

## PROJECT DESCRIPTION - AZERBAIJAN

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## **2 PROJECT DESCRIPTION - AZERBAIJAN**

### **2.1 GENERAL**

Chapter 2 briefly describes the Azerbaijan section of the BTC Pipeline and, where relevant, the SCP project. The focus is on project activities, land requirements and restrictions of use with potential to affect landowners, users and their livelihood. For a detailed technical description of each of the projects, reference should be made to the *BTC Pipeline ESIA Azerbaijan* (AETC and ERM, May 2002) and the *SCP Pipeline ESIA Azerbaijan* (AETC and ERM, May 2002)

### **2.2 PIPELINE ROUTE IN AZERBAIJAN**

The BTC and SCP pipeline routes in Azerbaijan are shown in Figure 1.1.

### **2.3 PIPELINE CORRIDOR**

#### **2.3.1 BTC and SCP Contiguous Construction Corridors**

In Azerbaijan and Georgia, the BTC and SCP pipeline projects will be constructed within a 44 metre wide construction corridor, with each project ultimately in its own 22-metre wide corridor. Through a land cooperation agreement, BTC Co. and the SCP project entity will share portions of their individual 22 metre wide construction corridor with each other as necessary to complete the construction of both projects. BTC Co. will commence the construction of its crude oil pipeline first, to be followed by the SCP entity's construction of a natural gas pipeline. The sequence for construction of the two pipelines and their use of each other's corridor is illustrated in Figure 2.1.

This arrangement has the benefit of reducing the overall amount of land space necessary to construct the two pipelines through the use of one 44 metre wide strip of land being sequentially used by BTC Co. and then the SCP entity, versus the use of two strips of 32 metres that would otherwise be cleared, if the two pipelines were built entirely independently. The result is that 30 percent less land will be impacted by construction. This equates to a reduced impact on 884 hectares of land over the length of the pipeline corridor.

#### **2.3.2 BTC Construction Corridor (32 metres)**

The construction corridor for the BTC Pipeline will generally be 32 metres wide.

- 2 metres will be cleared for BTC
- 12 metres will be reinstated immediately
- 20 metres will be left not reinstated, for subsequent use for the SCP pipeline construction (see note below on reinstatement if SCP construction is delayed)

If SCP pipeline construction is delayed 12 months or more from when clearing takes place for the BTC Pipeline, then the balance 20 metre strip will be reinstated as well. Construction of the SCP pipeline will require the use of the 20 metre central strip associated with the BTC Pipeline and an additional 12 metre strip on the opposite side from the BTC corridor.

Following SCP pipeline construction completion, the whole construction corridor will be reinstated, with the BTC Pipeline to occupy one 22 metre corridor and the SCP pipeline occupying a second and contiguous 22 metre corridor.

Even though ownership of the land within the construction corridor for the BTC Pipeline will remain vested with the existing land owners, under the rights to be granted to the projects, the construction corridor will not be available for agricultural use for the 3-year construction period<sup>1</sup>. It will be cleared of all structures, trees, crops and vegetation to accommodate pipeline construction. Under an arrangement by which the State will acquire all the necessary land rights from the land owners and grant the rights to land required by the HGAs to the projects, upon payment of compensation, BTC Co. will hold the right to use, possess and control the corridor for the life of the project. Restrictions of use are described in Section 2.8.2.

Mechanisms used to grant rights to BTC Co. and the SCP entity to construct and operate the pipeline are described in Section 5.4.

Where the proposed pipeline routes pass close to public infrastructure or environmentally sensitive areas, the right of way width may be reduced from 32 metres to as narrow as 24 metres. It should be noted that a reduced working width can only be maintained for a limited distance without seriously impeding construction activities, and that reduction of the working width can lead to other impacts such as the need for additional access road construction.

At certain locations, such as where the pipelines cross other pipelines, roads, rivers or irrigation infrastructure, additional construction width may be required to accommodate the plant and materials necessary for the specialized crossings of these features. These areas have been planned for and are included in the project land summaries in this RAP.

## **2.4 PIPELINES IN AZERBAIJAN**

### **2.4.1 BTC Pipeline**

442 kilometres of 42" diameter pipe will be required for the Azerbaijan section of the BTC Pipeline. This will be made up of approximately 37,000 steel pipe sections, each just under 12 metres long. All pipe sections will be externally coated with polyethylene prior to delivery to the construction site. Welded joints will have a similar coating applied during construction. The polyethylene will protect the pipe from corrosion and damage.

### **2.4.2 SCP Pipeline**

The SCP pipeline will be constructed in a corridor contiguous with the BTC Pipeline. In Azerbaijan, it will consist of 442 kilometres of 42" steel pipe externally coated with a polyethylene anti-corrosive coating. The SCP pipeline will have five block valves and, when fully operational, one compressor station to be located within the Sangachal Terminal complex. It will run a total distance of 690 kilometres from the Sangachal Oil and Gas Reception Terminal to the Georgian-Turkish border near Arkhaltsikhe. The SCP pipeline will link up with a pipeline being constructed within Turkey to transport gas to Erzurum, from whence it will be distributed to domestic consumers.

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<sup>1</sup> The three year period is the time required to complete construction of both the BTC and SCP pipelines. It is currently envisaged that construction of the SCP pipeline will commence very shortly after completion of the BTC Pipeline. The construction period for the BTC Pipeline will be about 15 months.

## **2.5 ABOVE GROUND INSTALLATIONS (AGIS)**

The following facilities will be constructed as part of the BTC Pipeline development. These are permanent installations and will require the State to acquire full ownership title for the sites where they will be constructed. BTC Co. will be granted the rights to construct and operate the AGIs by sub-grants from the State. The AGIs in Azerbaijan are as follows:

- Pump stations
- Valve stations
- Pigging facilities (currently only optional)
- Permanent access roads

### **2.5.1 Pump Stations**

There are two pump stations for the BTC Pipeline ultimately planned within Azerbaijan. One will be within the Sangachal Oil and Gas Reception Terminal. The land impacts of this head pump station are described in the RAP for Sangachal Terminal. The second pump station will be added when volumes increase and will be situated mid way between the Terminal and the Georgian border (near KP244). The second pump station will encompass four mainline pumps, generator sets and fuel storage, control room, mess and accommodation for 10 workers in a secure compound. The pump station has been specifically sited on municipal land to avoid impacts upon landowners, as detailed in the following case study, and will occupy approximately 9 hectares. Restrictions on use such as described in Section 2.8.2 will apply to an area within 25 metres of the pump station perimeter fence which will be permanently acquired for the project.

### **2.5.2 Valve Stations**

There are two types of valve stations. Block valves that can be remotely or manually controlled will be used to restrict or stop pipeline flows. Check valves are devices that rely on gravity and reverse flow to automatically close when pipeline flow is interrupted. Altogether there are twenty block valve stations and three check valves spaced along the BTC Pipeline. Each block valve will be located within a nominal 25 metre by 25 metre fenced enclosure. The check valves will also be within fenced enclosures of about 12 metres by 12 metres. Restrictions of use, as detailed in Section 2.8.2, will apply to the surrounding area within 2 metres of the perimeter fencing for both types of valve station. Access within the fenced area will be prohibited.

### **2.5.3 Pigging Facilities**

There is an option to convert two of the block valve sites into larger intermediate pigging stations. Work is currently underway to determine if this is necessary. If pigging facilities are required in Azerbaijan for the BTC Pipeline then restrictions of use within 2 metres of the perimeter fencing will be implemented.

### **2.5.4 Access Roads**

About 25 kilometres of existing roads and tracks will need remedial works, and 6 kilometres of new roads will need to be constructed, in order to safely accommodate construction traffic and to provide access to permanent facilities for the BTC Pipeline, such as the check and valve stations.

### **Avoiding and Minimizing Resettlement - Pump Station Case Study**

Initially one pump station will be required on the BTC Pipeline within Azerbaijan, and this will be housed within the Sangachal Terminal complex. As crude volumes increase, a second pump station is required approximately half-way along the Azerbaijan section of the pipeline.

Analysis of hydraulic models was used to identify the optimum location for the pump stations, with the aim of minimising the number of stations needed across all three countries. From an engineering design perspective, the optimum location for the second pump station in Azerbaijan was identified as an area of agricultural land approximately 243 km along the route, near to the community of Yaldili.

However, as additional details of land ownership for this area became available it was apparent that the land was in private ownership. In total, almost 30 private landowners would have been impacted by land-take for construction of the pump station. Therefore the project team looked for alternative land in the vicinity that could be used as the site of the station. It was found that by moving the station west by 750m it was possible to keep within the hydraulic design limits, and locate the station on infrequently used Municipal land, thereby avoiding permanent impact upon the 30 private landowners.

*Landscape character of the original pump station site*



*Proposed new location adjacent to the Karabakh canal*



Note: The Karabakh canal is concrete lined. The edge of the canal is about 5 metres above the adjacent ground level, so in the unlikely event of an oil spill at the pump station, there is no possibility of the spill entering the canal. The BTC Pipeline itself will be installed using horizontal directional drilling and will pass about 20 metres below the canal.

A number of bridges will also need to be upgraded. The 6 kilometres of new access roads will be 4-6 metres wide and will remain after the construction period to provide access for maintenance and monitoring operations. Land for permanent roads is included in RAP schedules of land area to be permanently acquired.

## 2.6 TEMPORARY CONSTRUCTION FACILITIES IN AZERBAIJAN

Temporary facilities that will be used during the construction phase of the projects will include pipe and materials storage yards, warehousing, project offices and construction camps for workers. In Azerbaijan, ten potential pipe storage locations and five potential construction camp sites have been identified as part of project design. This Azerbaijan RAP describes land impacts and compensation arrangements for all of these sites. The construction contractor, in consultation with BTC Co., will determine the final locations of the construction camps and materials storage yards. Preliminary advice from the selected construction contractor is that in Azerbaijan no sites beyond those identified in this RAP will be used. If in future, it proves necessary to make use of additional sites, BTC Co. and its appointed construction contractor will follow the procedures and compensation framework established in this RAP.

Land for temporary construction facilities will be required for a 3-year period which commenced in the last quarter of 2002.

### 2.6.1 Pipe and Materials Storage Yards

Pipes will be transported to the vicinity of works areas by rail. Eleven provisional pipe and materials storage yards have been identified, close to existing rail sidings or spurs. Pipe will then be transported from the storage yards to the pipeline construction spread by road. Potential pipe storage yards are spaced at approximately 40 kilometre intervals along the route and each is typically 15-20 hectares in area. The majority of sites are on disused railway land. Many of the proposed sites were previously used for pipe storage during construction of the Western Route Export Pipeline. Potential sites are summarised in the following table.

**Table 2.1 Summary of Possible Pipe and Materials Storage Yards**

Pipe Dump Site	Description	Area (Ha.)
Umbaki	Rail siding on state land leased by Azer Energy (Ministry of Fuel and Energy)	2.4
Mugan	Inactive former industrial land and warehouse leased to private individual	16.6
Kurdemir	State land leased to State Committee and Water Supply – not actively used	14.9
Laki	State land controlled by Ministry for Economic Development	17.1
Yevlakh	State land comprised of unused land and inactive enterprise warehouse and factory buildings	21.9
Kurak Chay	-	12.9
Ganja	State land controlled by State Railways and Ganja City Executive Power (formerly used as pipe dump for WREP)	39.7
Dallar	-	10.5
Zaeam	-	29.6
Polyu	State land controlled by State Railways	3.0
Beyuk Kassik	-	30.9
<b>Total</b>		<b>199.5 Ha</b>

## 2.6.2 Construction Camps

A number of potential construction camp sites have been identified. These sites have been subjected to social and environmental assessment and are covered by this RAP. The construction camps will typically include accommodation and supporting facilities for workers, medical facilities, project offices, equipment storage and waste treatment infrastructure. Camp sites will be two to three hectares in area, subject to the construction contractor's requirements. It is considered likely that the contractor will choose to utilise some or all of the potential sites listed below.

**Table 2.2 Summary of Possible Construction Camp Sites**

Camp Site Location	Description	Area (Ha)
Mugan	Municipal land leased to private individual for – former industrial site, not presently used	5.7
Kurdemir	State land and former WREP construction camp site	5.6
Ganja	Formerly used as WREP construction camp site	5.7
Polyu	State land with industrial buildings and partially fenced yard.	2.3
<b>Total</b>		<b>19.3</b>

## 2.6.3 Temporary Access Roads

The construction contractor will identify any necessary temporary access roads during the detailed construction planning. In acquiring land for such temporary roads, the contractor will follow the procedures of compensation entitlement defined within this RAP.

## 2.7 CONSTRUCTION SEQUENCE

BTC Co. has engaged a highly experienced international contractor (Consolidated Contractors International Company) to install the Azerbaijan section of the pipeline and valve stations. A second contractor (Spie Capag Petrofac) will construct the initial pump station [at Sangachal].

The pipeline contractor will install the BTC Pipeline using one spread. A spread consists of a pipeline laying team and all plant and equipment necessary to excavate, assemble and install the pipeline. There will also be a number of specialist teams to accomplish watercourse crossings and undertake other special installation work. The spread will lay approximately 1.8 kilometres of pipeline per day, though actual lay rates will vary dependent on localized site conditions. Laying of the Azerbaijan section of the BTC Pipeline is anticipated to take approximately 15 months.

The construction process will involve the following steps:

**Step 1: Survey and Stake-out:** the pipeline construction corridor (32 metres) will be surveyed and pegged.

**Step 2: Clearing, Stripping and Earthworks:** all existing structures, trees and vegetation will be cleared from the 32 metre corridor. The corridor will then be stripped and levelled. Topsoil and subsoil will be stockpiled separately for reuse during reinstatement. The stockpile will be used to mark the edge of the corridor for safety and security.

**Step 3: Trenching:** backhoes and trenching machines will be used to excavate a trench not less than 2.2 metres in depth. This will allow for a minimum one metre cover over the pipeline upon completion. In Azerbaijan, it is anticipated that rock saws, explosives or jackhammers will not be required for trench excavation. In rural areas of Azerbaijan, up to 15

kilometres of the pipeline trench may be open at any one time. Where the construction corridor is close to settlements, measures will be taken to limit public access to the active works area and trench. Safe trench crossings will be constructed to maintain public and stock access across the trench on public roads and paths.

**Step 4: Pipe Stringing and Welding:** pipe sections including factory manufactured bends will be delivered to secure pipe yards before onward transportation to the site. On site, sections will be raised and aligned on wooden blocks for welding

**Step 5: Field Coating:** each pipe section will be delivered to the site with a factory applied polyethylene coating to prevent corrosion. Following welding, a further protective coating will be applied on site over the welds themselves.

**Step 6: Pipe Installation and Backfilling:** where borrow material is unsuitable, bedding and backfilling materials will be obtained from commercial sources. The pipeline will then be lowered into position in the trench by side-boom tractors and the trench backfilled and compacted. Any surplus material from trench excavations will be spread within the width of the construction corridor. Topsoil will be retained for spreading as the finish layer. Any affected drains will be restored.

**Step 7: Crossings:** are defined for special treatment in construction contract documents. Crossings include the following:

- Rivers
- Water courses, including aqueducts, canals, irrigation channels, and drains
- Public roads and tracks
- Rail tracks
- Underground services

Special techniques will be employed to ensure that there is no or limited disruption of service at designated “crossings”.

**Step 8: Reinstatement:** the construction contractor will be required to develop a project-specific Reinstatement Plan based on specifications contained in the construction tender documents. The full width of the construction corridor and any other works areas will be reinstated in accordance with the Reinstatement Plan on completion of construction. Key reinstatement principles will be as follows:

- To strip and stockpile existing topsoil in such a manner that its quality and structure is retained for reuse following construction completion.
- To re-grade the works area upon completion as close to the original ground profile as possible and to ensure pre-project drainage patterns are restored.
- To undertake all necessary measures (ploughing, harrowing, fertilizer application, use of leguminous cover crops, etc) to restore the soil to its pre-project condition, or better, in terms of suitability for growing crops and pasture.
- To monitor effective restoration of productivity for a three-year period following reinstatement, and to undertake any additional restoration measures deemed necessary to restore the affected ground to full productivity.
- Any public services, structures, roads, tracks, pavements or other facilities<sup>2</sup> affected by the construction works will be repaired or replaced to a condition that is at least as good as that found prior to construction.

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<sup>2</sup> Private fixed assets and land improvements will be compensated with cash at full replacement value prior to occupation of the corridor. See Section 6.13.

Contractor's compliance with the Reinstatement Plan will be monitored by the BTC Co.'s Construction and Environmental and Social Departments.

The construction sequence is illustrated in Figure 2.1.

## **2.8 OPERATIONS PHASE**

The BTC Pipeline will be operated in accordance with international codes and standards. These place stringent requirements upon the operator to ensure that:

- The pipeline is operated safely for employees, customers and third parties including people living and working near the pipeline
- Staff are adequately trained to operate and maintain pipeline and facilities
- Effective preventive maintenance programs are implemented
- The pipeline is regularly inspected

Restrictions of use, inspections, and maintenance activities will affect some landowners' and users' livelihood activities over the pipeline during the operations phase. Such restrictions and related activities are briefly described below.

### **2.8.1 Operations Activities Potentially Affecting Land Owners and Users**

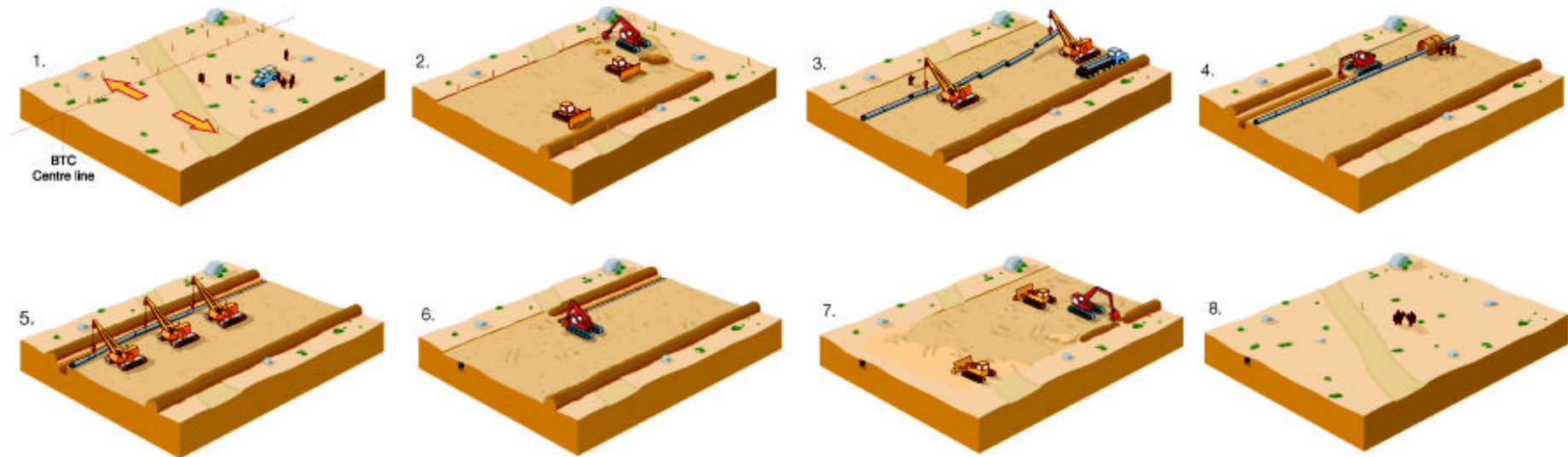
There are potentially three types of activities during the operations phase that may affect adjacent landowners and users. These are as follows:

- Regular horse patrol of the pipeline corridor
- Occasional maintenance access
- Response to incidents

Throughout its operational life, the Azerbaijan section of the BTC Pipeline will be regularly inspected by horse patrols. Horse patrols will provide flexibility for BTC Co. inspection staff to pass up and down the pipeline corridor without requiring construction of a dedicated vehicle track, thereby avoiding alienation of land from agricultural use. It will also enable patrols to pass around the perimeters of cropped land avoiding damage to in-ground crops. Functions of the horse patrols will include: (i) liaison with affected landowners and users; (ii) inspection of above ground installations and river crossings; and, (iii) monitoring of land owners and users' compliance with 'restrictions of use'. Horse patrols are seen as the most effective means to achieve these functions while minimizing adverse impacts on landowners and users.

The BTC Pipeline is designed to minimise the need for ongoing maintenance. It is possible, however, that on infrequent occasions it may be necessary for men, vehicles and equipment to

**Figure 2.1 Construction Sequence**



1. Setting out and surveying
2. Preparing the right of way (including topsoil stripping as necessary)
3. Pipeline stringing prior to pipeline fabrication
4. Excavating the trench (other methods may also be used where necessary)
5. Laying of pipeline in the trench (ditching)
6. Backfilling with subsoil
7. Reinstating the right of way (including replacing the topsoil)
8. After completion of reinstatement

Safe crossing points across the construction works taking place along the pipeline route will be provided at all times. Illustrations are for guidance only. Methods and equipment may vary from those shown above.

pass along an 8-metre wide strip directly over the pipeline to undertake maintenance activities or repairs. Wherever possible, such activities will be scheduled outside of growing seasons to avoid the need to damage in-ground crops. On occasion, there may be incidents necessitating emergency access along the pipeline. Dependent on the season when such incidents occur, such access may necessitate damage to crops. The basis for compensation for right of access is described in Chapter 6.

## 2.8.2 Restrictions of Use

Restrictions of use are typically applied around crude oil pipelines and related installations to protect the integrity of the pipeline, to reduce the potential for accidental damage, and to minimize risks to people and communities living and working in the immediate vicinity. Such restrictions can, in some cases, limit the types of installations that be constructed or the activities that can be conducted by owners or users within a prescribed zone.

### 2.8.2.1 Pipeline Corridor

“Restrictions of use” will be applied to a 58-metre corridor (referred to as the pipeline “protection zone”) that will extend 7 metres either side of the total 44-metre construction corridor for both projects. Restrictions will apply throughout the operational life of the projects. The restrictions will be consistent with international codes and will be considerably less restrictive on land owners and users than Azeri standards, which are based on Soviet standards that have historically been applied to crude oil and natural gas pipelines in Azerbaijan. In Azerbaijan, restrictions of use will be applied through agreements to be signed with each project-affected landowner. Restrictions of use to be applied within the 58-metre corridor are illustrated in Figure 2.2 and described below.

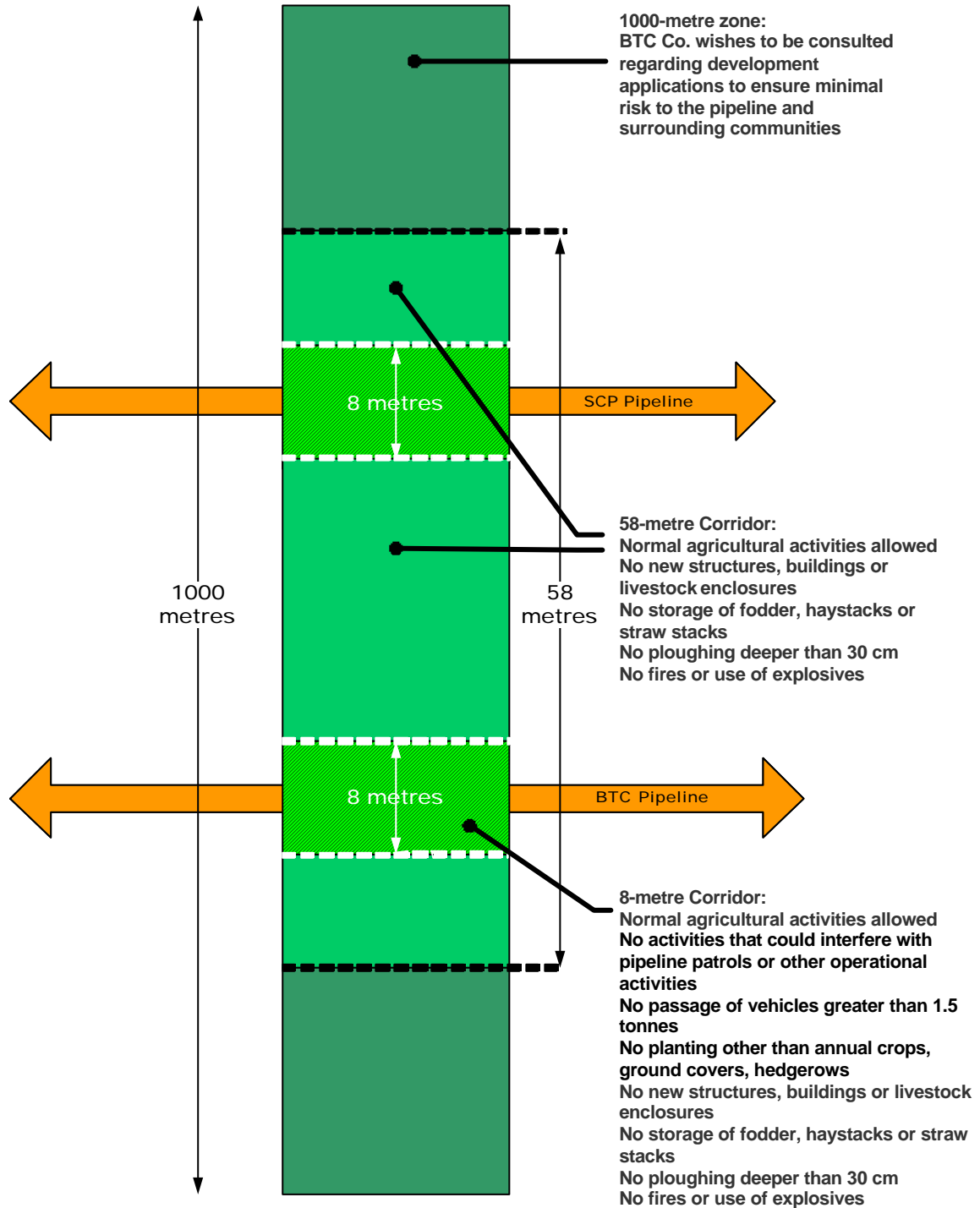
Any uses or activities not listed as prohibited are allowed. The majority of existing uses such as grazing, hayfields and cultivation will be able to continue as before the project.

The following work and activities will be **prohibited** within this zone

- Construction of any building, whether habitable or not
- Construction of any facility or the erection of any installations, including livestock enclosures
- Storage of fodder, fertilisers and materials, making of haystacks and straw stacks.
- Fires of any sort
- The construction of passages, vehicular accesses and roads
- The construction or use of parking lots for tractors, agricultural machinery or other machine driver vehicles.
- The use of explosives, piling or similar activities
- The pouring of any acid, alkali solutions or other inflammable corrosive or toxic fluids.
- Any welding or flames, except as required for activities in section below, as approved by the pipeline operator and carried out under the pipeline operator’s permit supervision
- Interference with any marker post or cathodic test point, including relocation, burying, breaking or knocking down.
- Interference of any kind with any of the pipeline operator’s equipment in the zone, including, opening and closing valves, switching on and off any communication of logging devices, interfering with any power supplies.
- Significant change to the ground profile

- Alter, divert or otherwise interfere with any drainage ditches, irrigation canals or dykes and banks that protect the pipeline and the pipeline zone from damage, and any erosion control materials/measures
- Alter, divert or otherwise interfere with the dykes and banks designed to contain any oil spill or protect adjoining areas in the event of an oil spill

**Figure 2.2 Pipeline Protection Zones**



The following activities are **prohibited** within the zone, except with full approval of BTC Co., and if they are being carried out under the pipeline operator's permit system, and the pipeline operator supervision.

- Installation of lines (including electrified stock fencing), cables or pipes of any kind either under the land, or over the land (whether surface laid or on poles)
- Installation of essential agricultural fences
- Road, track or railway construction
- Construction of new irrigation (greater than 30 cms deep) or drainage ditches
- Excavations
- Small alterations in the ground profile

The following activities are additionally prohibited within 4 metres of the pipelines:

- Any activity which could interfere with the performance of pipeline patrols and other necessary operational activities
- Any activity which could cause or lead to damage to the pipelines
- The passage of any vehicles (not permitted under permitted activities across the pipelines), if greater than 1.5 tonnes weight, except at designated pipeline crossing points, or with full approval of the pipeline operator, and carried out under the pipeline operator's permit system and supervision
- Construction of new irrigation (greater than 30 cms deep) or drainage ditches
- Taking of soil samples, including survey, mining, reclamation or other such works
- Boreholes, for any reason whatsoever
- Any alteration to the ground profile
- Any material alteration to the zone affecting support of the surrounding soil to the pipeline.
- Any increase in the cover over the pipelines, however caused
- Any decrease in the cover on the pipelines, however caused (including agricultural activity)
- Any placement of substances, including general rubbish, wastes or detritus.

The land and community liaison teams will be able to provide information on the minimum allowable distance from the pipelines for different tree species, based on Figure 2.3.

As described in the foregoing section, regular horseback patrols will be conducted along the pipeline for liaison with owners, users and occupiers and to monitor activities within the 58-metre pipeline protection zone.

### 2.8.2.2 Above Ground Installations

Similar restrictions to those defined for the pipeline protection zone will apply for zones around other BTC Co. and SCP entity installations. These are summarised in the following table.

**Table 2.3 Restrictions of Use around BTC Co. Above Ground Installations**

<b>Installation</b>	<b>Extent of Restrictions of Use</b>
Pump Stations and Compressor Stations	25 metres from the perimeter fence (to be permanently acquired by the project)
Pigging Station	2 metres from the perimeter fence
Check Valve Station	2 metres from the perimeter fence
Block Valve Stations	2 metres from the perimeter fence (to be permanently acquired by the project)

### 2.8.2.3 River Crossings

Gravel extraction is practiced on several rivers crossed by the pipelines. These include the Kura, Kurekchay, Shamkirchay and Zayamachay Rivers. Such activities can reduce the cover over, or expose, the pipelines either through direct excavation or by triggering processes of scour or deposition. To avoid problems arising from extraction activities, restrictions may be required for gravel extraction in certain areas.

The project design team is currently assessing the requirement for, and potential extent of any restrictions on, gravel extraction activities. If restrictions are required the procedures for compensation and entitlement discussed within this RAP will be adhered to.

### 2.8.3 Planting Restrictions

Planting of trees and vines within the immediate vicinity of the pipelines will also be subject to restrictions to: (i) avoid possible damage from tree roots to the pipelines themselves, fibre optic and cathodic protection systems; and, (ii) to allow for vehicular access along the pipelines for maintenance or other requirements. Figure 2.3 details the controls on tree planting over the pipelines. The planting restrictions have been developed to minimize the alienation of agricultural areas for tree crops, orchards and vineyards. Trees and vines will not be permitted within an eight-metre strip directly over the pipelines. Compensation measures for this loss of use are described in Section 6.5.

## 2.9 PROJECT SCHEDULE

A schedule showing the timing of the principle design, implementation and operations phases forms Figure 2.4.

**Figure 2.4 BTC Schedule in Azerbaijan**

ID	Task Name	2001		2002				2003				2004				2005							
		Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
1	Pipeline Routing and Design	█																					
2	Preparatory Civil Works & construction mobilization							█															
3	Pipeline and Ancillary Works Construction							█															
4	Land Reinstatement											█											
5	Testing and Commissioning															█							
6	Operations																			█			

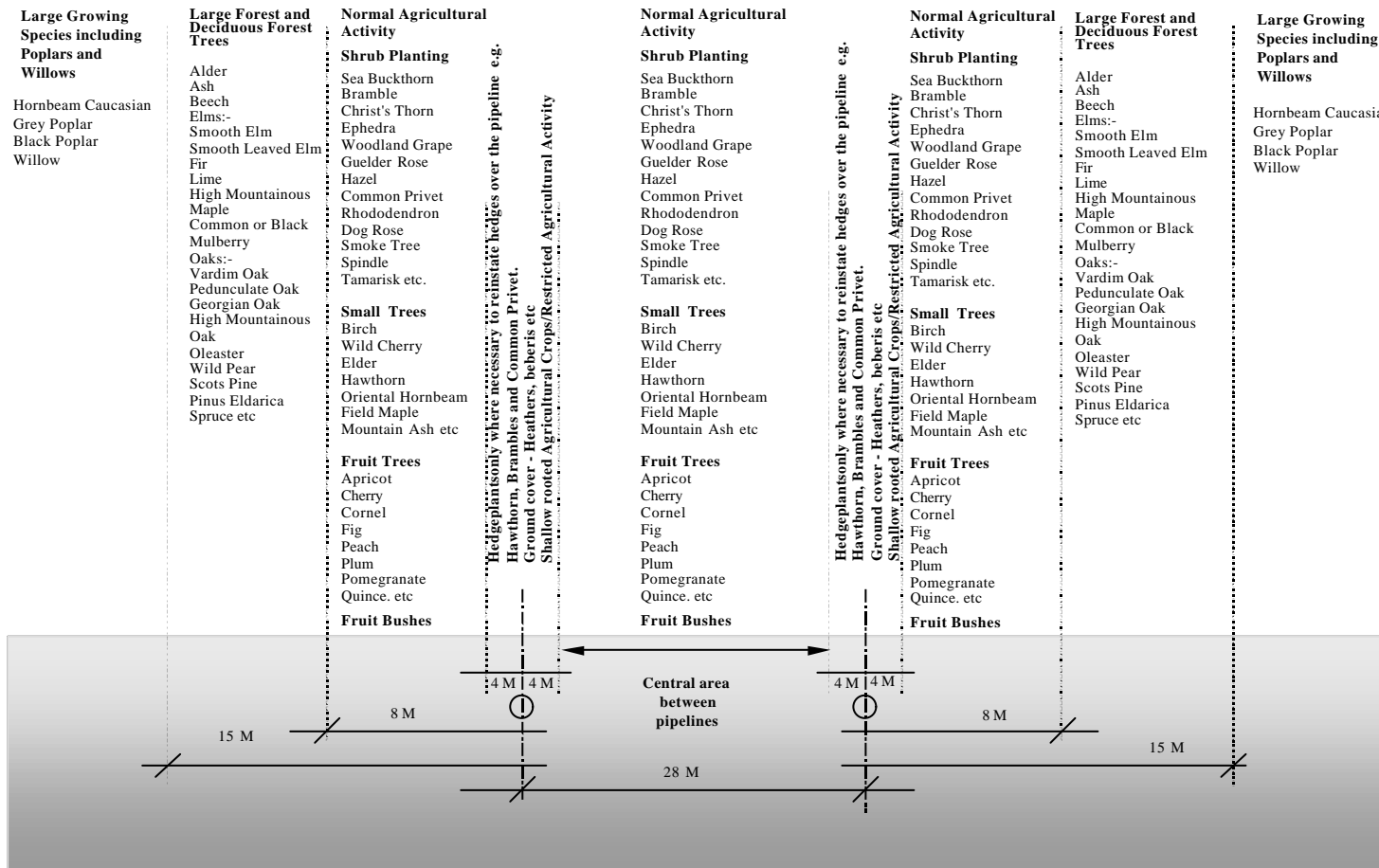
## 2.10 SUMMARY OF LAND REQUIREMENTS

Project land requirements are summarised in Table 2.5. Land includes state, municipal and privately owned land.

**Table 2.4 Summary of Land Requirements in Azerbaijan**

<b>Project Component</b>	<b>Comment</b>	<b>Land Requirement (Ha)</b>
<i>A. Permanent Land Acquisition</i>		
Pump station (including access road)		15.5
Valve stations (including access roads)		4.2
Pigging stations (including access roads)		6.0
<i>Total</i>		<i>25.70</i>
<i>B. Temporary Land Use During Construction</i>		
Pipeline corridor	44-metre corridor	1,970
Pipe dumps & materials storage	Contractor will select from 10 provisional sites	199.5
Camp sites	Contractor will select from 5 provisional sites	19.3
<i>Total</i>		<i>218.7</i>
<i>C. Land Affected by Restrictions of Use</i>		
Pipeline protection zone	58 metre zone extending 7 metres either side of the 44 metre shared construction corridor.	2,537

Figure 2.3 Tree Planting Schedule



## **2.11 MEASURES TAKEN TO MINIMIZE LAND ACQUISITION AND RESETTLEMENT IN AZERBAIJAN**

In addition to the routing principles that were adopted for the overall project, as described in Part A of this RAP, specific measures introduced to minimize land acquisition and livelihood impacts in Azerbaijan included:

- Adoption of a shared corridor with the SCP project to reduce by 30 percent the overall area to be cleared for construction by the two projects, by 30 percent.
- Use of international performance based standards to define areas around the pipeline to be subject to restrictions of use, rather than the far more restrictive Soviet SNIPs codes.
- Development of a project specific tree planting guideline to minimize the areas alienated from tree cropping and vineyard use.
- Use of horizontal directional drilling (HDD) at two “pinch points” in the pipeline corridor at Garabork and Chinli where resettlement of dwellings would otherwise have been required. HDD will enable safe separation to be achieved by taking the pipeline between dwellings at a depth of 10 metres or more below the ground surface<sup>3</sup>.
- Use of non-open cut techniques to avoid disruption of water supply in rivers and one major irrigation channels.
- Careful siting of all AGIs and access roads to place them wherever possible on state or municipal land rather than privately owned land.
- Re-siting of the pump station at KP244 to relocate it from privately owned, irrigated land to fallow municipal land.
- Siting of all AGIs to limit length of access roads
- 11 iterations of the pipeline route to reduce impacts on private and cultivated land

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<sup>3</sup> The pipeline is designed in accordance with the relevant codes and requirements of the American Society of Mechanical Engineers. The pipeline at Garabork and Chinli has been designed to meet internationally accepted safety requirements.