

# Chapter 17: Conclusions



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## 17 Conclusions

This chapter summarises the conclusions of the impact assessment undertaken for the Project. It provides a holistic overview of how the Environmental and Social Impact Assessment (ESIA) process was undertaken, how the Project has committed to avoiding, mitigating and managing impacts, and provides a summary of impact assessment conclusions for each technical discipline.

### 17.1 Meeting ESIA Objectives

In accordance with the Equator Principles and the Organisation for Economic Co-operation and Development (OECD) Common Approaches, the objectives of this ESIA are based on those of International Finance Corporation (IFC) Performance Standard (PS) 1 (Assessment and Management of Environmental and Social Risks) and can be summarised as:

- To identify and evaluate environmental and social risks and impacts of the Project;
- To adopt a mitigation hierarchy to anticipate and avoid, minimise, and, where residual impacts remain, compensate or offset risks and impacts;
- To promote improved environmental and social performance through the use of management systems;
- To ensure that grievances from affected communities and external communications from other stakeholders are responded to and managed appropriately; and
- To promote and provide means for adequate engagement with affected communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

South Stream Transport is committed to implementing Good International Industry Practice (GIIP) in relation to environmental and social performance during all phases of the Project, including the Construction and Pre-Commissioning, Operational and Decommissioning Phases. The Project is being carried out in accordance with applicable standards for international financing.

**Chapter 1 Introduction** demonstrates how the South Stream Offshore Pipeline will respond to the increased European Union (EU) demand for natural gas by providing an overall export capacity of 63 bcm/year, the bulk of which will be directed to the EU supply network. The South Stream Offshore Pipeline is estimated to account for between 11% to 22% of the gas imported to Europe under the future scenarios presented in the International Energy Agency (IEA) and Wood Mackenzie (WM) reports.

**Chapter 2 Policy, Regulatory and Administrative Framework** explains how this ESIA process has been undertaken having regard to the following: the OECD Common Approaches, Equator Principles III (EP III) Financial Institutions requirements for a Category A project, the Japan Bank for International Cooperation (JBIC) Guidelines for Confirmation of Environmental and Social Consideration, and the IFC PS and World Bank Group Environmental Health and Safety (EHS) Guidelines, which underpin the OECD Common Approaches and EP III.

**Chapter 3 Impact Assessment Methodology** describes the approach taken to the identification and assessment of impacts. Potential impacts to the key receptors were assessed using an impact significance matrix approach that considers the sensitivity of the receptors and the magnitude of the impacts. Impacts due to unplanned events, cumulative and transboundary impacts were also considered.

Impact significance was assessed with and without mitigation and management measures in place. The adoption of design controls and mitigation measures considered the mitigation hierarchy, as specified in IFC PS1 and PS6, which is widely regarded as a best practice approach to managing risks. For the Project, efforts were made to firstly avoid or prevent, then minimise or reduce adverse impacts, which were principally achieved through the application of 'design controls'. The list of design controls was influenced throughout the ESIA process by allowing technical experts within the Project team to feedback results of their initial assessment work to the Project engineers. Minimisation, avoidance, repair and restoration were considered during the application of 'mitigation measures', to avoid adverse effects.

The assessment goes onto present the post-mitigation, or residual impact and its significance, which is predicted to remain after all mitigation and management measures have been adopted. If applicable, any remaining significant residual impacts are then addressed via offsetting or compensation.

**Chapter 4 Analysis of Alternatives** describes the technically and financially feasible alternatives, which were analysed in the context of the engineering, environmental, socio-economic and cultural heritage constraints identified during the Feasibility and Development Phases of the Project. Due to the fact that the Project is located offshore, the water depth and the physical characteristics of the Black Sea present a challenge for the Project and have influenced a number of key technical decisions. The proposed Pipeline route in the Turkish EEZ was influenced by the selected locations of the landfalls in Russia and Bulgaria and the location of continental slope crossings. No significant engineering or social constraints were identified in the Turkish EEZ and as such direct line routes were initially adopted within the preferred corridor.

**Chapter 5 Project Description** provides a detailed description of the Project, at the time of writing this ESIA Report, which has formed the basis for the assessment of Project Activities. It describes the physical characteristics of the Project and the activities (e.g. pipe-laying techniques) of the Project which are proposed during the Pre-Commissioning and Commissioning and Operational Phases. It describes the arrangements to ensure safety and safeguard against risks, anticipated labour requirements and hours of working. The design life of the Project is 50 years; the chapter suggests possible decommissioning scenarios which might be appropriate at that time. Finally, the chapter describes how any amendments to Project design elements or processes would be managed to ensure any environmental and social consequences are assessed and outlines arrangements for notifying relevant parties should the conclusions of this ESIA Report materially change, as a result.

This ESIA Report has been prepared taking into consideration the definition of Project Area of Influence provided by IFC PS1. The Project Area of Influence includes those areas likely to be affected by the main Project facilities, and in the case of cumulative impacts, incremental impacts from the Russian and Bulgarian sectors of the South Stream Offshore Pipeline and from

any other developments, unrelated to the Project, that will take place within the vicinity of the Project Area and within the Project timescale of implementation.

## 17.2 Stakeholder Engagement

South Stream Transport is committed to a transparent and respectful dialogue with stakeholders throughout the life of the Project. As part of the ESIA process, stakeholder engagement was and continues to be undertaken to ensure that interested parties are aware and informed of the Project and have an opportunity to provide input regarding potential Project impacts and mitigation measures.

**Chapter 6 Stakeholder Engagement** describes South Stream Transport's approach to stakeholder engagement, its purpose, and the regulatory context in which it occurs. It provides information about engagement activities undertaken to date for the ESIA process and those that are planned for the future. The chapter also summarises the comments that have been made by stakeholders to date and how these comments have been informed and been addressed in this ESIA Report. A Stakeholder Engagement Plan has been developed and a Grievance Procedure will be implemented by South Stream Transport in partnership with its contractors to ensure that grievances are brought to the attention of the appropriate Project staff and addressed in an appropriate and timely way.

The Project's approach to stakeholder engagement considers both regulatory requirements and principles of GIIP, and seeks to:

- Meet the legal requirements of Turkey for public consultation and disclosure during the EIA process;
- Align with international standards for financing (and GIIP), as related to ESIA, that provide a framework for public consultation and disclosure during the ESIA process; and
- Align with international conventions and protocols relevant to stakeholder engagement for the Project.

## 17.3 Impact Assessment Conclusions

### 17.3.1 Overview

After implementation of design controls, management and mitigation measures, the remaining residual environmental and social impacts predicted to arise from the Project have been assessed to be of **Low** significance and, as such, do not require additional mitigation measures. A summary of all residual impacts is given in Table 17.1.

Decommissioning activities are not known at this stage, and consequently, impacts from decommissioning activities have not been assessed in detail. On the assumption that decommissioning would involve the removal of the pipelines from the seabed; impacts are likely to be broadly similar to those associated with the Construction and Pre-Commissioning Phase. If the pipelines are left in situ, potential impacts would be negligible.

**Table 17.1 Summary of Residual Impacts**

<b>Discipline</b>	<b>Phase</b>	<b>Activity and Receptors</b>	<b>Impact</b>	<b>Residual Impact Significance</b>
Physical and Geophysical	No residual adverse impacts			
Biological	Construction and Pre-Commissioning	Vessel operations, birds	Physical disturbance of animals at sea surface, lighting	Low
Biological	Construction and Pre-Commissioning	Vessel operations, fish	Behavioural changes (noise)	Low
Biological	Construction and Pre-Commissioning	Vessel operations, mammals	Behavioural changes (noise) and collision risk	Low
Socio-Economic	No residual adverse impacts			
Cultural Heritage	Construction and Pre-Commissioning	Pipe-laying and surveys, unknown Cultural Heritage Objects (CHOs)	Damage to previously unidentified CHOs	Low
Ecosystem Services	Construction and Pre-Commissioning	Wild species diversity	Disturbance to species as a result of vessel movements and operations	Low

The following sections provide further detail on the residual impact assessment undertaken for the Project.

### **17.3.2 Biological Environment**

The Black Sea is the world's largest anoxic basin due to the presence of a permanent density gradient (pycnocline) at around 150 to 200 m water depth that limits the vertical exchange of water between surface waters and anoxic deeper waters creating a unique chemical and biological environment. Waters with hypoxic or entirely anoxic conditions are typically incapable of sustaining permanent populations of species dependant on aerobic respiration.

The ESIA process has considered potential impacts to main habitat types (namely microbial communities in the anoxic waters of the abyssal plain and the open sea), and to species



grouped according to plankton fish, seabirds, and marine mammals, and including the conservation status of designated areas and species.

Construction and pre-commissioning activities have the greatest potential to impact marine ecological receptors. Residual impacts to benthos are **Not Significant** given the lack of benthic receptors in the Project Area. Most of the impacts to plankton, fish, birds and marine mammals have been reduced to either **Low** significance or **Not Significant** through various Project design controls and mitigation measures, including strict adherence to relevant environmental standards, appropriate technology and comprehensive environmental management.

Potential impacts during the Operational Phase relate to the presence of the pipeline on the seabed directly, as well as disturbance due to inspection and maintenance activities, such as the periodic use of remotely operated vehicles (ROVs). These impacts are all deemed **Not Significant**.

The impacts on cetaceans from underwater noise were initially assessed as of **Moderate** significance after mitigation. However, such significance is not compatible with the definition of 'Moderate' impacts as applied throughout the Project and therefore expert judgement has been applied, in line with **Chapter 3 Impact Assessment Methodology**. This degree of impact is consistent with the definition of **Low** significance because though changes are detectable, they are very short term (no more than a few days duration on any one receptor) and "not expected to cause hardship, degradation, or impair the function and value of the resource/receptor".

A critical habitat assessment was undertaken in line with IFC PS6<sup>1</sup> guidance. The ESIA Report concluded that the Project Area could be considered Tier 2 critical habitat for endangered species such as Black Sea bottlenose dolphin (*Tursiops truncatus ponticus*) and Black Sea common dolphin (*Delphinus delphis ponticus*). The Project Area also constitutes Tier 2 critical habitat for migratory species such as the Mediterranean shearwater (*Puffinus yelkouan*). It should be noted that the Project Area does not, per se, represent particular habitat that is not replicated elsewhere in the Turkish Black Sea; it is merely part of a wider zone that meets the requisite criteria. The Project will produce a Biodiversity Action Plan (BAP) which will provide the mitigation strategy for identified critical habitats and include relevant stakeholders identified to help achieve net gain.

### 17.3.3 Socio-Economics

There are no anticipated impacts on fishers and fisheries, shipping or other marine users during the Construction and Pre-Commissioning Phase.

Engagement with fishing cooperatives and unions, as well as government and academic authorities, highlighted the issue of potential impacts to fish and fisheries, particularly with regard to impacts on migratory species of commercial significance such as anchovy. Given the

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<sup>1</sup> IFC (2012) Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

importance attached to the issue expressed by stakeholders, an additional fisheries study was undertaken as part of the ESIA process.

The Fishing Study has shown that the Turkish fishing fleet, which is mostly comprised of small vessels with limited range, most likely concentrates their fishing efforts in waters relatively close to the Turkish coast and approximately 100 km from the Project Area and that fishing is not known to occur within the Project Area. The fisheries study has also shown that any significant impact on fish migration routes and patterns across the Black Sea is unlikely, including for the key species targeted by Turkish fishing fleet including anchovy.

It is therefore considered that there will be no impacts on commercial fish stocks, on the size of catch or on the fishing effort expended by Turkish fishing vessels. Even considering the potential vulnerability of fishers (including small-scale and artisanal fisheries) who may have low or variable (and unreliable) incomes that may make them susceptible to economic fluctuations, it is unlikely that there will be any discernible change in fishing industry revenues, incomes or livelihoods associated with the fishing industry as a result of the Project.

A review was undertaken on the effects of the construction and operation of the Project, including the associated safety exclusion zone, on potential future oil and gas exploration and development. While the Project Area intersects with TPAO exploration licence blocks, due to the narrow width of the Project Area, there is no expected impact on the feasibility of future oil-and-gas exploration or development activities occurring in the vicinity of the Project Area.

As part of the design process, South Stream Transport has liaised with the TPAO regarding the width of the pipeline corridor so as to reduce any potential impact on future TPAO activities. As a result of these consultations, it is proposed that the pipelines will be laid within a 420 m width corridor, in agreement with the relevant Turkish authorities. Due to the narrow width of the pipeline corridor, there will be no impact on the feasibility of potential oil and gas exploration or development activities occurring in the vicinity of the Project. Therefore, no socio-economic impacts are predicted to arise from the Operational Phase of the Project.

Notwithstanding, management measures will be put in place to help manage stakeholder perceptions and to provide a mechanism for identifying and handling any unexpected issues or impacts. These will include but are not limited to on-going stakeholder engagement, a grievance procedure and a Project Compensation Management Plan.

With regard to Human Rights, the policies, plans and procedures to protect the safety and security of the workforce and Project stakeholders documented in the Health, Safety, Security and Environment Integrated Management System (HSSE-IMS) mean that no significant residual impacts are anticipated.

#### **17.3.4 Cultural Heritage**

Impacts on two known cultural heritage objects (CHOs) in the Project Area have been avoided as a result of the Project's design control of avoiding cultural heritage objects (known CHOs by 150 m).

There is the potential for Project activities to impact currently unidentified CHOs in the Project Area. Potential impacts on unknown CHOs during the Construction and Pre-Commissioning

Phase will be mitigated by real-time monitoring of the pipe-laying process, archaeological watching briefs, and careful piloting and management of ROVs. Additionally, a Project specific Chance Find Procedure will be established. These measures will reduce the significance of any potential impacts to **Low**. Due to the mitigation measures applied, no impacts are anticipated during the Operational Phase.

### 17.3.5 Ecosystem Services

The assessment of ecosystem services has identified no priority services on which the Project is likely to have a significant impact during the Construction and Pre-Commissioning Phase or during the Operational Phase. As such no additional mitigation was identified to be required beyond that set out in other technical chapters (7 to 12). The only priority service for which an assessment was undertaken was 'Wild Species Diversity' relating to the fact that people derive value from interaction with wild species as well as from knowledge of their continued existence. The ESIA Report concluded that any potential impacts are of **Low** significance. However, it is considered that the Project will generate beneficial impacts on *Scientific and Knowledge Values* given the data that has been acquired on CHOs and the Black Sea abyssal plain through Project surveys.

### 17.3.6 Waste

The assessment has identified the waste streams that are anticipated to be produced during the Construction and Pre-Commissioning Phase and during the Operational Phase, and identified the availability and suitability of existing waste management facilities to manage those wastes in Russia and Bulgaria. Mitigation measures have been recommended in order to minimise the impacts as far as possible, including having waste management elements within the Projects ESMP and contractors waste management plans.

Provided that all of the mitigation measures recommended for waste management are implemented, the overall waste management impacts from the development are expected to be **Low** to **Negligible**, using the methodology set out in the waste chapter of this ESIA Report.

### 17.3.7 Unplanned Events

Unplanned events are events such as accidents that are not expected to occur during the Project's normal construction and operational phase activities. The environmental and social consequences of an unplanned event, should it occur, can often be significant.

This ESIA Report has followed a systematic approach to identify a number of unplanned events, related to marine accidents and loss of pipeline integrity, with the potential to cause a significant impact. In order to manage unplanned events efforts must be made to minimise the likelihood of an unplanned event occurring in the first instance. The Project has therefore adopted the following approach:

- Use design controls based on GIIP to minimise the likelihood of an incident; and
- Develop response measures in case of an unplanned event.

This ESIA Report details a number of modelling scenarios undertaken to investigate the fate and behaviour of an oil spill that may occur following an unplanned event. The chapters also considered impacts from the accidental introduction of invasive species, maritime collisions and gas leakages. It was concluded that the likelihood of occurrence of such significant events is low. Nevertheless, South Stream Transport will prepare an Emergency Preparedness and Response Plan and will work with its contractors to ensure that the South Stream Transport and contractors plans are integrated with regional contingency plans. These plans will help to enable a rapid response should an unplanned event occur.

In the case of potential introduction of invasive species from vessel operations, the Project will develop measures that would effectively minimise the adverse impacts on potentially impacted marine habitats and associated species. Where relevant and practicable these measures will be based on those identified in the IPIECA (Global Oil and Gas Industry Association for Environmental and Social Issues) document Alien Invasive Species and the Oil and Gas Industry, Guidance for Prevention and Management and the International Maritime Organisation (IMO) Ballast Water Management Convention and Guidelines.

### **17.3.8 Cumulative Impacts**

The assessment of cumulative impacts has regard to recent IFC guidance to determine the potential for the Project's impacts to interact with those of other projects or developments in the vicinity. Only one project was identified as a possible source of cumulative impact; Turkish Petroleum Corporation (TPAO's) proposals for exploration activities in oil and gas license areas through which the Project Area passes.

TPAO's development could potentially involve seismic surveys which have the potential to generate underwater noise. However, full details of the type, equipment and extent of TPAO seismic activities are not known. A cumulative noise impact would only occur in the event that potential TPAO seismic surveys are within sufficient range of the construction spread. In this event, cumulative noise impacts on marine mammals and fish are anticipated to be temporary and localised. Given the wide spatial ranges of mammal species within the Black Sea and their ability to avoid areas of disturbance, the cumulative impact assessment has not identified any adverse cumulative impacts that are considered to be significant and in need of specific mitigation measures, monitoring or management.

### **17.3.9 Transboundary Impacts**

The Project has the potential to cause a number of transboundary impacts during planned activities relating to the propagation of underwater noise, disposal of waste from construction vessels, and disruption to migratory fish species. Further transboundary impacts might also result from unplanned events including the introduction of invasive species to neighbouring countries via ballast water exchange and marine accidents resulting in oil spills that could affect Turkey's neighbouring Black Sea countries.

The transboundary impact assessment discusses each of these in turn and concludes that no significant transboundary impacts are likely from planned activities of the Project. Although, unplanned events (e.g. oil spills) do have the potential to cause transboundary impacts, the

risks are considered minimal because of the measures which are in place to reduce the likelihood and consequence of such incidents.

## 17.4 Environmental and Social Management

As described in **Chapter 16 Environmental and Social Management**, a Health, Safety, Security and Environmental Integrated Management System (HSSE-IMS) will form an important part of the corporate management system for the Project. The potential impacts are markedly different between Project phases. The HSSE-IMS will include phase-specific management plans.

Environmental and Social Management Plans (ESMPs) have been developed to capture design controls, safeguards, mitigation measures and monitoring commitments made within the ESIA Report. Adherence to these plans will be a condition of any Project construction and operation contracts awarded. The South Stream Offshore Pipeline will develop construction and operation ESMPs which will contain a number of activity-specific construction management plans (CMPs) and operational management plans (OMPs). Activity-specific CMPs and OMPs will be designed for identifiable discrete Project Activities (e.g. Vessel and Marine Transport CMP) and will address environmental and social impacts that are likely to occur as a result of the relevant activities.

Each individual ESMP will contain a Management and Mitigation Plan and a Monitoring Programme. In addition, South Stream Transport is developing a detailed overarching Environmental and Social Monitoring Programme for the South Stream Offshore Pipeline which will detail all monitoring requirements applicable to the South Stream Offshore Pipeline.

## 17.5 Summary

Assuming that the mitigation measures identified in this ESIA Report are successfully implemented, it will be possible to mitigate all of the identified adverse impacts associated with the Project to the degree that the residual impacts would be classed as being either **Not Significant** or of **Low** significance.





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