the IEC was informed that BTC has undertaken a cross-project technical review of Operations WWTPs and, together with BIL, is developing a plan to bring all facilities into consistent compliance. IEC recommends that BTC expedites this process to reduce the current risk of non-compliant conditions with respect to Operations ESAP commitments.

2. While it is recognized that the Project is taking steps to deal with the issue, control valves should be immediately installed at all wastewater and stormwater locations at fixed facilities pond outlets to the receiving environment. WWTP and stormwater discharges should be isolated and separate monitoring procedures undertaken to comply with Project discharge standards.

3. BTC should undertake a complete quality control analysis of OWS performance, including testing of parameters not yet tested and implementation of technically adequate techniques to consistently measure all OWS discharge points.

4.6 POLLUTION PREVENTION AND ENVIRONMENTAL MONITORING

4.6.1 Observations

The Project has adopted a pollution prevention plan aimed at systematically identifying potential impacts from construction and operations activities and implementing avoidance and mitigation measures to minimize the likelihood, extent or duration of their occurrence, and any associated adverse effects. The mitigation measures include: spill prevention and management; management of existing contaminated sites; groundwater protection; surface water protection; ecological receptor protection; air quality protection and dust mitigation; noise control; soil erosion control and topsoil protection.

Various provisions apply directly to the protection of surface water and groundwater, including permanent fuel and chemical storage, hazardous materials storage, vehicle maintenance facilities, wastewater discharges, run-off controls, and disposal of trench water and groundwater.

In regard to the Operations phase, BIL has initiated an environmental monitoring program as dictated by the Operations ESAP Environmental Emissions Monitoring Plan (EEMP). IEC notes the following (waste and wastewater monitoring has been discussed in the previous sections):

- An air emissions register is maintained and stack emission ports have been installed at the CMT and Pump Stations, however the register data provided

was found to be incomplete for some emission sources (i.e., pump engines at all pump stations) *(Level I Non-Compliance, BIL Environmental Emissions Management Plan, Commitment ID: CH4E28)*;

- Ambient air quality monitoring at the CMT has continued under BIL management post Provisional Acceptance. The air quality monitoring results are within the Project specified standards for nitrogen oxides, sulfur dioxide and benzene at all sampling locations near CMT;

- Groundwater monitoring has not started yet, although BTC has prepared a draft Operational Groundwater Monitoring Strategy; and

- The EEMP, as modified according a proposed MOC, has defined the management procedure for ballast water to be applied at the CMT (i.e., ballast water exchange). BTC has commissioned a risk assessment study in May 2007 to identify potential risks associated with ballast water from oil tankers approaching the CMT. A concern has been raised by the IEC relevant to the visual monitoring of the ballast water discharge, adopted in the interim period.

4.6.2 Pollution Prevention and Environmental Monitoring – Recommendations

1. Consistent with their assurance role, BTC should work with BIL to oversee the development of an integrated environmental information management system to collect, analyze and ensure data availability and quality. This should include the development of quality control assurance measures (e.g., duplicate samples, independent testing) to verify quantitative monitoring data.

2. BTC and BIL should 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.

3. The groundwater monitoring plan at all AGIs, including representative monitoring points (existing water wells, piezometers) for both groundwater quality and quantity, including monitoring for potential hydrocarbon contamination, should be implemented as soon as practical.

4. BTC should ensure that the procedure for ballast water monitoring is consistent with BP best practice and compliant with the IMO Ballast Water Convention, and should complete the risk assessment as soon as practical.

4.7 ROW MANAGEMENT, EROSION CONTROL, REINSTATEMENT AND BIORESTORATION

4.7.1 Erosion Control, Reinstatement and Biorestoration - Observations

Reinstatement Progress

IEC noted continued good progress in reinstatement of the pipeline ROW in Turkey, now in some cases into the second growing season. Outstanding issues relative to erosion control, reinstatement and biorestoration, noted during the June 2007 visit, involve the following:

- Maintenance of permanent erosion control measures;
- Final agreement on punch list items and required repairs;
- Confirmation of maintenance responsibilities during the "warranty period";
- Supervision of NGPL reinstatement; and
- Measurement of revegetation success against new Project commitments, as per an MOC on biorestoration, discussed below.

The following is a summary of field observations made by IEC at selected locations visited in June 2007. KP locations are as per as-built specifications.

For the most part, revegetation success on the ROW in Turkey was found to be good, although there were instances where gully erosion was noted, due to lack of ROW maintenance that affects the proper operation of permanent erosion control measures.

The following is a summary of some locations visited:

- KP 1007 – slope instability was noted during construction. Terraces were constructed, reinforced with geotextile, and subsurface drainage installed. Good stabilization and vegetation regrowth were noted and rip-rap on small creek at the base of the two slopes is in good condition. .
- KP 992/ESA 48 – initial revegetation was noted in this rocky slope.
- KP 983 – long slope, which was reinstated twice due to previous failure of erosion control measures. The slope is grazed by goats. Lack of maintenance of slope breakers is leading to rilling and erosion.
- KP 931 – slope stabilization appeared to be adequate on both sides of road, but slope breakers were found to be full of sediment and require maintenance.

- KP 727 – slope reinstatement was found to be adequate. Rock has been placed in slope breakers to stabilize them, but their placement and effectiveness warrants review.

- KP 680 –repairs have been done at this location recently to improve drainage away from the NGPL ROW that is impacting the adjacent BTC ROW. Good revegetation was observed to occur in this area.

- KP 659 and BV 36 – this slope has been significantly improved since significant subsidence and erosion were noted along the length of the pipe trench in June 2006. Good revegetation was also noted.

- KP 496 – adequate revegetation was noted in this location, which is the highest elevation in Turkey. The BTC ROW parallels the NGPL, which has a running track along its length. Trench breakers were observed to be full of sediments on the BTC ROW and partially damaged due to vehicles using the NGPL ROW running track.

- KP 457 – revegetation of this steep slope is excellent. The rocky slope on the opposite side is also showing initial revegetation and appears to be stable.

- KP 455 – this slope was repaired after the June 2006 visit to correct a slope failure along the trench line. However subsurface drainage problems were still noted in June 2007.

- KP 411 – Karasu River crossing appears to be stable. Rip-rap is starting to revegetate.

- ESA 13 – good regrowth was noted and good blending with the surrounding plain.

- KP 246 – erosion was noted on the ROW causing gullying.

- KP 209 – the slope was found to be well revegetated and stable.

- KP 198 – slope stability and revegetation is excellent. Good recontouring and landform establishment were observed in this section.

- KP 171 – ESA 8 – slope stability and revegetation is excellent.

- KP 166 – ESA 7 – good placement of rip-rap at the road, slope breakers appear to be working well, although some gully erosion noted.

IEC was provided with a BTC punch list dated 6 June 2007, that documents the list of outstanding work items for the pipeline ROW in Turkey. IEC was also informed that the original list of over 2,000 items has been reduced to about 745 outstanding

items. Although the Project has worked hard to reduce the original punch list, the list still is long, particularly in Lot B. 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. BTC confirmed that punch list closure is a requirement for Work Completion.

Maintenance of ROW Erosion Control Measures

Maintenance of ROW erosion control measures appears to be a weak point in this transition period from BOTAŞ to BIL. At the time of the IEC visit, BOTAŞ crews were primarily dedicated to repairs associated with closure of the Lot B punch list. Lack of maintenance was observed at several locations visited throughout the entire length of the pipeline in Turkey (see above) (*Level II Non-Compliance, CCP Reinstatement – Turkey, BIL Environmental Management Manual; Commitments ID: APC2E2, APC2E79, APC2E148, APC2E3).*

ESAP commitments on ROW erosion control and maintenance in both BOTAŞ and BIL management plans exist. The following list presents some of key commitments that should be met.

Turkey EIA (Section 4.9.7) commitments on reinstatement roles and responsibilities are as follows:

Before site demobilisations, the reinstatement efforts of the Contractor will be inspected and, if found to be satisfactory, will be provisionally accepted project management. This provisional acceptance will be provided on the basis of the Contractor providing a reinstatement warranty for a minimum period of 12 months. Prior to the end of the warranty period, a final reinstatement inspection will be undertaken and any necessary corrective measures will be instigated until the state of the reinstatement meets the requirements of the Project. Upon final approval of the reinstatement works, the responsibility for the future management and maintenance of the reinstatement programme will reside with BOTAŞ Int on behalf of BTC Co. These responsibilities will be assigned as part of the ongoing operation and maintenance programme for the pipeline (see section 4.12).

BOTAŞ CCP Reinstatement – Turkey and BIL Environmental Management Manual commitments are as follows:

APC2E2: The Contractor shall maintain the integrity of the RoW during the maintenance term defined in the Contract. All temporary and permanent erosion measures will be maintained by the Contractor in addition to the reinstated RoW.

APC2E3: Upon handover to Operations from the Contractor, the RoW is to be maintained by Operations. The Operations maintenance will follow the same project specifications and documentation as appropriate.

APC2E79: For the duration of the RoW maintenance period, the Contractor shall monitor the condition of the water outlets at two week intervals and any breaches or damage reported to BOTAS. Repair work should be carried out within 14 days or less, depending on the severity of the breach.

APC2E148: During the contract maintenance period, Contractor shall be responsible for maintaining the standard of reinstatement and for ensuring that the stated erosion class and biorestoration requirements are met.

As indicated by BTC, the Project Agreements (LSTKA and Agreement for the Operations of Facilities in the Republic of Turkey) do not recognize a 'maintenance period' as referenced in the above commitments and interprets the 'maintenance period' or 'maintenance term' as referenced above, to be synonymous with the term 'warranty period' as defined in the LSTKA.

BOTAŞ has certain obligations under the LSTKA, in particular "all final restoration works" as a requirement for Work Completion. BOTAŞ has therefore developed a system that includes reinstatement activity that is not meeting the ESAP commitments and, therefore, LSTKA obligations, under 'Outstanding Work Items' and 'Outstanding Warranty Work Items'. These lists quantify the outstanding works that are required as a result of deficiencies in the 'design' and/or 'performance' requirements according to Turkey EIA (Appendix C2, Reinstatement Plan). As clarified by BTC, all ROW maintenance activity with the exception of Work identified as 'Outstanding Work Items' and 'Outstanding Warranty Work Items' is the responsibility of BIL from Operations Commencement (Provisional Acceptance). Although this system appears to be well established, a lack of maintenance was observed and triggered the assigned non-compliance to the Project.

Reinstatement of the NGPL

In previous site visits, IEC has expressed numerous concerns over persistent and unresolved delays in the reinstatement of the NGPL. In October 2005, IEC raised a repeat Level II non-compliance for an ongoing failure of the Project to conclude reinstatement of the NGPL as per ESAP commitments (*Level II Non-Compliance, CCP Reinstatement Turkey, Commitment ID: CH15E5, APC2E15, APC2E16, APC2E17, APC2E18)*. In June 2006, the Level II Non-Compliance was rescinded, based on a BTC commitment to act, in the form an LSTKA Amendment.

In June 2007, IEC was informed that a Turkish contractor (Tekimas) was selected to perform the agreed-to scope of work for reinstatement of the NGPL, in accordance with Project commitments. A contract was awarded on June 6, 2007. BTC will assume an assurance role over the work, which will be done under a permit to work system, as issued by BIL.

Temporary Erosion Control Measures at Camp Locations

On previous occasions, IEC has noted that while landscaping of disturbed areas of the CMT and pump station locations is underway, no work had been initiated for landscaping and temporary erosion control at the construction camp locations, especially at locations where a visual impact is apparent (e.g., PT3 camp). The CCP Reinstatement Turkey commits the Project to ensuring temporary erosion control measures are in place for all areas of non-permanent land take, until full reinstatement, which should be conducted using species appropriate to the surrounding habitat or land use.

As of June 2007, there is not measurable progress for maintaining temporary erosion control at camp locations, relative to the MOC action to maintain camps at fixed facility locations until 2011 (*Level I Non-Compliance, BOTAS Reinstatement Plan, Commitment ID: 167)*. After the visit, the IEC was informed that BTC has undertaken audit in May 2007 to identify any erosion issues at the stations camps and communicated these issues to BIL/BOTAS as warranty items.

4.7.2 Erosion Control, Reinstatement and Biorestoration – Recommendations

1. 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.

2. IEC observes that the procedure for closure of warranty items is not fully understood by all Project staff and that final dates for closure of all warranty items post Provisional Acceptance are not fully defined. BTC should develop a list of outstanding warranty items, including dates for final closure and handover to BIL.

3. BIL, in cooperation with BTC, should develop a clear and auditable ROW Maintenance Strategy, defining responsibilities, protocols, frequencies, monitoring of water [discharge] outlets, monitoring of permanent erosion measures, aftercare actions and reporting methods/lines to the E&S team. A Maintenance Contractor should be selected, separate from the repair and vegetation assessment teams, and a scope of work should be finalized including a time-bound commitment for their mobilization prior to winter 2007-2008.

4. BTC should ensure adequate NGPL reinstatement, as per Project commitments and undertake the following: a) develop compliance and sign-off procedures for the agreed to SOW prior to completion b) provide assurance that the contractor is fully aware and compliant with Construction ESAP commitments (e.g., have a 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.

5. In previous missions, IEC has recommended that BOTAŞ, in conjunction with BTC, implement a systematic assessment of topsoil fertility, particularly focused on problematic high elevation areas with fragile and thin topsoil in Lot B. IEC continues to recommend that special attention be paid to monitoring and quantitatively reporting revegetation success in high elevation areas in Lot B. After the June 2007 visit, BTC informed IEC that soil sampling in high elevation ESAs is underway. Results should be made available as part of the closure of all warranty items post Provisional Acceptance.

6. IEC has noted that in several locations (e.g. KP 983), animal feeding and use of the ROW has impacted biorestoration efforts. The CCP Reinstatement Turkey discusses this concern and Commitment ID: APC2E12 2 states ……. ""*Where necessary, contractor will provide appropriate fencing to prevent access by grazing animals and vehicles. Fences will be fitted with signs in Turkish indicating the purpose, i.e., the enclosure is a BTC biorestoration project area and fencing is required for protection*." BOTAŞ, in conjunction with BIL, should consider the need for temporary control measures (i.e., fencing) in ecologically sensitive areas where animals could affect the future success of biorestoration, as required through ongoing monitoring and patrol of the pipeline ROW.

7. BTC should review the implementation of temporary erosion control and landscaping measures for those construction camps that will continue to be used during Operations, or transferred to other contractors. These measures should be implemented as part of the MOC for temporary camps for fixed facilities.

4.7.3 Access Roads - Observations

In past visits, IEC has recommended that the Project establish clear commitments and procedures for the reinstatement of Project access roads as indicated in the ESAP and as part of efforts to minimize Project footprints. During the June 2006 visit, IEC reviewed the access road registers provided by the Project and found them to be deficient in regard to reinstatement status.

Despite progress in the reinstatement of project access roads in accordance with ESAP commitments, one year later, in June 2007, the final status of many project access roads remains unclear, particularly at high elevation locations in Lot B. IEC remains concerned about the final reinstatement of these project access roads in compliance with ESAP commitments *(Level II Non-Compliance, Reinstatement CCP, Commitment ID: 2)*.

4.7.4 Access Roads – Recommendations

1. BTC should 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, etc., prior to completion.

4.8 ECOLOGICAL MANAGEMENT

4.8.1 Observations

Biorestoration monitoring is designed and implemented to assess cover, species diversity, tree/shrub survival and translocated rare species along the ROW in Turkey. A BTC MOC procedure is currently in place for biorestoration monitoring; the procedure involves analysis of satellite data to assess the trend in revegetation success, coupled with ground truthing procedures. BTC is developing an Access Database and GIS/RS tools that appear to be a useful analytical tool for biorestoration monitoring. The initial results of the BTC biorestoration monitoring program look encouraging and the entire length of the BTC pipeline is being acquired for 2007.

In addition to analysis of satellite data, BTC is also conducting ground-based species diversity, vegetation cover (for verification and calibration purposes for various assurance tools) and tree and shrub survival monitoring programs. BTC has developed GIS layers of biorestoration records to be used as informative tools in taking corrective action where the biorestoration targets are not being met.

BOTAŞ and BIL are conducting their own biorestoration monitoring programs as part of warranty and operations.

IEC was informed by BTC that it is providing assistance to transfer the GIS database, generated by BOTAŞ during construction, to BIL. The GIS has a number of data layers including administrative, engineering, environment, oil spill response, cultural resources, social and image data.

4.8.2 Recommendations

1. Given that BIL and STA/PLL/BOTAŞ are also conducting their own ground based biorestoration monitoring programs, there is a need to improve the coordination of monitoring efforts. BTC should develop a coordinated biorestoration monitoring plan involving BIL and assist in the development of a centralized ROW monitoring database.

2. BTC should provide an updated evaluation of biorestoration success, prior to Project completion.

4.9 COMMUNITY LIAISON

4.9.1 Observations

Community liaison and dialogue with affected stakeholders is a major concern of the Project. Processes are well established for communicating Project information to the general public and communities along the pipeline route, as well as to receive and transmit community concerns to the Project. The overall objective for the Community Liaison and Community Relations teams is to build a positive, non-dependent relationship between the Project and local communities. At the close of the construction period, the Project is committed to a transparent and effective land exit process to maintain this goodwill through to BIL Operations.

As the SRAP Panel completed an audit in June 2007, prior to the IEC visit, any evaluation of land exit, complaint management and livelihood restoration issues will be assessed as part of that report.

As noted previously, BIL has a team of public and community relations specialists in place for the pipeline ROW and fixed facilities. BOTAŞ has a community relations manager who reports to the BOTAŞ environmental manager.

4.10 ENVIRONMENTAL INVESTMENT PROGRAM

In June 2007, IEC was provided with a final report by external consultants assessing the success of the Environmental Investment Program in Turkey. The external EIP evaluation was complimentary, noting that *accomplishments compare favorably to most international conservation programs of equal or greater investment*, and that the EIP has *established BTC/BP as a leader of Turkey's conservation network*.[6]

Recommendations for improving the EIP involve the following:

- Recognition of capacity constraints associated with project implementation;
- Improved marketing strategy that reaches local, national and international interests;
- Improved project design, in particular the relationship between logical framework and monitoring and evaluation;

[6] See: External Evaluation BP/BTC-Turkey Environmental Investment Programme (EIP). Prepared by Dodosong Inc. May 2007.

- Development of a coherent strategy for the next phase of EIP implementation (EIP-3); and

- Securing of long-term funding for the EIP.

4.11 CULTURAL HERITAGE MANAGEMENT

BTC continues with the implementation of the publication program for the selected cultural heritage sites studied by the Project archaeologists. Additional scientific publications are available since the previous visit in June 2006.

TABLE 1 – SUMMARY OF RECENT MOC DOCUMENTS FOR THE THREE COUNTRIES WITH IEC RESPONSE AS OF JUNE 2007(1)

Proposed MoC description	Class	IEC Final Review and/or MOC Status
Cross Country Issues		
14001 Certification Date	II	Acceptable
EIP Strategy Change	II	Acceptable
Offset Management Program	II	Acceptable
Monitoring and Measurement of Biorestoration Success	II	Acceptable
BTC ESAP Operations (Azerbaijan, Georgia and Turkey)	II	Acceptable
Azerbaijan and Georgia BTC Management Plans		
Emissions Management Plan ((EMP)	II	Acceptable, pending GoG approval on g/w monitoring locations and parameters
Community Liaison and Safety, Infrastructure and Services	II	Acceptable
Employment and Training (E&TMP)	II	Acceptable
Waste Management Plan (WMP)	III	Under revision by BTC
Ecological Management and Monitoring (EMMP)	II	Under revision by BTC
Cultural Heritage Management Plan	II	Acceptable
Procurement and Supply Chain Management	II	Acceptable
Azerbaijan		
ROW Access Strategy	III	Under revision by BTC
Store oily waste at Serenja Waste Management Facility as an interim solution whilst an alternative contractor is identified until September 2007	III	Acceptable
Storage of medical waste at the Serenja Waste Management Facility	III	Acceptable
Removal of raw sewage waste from sewage treatment plants by vacuum tanker and transportation to external municipal wastewater treatment facility.	III	Acceptable

Proposed MoC description	Class	IEC Final Review and/or MOC Status
Use of non EU compliant facility for reuse of pigging wax arisen from BTC Operations sites (IPA1).	III	Acceptable
Use of ADES Sumqayit Municipal Landfill site BP dedicated cells for disposal of non hazardous waste from BTC Operations	III	Acceptable
Reinstatement of CCIC Yevlakh Camp and Pipe Dump Yard - Document Number: OP-AZ-ENV-DEV-00011	II	Acceptable, subject to owner/regulator approval
Reinstatement of Yevlakh PSA-2 Camp - Document Number: OP-AZ-ENV-DEV-00010	II	Acceptable, subject to owner/regulator approval
Georgia		
Disposal of sewage sludge at the Gardabani Municipal Treatment Plant - Document Number: AGT002-2003-OP-DCN-00007	III	Acceptable
Continued use of the Central Waste Accumulation Area (CWAA) adjacent to PSG-1 - Document Number: AGT002-2004-PM-DCN-00067	III	Acceptable
Export of BTC legacy waste - Document Number: AGT002-2000-OP-DCN-00010	III	Acceptable
Continued operation of the Rustavi Pipeyard - Document Number: AGT002-2004-PM-DCN-000XX	II	Acceptable
Purchase and dismantling of the Marneuli, Tsalka and Akhaltsikhe Camps - Document Number: AGT002-2004-PM-DCN-00073	II	Acceptable
Upgrading and continued use of a Kodiana access road and construction of bypass - Document Number: AGT002-2004-PM-DCN-00067	II	Acceptable
Continued operation of the Andezit pipeyard (also known as Bakuriani pipeyard) - Document Number: AGT002-2004-PM-DCN-000XX	II	Acceptable
Turkey		
Continued use of Ceyhan temporary harbour	II	Acceptable
Marpol slops handling	II	Acceptable
Manning of IPT1 and 2	II	Acceptable

Proposed MoC description	Class	IEC Final Review and/or MOC Status
Continue to use the temporary AGI camp facilities (PT1, PT2, PT3, PT4, IPT1 and CMT)	II	Acceptable
Waste Management Plan (WMP)	III	Acceptable
Environmental and Emissions Management Plan (EEMP)	II	Under revision by BTC
Cultural Heritage Management Plan (CHMP)	II	Acceptable
Ecological Management and Monitoring Plan (EMMP)	II	Under revision by BTC

Note:

(1) It is anticipated that a detailed and final summary of the approved MOCs will be provided by BTC in their next annual report.

Appendix A – Trip Summary- 9th IEC Mission by D'Appolonia for the BTC Pipeline Project – June 2007

For this mission, two members of the team toured Turkey while another two visited Azerbaijan and Georgia. The trip summaries of the two groups are presented separately.

Azerbaijan/Georgia Team

June 12 – Azerbaijan. IEC team arrives in Baku by air.

June 13 – Azerbaijan. Meeting held with SRAP Panel members at the BTC offices in Baku.

June 14 – Azerbaijan. Meeting held with OSRP independent consultant Polaris; attend initial presentations by BTC staff and attend Polaris closeout meeting to BTC in afternoon.

June 15 – Georgia. Travel to Tbilisi and attend kick-off meeting by BTC at AGT offices; continue Project briefings throughout day. Attend meeting with representatives from the Georgian Ministry of Environmental Protection and National Resources (MoE) and the Georgia Oil and Gas Corporation (GOGC).

June 16 – Georgia. Conduct helicopter tour of entire Georgian ROW from the Azerbaijan border (PSG1) to the Turkish border (Area 80) and then stop at Bakuriani. Travel along ROW to KP 176, visit the Kodiana Projects site of the EDDF and attend a briefing by Contractor Ergil & AvrAsya. Visit areas of tree planting KP 180-183 and abandoned Andiziti quarry. Spend night at Bakuriani.

June 17 – Georgia. Drive to visit various locations along the ROW and the Askuri borrow pit, the KP 240 borrow pit, and the Kashuri quarry and then drive to Tbilisi.

June 18 – Georgia. Visit proposed non-hazardous solid waste landfill site near Rustavi; visit GB3; review reinstatement at Kura East River crossing; tour the CWAA at PSG1; tour the Iagludja municipal waste dump and return to Tbilisi.

June 19 – Georgia/Azerbaijan. Present closeout meeting at BTC office in Tbilisi and then travel to Azerbaijan. Travel to Kura West crossing (KP 411) and then the Hasan Su crossing (KP 398) and travel to Ganja. Spend night at Ganja

June 20 – Azerbaijan. Tour ROW from KP 255 to PSA2 at KP 245. The group split with one part touring PSA1 and the remainder touring the Mingechevir municipal wastewater treatment plant and then reuniting at the Kurdamir CWAA. The combined team then traveled to Baku.

June 21 – Azerbaijan. Toured the Gobustan Desert area to review reinstatement and returned to Baku.

June 22 – Azerbaijan. Attended briefing meetings by BTC and in afternoon conducted Azerbaijan closeout meeting at Hyatt Hotel in Baku.

June 22/23 – Azerbaijan. Entire team departs.

Turkey Team

June 12 – Azerbaijan. IEC team arrives in Baku by air.

June 13 – Azerbaijan. Meeting held with SRAP Panel members at the BTC offices in Baku.

June 14 – Azerbaijan. Meeting held with OSRP independent consultant Polaris; attend initial presentations by BTC staff and attend Polaris closeout meeting to BTC in afternoon.

June 15 – Turkey. Travel to Ankara and attend kick-off meeting by BTC Co. at BTC offices; continue Project briefings, including meeting with BOTAŞ representatives, throughout day. Depart Ankara to Adana in the evening.

June 16 – Conduct CMT visit and E&S meetings with BIL at the CMT. Spend night in Adana.

June 17 –Drive to visit various locations along the ROW in Lot C from Adana to Andirin. Then drive and spend the night in Kayseri.

June 18 – Depart Kayseri and meet with BTC, BOTAŞ and BIL personnel in Lot B, visiting several ROW locations from Ulas to Erzincan (former Spread 2). Overnight in Erzincan.

June 19 – Drive from Erzincan to Erzurum to visit several ROW locations in Lot B, including Speke Mountains, Cardikaya valley and PT3. Overnight in Erzurum.

June 20 – Drive from Erzurum to Sarikamis, visiting first PT2 and then several ROW locations in Lot A, including Pasinler and Sarikamis. Spend the night in Sarikamis.

June 21 – Drive from Sarikamis to Ardahan to visit locations along the ROW in Lot A. Then drive to Trabzon in the afternoon and fly to Ankara in the night.

June 22 – Ankara. Close out meeting with BTC, BOTAŞ and BIL in the afternoon.

June 23 – IEC team departs from Ankara.

Appendix B
Table B-1: Non-Compliances with ESAP – Azerbajian

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
2.3.1	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, but that their actions have not fully prevented exposure to potable water of inadequate quality, either from dispensers or from the treatment plants.	CCP Infrastructure and Services, Commitment ID: 528, 628, 1130; CCP Construction Camps, Commitment ID: 308.	I	Verify that procedures and systems are in place such that Project staff can have a high level of confidence that the potable water they use for drinking, showers, etc. is pure and safe

Table B-2: Non-Compliances with ESAP – Georgia

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
3.4.1	Final disposal of non-hazardous, non recycled/re-usable domestic waste	CCP Waste Management Plan, Commitment ID: J1, J16, J18 (N15	III	This Level III will remain in effect as long as the Project continues to use the Iagludja facility.
3.5.1	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	CCP Pollution Prevention Plan, Commitment ID: H42	I	
3.5.1	Stack emission monitoring	Emissions Management Plan - BTC Operations – Azerbaijan & Georgia, Commitment ID: Y14	I	

Table B-3: Non-Compliances with ESAP – Turkey

Section Ref.	Observation	Non-Compliance	Level	Comments / Recommendations
4.5.1	Inconsistent emission and waste monitoring registers	BIL Waste Management Plan, Commitment ID: CH9E33	I	Improve the format and structure of the two registers and ensure that they report consistent data/information
4.5.4	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	BIL Environmental Emissions Management Plan, Commitments ID: CH4E55 and CH4E57	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
4.6.1	An air emissions register is maintained and stack emission ports have been installed at the CMT and Pump Stations, however data reporting is inconsistent	BIL Environmental Emissions Management Plan, Commitment ID: CH4E28	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
4.7.1	Lack of maintenance was observed at several locations visited throughout the entire length of the pipeline in Turkey	BIL Environmental Management Manual; Commitments ID: APC2E2, APC2E79, APC2E148, APC2E3	II	Develop a clear and auditable ROW Maintenance Strategy
4.7.1	No measurable work has been initiated for temporary erosion control at the construction camp locations, especially at locations where a visual impact is apparent	BOTAS CCP Reinstatement Plan; Commitment ID: 167	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.
4.7.3	Lack of clarity with regards to final reinstatement of project access roads in compliance with ESAP commitments	BOTAS Reinstatement CCP, Commitment ID: 2	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