Chapter 23: Conclusions

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23 Conclusions

This chapter summarises the conclusions of the impact assessment undertaken for the Project. It provides a holistic view of how the ESIA was undertaken, how the Project has committed to avoiding, mitigating and managing risks and impacts so that development opportunities are enhanced, and provides a summary of impact assessment conclusions for each technical discipline.

23.1 Meeting ESIA Objectives

South Stream Transport is committed to implementing Good International Industry Practice (GIIP) in relation to environmental and social performance during Project Construction and Pre-commissioning, Operational and Decommissioning Phases. The Project is being carried out in accordance with standards and guidelines for international financing, including those for Environmental and Social Impact Assessment (ESIA). As described in **Chapter 2 Policy, Regulatory and Administrative Framework** (Section 2.7), applicable standards and guidelines include: the International Finance Corporation (IFC) Performance Standards (PS), Equator Principles (EP) III, the OECD Common Approaches, and the Japan Bank for International Cooperation (JBIC) Guidelines for Confirmation of Environmental and Social Consideration. In accordance with these standards and guidelines, this ESIA has met the necessary requirements for an assessment and management of environmental and social risks.

Chapter 1 Introduction demonstrates that the South Stream Offshore Pipeline will respond to the increased European demand for foreign natural gas by providing an overall export capacity of 63 bcm/year, which will be directed to the European supply network. This additional capacity, which is the primary benefit of the Project, is estimated to be between 11% and 18% of total projected European imports in 2035[1]. Without the Project, this positive benefit to society may not be met.

Chapter 4 Analysis of Alternatives presents an analysis undertaken of technically and financially feasible alternatives, which were analysed in the context of the engineering, environmental, socio-economic and cultural heritage constraints carried out during the Feasibility and Development Phases of the Project. The requirement to provide flexibility to construction contractors in determining the most efficient and cost-effective construction methods whilst ensuring compliance with Project standards and Project commitments drove this process. To some extent, the nature and location of the Project was determined by factors beyond the control of South Stream Transport, particularly in respect of the location of the landfall section which was constrained by the selection and siting of the Russkaya compressor station (CS). Due to the fact that a majority of 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, including the routing of the pipelines.

[1] Based on Wood Mackenzie (2013) estimates. International Energy Authority (2013) estimates suggest this could be between 14 – 22% of the EU's demand for natural gas in 2035.

Chapter 5 Project Description provides a detailed description of the Project, and has formed the basis for the assessment of Project Activities. Baseline information is presented in each technical chapter (Chapters 8 - 18) of this ESIA Report. Key receptors within each technical Study Area are identified and their characteristics described in each technical chapter also.

This ESIA Report has been prepared taking into consideration the definition of Project Area of Influence provided by IFC Performance Standard 1. The Project Area of Influence includes those areas likely to be affected by the main Project Facilities and Associated Facilities, and in the case of cumulative impacts, incremental impacts from other developments unrelated to the Project that will take place within the vicinity of the Project Area and within the Project timescale of implementation.

23.2 Stakeholder Engagement

Stakeholder engagement (including dialogue, consultation and the disclosure of information) is a key element of project planning, development and implementation. Effective stakeholder engagement assists good design, builds relationships with local communities, and reduces the potential for delays through the early identification of risks and issues.

South Stream Transport is committed to a transparent and respectful dialogue with stakeholders throughout the life of the Project. Within each phase of the Project, a range of engagement activities have been and will be undertaken to address the needs of different stakeholders and stakeholder groups.

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 EIA and ESIA processes 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 are addressed within the relevant chapters of this ESIA Report.

A Stakeholder Engagement Plan (SEP) 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 Grievance Procedure describes the process by which a grievance is received, recorded and managed so that it can be tracked from its original submission through to a resolution with the affected stakeholders.

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

- Meet the legal requirements of the Russian Federation for public consultation and disclosure during the EIA process (described in Chapter 6 - Section 6.2.1);
- Align with international standards and guidelines for financing (and GIIP), as related to ESIA, that provide a framework for public consultation and disclosure during the ESIA process (described in Chapter 6 - Section 6.2.2); and

- Align with international conventions and protocols relevant to stakeholder engagement for the Project (described in Chapter 6 - Section 6.2.3).

Effective engagement has facilitated the establishment of an active and positive relationship between stakeholders and the Project proponent, South Stream Transport. The most common topics raised during consultations to date included:

- Concerns about the Project's potentially negative impact on the natural environment including marine environment, the coastline and onshore habitat area;
- Local residents felt that gas transported by the Project should be supplied to the Local Communities located near the proposed Pipeline;
- Concerns about the safety of the Project and what measures would be put in place in an emergency situation;
- Various social related issues including anticipated Project impacts on Local Communities and visiting tourists;
- Concerns about the potential impacts of the Project in relation to increased traffic and on the quality of roads and access routes;
- Questions about the Project location, pipeline routing and alternative options considered;
- Queries about the EIA and ESIA processes;
- Questions about how the Project is engaging with stakeholders and ensuring issues and concerns are being taken into consideration; and
- Enquiries about whether local jobs would be created by the Project and how people could apply.

23.3 Impact Assessment Conclusion

The ESIA process is a systematic approach to identifying the potential environmental and social impacts of a development proposal, and to describing the mitigation, management and monitoring measures that will be implemented to address those impacts. Ultimately, it allows relevant parties to make informed decisions about a development proposal, and allows potentially affected stakeholders to participate in the process. The impact assessment has been based on the methodology presented in **Chapter 3 Impact Assessment Methodology.** Credible impacts to the key receptors were in general 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, and due to cumulative and transboundary impacts, were also considered.

Impact significance was assessed with and without mitigation measures in place. The assessment of impact significance without mitigation measures in place took into consideration Project design controls. It is pertinent to note that impacts without mitigation measures in place are not representative of the Project's actual extent of impact, and are described in this ESIA Report to facilitate understanding of how and why mitigation measures were identified.

The residual impact is what remains following the application of mitigation and management measures, and thus represents the final level of predicted impact associated with the development of the Project. A summary of the residual impacts is presented below.

23.3.1 Overview

After implementation of design controls, management and mitigation measures, the residual environmental and social impacts of the Project, are generally of **Not Significant** to **Low** significance. The three exceptions which are above **Low** significance are presented in Table 23.1 below.

Table 23.1 Summary Table of Residual Impacts Above Low Significance

Discipline	Phase	Activity and Receptors	Residual Impact Significance	Duration / Frequency
Landscape and Visual	Construction	Impacts upon the Undulating Plateau LCA, and impacts to visual amenity for Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka, residents living at North-East Varvarovka, walkers on the coastal path along the cliff top, recreational visitors to the seashore and recreational boat users.	Moderate	Permanent and direct for Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka, residents living at North-East Varvarovka and walkers on the coastal path along the cliff top. Short term and temporary for recreational visitors to the seashore and recreational boat users.

Continued…

Discipline	Phase	Activity and Receptors	Residual Impact Significance	Duration / Frequency
Socio-economics	Construction	Reduced residential amenity for residents of north-eastern Varvarovka due to noise impacts from Varvarovka Bypass Road; noise impacts from Pre-Commissioning of the whole pipeline; and views of the acoustic barrier along the access road and limited views of construction work on the landfall section.	Moderate	Short term and temporary.
Community Health Safety and Security	Construction	Increased traffic safety risks for the residents of Rassvet due to construction traffic loads on the main road through the community. Mitigation will include traffic calming measures and traffic safety, driver training and speed controls as part of the Traffic Management Component of the Landfall Construction CMP.	Low/Moderate	Short term and temporary
Cultural Heritage	Construction	One marine cultural heritage object will be impacted - Amphora RU-MCH-003 will be recovered by lifting it to the surface prior to the start of construction. In addition marine site RU-MCH-004 (shipwreck) will be avoided by approximately 70 m (due to geotechnical constraints) and not the Project committed buffer of 150 m as.	Moderate	Permanent (RU-MCH-003) / Short-term (RU-MCH-004)

Complete.

The following sections provide additional detail.

23.3.2 Soils, Ground Water, and Surface Water

Impacts to soil may result through the use and storage of materials, land clearance and earthworks. With mitigation measures in place, including standard soil and erosion control measures and the provision of adequate spill prevention, the residual impact to soils is concluded to be of **Low** significance. This applies to the Construction and Pre-Commissioning Phase, and to the Operational Phase of the Project, and includes Landfall Section of the Project Area.

Impacts to groundwater quality and dynamics may result through use and storage of materials, groundwater control, the mobilisation of existing contamination due to earthworks, and hydro-testing. Through mitigation, including the implementation of a Spill Prevention and Response Plan, residual impacts to groundwater are considered to be of **Low** significance. This applies to the Construction and Pre-Commissioning Phase, to the Operational Phase, and to the Decommissioning Phase of the Project.

Impacts to surface water in the landfall section of the Project Area may result through use and storage of materials, surface water run-off across disturbed soils and river crossings (by the pipeline and access road). Impacts during the Operational Phase are not anticipated. Through mitigation, the residual significance of the impacts is reduced to **Not Significant** to **Low.**

23.3.3 Air Quality

Project emissions will result from a number of area, point and mobile sources. These include emissions of combustion gases from construction vehicles and plant, diesel generators and marine vessels. There will also be dust generated from earth works and vehicles movements. Emissions from other sources e.g. small releases from vents during maintenance are also likely during the Operational phase of the Project, although such emissions will be minimal and/or infrequent. Consequently, the impacts during operation are anticipated to be of negligible magnitude, resulting in an impact that is **Not Significant**.

The air quality assessment has therefore focussed on Construction Phase impacts utilising established air quality modelling techniques and conservative assumptions to estimate Project derived air quality impacts. The assessment studies, taking account of potentially affected receptors and existing baseline conditions, concluded that air quality impacts associated with the Project are typically of **Not Significant** or **Low** significance for all pollutants.

Despite the Project's minor impact on air quality, a number of good practice mitigation measures will be implemented to minimise air emissions. Monitoring will also be undertaken during the Construction Phase to confirm that ambient air quality remains within applicable limits for the protection of human health.

During the Construction Phase the Project may emit significant quantities of greenhouse gases (GHG). South Stream Transport will therefore put in place a monitoring plan to quantify the Project's GHG emissions during the Construction Phase.

23.3.4 Noise and Vibration

An assessment of the worst case noise and vibration impacts associated with construction has been undertaken. The results predict that noise and vibration impacts will be **Not Significant** at existing sensitive receptors neighbouring the Project, with the exception of Receptor 4 (a cluster of residential dwellings on the north-eastern part of Varvarovka), where a **High** impact is predicted. The Receptor 4 location is mainly affected by road traffic noise using the Varvarovka Bypass Road, and the **High** impact significance is only predicted to occur during periods when the greatest vehicle movements will occur. Mitigation in the way of a noise screen is proposed along the boundary of the Varvarovka Bypass Road. Post mitigation noise impacts are predicted to be of **Low** significance.

The assessment at a proposed residential site (Receptor 5 – known as the Lesnaya Polyana Development Site and described in **Chapter 14 Socio-Economics**), has indicated that noise impacts may be **High**. It is however, anticipated that this location will not be developed and occupied by residents before the Construction Phase has been completed. Therefore, the impact significance at this location is also considered to be **Not Significant**. If occupation occurs during the Construction Phase, adequate mitigation measures will be investigated to reduce noise levels to meet the identified criteria.

Assessment of the cleaning, gauging and drying pre-commissioning activities has concluded that that the majority of receptors would experience a **High** impact during the pre-packing period when the booster compressors are used. By selection of inherently quiet plant, careful siting, and the use of acoustic bunds/barriers it is feasible to reduce noise impacts to **Low** impact significance. These impacts would be temporary and short term in nature.

Vibrations impact significance was assessed to be **Not Significant** during the Construction Phase.

The assessment of the Operational Phase concluded that noise and vibration impacts will be **Not Significant**.

An assessment of decommissioning activities will be undertaken during the Operational Phase of the Project when conditions and receptors at that time are known. However, it is anticipated that decommissioning works can be suitably mitigated so that the impacts are of **Not Significant** to **Low** significance.

23.3.5 Terrestrial Ecology

The Project has the potential to affect designated sites (Utrish State Nature Reserve, Kuban River Delta Ramsar Site, and the Delta of the Kuban River Important Bird Area – although the footprint of the Project does not intercept any of these), natural habitats (as defined by IFC PS6), and a number of species listed on the IUCN Red List, the Red Data Books of the Russian Federation and Krasnodar Krai (including notably, *Testudo nikolskii* or Nikolski's tortoise, an internationally Critically Endangered species).

Impacts which have been identified as likely to occur at the Construction and Pre-commissioning Phase include habitat loss and degradation, direct mortality, injury, and disturbance to individuals of species, and habitat fragmentation or severance. Impacts are

however anticipated to be either avoided, through consideration of ecological receptors in the Project's design and/or, where appropriate, through implementation of mitigation measures (including provision of a Biodiversity Action Plan (BAP)) which will reduce the magnitude of all impacts to low – negligible levels. The residual effects on all receptors, regardless of their sensitivity, will therefore be either **Not Significant** or of **Low** significance.

The assessment also considered the potential for the Project to affect terrestrial ecology receptors during the Commissioning and Operational Phase of the Project. Although impacts during this phase are anticipated to be relatively limited, there is the potential for the Project to have impacts of up to moderate significance, in the absence of mitigation. This is due to the potential for routine maintenance activities to cause mortality or injury to Nikolski's tortoise and other herpetiles. Mitigation measures have been proposed which will reduce the magnitude of all impacts at the Operational Phase on all receptors to either **Not Significant** or **Low** significance.

While it is not possible now to fully assess the effect of decommissioning the Project, the ESIA has considered two scenarios in this regard: in situ abandonment and pipe recovery, considering that the former generates impacts broadly similar to those of the Operational Phase, while the latter generates impacts broadly similar to the Construction Phase. It is, therefore, assumed that if mitigation measures are implemented which are broadly similar to those proposed for the Construction and Operational Phases of the Project, the residual effect on all receptors for decommissioning will be **Not Significant**.

Consideration has been given to the requirements of the IFC's PS6, particularly in relation to the identification and consideration of critical habitat. A Critical Habitat Assessment has been undertaken which has identified a number of ecological receptors which qualify as components of critical habitat. In accordance with IFC PS6, mitigation measures (including provision of a BAP) have been proposed and will be implemented to achieve a net biodiversity gain for these receptors.

23.3.6 Marine Ecology

The Black Sea is the world's largest anoxic basin. This condition is due to the presence of a permanent pycnocline at around 150 to 200 m water depth that limits the vertical exchange of water between oxic 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 considered potential impacts to main habitat types (viz. soft substrate benthic habitats and seaweed stands in oxic and suboxic waters of the shelf, and microbial communities mainly in the anoxic waters of the abyssal plain), and to species grouped according to plankton, benthic communities, fish, seabirds, and marine mammals, and included the conservation status of designated areas and species. Construction and Pre-Commissioning activities have the greatest potential to impact marine ecological receptors, particularly benthic communities. Residual impacts to benthos are reduced to **Low** or **Not Significant** through various project design controls and mitigation measures, including strict adherence to relevant environmental standards, the choice of technology and comprehensive environmental management. Noise

impacts associated with construction activities are very short term and unlikely to cause mortality or injury to marine mammals and so have a **Low** significance.

Potential impacts during the Operational Phase relate to the presence of the pipeline on the seabed directly and indirectly affecting habitat structure, as well as disturbance due to inspection and maintenance activities. These predominately have the potential to be moderate impacts prior to mitigation. Operational impacts are largely mitigated through ensuring the stability of the pipe on the seabed and through control of vessel activities during inspection and maintenance. These mitigation measures will reduce operational and commissioning impacts to marine ecological receptors to **Low**. Decommissioning impacts are anticipated to be similar to those in the Construction Phase.

The occurrence of critical habitat was determined in accordance with IFC guidance. The Project Area lies within some Tier 2 critical habitat, which was identified according to IFC criteria for endangered, migratory and congregatory species (namely certain pelagic fish, seabirds and cetaceans). It should be noted that the Project Area does not, per se, represent particular habitat that is not replicated elsewhere in the Russian Black Sea; it is merely part of a wider zone that meets the requisite criteria. Because the Project does not have the scope or scale to impact such extended areas, the assessment of impacts relating to critical habitats has focussed on the species for which that habitat is considered critical rather than the habitat itself. After mitigation measures are in place, a monitoring and research programme will enable the Project to meet IFC PS6 requirements for net gain.

23.3.7 Landscape and Visual

The landscape and visual impact assessment concluded that during the Construction and Pre-Commissioning Phase of the Project the residual effects on the Undulating Plateau landscape character area (CA) will be **Moderate**, and on the Black Sea Coastal seascape CA will be **Low**. There will be five **Moderate** adverse residual effects, seven **Low** adverse effects and one **Not Significant** effect on potential visual receptor groups.

The five visual receptor groups identified with significant (Moderate or above) residual effects are visitors to the Russian Orthodox and Armenian cemetery at Varvarovka, residents living at North-East Varvarovka, walkers on the coastal path along the cliff top, recreational visitors to the seashore and recreational boat users.

These impacts will typically be short-term and indirect, during the Construction Phase, which could be further reduced by consultation with the affected parties to better assess the receptor sensitivity and more accurately gauge the magnitude of the potential impacts.

During Construction and Pre-Commissioning Phase, it is considered that visitors to the Russian Orthodox and Armenian cemetery at Varvarovka, and residents living at North-East Varvarovka, will potentially experience the major impacts associated with the Project. These impacts are direct and permanent but could potentially reduce with the establishment of the proposed mitigation planting vegetation.

The residual impacts for landscape character and visual amenity during the Operational Phase will be **Not Significant** to **Low** following the implementation of design controls and mitigation measures. No significant impacts are expected during the Decommissioning Phase.

23.3.8 Socio-Economics

In terms of economic related impacts, the assessment has identified that the Project will result in limited temporary beneficial economic impacts as a result of the additional employment and increased demand for goods and services during the Construction and Pre-Commissioning Phase. In the longer term, it has also identified beneficial economic impacts at a national level associated with an increase in revenues for both the Russian gas industry and the Russian Federal government, due to the increase in Russian gas exports that the Project will enable.

During the Construction and Commissioning phases, there is the potential for **Low** adverse economic impacts prior to mitigation on Shingari and Don Holiday Complexes, and the Anapa Resort Town tourism sector, due primarily to impacts on the coastal area amenity that may affect customers of these two businesses, and thereby potentially reduce revenues for the businesses. A Fisheries Study (see Appendix 14.1 Fisheries Study) has concluded that it is unlikely that there will be any distinguishable impact on fish stocks or on the fishing industry in general (individual employment or local business impacts) due to construction of the Project in the nearshore and offshore sections. Accordingly, the impact on the fishing industry would be **Not Significant**. The requirement by the Project for land on both a temporary and permanent basis will also result in **Low** adverse impacts due to the take up of Agrifirm Kavkaz (Fond Yug) vineyards and associated potential economic displacement of vineyard workforce activity.

The application of mitigation, including ongoing stakeholder consultation, the Grievance Procedure and, if applicable, access to the Compensation Framework would result in a **Not Significant** residual impact on Shingari and Don holiday complexes and also on the Anapa Resort Town tourism sector. The Grievance Procedure (and, if applicable) the Compensation Framework would also apply in terms of the fishing industry and the workforce of Agrifirm Kavkaz (Fond Yug) vineyards as a result of the take up of land. Additionally, a Livelihood Restoration Framework would also apply as mitigation. Given the potential for impacts on livelihoods, it has been considered that the residual impact magnitude would remain **Low**.

There is also the potential for a moderate adverse pre-mitigation impact on the Varvarovka Horse Riding Business, in a worst-case scenario if that businesses' access to a riding route is interrupted or severed. However if the worst-case scenario does occur, the application of mitigation including the Compensation Management Framework and Livelihood Restoration Framework, would reduce the impact significance to **Low** adverse. With regard to community-related impacts, the construction of the Project may also result in **Low** significance adverse residual impacts on Sukko beach and Shingari beach users, and also on the amenity experienced by visitors to the Varvarovka village cemetery. During the Construction and Pre-Commissioning Phase, there is the potential for amenity-related impacts on residents as a result of noise and visual impacts. With the application of mitigation, as set out in noise and visual impact assessments, these impacts can be partially mitigated. However, **Moderate** adverse residual amenity-related impacts are still expected to be experienced by residents in the North East of Varvarovka for a short period of time.

During the Operational Phase, there would be beneficial economic impacts at a national level in terms of increased demand for Russian goods and services (gas) and increased government revenues, taxes and royalties. There would not be any adverse residual socio-economic impacts associated with the Project during the operational phase.

With regard to Human Rights, there were no significant adverse potential impacts identified that cannot be mitigated through adherence to policies, plans and procedures, as well as through community engagement. Furthermore, the Due Diligence process recognises that the Human Rights risks may change over time as the Project evolves from the Construction and Pre-Commissioning Phase into the Decommissioning Phase. As such, the Project's Human Rights Due Diligence is an iterative process whereby business operations and operating context will be examined on a regular basis.

23.3.9 Community Health, Safety and Security

The Construction and Pre-Commissioning Phase of the Project will bring direct employment opportunities to Local Communities at the landfall facilities. Procurement of goods and services will also give rise to indirect employment across a wider area. This local employment is relatively small in number and while the effects will also be small they will be beneficial. The people who are employed and their families and dependents could enjoy improvements to their health and wellbeing through increased wealth and socio-economic status.

The infrastructure and logistics requirements of the Project mean that there are inevitably some adverse effects for certain population groups. Large construction sites and busy transport corridors can be disruptive for Local Communities and can contribute to negative health outcomes.

South Stream Transport will take appropriate measures to reduce disruption through design controls and other mitigation measures that will govern the movement of transport, noise from Project vehicles and noise from Project plant. The Project will also maintain communication with Local Communities to ensure that any grievances are addressed promptly.

The community health, safety and security assessment identified that following the implementation of design controls and mitigation measures, one residual impact of **Low** to **Moderate** significance remained during the Construction and Pre-Commissioning Phase: road safety impacts due to increased traffic as a result of construction on the main road running through the community of Rassvet.

Noise impacts on residential dwellings in parts of Varvarovka due to traffic on the proposed Varvarovka Bypass Road and from the use of the compressor spread are considered to have a Low significance of health effect.

No significant impacts were identified during the Operational Phase of the Project which will bring economic benefits to the Russian Federation, which could translate into greater expenditure on infrastructure and initiatives that directly or indirectly improve health across the nation. South Stream Transport's commitment to ongoing consultation with local communities is expected to provide reassurance regarding Project operations, with potential anxieties decreasing as the Project's track record for safety becomes established and is publicised.

23.3.10 Cultural Heritage

The Construction and Pre-Commissioning Phase of the Project has the potential to impact the terrestrial cultural heritage receptor RU-TCH-02, RU-TCH-06 (Varvarovka village cemetery, Armenian and Russian cemetery). Through the use and application of mitigation measures such as the Cultural Heritage Management Plan and an Archaeological Watching Brief, the residual impacts will reduce to **Not Significant** to **Low**. No residual impacts on terrestrial receptors are expected during the Operational or Decommissioning Phases of the Project.

The Construction and Pre-Commissioning Phase has the greatest potential to impact marine cultural heritage receptors. However, with the implementation of Project design controls and mitigation measures, including careful routing to avoid and minimise impacts on sensitive marine cultural heritage, many impacts are reduced to **Not Significant** to **Low** with the exception of two Cultural Heritage Objects which will have **Moderate** residual impacts due to the fact the 150 m minimum distance cannot be met and one CHO will need to be relocated.

The exception is disturbance to currently unknown marine archaeology which remains at having the potential for not significant to high adverse impacts. However, with implementation of the Archaeological Chance Finds Procedure, the residual impact will minimise impact significance.

Operational and Commissioning Phase impacts relate to offshore and nearshore sections. Prior to mitigation, these are potentially moderate to high impacts. However, operational impacts are largely mitigated through avoidance by protective buffering, tether management, minimising propeller or thruster washing and avoiding ROV strikes by careful piloting. These mitigation measures will reduce residual impacts to marine cultural heritage receptors to **Not Significant.**

23.3.11 Ecosystem Services

The values which ecosystem service beneficiaries attached to ecosystem goods and services are appropriately considered and addressed throughout the ESIA process.

The assessment identified five priority services which the Project is likely to impact during the Construction and Pre-Commissioning Phase: crops; soil quality regulation; tourism and recreational values; cultural and spiritual values; and wild species diversity. No priority services were identified for the Operational Phase.

Mitigation measures are identified and are intended to anticipate and avoid, or where avoidance is not possible, minimise impacts on receptors. Assuming that the mitigation measures are successfully implemented, it will be possible for the Project to mitigate all potential adverse effects associated with the Project to the degree that residual impacts would be of **Not Significant** to **Low** significance.

Hazard regulation was identified as an additional priority service during the Decommissioning Phase if the second option for decommissioning (i.e. removing the pipeline) is selected. However, as the approach has not yet been decided and due to the large degree of uncertainty of assessing impacts over this timeframe, appropriate mitigation will be determined based on a survey of the risks nearer the time of decommissioning. The combined effects of the Project and other developments are not expected to result in any significant cumulative impacts on ecosystem service beneficiaries.

23.3.12 Waste

The assessment 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. Mitigation measures have been recommended in order to minimise the impacts as far as possible, including an Integrated Waste Management Plan for the entire Project.

Moderate impacts are estimated in the event that the existing Alfa landfill is used for disposal of non-hazardous wastes from the Project. It is expected that this landfill will be closed and a replacement, engineered facility may be available by 2016. Even in the absence of such a facility, the relatively small amounts of non-hazardous waste requiring landfill means that the impacts of using Alfa Landfill would be **Not Significant**.

Provided that all of the mitigation measures are implemented, the overall waste management impacts from the development will be **Not Significant**.

23.3.13 Unplanned Events

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

This ESIA has followed a systematic approach to identify a number of unplanned events, primarily related to marine accidents and loss of pipeline integrity, with the potential to cause significant environmental and social impacts. 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 details a number of modelling studies undertaken to predict the likelihood of unplanned events (marine spills, pipeline rupture, fires) and concludes that the probability of such significant events is low and below the levels specified by industry acceptance criteria. Nevertheless, a suite of emergency response plans is being developed by South Stream Transport and its contractors to enable a rapid response in the unlikely event of an incident with the potential to result in adverse environmental and/or socio-economic impacts. The plans will contain measures to minimise the impacts of unplanned events including: measures for oil spill prevention and response; medical provisions; fire-fighting and; the use of pipeline exclusion zones and measures designed to enhance workers' well-being and thereby minimise potential worker or civil conflicts. The Project's emergency response plans will be integrated with regional and national plans as necessary.

23.3.14 Cumulative Impact Assessment

Chapter 20 Cumulative Impact Assessment provides an assessment of potential cumulative impacts. The assessment follows recent IFC guidance to determine the potential for

the Project's impacts to interact with those of other projects/developments (spatially and/or temporally) in a manner that could result in significant cumulative impacts. The cumulative impact assessment (CIA) includes consideration of the Russkaya CS (which is defined as an associated facility) and a number of residential and mixed use developments that are reasonably defined and in the vicinity of the Project.

The Project has relatively few and/or minor impacts during the Operational Phase of the Project, whilst the other developments scoped into the CIA are almost exclusively onshore. Consequently the CIA largely focusses on the potential for cumulative impacts associated with the Project's onshore construction activities. Where possible the CIA draws from existing development plans and impact assessment studies, notably the EIA prepared for the expansion of the United Gas Supply System which includes an assessment of the Russkaya CS.

The CIA considered the potential for cumulative impacts in each of the technical disciplines where the Project has the ability to generate impacts and therefore could contribute to a cumulative impact. Consequently the CIA considered potential cumulative impacts upon soils, groundwater and surface water; air quality; noise; terrestrial and marine biodiversity; landscape and visual receptors; socio-economic impacts (including beneficial impacts); ecosystem services; cultural heritage; waste; and land-based traffic.

The results of the CIA did not identify any adverse environmental or social cumulative impacts that are considered to be significant, principally due to the degree of mitigation being proposed by South Stream Transport for the Project.

In addition to the above, given that the Russkaya CS development is defined as an associated facility, a separate collective appraisal was undertaken which considered the potential impacts of the Project and the Russkaya CS development as though they were one development. This collective appraisal highlighted a number of areas where the alignment of mitigation approaches and the integration of mitigation and management plans would be advantageous with regard to reducing potential collective environmental and social impacts. South Stream Transport will use the findings of the collective appraisal to discuss opportunities for the aligning the mitigation and management approaches with Gazprom Invest.

23.3.15 Transboundary Impact Assessment

The potential for the Project to generate potential transboundary impacts during planned activities has been assessed. This included an assessment of the implications on air quality due transportation activities, impacts due to waste generation, impacts due to the propagation of underwater noise on fish and marine mammals, and impacts on migratory birds and fish. **Chapter 21 Transboundary Impact Assessment** discusses each of these in turn and does not identify any significant transboundary impacts associated with these planned activities.

An assessment has also been undertaken of the potential for transboundary impacts due to unplanned events, including the severance of transnational subsea infrastructure, marine accidents resulting in oil spills that could affect Russia's neighbouring Black Sea countries, the inadvertently introduction of invasive alien species into the marine environment and potential unplanned gas releases. Some unplanned events (e.g. oil spills) do have the potential to cause significant transboundary impacts, however the risks are considered to be acceptable because

of the measures in place to minimise the likelihood and consequence of such incidents. The Project will also apply applicable international guidelines designed to prevent the transboundary movement of invasive marine species.

In addition, the Project pipelines will be designed in compliance with national and internationally recognised standards, whilst the Project has developed specific design criteria taking into account Russian Federation design standards and international pipeline industry standards that aim to minimise the risks of pipeline failures which could result in large scale gas releases.

23.4 Environmental and Social Management

As described in **Chapter 22 Environmental and Social Management**, a Health, Safety, Security and Environmental Integrated Management System (HSSE-IMS) will form an important part of South Stream Transport's corporate management system. The potential impacts are markedly different between Project phases, with many construction-related impacts ceasing during the Operational Phase. The HSSE-IMS will therefore 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. Adherence to these plans will be a condition of any Project construction and operation contracts awarded.

23.5 Summary

As set out in South Stream Transport's Health and Safety, Security and Environmental Policy, South Stream Transport is committed to environmentally and socially responsible management, in accordance with applicable national, international (including EU legislation), and internationally recognised standards for health and safety, security and environmental and social performance. This corporate policy applies to all staff and across all business activities, it guides strategy, management, decisions and actions, it is incorporated into the documents governing relationships with suppliers and contractors, and guides relationships with joint venture and other business partners.

The Corporate Social Responsibility and Sustainability Policy further expresses South Stream Transport's commitment to integrating social, economic, environmental and governance considerations into the everyday conduct of business during the design, build and operation of the South Stream Offshore Pipeline.

These policies thus underpin South Stream Transport's commitments to systematically avoid and reduce the potential for adverse environmental and social impacts associated with the Project, or where this is not possible to compensate and offset impacts on receptors. South Stream Transport is committed to ensuring appropriate monitoring and management plans are in place to address these impacts and this will be done through the HSSE-IMS and ESMP processes, as well as continual stakeholder engagement through the life of the Project. Assuming that the mitigation measures identified in this assessment are successfully implemented, it will be possible for the Project to mitigate most adverse effects associated with the Project to the degree that the majority of impacts after mitigation would be **Not Significant** or **Low**.