# Chapter 14 Overall Project Assessment



## TABLE OF CONTENTS

14 C	VERALL PROJECT ASSESSMENT	
14.1	Introduction	14-1
14.2	Development of the ESIA	
14.2	1 Adopted Process	
14.2	2 Challenges Faced by ESIA Process	
14.3	Issues Arising from Environmental and Social Assessment	
14.3	1 Key Residual Impacts	
14.3	2 Secondary and Indirect Impacts	
14.3	3 In Combination Impacts	
14.3	4 Unplanned Events	
14.3	5 Issues to be finalised	14-6
14.3	6 Other Key Issues of the ESIA	14-7
14.4	Project Assessment Statement	

### Tables

Table 14-1: Summary of Key Residual Impacts – Generic	14-3
Table 14-2: Summary of Key Residual Impacts – Site Specific	14-4
Table 14-3: Summary of Key Secondary/Indirect Impacts	14-5

## 14 OVERALL PROJECT ASSESSMENT

### 14.1 Introduction

The SCPX Project represents the results of years of feasibility studies and detailed assessment of a number of alternative technical options to ascertain the preferred arrangement. These studies have included identification of environmental and social matters along the route to assess potential risks to the integrity of the pipeline and to obtain relevant baseline data for pipeline design, construction and operation.

## 14.2 Development of the ESIA

#### 14.2.1 Adopted Process

An Environmental and Social Impact Assessment (ESIA) in line with current international practice has been undertaken for the Azerbaijani section of the SCPX Project. This ESIA is intended to ensure that all potential impacts on the environmental, social and cultural heritage that are attributable to the Project are fully investigated, reported and, where necessary, managed.

This ESIA has been undertaken and reported as an independent and objective process. In this regard, RSK has worked closely with partner companies in Azerbaijan; Azerbaijan Environment and Technology Centre (AETC); and ERA Marketing Centre, a specialist socio-economic consultancy, together with cultural heritage, health and resettlement experts of international repute. RSK has also teamed with a number of Azerbaijani scientists who have provided specialist input in areas such as ecology and soil science. One other ESIA has been undertaken for the SCPX Project, which assesses impacts attributable to the Georgian section of the Project.

In line with the relevant provisions of the Host Government Agreement (HGA), the approach adopted in this ESIA is in accordance with best endeavours to minimise potential disturbances to the environment, and in accordance with the standards and practices generally prevailing in the international natural gas pipeline industry.

A feature of the process undertaken for this ESIA has been the extent to which it has been underpinned by stakeholder engagement and public consultation. The focus of consultation has been to understand as far as possible how the Project may impact all stakeholders, and to obtain their ideas and opinions on management of impacts in order to influence Project design, implementation and follow-up. In this regard, a Public Consultation and Disclosure Plan (PCDP) has established the framework for a structured and accountable programme of ongoing public engagement and participation that commenced in 2010 and which is anticipated to continue throughout future Project development and implementation.

The ESIA team has had the opportunity to work closely with the Detailed Engineering Design Team (CB&I) and with SCPX Co. (UK and Azerbaijani representatives) with the common objective of fully assessing potential impacts and building mitigation into the Project's design.

The construction phase mitigation measures and procedures that have been developed as part of this ESIA have been transcribed by the Project into an Environmental and Social Management and Monitoring Plan (ESMMP), which will be included as a contractual requirement in the terms of reference issued to bidders for the various construction contracts for the Project. Other mitigations have been incorporated as an integral part of the Project design. Operational commitments have been included in this ESIA and the new operational commitments will be carried forward into operational management plans.

A Commitments Register (Appendix E) has been compiled which provides a definitive list of the design, construction, operational and decommissioning phase commitments (mitigation measures) identified as a result of the ESIA process.

#### 14.2.2 Challenges Faced by ESIA Process

In common with most environmental assessments, the ESIA for the Azerbaijani section of the SCPX Project has faced challenges in a number of areas in terms of the reliability of predicting impacts and in development of appropriate mitigation. These generally centre on the following factors.

- Uncertainty due to gaps in knowledge of the baseline. Where these difficulties have materialised, existing data has been relied upon as an interim measure and the ESIA as a result has identified locations where pre-construction surveys and further data acquisition will be needed
- Evolving detailed design. While an ESIA is generally a process that parallels and interacts with design, it relies on design for certain data to facilitate identification of potential impacts. In a project of the scale and complexity of the proposed SCPX Project there are inevitably some outstanding issues that remain to be resolved in terms of the precise nature of Project activities. The majority, if not all, of these are construction related and are therefore considered likely to be short-term in most instances. These are discussed further below
- The ESIA provides a level of assurance with regard to these impacts in terms of generic mitigation measures and professional judgement on the extent to which they can be mitigated. The measures are described in detail in the ESMMP, which is an integral part of the ESIA report
- Reliability of impact prediction and effectiveness of mitigation. In recognition of some existing unknown factors with regard to the project (further details of which are set out below) the ESIA has stressed the importance of the ESMMP as a vehicle for delivering appropriate and effective measures for managing, controlling and mitigating environmental and social impacts. In this regard, on the premise that the management plans will be rigorously implemented and enforced, the stated level of significance of identified impacts in this ESIA where uncertainty exists has been conservative (i.e. significance may be over-stated).

## 14.3 Issues Arising from Environmental and Social Assessment

#### 14.3.1 Key Residual Impacts

The ESIA has methodically undergone a process of identification of all potential impacts and assessment of their significance against a structured set of criteria that have been specifically developed for this project and which reflect current international practice. All residual impacts and benefits have been identified and summarised to assist decision makers in forming a view of the relative attributes of the Project. The generic residual impacts are summarised in Table 14-1, and the site specific residual impacts are summarised in Table 14-2.

High Significance Residual Impacts
Community safety
<ul> <li>The project may cause a risk of accident to local people and livestock from open excavations</li> <li>The project may cause a risk of accident to local people and livestock from construction activities including construction traffic</li> </ul>
Medium Significance Residual Impacts
Community health
Risk of deterioration of patient's condition as a result of delays in reaching a medical facility
Accidental spill
Contamination of water used for potable water supply with sediment, fuel or chemicals
Surface water
I emporary reduced flow at construction of surface water crossings may cause adverse impacts to downstream users
Ecology
<ul> <li>Reduced breeding potential and population of species. This is generally a low residual impact but increases to medium if Azerbaijan Red Data Book (RDB) or species listed by the IUCN as vulnerable or above are affected</li> <li>Injury or death of wildlife. This is generally a low residual impact but increases to medium it</li> </ul>
Azerbaijan RDB or species listed by the IUCN as vulnerable or above are affected
Community health
<ul> <li>Spills impacting surface water and groundwater leading to community health impacts</li> <li>Outbreaks of infection in camps, which could be transferred to PACs</li> <li>Increase in prevalence of STIs in camp and PACs</li> </ul>
Employment, skills and livelihoods
<ul> <li>The project is likely to cause resentment of inequalities between local people who are employed by the project and those whose applications were unsuccessful and of inequalities in pay and conditions between local workers and foreign workers</li> </ul>
<ul> <li>At stages of the project, particularly on completion of construction, jobs created by the project will be lost due to retrenchment</li> </ul>
The project may cause tensions resulting from cultural differences, anti-social behaviour of construction workforce, potential prostitution and attraction of 'hangers on' at camp sites
Infrastructure and services
<ul> <li>Temporary shutdown or accidental damage of third-party infrastructure (including water from rivers or irrigation channels) may result in temporary loss or restriction of supply to other consumers</li> </ul>
Land contamination elegrance
Lanu contamination created areas or disposal of fly tinned waste to an appropriate licensed facility is
<ul> <li>Cleanup of containinated areas of disposal of ny tipped waste to an appropriate incensed facility is expected to reduce the risk of mobilising contaminants into the surrounding environment and also reduce the risk of injury or disease to community members and construction personnel</li> </ul>
UXO
<ul> <li>Cleanup of unexploded ordnance will reduce the risk of injury or death to both construction personnel and the public</li> </ul>
Demographics
Improving the availability of employment may reduce out-migration
Employment, skills and livelihoods
The project will enhance skills among the local workforce hired in respect of the project
Increase in sales for local businesses and those involved full/part time in 'cottage' industries
Infrastructure and services
Dead wide size and immediate state size land, some with a more officient term and links

High Significance Residual Impacts			
<ul> <li>The Project may cause a risk of accident to local people and livestock from construction traffic as the access roads to Kurdemir Rail Spur and Offloading Area and Kurdemir Pipe Storage Area Options 1 and 2 (Mususlu) and Samukh Camp Option 3, depending on the final south access through accemunities</li> </ul>			
Madium Significance Decidual Impacts			
Medium Significance Residual Impacts			
Community safety			
Area as the access roads pass through the local communities			
Ecology			
<ul> <li>Potential impact on fish spawning habitat at open-cut river crossings known to be of value for spawning fish: Kurekchay, Ganjachay, Goshgarachay, Shamkirchay, Zeyamchay, Asrikchay, Tovuzchay, Hasansu and Kurudere</li> </ul>			
Groundwater			
<ul> <li>Where the pipeline crosses the Garayazi aquifer (KP358-KP390) and at the Saloghlu Rail Spur and Offloading Area, camp and pipe storage area, groundwater is close to the surface and vulnerability to contamination is high, leading to an increased potential for impact on aquifer quality due to spills. There may also be impacts on ecology where the aquifer is in hydraulic continuity with the Garayazi Wetland which is part of the Garayazi Reserve (IUCN Cat 1a)</li> </ul>			
Landscape and visual impact			
<ul> <li>In the areas around the Asrikchay and Tovuzchay (KP321-KP324) and Hasansu (KP342-KP345) river crossings, the visual appearance and character of the landscape will be permanently altered - the ROW will be benched (levelled) to create a safe working are for plant and machinery and ridges will not be fully reinstated to pre-construction contours, with the aim of reducing erosion</li> <li>At Garaberk village (KP118) and Alpout village (KP123) the route passes through gardens close to houses. The construction works will have a medium temporary visual impact and the removal of trees will have a medium landscape impact</li> <li>At Dallyar Dashbulak village (KP289) the route passes through a tree belt and there is a medium landscape impact</li> <li>There will be a temporary visual impact at most of the rail spur and offloading areas as these existing sites are often associated with existing housing and other development. Only one of the camp sites is associated with a medium impact (Ujar Camp Option 5)</li> <li>The herder at BVRA6 will be relocated but the visual impact on him may remain medium.</li> </ul>			
Air quality			
<ul> <li>Pipeline construction may cause dust mobilisation which could affect communities along the route, including Chiyny village (KP104-KP108), Garaberk village (KP116-KP120), Alpout village (KP121-KP125) and Dallyar Dashbulak village (KP287-KP290)</li> <li>Dust generated by plant and traffic movements at most of the rail spur and offloading areas as these existing sites are often associated with existing housing and other development. Only one of the camp sites is associated with a medium impact (Ujar Camp Option 5)</li> </ul>			
Cultural heritage			
<ul> <li>During stripping of topsoil and trenching, there is a risk of loss/disturbance to known and unknown cultural heritage, particularly at the Bronze Age Settlement and Nineteenth century cemetery near KP261 (Site CH066)</li> <li>Medium residual impacts are predicted at the following sites because, while the impact of SCPX itself is low, the sites were also affected by either the BTC/SCP or WREP pipelines increasing the overall impact on these sites:</li> </ul>			
<ul> <li>Medieval Settlement at KP233 (site CH054)</li> <li>Bronze age cemetery at KP302 (site CH092)</li> <li>Chalcolithic (prehistoric) settlement at KP303 (site CH097)</li> <li>Chalcolithic (prehistoric) settlement at KP306 (site CH100)</li> </ul>			
Soil erosion			

#### Table 14-2: Summary of Key Residual Impacts – Site Specific

<ul> <li>The Project may cause increased erosion in particular on the narrow erodible ridges with thin topsoil before and after the crossing of the Asrikchay and Tovuzchay (KP321-KP326), the approach to Hasansu River (KP343-KP346) over narrow erodible ridges with thin erodible soils and near the Sarisu (KP260-264), which is an erosion sensitive area</li> </ul>		
Land use and land ownership		
<ul> <li>Loss of livelihood (orchards) - route passes through gardens and will require the removal of some fruit trees at Garaberk (KP118) and Alpout village (KP123)</li> <li>Relocation of house and movement of livestock pens at Dallvar Dashbulak village (KP288)</li> </ul>		
Employment		
<ul> <li>Unmet employment expectations and/or resentment between local people who are employed by the project and those whose applications were unsuccessful may be particularly sensitive issues at Susha village which houses IDPs</li> </ul>		
Beneficial Impacts		
<ul> <li>Improvement of access roads to some of the camp, rail spur, offloading and pipe storage areas</li> </ul>		

There are no residual impacts of medium, high or beneficial significance predicted for the Azerbaijan portion of the SCPX Project during the operational phase.

#### 14.3.2 Secondary and Indirect Impacts

Secondary and indirect impact assessment has been an integral part of the ESIA process and the identification of impacts and mitigation measures that are described in Chapter 10.

Ecology and community health issues have been assessed as having medium significance secondary/indirect impacts and a number of beneficial secondary/indirect impacts have been identified, as shown in Table 14-3.

#### Table 14-3: Summary of Key Secondary/Indirect Impacts

Medium Significance Residual Secondary Impacts		
Ecology		
<ul> <li>Stress or mortality of flora and fauna due to drilling mud break out in watercourses, This is generally a low impact except if it occurs during the spawning season at rivers that have a medium or high ecological importance for fish</li> </ul>		
Community health		
<ul> <li>Dust from access roads may have adverse health impacts</li> <li>Temporary potential increase in drug and alcohol abuse in the PACs due to increased income</li> </ul>		
Beneficial Residual Secondary Impacts		
Demographics		
Reduced out-migration		
Cultural heritage		
<ul> <li>Increased understanding of local archaeology following excavation and recording of any sites found during construction</li> </ul>		
Community health		
<ul> <li>Improved health of population employed or dependent on people employed by the Project as a result of disease awareness and reduction programmes etc.</li> </ul>		
Employment, skills and livelihoods		
<ul> <li>Increase in jobs available and incomes, leading to enhanced circulation of money in local/PAC economies and potentially resulting in overall economic growth, albeit small-scale</li> <li>Improved standard of living for households with members who have increased incomes due to employment of local people</li> </ul>		

#### *14.3.3 In Combination Impacts*

The significant in-combination impacts are expected to be seen mainly in the construction phase. The areas close to the ROW where these in-combination impacts have been

identified as a potentially significant issue, where dwellings are in very close proximity to the ROW, are Chiyny village (KP104-KP108), Garaberk village (KP116-KP120), Alpout village (KP121-KP125) and Dallyar Dashbulak village (KP284-KP286). Those communities in close proximity to construction camps will also experience an increased number of vehicle movements on local roads during the construction phase of the Project. This effect may be somewhat ameliorated by the intent of the Project to upgrade local roads that are to be used as access routes to the pipeline ROW.

Landowners and tenants of affected landholdings may be subject to a combination of localised disruption to their current agricultural regimes.

Given the temporary nature of construction works, and the fact that works along the pipeline ROW will progress in a linear manner, any such effects are expected to be short term, the significance of which will vary depending on the timing, extent and nature of operations undertaken and the effectiveness of the mitigation employed.

During the operational phase, in-combination effects are likely to be of low significance.

#### 14.3.4 Unplanned Events

Chapter 12 discussed the features of the Project's design that are intended to reduce the likelihood of unplanned events occurring, and the operational controls, such as emergency response measures, that are proposed to limit the duration of an unplanned event or limit the area that it affects. The noise and community safety issue from an incident on the pipeline was assessed as having a medium significance. However, the likelihood of this type of event occurring is considered to be extremely low and hence a medium level of residual risk. Other types of impact were assessed as having low residual risk.

#### 14.3.5 Issues to be finalised

The ESIA recognises that there are a number of activities, mainly construction related, which are not fully defined at this stage and which can only be resolved following selection of the various major construction contractors and detailed development of their work plans. These are discussed in the section below. Specific commitments relating to these issues are provided in Appendix E, Commitments Register.

#### 14.3.5.1 Waste disposal

The quantities and types of waste that will be generated during construction are subject to the construction methodology to be employed by the (yet to be selected) construction contractors and to ongoing detailed design and vendor selection for particular plant and machinery. For both the construction and operational phases, the Project is committed to a waste management strategy that is based on minimisation of waste at source, identification of all waste arisings, maximising recycling and re-use, use only of licensed disposal sites with adequate capacity and inspection and audit to allow conformance with Project specifications.

#### 14.3.5.2 Sourcing of aggregates and other construction materials

The Project will need a significant quantity of aggregates, the volumes of which have been estimated as far as possible in this ESIA. The focus will be to minimise the level of transport of such materials by sourcing aggregates and other raw materials locally along the route. In accordance with the commitments set out in Appendix E, the project will only use licensed facilities with sufficient capacity. If new facilities are required to service Project needs, these will be subjected to the formal Azerbaijani approvals process.

#### 14.3.5.3 River-crossing methodologies

Work is ongoing to define the exact methodology for crossing each of the main rivers. The proposed methodologies presented in this ESIA are correct at the time of writing. In most cases, the decision has been made with respect to open-cut vs. non-open-cut

methodologies. However, for some rivers, particularly the Kura West crossing, work is still ongoing to evaluate the optimum crossing methodology. Final decisions will be made following input from the selected contractor.

#### 14.3.5.4 Temporary access roads to the ROW

Access roads to the ROW have yet to be fully defined. The Project will aim to prioritise use of existing access roads, in particular those that were used for BTC and SCP construction. These may need improving and widening in places. New temporary access roads will only be constructed where considered necessary. Once finalised, the routes will be subject to environmental and social assessment, an ESIA and any additional requirements in order to comply with the formal Azerbaijani approvals process.

#### 14.3.5.5 Summary

In recognition of these existing unknowns, the ESIA has stressed the importance of the ESMMP as the mechanism for delivering appropriate and effective measures for managing, controlling and mitigating the environmental and social impacts associated with these aspects of the Project. While this uncertainty has not affected the robustness and integrity of the ESIA process, the potential for residual impacts remains pending the resolution of these issues. The implementation of the provisions of the ESMMP will be a key contractor-management requirement and will be informed by performance monitoring and auditing.

#### 14.3.6 Other Key Issues of the ESIA

#### 14.3.6.1 Protection of biodiversity

Route and site selection has focused on avoidance of environmentally sensitive areas with the intent of minimising impact in these areas. Proposed protection measures include:

- Conducting further pre-construction surveys to determine the presence or absence
  of protected flora and implementing site-specific plans to address any found, such
  as translocation of *Iris camillae* where it has been identified on the ROW and *Iris
  acutiloba* if found
- Conducting pre-construction works to discourage RDB- or IUCN-listed species from nesting on the ROW and further checks, immediately prior to clearing works, for RDB or IUCN listed species
- Undertaking a pre-construction survey to identify if bats are roosting in any structures or trees to be removed and designing a mitigation strategy to try to ensure that bats are protected
- Planning to avoid construction of major open-cut crossings during the fish-spawning period
- Defining a buffer area between the Saloghlu Pipe Storage Area and the Garayazi State Nature Reserve
- Reinstating the ROW and temporary works as soon as practicable after construction work is complete and undertaking planting to compensate for any trees removed Biorestoration will aim to make the reinstated areas compatible with adjacent areas. The success of biorestoration will be monitored and corrective measures will be implemented if establishment of vegetation is not successful.

#### 14.3.6.2 Protection of groundwater and surface water resources

The ESIA recognises the importance of protection of groundwater and surface water resources for the SCPX Project. The focus of the assessment has included the following:

- Input to design: specialist studies to determine the optimum crossing design (including burial depth and set back distance) at the main watercourse crossings
- Input to construction planning with regard to construction discharges, water abstraction sustainability (particularly in regard to hydrotesting and camp supply),

water quality issues at river crossings or when construction is taking place over vulnerable aquifers

- A risk-based corrective action approach to dealing with contamination
- Development of measures regarding the protection of surface and ground water quality during the construction phase.

#### 14.3.6.3 Cumulative impacts

The assessment of cumulative impacts in Chapter 11 has identified those areas where impact interactions may arise from concurrent development. This applies particularly to:

- Road upgrades and new developments (particularly the Shamkir bypass)
- Railway upgrades
- Ongoing maintenance of the existing oil and gas pipelines
- Agricultural improvement projects
- Irrigation system repair projects
- Fibre optic cable project between Hajigabul and Kurdemir
- Potential residential development near Samukh Camp Option 3
- Other, as yet unidentified developments.

The most significant potential negative cumulative impacts are likely to be:

- Local land ownership and use impacts
- Local livelihood impacts (significance of which will be dependent upon the compensation policies and mechanisms to be implemented by the Azerbaijan Ministry of Transport)
- Local landscape impacts
- Local and regional air quality impacts
- · Local and regional noise and vibration impacts
- Local and regional community health and safety impacts
- Local and regional traffic impacts.

The Project will endeavour to engage the other developers concerned to work with them and the authorities towards minimisation of the cumulative impacts identified.

#### 14.3.6.4 Land acquisition and resettlement

The Project has developed a land acquisition process that sets out the policies and principles to be applied in cases where Project construction and operation activities will impact on land, other fixed assets, and land-based and other livelihoods. This land acquisition process will form the basis of the Land Acquisition and Compensation Framework (LACF).

#### 14.3.6.5 Cultural heritage

The route has been subjected to desk study, archaeological field survey and extensive consultation to identify all known and readily apparent cultural heritage features of importance. In the process, knowledge of cultural heritage issues along the route has been added to. In response to the findings of this work, the route alignment has sought to avoid these features to the extent practicable. In the few areas where this has not been possible further investigations will be undertaken to seek to minimise impacts as far as is practicable. However, the ESIA recognises that during construction of pipelines there is some risk of encountering artefacts or features of cultural importance. In this regard, the Cultural Heritage Management Plan (CHMP), within the ESMMP, which forms part of this report, provides the framework for identifying chance finds and how work should then proceed.

#### 14.3.6.6 Employment opportunities

A significant impact (considered highly likely) as a result of the Project is tension due to the limited number of employment opportunities. However, the Project has declared its

commitment to working to manage this expectation through consistent and comprehensive communications by the community relations teams.

#### 14.3.6.7 Greenhouse gases (GHG)

The Azerbaijani section of the proposed SCPX Project will produce minimal GHG emissions throughout its lifetime. While any contribution of these to global emissions is expected to be very small, the Project has nevertheless sought to minimise GHG emissions.

#### 14.3.6.8 Sustainable development

It is a feature of buried pipeline projects that, in the main, they are associated with predictable impacts during the construction phase and, provided reinstatement is properly applied, their long-term impacts are restricted to aboveground installations such as compressor stations, valve stations and terminal facilities. Similarly, the direct benefits to affected settlements of such projects are mainly short-term employment during construction and significantly less extensive long-term employment during the operation phase. SCP Co. is committed to contributing to the longer-term sustainability of Project-affected settlements via its ongoing community development initiatives.

## 14.4 Project Assessment Statement

The ESIA has systematically and comprehensively examined all identified aspects of the Project with the potential to give rise to environmental or social impacts.

There are a number of residual impacts relating to construction of the pipeline and operation of the aboveground facilities. However, residual impacts of medium, high or beneficial significance are only predicted for the construction phase. All residual impacts associated with the operations phase have been assessed as low significance. However, by careful management (and in certain cases further surveys to remove or reduce current uncertainty regarding their location or sensitivity) and the implementation of the various mitigation measures set out in this report, these residual impacts are expected to be managed.

On a national scale the SCPX pipeline will bring significant economic benefits to Azerbaijan. There are also a number of anticipated direct benefits for local settlements, particularly during the construction period, in terms of short- and (in fewer cases) long-term employment. Community development initiatives are also anticipated to benefit certain impacted communities.