

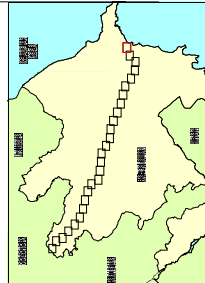
Route 010 Kilometre Point

Route 010 Kilometre Point

Proposed BTC Pipeline Route 011

Proposed SCP Pipeline Route 011

Proposed BTC Pipeline Route 010

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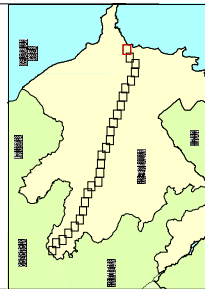
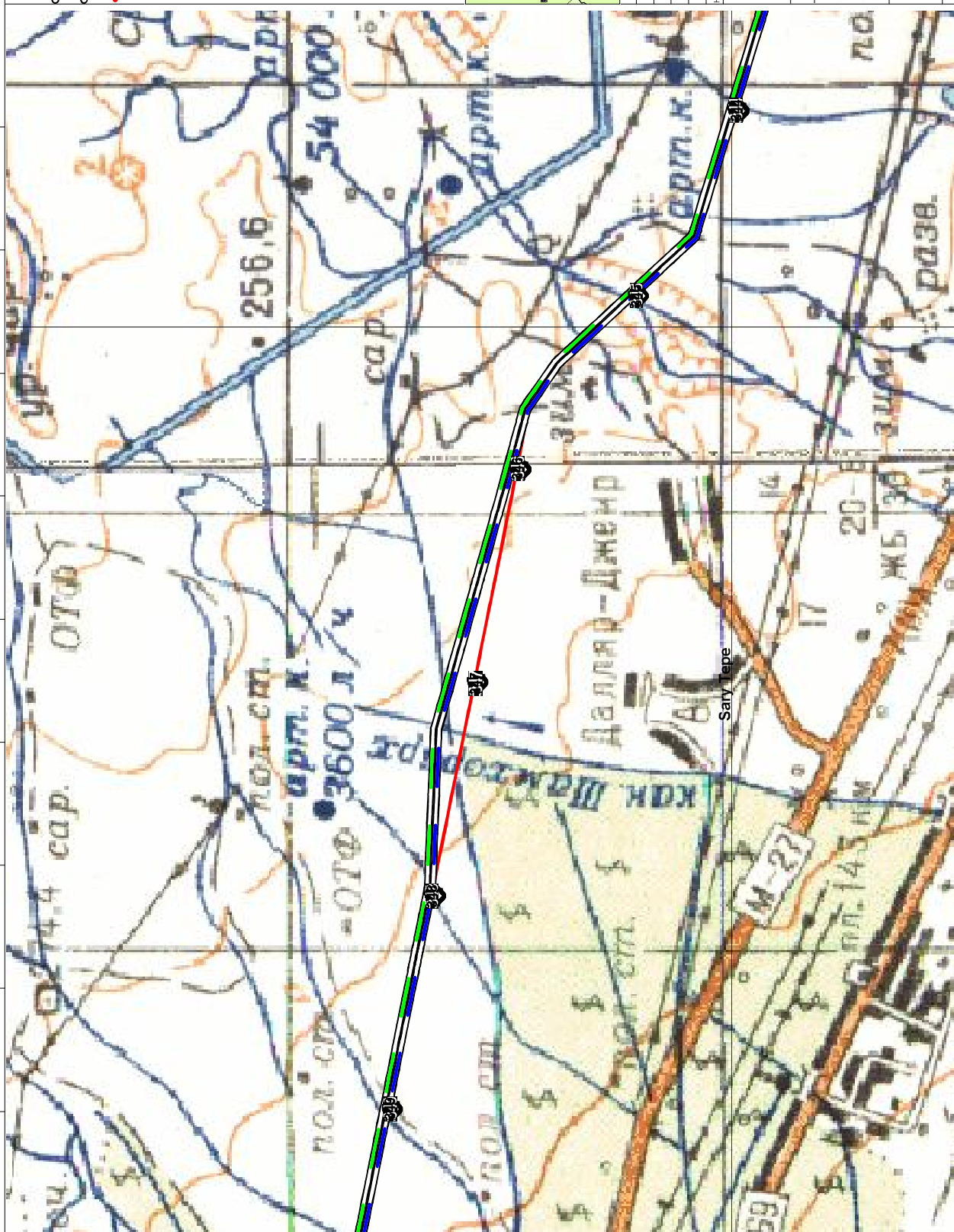
BTC/SCP PIPELINE PROJECT



**FILE: APPENDIX A
AREAS OF DEVIATION BETWEEN BTC
AND SCP ROUTES 010 AND 011**

SCALE: 1:25,000

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BTC/SCP PIPELINE PROJECT



FILE: **APPENDIX A**
AREAS OF DEVIATION BETWEEN BTC
AND SCP ROUTES 010 AND 011

SCALE: 1:25,000

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Karayazi Aquifer – Case Study

Hydrogeology Baseline

Key issues relating to hydrogeology along the pipeline route are as follows:

- Groundwater east of Yevlakh is largely unpotable and not exploited
- Groundwater is shallow and heavily exploited for potable and irrigation use to the west of Yevlakh
- Groundwater in the Karayazi aquifer, to the west of the Kura West River crossing, is particularly vulnerable due to its shallow nature and permeable overlying strata (see Figure 2-5a at the end of this report, which is reproduced from the ESIA documentation: Part 3, Hydrology Baseline Appendix Volume).

Routing Issues

A number of general corridor alignments have been assessed in the Azerbaijan sector of the pipeline approaching the border with Georgia, namely:

- South of the Kura River (the Southern Option);
- Within the same corridor as the existing Western Route Export Pipeline to the North of Kura River (the WREP Option);
- To the north of the WREP corridor and south of Lake Jandar (the Central Option); and
- To the north of Lake Jandar (the Northern Option).

The Southern Option was discounted during the preliminary engineering phase of the project, primarily due to concerns over the proximity of the line to the Armenian border.

The northern and central options were discounted primarily due to military, terrain, ecological and seismic constraints. A full report detailing all potential routes in the Azerbaijan Georgia border region was prepared and submitted to the MENR in August 2001.

Risk Assessment

The BTC pipeline system has been designed to meet or exceed the relevant international codes and standards and a large effort has been directed towards ensuring that the design and integrity of the pipeline is maintained in order to ensure that there is no loss of containment. Rigorous application of best practice leak prevention and detection measures have been incorporated into the design and are outlined in the sections below.

Nevertheless, despite high levels of design and operational standards, there is always a small residual risk of a loss of containment.

A Quantified Risk Assessment (QRA) has been carried out with the following objectives:

- To demonstrate that the base case design is robust and to verify that that residual risk of a loss of containment is extremely small. It is important to note that the QRA was used both as an assurance tool and a tool to inform the design. The QRA was used as a tool to analyse the base case project design, which included specific features for mitigating risk of a loss of containment event. Based on this analysis, additional design features were incorporated as necessary
- To evaluate the potential consequences of a loss of containment event in specific areas which have been selected on the basis of elevated environmental risk

Environmental risk incorporates the risk to the environment as a whole, that is air, water, land, plants and animals, including direct or indirect impact on people. The Karayazi Aquifer area was included as an area of elevated sensitivity in the Risk Assessment Process.

The major steps in the risk assessment process were:

- Failure frequency analysis, ie determination of spill frequency (which involves both the identification of causes of failure and the likelihood of the failure)
- Evaluation of potential spill volumes associated with the failure scenarios
- Determination of environmental sensitivity, ie susceptibility of the receiving environment to impact from an oil spill.
- Quantification of risk by combining spill frequency, magnitude and sensitivity of affected environmental features

The results of the risk assessment indicated further opportunities to reduce the size and frequency of oil spills, including increasing the number of block valves and check valves or increasing the wall thickness in the Karayazi Aquifer.

Mitigation Through Design

The entire pipeline has been designed to minimize the potential for oil spills by conforming to international standards for pipeline design and construction. Appropriate protective measures have been designed into the pipeline system as outlined below:

- The pipeline will be buried to increase protection against 3rd party interference
- Pipeline design includes an external pipe coating to protect against corrosion, particularly in the areas of saline soils and highly mineralised groundwater
- A cathodic protection system will be installed to minimize corrosion, particularly in areas where the pipeline passes through saline soils
- The pipeline will be fabricated from very high quality steel which will minimise risks from corrosion
- The pipeline will be inspected internally (PIGGED) for defects, which will provide an early warning of any corrosion.

- A risk assessment has been undertaken to define the optimum locations for block valves along the route to limit the amount of oil spilled should a leak occur. Block valves will be more closely spaced at sensitive receptors such as rivers and areas of high groundwater vulnerability.

Additional specific design measures that will be taken in the Karayazi Aquifer Area are as follows:

- The pipeline wall thickness will be increased in the most sensitive parts of the aquifer (those areas where groundwater is shallow and overlain by highly permeable strata) in order to provide additional protection against corrosion and 3rd party damage
- Additional groundwater studies, including the installation of monitoring wells to enable early leak detection (see below)

Groundwater Studies

BTC Co. is committed to an ongoing program of investigation and monitoring in the Karayazi Aquifer region. This will entail the following:

- identification of key potable water abstraction points that may be affected by a leak from the pipeline,
- development and implementation of a programme of monitoring in the Karayazi Aquifer area. This will involve installation of a series of monitoring wells to enable early detection should a leak occur.

The ongoing program of investigation and monitoring in the Karayazi Aquifer region, will enable a more detailed hydrogeological model of the area to be developed. This will be taken into consideration during the further development of the Oil Spill Response Plan.

Oil Spill Detection

Comprehensive methods of leak detection are also part of the project design and implementation. These include:

- Installation of a leak detection system
- Installation of a system of groundwater monitoring wells in the Karayazi Aquifer area
- Pipeline surveillance, including daily horseback patrols
- Monitoring of river crossings for signs of instability or erosion

Specific mitigation measures to be implemented should a leak be detected, including the location and content of oil spill response equipment, will be outlined in the Oil Spill Response Plan.

Oil Spill Response

BTC Co. considers that response preparedness in the event of a spill is of vital importance. The following will be undertaken in order to ensure that in the event of a spill, any potential damage to the environment is minimised:

- Develop a comprehensive Oil Spill Response Plan
- Purchase and locate equipment to deal with a spill quickly and

- effectively
- Provide all necessary resources in terms of personnel
- Assign specific responsibility to deal with an incident

In line with best industry practice, the project will develop an oil spill response plan prior to the project becoming operational. A document entitled Oil Spill Response: Planning, Framework for Development of a Comprehensive Oil Spill Response Capability for the BTC Project has been included in the Technical and Baseline Appendix Volume of the ESIA. This has been published at this time in preparation for the General Oil Spill Response Plan and Area Specific Oil Spill Response Plans.

The General Oil Spill Response Plan is now in development and will be publicly released once it is complete. The plan will also address financial responsibility in the event of an oil spill. It is important to note that in the unlikely event of a spill occurring, BTC Co. will not wait to assign responsibility or liability in order to respond. All resources will immediately be made available to deal with the incident. The first priority will be to get the situation under control.

Oil Spill Modelling

Detailed modelling of oil spill scenarios has been undertaken for the Karayazi Aquifer as part of the ESIA process. The conceptual model for the aquifer, which is relatively simple at present, and represents a worst-case scenario, will be further refined using details of subsurface geology from the boreholes which will be drilled as part of the monitoring programme. The results of the modelling will be used in preparing the Karayazi Area Specific Oil Spill Response Plan.

Table 1 Comparison of Options Against Key Constraints

CONSTRAINT	ISSUE	MAGNITUDE OF POTENTIAL IMPACT			MANAGE-ABILITY
		WREP OPTION	CENTRAL OPTION	NORTHERN OPTION	
Health and Safety	Ensuring the health and safety of survey and construction personnel, and the general public, is one of the key issues governing the selection of the route in this region. The main H&S issue is the presence of munitions and ordnance to the north of the WREP line.	Low Existing pipeline corridor, largely clear of munitions (1.5km thought to be impacted)	High Crosses approx. 27km of area thought to contain munitions	High Crosses approx. 20km of area expected to contain munitions	Low / Medium Military consulted and discussions underway about clearing short sections of the area
Groundwater	The Karayazi aquifer is the main groundwater resource in this region. It is an extensive aquifer that provides potable and irrigation water for a number of communities. Interestingly given that the aquifer is on the border, the Georgians have not raised any concern over this as an issue.	High Crosses aquifer for approx 28km	Medium Uncertainty over extent of aquifer crossed due to conflicting local data sources. Probably crosses aquifer for significant distance.	Low The corridor is to the north of the lake and is outside the aquifer permeable substrate.	High Design and construction techniques can address this issue.
Munitions	The area to the east of Lake Jandar is an old military range. The area to the east of the route is an old munitions store. This was destroyed when the Russians left, spreading ordnance over a wide area. The types of munitions present are unknown but could possibly contain chemical, radioactive, and biological contaminants. The Azeri military has been consulted.	Low / Medium A 1.5 km stretch of corridor is thought to be impacted and will need to be cleared by the military	High Crosses approx. 27km of area thought to contain munitions	High Crosses approx. 20km of area expected to contain munitions	Low / Medium Military consulted and discussions underway about clearing short sections of the area
Proposed Ramsar Site	Lake Jandar on the border is proposed as a Ramsar site (a wetland of international importance for bird life) by the Azerbaijan Government. The lake provides an important	Low The WREP corridor is approximately 3km distant and	Medium The Central corridor is less than 1km distant, but still	High The northern corridor is 1km distant of the lake.	Medium / High While design and construction techniques can address this issue

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	habitat for permanent, migratory and over-wintering bird species.	down gradient of the lake. The corridor does cross some minor rivers that feed into Lake Jandar.	down gradient of the lake. The corridor is within the direct catchment for the lake.	However, it is up gradient of the lake on impermeable soils. Any contamination would therefore migrate towards the lake. The corridor is within the direct catchment for the lake.	to a large degree this is made more difficult in the more severe terrain to the north.
Terrain	The WREP and Central corridor options cross the border to the south of Lake Jandar, crossing the Kura river plain, and some minor relief. The northern option runs to the north of the lake where the terrain is much more rugged and prone to geohazards including landslip, washout and erosion. Reinstatement in the northerly area would be more difficult.	Low Primarily crossing agricultural land within the flat Kura river valley and floodplain	Medium This option rises up from the flat river plain onto an incised plateau, where the terrain is more difficult.	High Significant concerns over geohazards and the ability to successfully reinstate and maintain the right-of-way.	Medium While design and construction techniques can address many of the impacts caused by terrain the threat of geohazards occurring remains.
Security	The key security concern is the proximity of the routes to the Azerbaijan / Armenian border, and the threat of terrorist activity during construction or operation. This was the main reason for the Southern Option being dropped.	Low Option is outside the security area and to the north of the Kura River	Low Option is outside the security area and to the north of the Kura River	Low Option is outside the security area and to the north of the Kura River	High
Seismicity	As correctly identified in the letter from the SCE seismicity is one of the key issues to be considered when routing an oil pipeline. The BTC Partners have commissioned a full seismic and terrain study of the pipeline route to identify key areas of concern.	Low On the Kura floodplain.	High Crosses and runs parallel to a fault scarp for 7 km.	Medium The area to the north of the lake is more susceptible to seismic events than the Kura floodplain.	Medium

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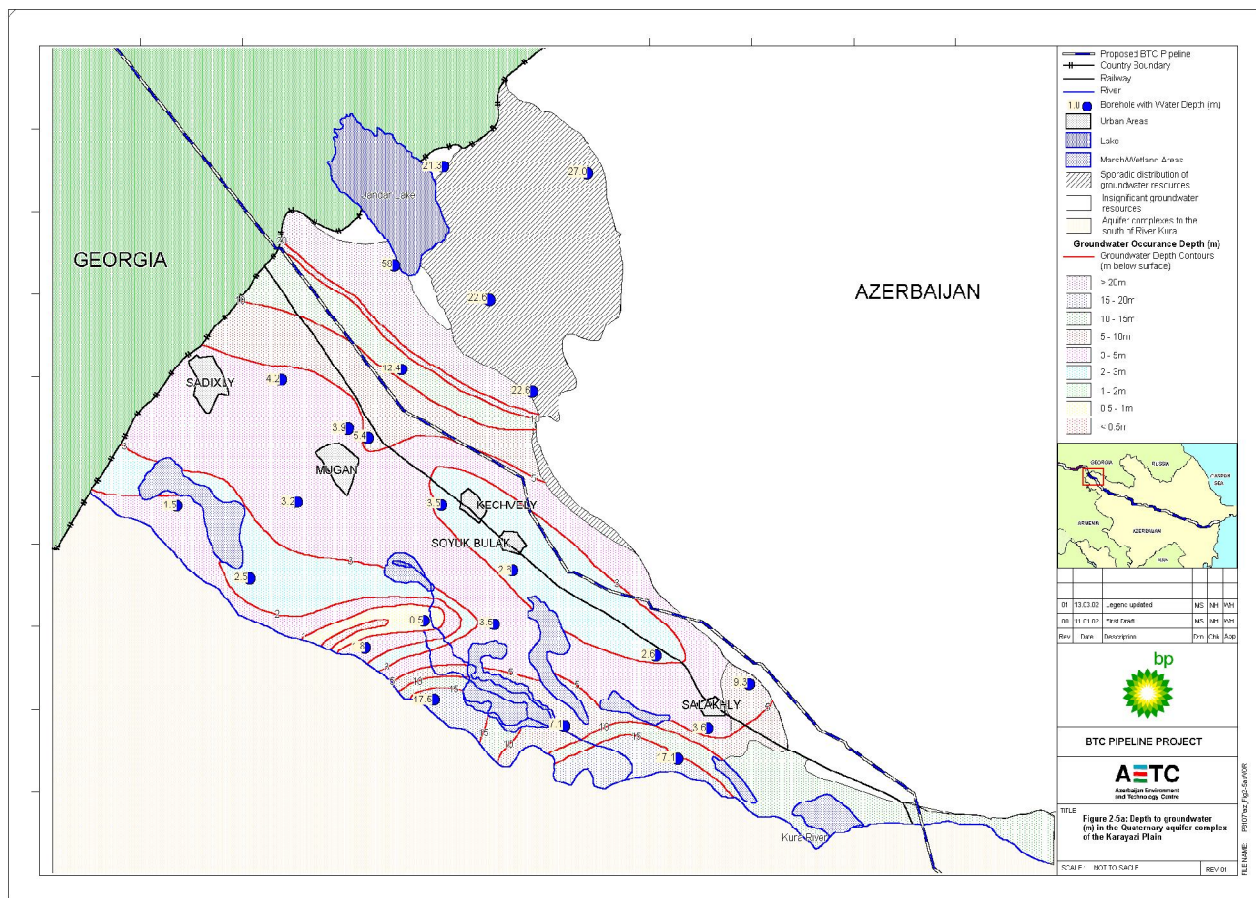
Ecology	Ecological issues are centred around the presence of red data book species, sensitive habitats and the level of disturbance of the area.	Low Few red data book species present, and primarily non-natural habitats.	Low Few red data book species present, and primarily non-natural habitats.	Medium Few red data book species present, but more natural habitats. Construction here would open up access to an otherwise undeveloped area.	Medium Impacts on flora, fauna and habitats can be managed through careful construction techniques (e.g. seasonality, special reinstatement etc). Access is more difficult to manage.
Archaeology	Numerous known or potential sites are located within the corridor options under consideration.	Medium 10 minor sites identified within the corridor.	Low 3 potential sites identified within the corridor.	Medium No detailed archaeological survey conducted in this area.	High Known or potential sites can normally be avoided through sensitive routing within the corridor. Sites that cannot be avoided will be visited and an appropriate management plan put in place.
Reserves	Avoidance of current or proposed natural reserves.	Low The WREP Option avoids all Nature Reserves and the proposed Ramsar site at Jandar Lake. The nearest reserve is the Karayazi reserve on the banks of the Kura river.	Medium The Central Option avoids all Nature Reserves but is within 1km of the proposed Ramsar site at Jandar Lake.	Medium The Northern Option avoids all Nature Reserves but is within 1km of the proposed Ramsar site at Jandar Lake. It is also up gradient of the lake.	High Current and proposed nature reserve boundaries are known and will be taken fully into account during project design.
Social	The key social issues are the land use crossed by the corridors and the proximity to	Medium	Low	Low	High

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	populations.	Crosses cultivated agricultural land. Passes closer to a number of settlements than the other options.	Crosses mainly cultivated agricultural land and pasture. Few people impacted.	Crosses undulating and natural habitats. Few people impacted.	Issues relating to land use will be fully addressed through a comprehensive land acquisition compensation programme. Safety concerns will be addressed though adherence to engineering standards.
Reinstatement	Following pipeline construction some types of habitat are easier to reinstate to their pre-construction condition than others.	Low Good reinstatement achievable as land is generally cultivated.	Medium Good reinstatement achievable in cultivated areas, more difficult in undulating terrain.	High Very undulating terrain difficult to reinstate and maintain. High potential for soil erosion and loss of vegetation.	Medium Reinstatement can be managed, although the task is easier and faster in agricultural land than in erodable, undulating terrain.
Surface Waters	The number and type of watercourses crossed by the corridors has been considered.	Medium Crosses more than two other options, although these are primarily irrigation systems and not rivers.	Low Crosses few watercourses.	Low Crosses few watercourses.	High Impacts upon watercourses will be mitigated during project design and construction. Major watercourses will be assessed and designed individually.
Georgian Constraints	As the region under discussion is on the Azerbaijan / Georgia border constraints within Georgia also have to be taken into consideration.	Medium Crossing into this Georgia corridor would impact approximately	Medium Crossing into this Georgia corridor would impact approximately	High Crossing into this Georgia corridor would impact approximately 10km	Low The project rationale has been to avoid crossing designated nature protection areas wherever possible.

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	<p>The key constraint in Georgia is the Iori Upland Prospective Protected Area of Multiple Use, which is just across the border from Azerbaijan.</p> <p>The proposed Iori Protected Area of Multiple Use, covering 192,200 hectares, is aimed at the conservation of existing ecosystems, facilitation and control of sustainable use of renewable resources. The area would correspond to IUCN Category VI 'Managed Resource Protected Area'</p>	0.5km of the Iori Area.	0.5km of the Iori Area.	of the Iori Area.	Routing the pipeline further north will impact on a much greater length of the Iori area.
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GOBUSTAN CULTURAL RESERVE

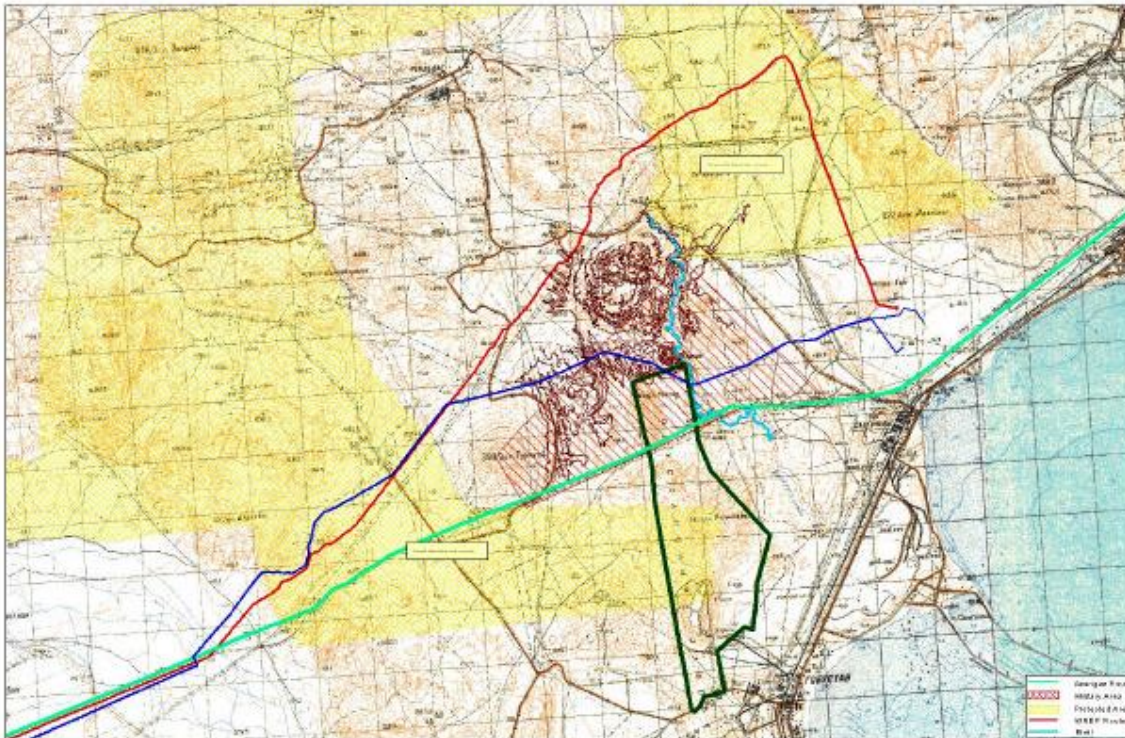
Within Azerbaijan the route of the BTC pipeline is generally parallel to the existing Western Route Export Pipeline (WREP). The WREP runs north from Sangachal for 8km, due to alignment with the Northern Route Export Pipeline, before heading to the west. Therefore the WREP does not interact with the Gobustan Cultural Reserve.

There is no requirement for the BTC pipeline to run north, as it does not need to tie into the NREP, and therefore the pipeline heads due west from Sangachal. This has the advantage of reducing the length of the BTC pipeline route within the proposed Gobustan National Park by 12km. However, it does bring the BTC pipeline close to the Gobustan Cultural Reserve.

The original intention was to avoid the Gobustan Cultural Reserve by routing around it to the north. However, examination of the terrain to the north of the Reserve showed that the area is extremely inhospitable, with significant gullies and evident erosion. Construction in this area would lead to significant environmental impacts including increased erosion, visual impacts, damage to soils and would be more difficult to reinstate successfully.

Consideration was also given to routing the BTC pipeline to the south, parallel to the existing Azerigaz pipeline, but this would mean crossing through the centre of the Reserve (Figure 1).

Figure 1 Routing Constraints in Relation to the Gobustan Cultural Reserve



An additional constraint to routing in this area is the proximity of the Djeyrankechmes River to the eastern boundary of the Reserve. This river is prone to significant erosion during high rainfall. The proposed crossing point has been selected by engineers as being the best place to cross this river, based on an analysis of bank erosion, flow characteristics, and the necessary set back distances for the pipeline crossing (Figure 2).

Figure 2 Proposed Crossing Point of Djerankechmes River



Extensive surveys have been conducted in the area during the pipeline route selection and ESIA preparation, by teams including representatives from the Institute of Archaeology and international archaeologists. These studies show that the proposed route is approximately 1km from any of the cultural monuments for which Gobustan is renowned, and approximately 10km from the most significant area of rock art. Detailed surface examination during these surveys has not indicated the presence of any archaeological sites on the pipeline corridor itself. Figure 3 is a photograph of Jingirdag taken from the proposed Right of Way.

We have attempted to reduce any impact on the Reserve to an absolute minimum. The current routing shows the pipeline crossing the Reserve for only 900m. The working width through the Reserve will be reduced, and archaeologists will be present on site during construction to advise in the unlikely event that any archaeology is uncovered. Areas of the Reserve are already severely degraded by human activity, including traffic,

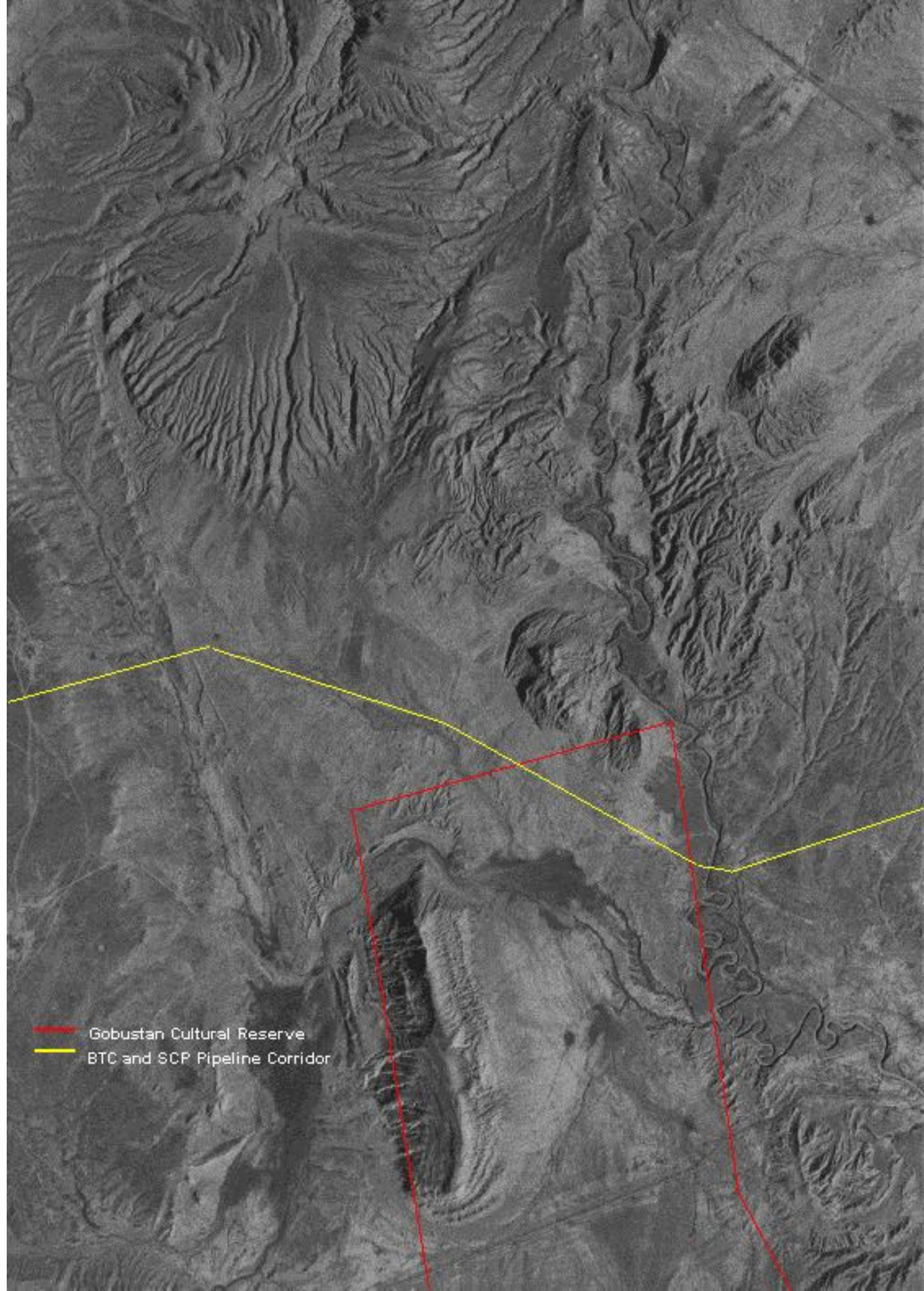
military activity and waste disposal, and we have therefore selected a pipeline route that maximises the use of previously degraded areas wherever practical.

The pipeline will be buried for its entire length, and the construction corridor will be fully reinstated following construction.

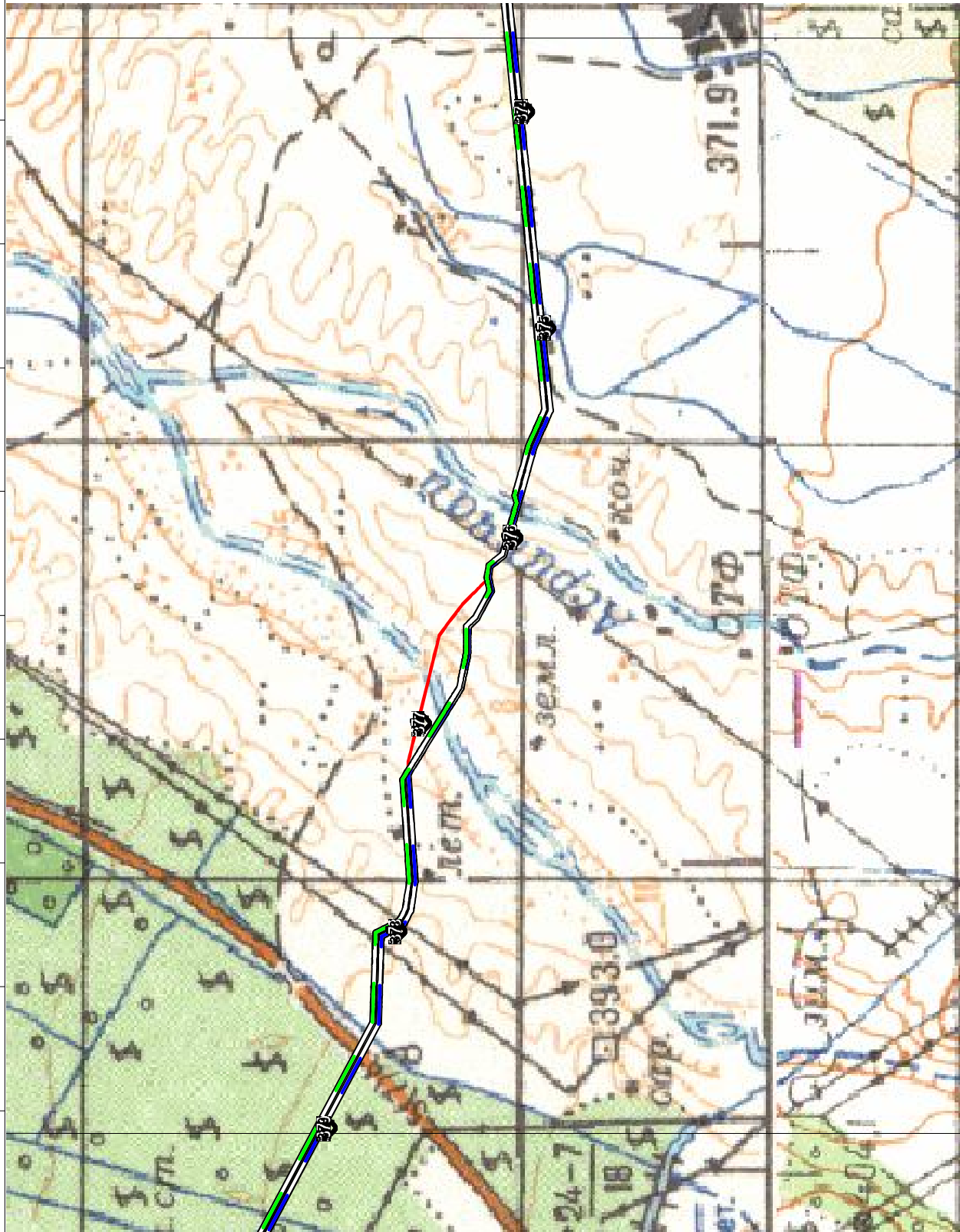
Throughout the routing process, discussions and site visits have been held with the Ministry of Culture, who are responsible for management of the Reserve. The BTC project is in discussions with the Ministry regarding supporting management of the Reserve, which will have a long-term beneficial impact upon the Reserve.

Figure 3 Jingirdag from the Right of Way






— Gobustan Cultural Reserve
— BTC and SCP Pipeline Corridor



Route 010 Kilometre Point

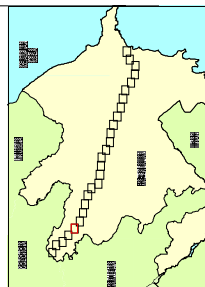


Proposed BTC Pipeline Route 011

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Proposed SCF Pipeline Route 011

Proposed BTC Pipeline Route 010

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**FILE: APPENDIX A
AREAS OF DEVIATION BETWEEN BTC
AND SCP ROUTES 010 AND 011**

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LIST OF PARTICIPANTS AT FORMAL DISCLOSURE MEETINGS

June 13th, Meeting with Academic and Scientific Community

- Institute of Archaeology and Ethnography
- Institute of Botany
- Institute of Geography
- Institute of Geology
- Institute of International Relations
- Institute of Political and Social Investigation and Information
- Institute of Soil Sciences
- Institute of Zoology
- International EcoEnergy Academy
- Ministry of Environment and Natural Resources

June 14th, Meeting with NGOs in Baku

- ‘TETA Hazri’ Public Association for Development and Research
- Azerbaijan AIDS Association
- Azerbaijan Centre for Protection of Birds
- Azerbaijan Green Movement
- Azerbaijan Journalist Association ‘Ecograph’
- Azerbaijan Society for Protection of Animals
- Azerbaijan Sociological Association
- Azerbaijan Woman and Development Centre
- Ecolex Azerbaijan
- Ecology Teachers Charitable Society
- Green Movement (Biodiversity Section)
- Himayadar Humanitarian Organization
- Human and Environment Azerbaijan Public Association
- Inam Centre for Pluralism
- National Center of Environmental Forecasting
- Society for Protection of Azerbaijan Nature.

Also invited:

- ACDI – VOCA
- AREAT
- Community Housing Foundation
- ECOS – Ecological Stability
- Initiative for Social Action and Renewal in Euro-Asia Azerbaijan
- Legal Education Society
- OXFAM
- Ruzgar Ecological Social Union
- Save the Children

- Women in the Oil Industry of Azerbaijan.

June 18th, NGOs invited to Formal Public Meetings in Ganja

Present:

- AMDA Agri-Input Market Development in Azerbaijan
- Ana Kur International Ecological Society
- Ganja Agrobusiness Association
- Ganja Women Entrepreneurs Union
- Helsinki Citizen's Assembly.

Also invited:

- 'Avicenna' (Medical NGO)
- AIDS organizations in Sanitary and Epidemic Station of Ganja
- Bridge to the Future Youth Union
- Debate in Civil Society Resource Center
- Ecological Fund
- Helsinki Assembly on Women Rights.
- Odjag Humanitarian Union
- Technological University
- The Center of Young Leaders
- Tomris Mother Society.

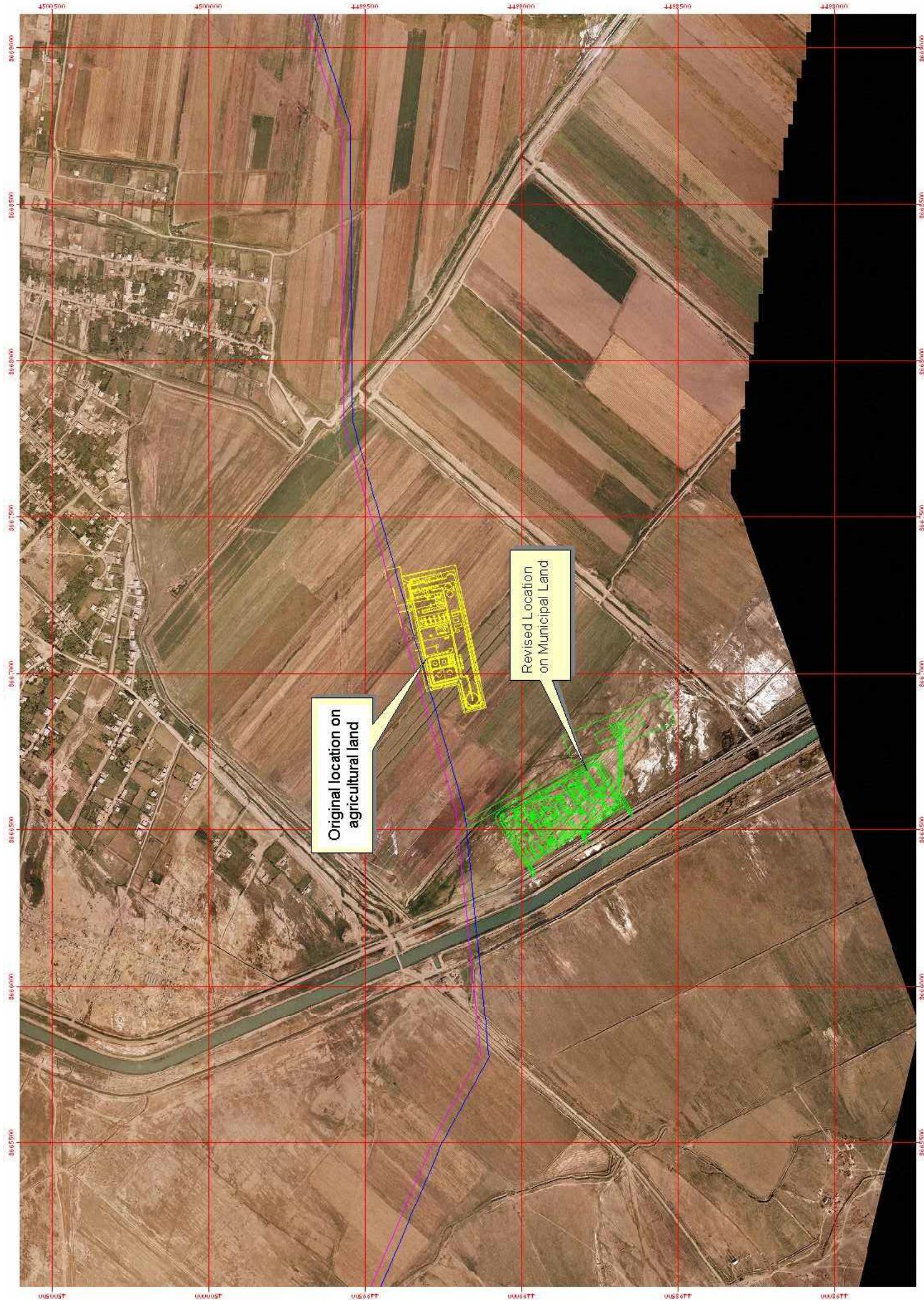
July 31st, NGO Workshop in Baku

- 'Azadlig' (Newspaper)
- 'Echo' (Newspaper)
- 'IHLAS' Charity Society
- 'Sayyah'- Caucasus Regional Confederation
- 'Yeni Azerbaijan' (Newspaper)
- 'Yeni Musavat' (Newspaper)
- Azerbaijan Greens Movement
- Azerbaijan Holland Friendship Society
- Azerbaijan Society for the Protection of Animals, Azerbaijan
- Baku Ecology News agency 'ASSA- Irada'
- Committee for the Defense of Oil Workers Rights
- European Bank for Reconstruction and Development
- Ecograph
- Human and Environment Azerbaijan Public Association
- Initiative for Social Action and Renewal in Euro-Asia Azerbaijan
- National Center for Environmental Broadcasting
- Regional Confederation of Caucasian NGOs
- Save the Children
- Scientific Humanitarian Organization, 'Chemist'
- Scientific Humanitarian Society 'Gunesh'
- Society for Democracy Reforms
- Woman in the Oil Industry of Azerbaijan.

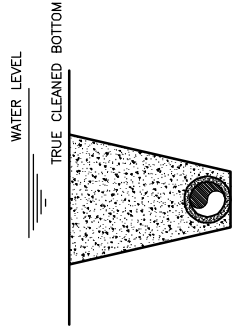
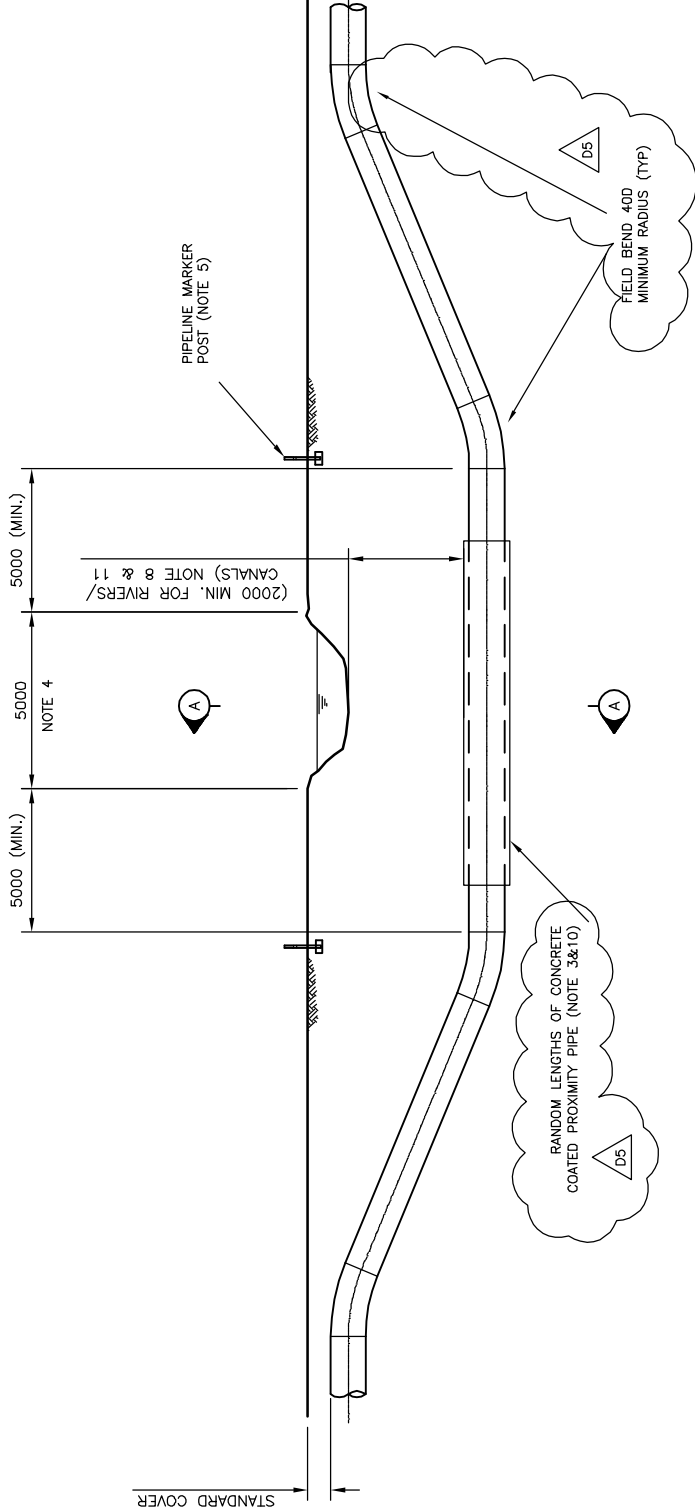
Sample Database

Topic	Access to energy
<i>Stakeholder Group</i>	<i>Community Member</i>
<i>Record ID</i>	<i>Comment</i>
	328 Gas supply to local residents is needed
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	37 The energy issue is not resolved in the ESIA
Topic	Archaeology
<i>Stakeholder Group</i>	<i>Community Member</i>
<i>Record ID</i>	<i>Comment</i>
	128 Clarification of procedures for archeological sites
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	43 Archeological surveys are required in Gobustan and Kurdamir where pottery and potential sites might be found
	94 Clarification on why the route cannot go around the rocks to the north of Gobustan reserve.
Topic	Consultation
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	380 Concern that not enough NGOs were involved into Road show.
	398 Concern whether the seminars on ESIA has been conducted in Georgia/Turkey.
<i>Stakeholder Group</i>	<i>RMG</i>
<i>Record ID</i>	<i>Comment</i>
	584 Section 13.2 (pages 13-2) defines Regional Review. We would like to see a copy of the Regional Review.
Topic	Erosion
<i>Stakeholder Group</i>	<i>RMG</i>
<i>Record ID</i>	<i>Comment</i>
	493 Explanation on the term "anti erosion mat" is needed.
Topic	Fauna
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	92 Have areas of ornithological interest been identified?
<i>Stakeholder Group</i>	<i>RMG</i>
<i>Record ID</i>	<i>Comment</i>
	488 Concern that too much attention has been given to the protection of the spur-thighed tortoise, as according to Azerbaijan zoologists this species is not endangered in

Topic	Health
<i>Stakeholder Group</i>	<i>Academic/Sci. Institute</i>
<i>Record ID</i>	<i>Comment</i>
	22 Clarification required on measures to minimise impact of communicable diseases
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	401 Concern over whether a detailed sanitation-epidemiological baseline has been conducted along the route; Suggest additional research is completed, since few people apply to hospitals in villages. Need to conduct a number of awareness raising training sessions on communicable diseases; need to apply drinkable water quality control for construction workers; need to identify places of possible burial ground of cattle (anthrax); High level hygiene standards should be applied, there needs to be a Waste Control Plan.
Topic	Land
<i>Stakeholder Group</i>	<i>Academic/Sci. Institute</i>
<i>Record ID</i>	<i>Comment</i>
	20 Details of actual land take should be included
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	52 Clarification of land ownership on completion of operations.
Topic	Pipeline operations
<i>Stakeholder Group</i>	<i>Community Member</i>
<i>Record ID</i>	<i>Comment</i>
	255 Confirmation needed on start date and duration of construction.
Topic	Pipeline safety
<i>Stakeholder Group</i>	<i>Community Member</i>
<i>Record ID</i>	<i>Comment</i>
	183 Clarification of procedures in the event of an oil spill or accident on the pipeline
Topic	Pipeline safety / Oil spill
<i>Stakeholder Group</i>	<i>NGO</i>
<i>Record ID</i>	<i>Comment</i>
	42 Concern that the distances between valve stations on the BTC line are too large in case of oil spill. 399 Concern over what measures will be undertaken towards the control of leakages.



11. FOR AUGER CROSSINGS, DEPTH OF COVER TO BE A MINIMUM OF 2m.



SECTION THROUGH TRENCH

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. COVER TO BE MEASURED FROM THE LOWEST TRUE CLEANED BOTTOM OF THE WATERCOURSE, AND TOP OF THE PIPE CONCRETE COATING.
3. EXTENT OF CONCRETE COATING AND CROSSING LENGTH SHALL BE CONFIRMED FOLLOWING DETAILED SPECIAL CROSSING AND GEOTECHNICAL SURVEY.
4. MAJOR WATERCOURSE CROSSINGS INCLUDE RIVERS AND CANALS, IN EXCESS OF 5m WIDE.
5. ON WATERCOURSES LESS THAN 10M WIDE, ONE MARKER POST ONLY IS TO BE PLACED ON THE NEGATIVE BANK FACING AWAY FROM THE WATERCOURSE.
6. WHERE THE BANKS AND BED ARE ARMOURD, THIS IS TO BE REINSTATED TO THE SATISFACTION OF THE IRRIGATION AUTHORITY.
7. ACTUAL DEPTH OF COVER AND EXTENT SHALL BE CONFIRMED FOLLOWING DETAILED HYDROLOGICAL AND GEOTECHNICAL SURVEY. DUE CONSIDERATION SHALL BE GIVEN TO FUTURE EROSION AND RIVER MOVEMENT.
8. THE DEPTH OF COVER FOR EACH SPECIAL SECTION RIVER CROSSING SHALL BE 2000 MIN OR AS SPECIFIED ON THE DETAILED DRAWING.
9. FOR DETAILS OF FOC INSTALLATION REFER TO 410088/00/L/PL/MI/029.
10. NO CONCRETE WEIGHT COATING FOR TRENCHLESS CROSSING.

REV	DATE	DESCRIPTION	DRN	CHK	APP	BL
D5	19/03/02	A.F.D	NME	TT	LC	
D4	21/01/02	A.F.D	WAB	TT	LC	
D3	26/11/01	A.F.D	M.E.	TT	LC	
D2	12/09/01	I.T.T.	M.E.	TT	LC	
D1	15/08/01	I.T.T.	M.E.	TT	LC	
B1	26/07/01	I.T.C.	PC	TT	SP	

bp



AGT PIPELINES PROJECT

JOHN BROWN

John Brown Hydrocarbons Limited
20, Eastbourne Terrace, London W2 6LE, UK

TITLE:
TYPICAL
MAJOR WATERCOURSE CROSSING

SCALE (A3):

DOCUMENT ID:

CONTRACT No:

CLIENT CONTRACT No:

DRAWING No.

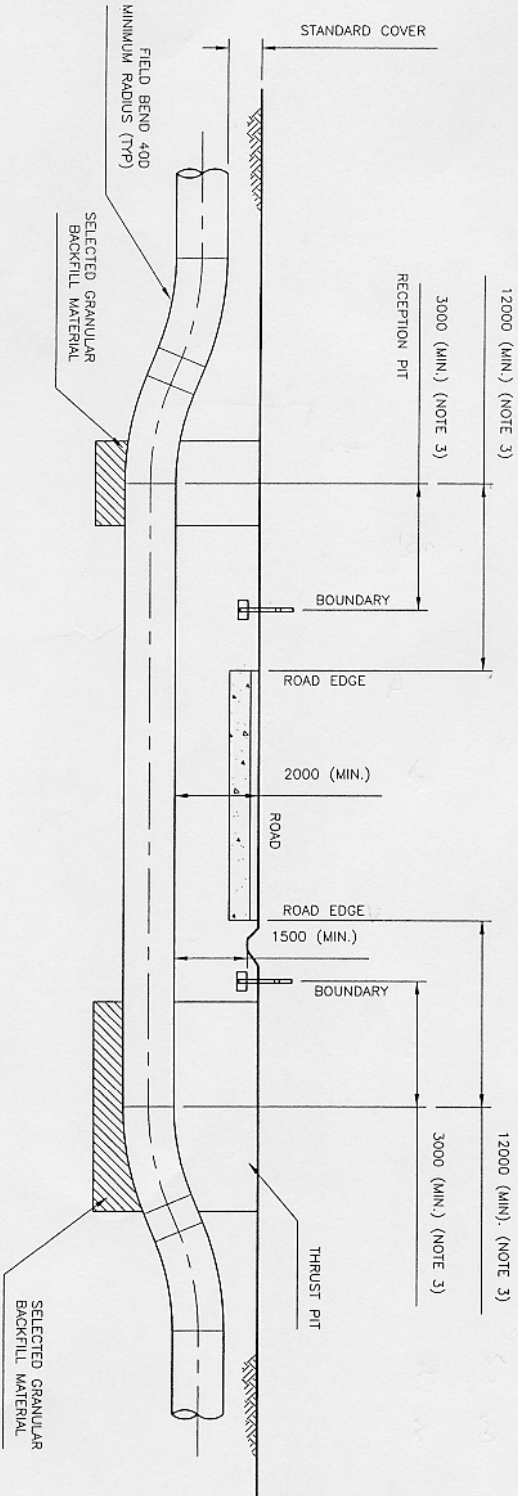
410088/00/L/PL/MI/006

REV

D5

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE STATED.
2. DIMENSION TO BE VERIFIED BY REFERENCE TO APPROPRIATE SPECIAL CROSSING DRAWING.
3. WHERE REQUIRED, STRAIGHT LENGTH OF HEAVY WALL PIPE SHALL EXTEND A DISTANCE OF 12000 OR 1 FULL RANDOM PIPE LENGTH BEYOND EDGE OF ROAD MEASURED AT 90° TO ROAD OR 3000 BEYOND ROAD BOUNDARY WHICHEVER IS GREATER FOR DETAILS OF HEAVY WALL PIPE REFER TO CROSSING SCHEDULE.
4. BORING IS TO CONTINUE UNTIL PIPE WITH UNDAMAGED COATING IS RECEIVED IN THE RECEPTION PIT OR AS AGREED WITH THE COMPANY.
5. CONTRACTOR TO PROPOSE METHOD FOR INSTALLATION OF CABLE DUCT ACROSS ROAD USING TRENCHLESS TECHNIQUES.



bp

AGT PIPELINES PROJECT

Kvaerner Hydrocarbons

20, Eastbourne Terrace, London W2 4LE, UK

TITLE:

TYPICAL
THRUST/AUGER BORED
ROAD CROSSING

SCALE (A3): N.T.S.

SCOPE ID: 692

DRAWING No.

410088/00/L/PL/M/003

REV

D2

LOCATIONS WHERE WREP CROSSES BTC PIPELINE

Table E 1 Locations where WREP crosses BTC pipeline

ID	BTC KP No.	ID	BTC KP No.
1	18.00	16	323.43
2	32.15	17	324.48
3	56.83	18	336.70
4	101.24	19	339.97
5	141.59	20	347.37
6	147.83	21	397.31
7	158.97	22	398.96
8	180.55	23	403.11
9	192.14	24	412.54
10	202.60	25	415.41
11	213.80	26	418.46
12	219.49	27	422.54
13	311.22	28	426.56
14	311.61	29	435.96
15	322.45	30	442.54

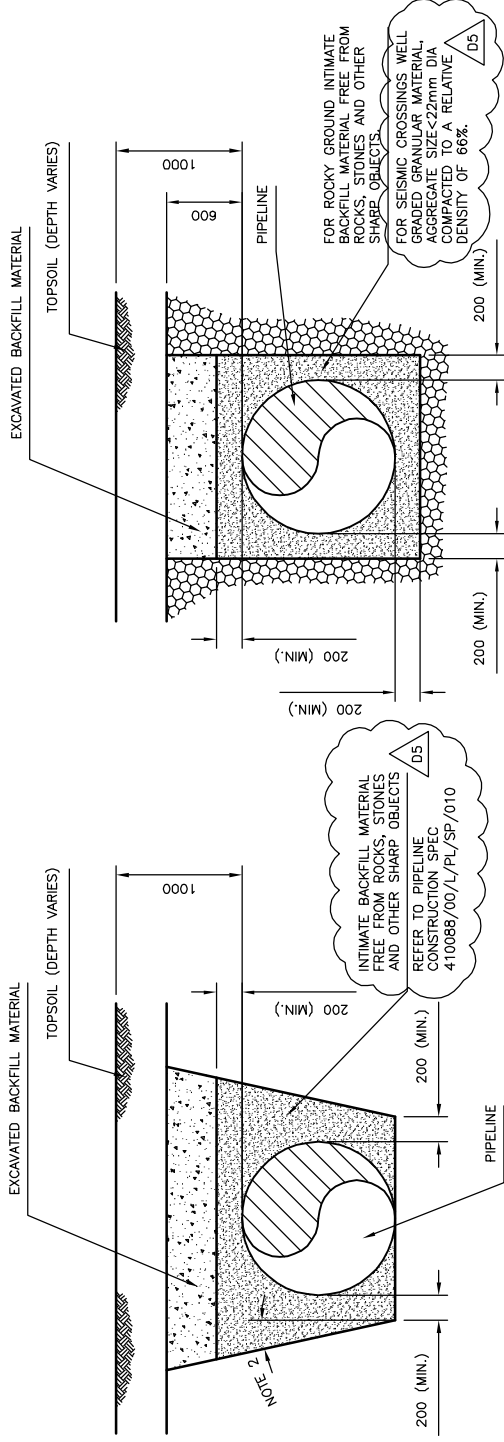


FIGURE 1
TYPICAL TRENCH SECTION

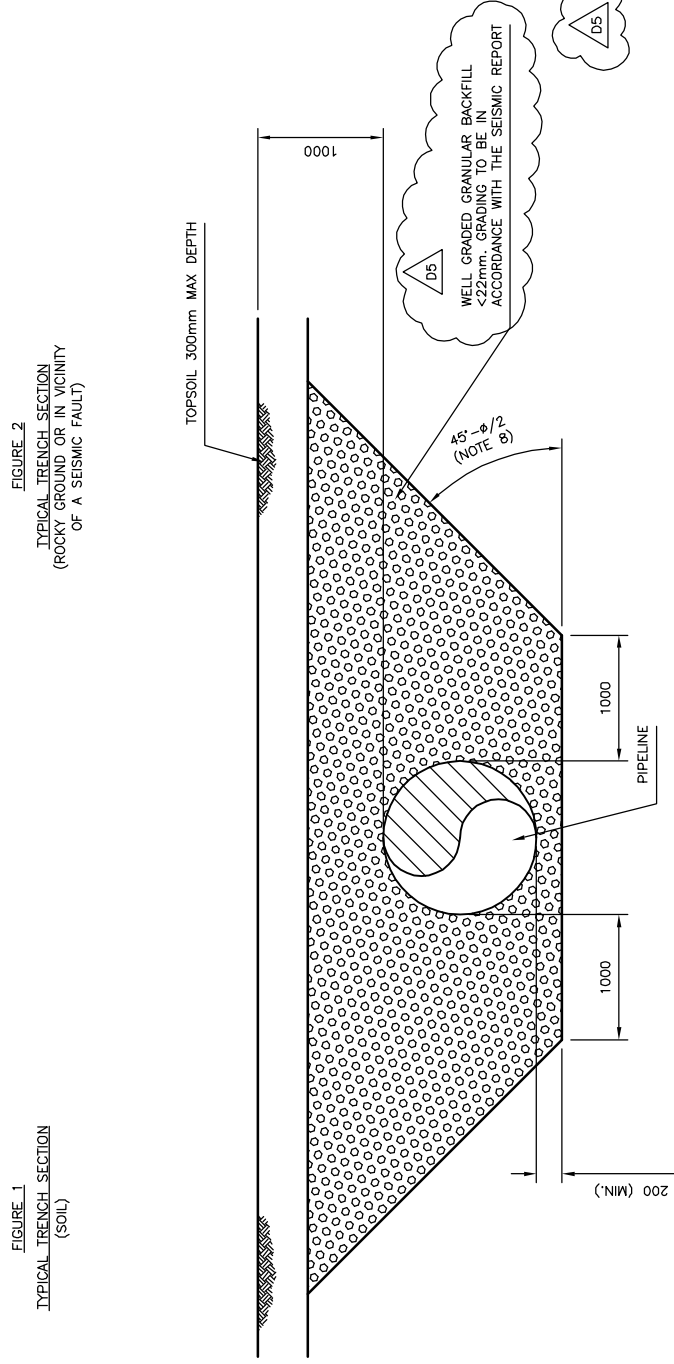


FIGURE 3
TYPICAL TRENCH SECTION
(IN VICINITY OF FAULT LINES) (NOTE 5)

REV	DATE	DESCRIPTION	DRN	CHK	APP	BL
B1	26/07/01	I.T.C.	PC	TT	SP	
D1	15/08/01	I.T.T.	M.E.	TT	LC	
D2	12/09/01	I.T.T. (46")	HKW	TT	LC	
D3	26/11/01	A.F.D.	M.E.	TT	LC	
D4	21/01/02	A.F.D.	WAB	TT	LC	
D5	19/03/02	A.F.D.	M.E.	TT	LC	



AGT PIPELINES PROJECT

JOHN BROWN

John Brown Hydrocarbons Limited
20, Eastbourne Terrace, London W2 6LE, UK

TITLE:

TYPICAL TRENCH DETAILS
FOR 42" & 46" PIPELINE

SCALE (A3):

DOCUMENT ID:

CONTRACT No:

CLIENT CONFIDENTIAL

DRAWING No.

REV

DS