South Stream
Offshore Pipeline
ENERGISING EUROPE

South Stream Offshore Pipeline – Turkish Sector

Non-Technical Summary

June 2014

South Stream
Offshore Pipeline
ENERGISING EUROPE

Non-Technical Summary of the ESIA Report South Stream Offshore Pipeline – Turkish Sector

This report has been prepared by URS Infrastructure and Environment UK on behalf of South Stream Transport B.V.

URS

SST-EIA-REP-205774

Preface

This document is the non-technical summary (NTS) of the Environmental and Social Impact Assessment (ESIA) Report for the proposed *South Stream Offshore Pipeline - Turkish Sector* ("the Project").

The objective of this document is to summarise the key information and conclusions contained within the ESIA Report, in a way that is accessible and understandable to a broad audience of readers who may not have expertise in the technical and scientific specialties that inform the ESIA Report, so that all stakeholders and interested parties are able to:

- Understand the nature of the proposed Project;
- Understand the anticipated impacts of the Project and associated mitigation measures;
- Develop an informed opinion regarding the benefits and adverse impacts of the Project; and
- Use their understanding of the Project to engage in the ESIA review, provide feedback on the Project and facilitate/assist with the decision-making processes.

The ESIA Report

The ESIA Report for the *South Stream Offshore Pipeline – Turkish Sector* has been completed in accordance with the financing requirements for the South Stream Offshore Pipeline. These standards and guidelines for environmental and social performance are defined by: the Organisation for Economic Co-operation and Development (OECD) Common Approaches for Officially Supported Export Credits and Environmental and Social Due Diligence; the Equator Principles (EPs), a financial industry benchmark for determining, assessing and managing environmental and social risk in projects; and the Japan Bank for International Cooperation (JBIC) Guidelines for Confirmation of Environmental and Social Considerations; and are underpinned by the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (PSs).

On behalf of South Stream Transport B.V. (South Stream Transport), the ESIA Report was prepared by independent environmental consultants URS Infrastructure and Environment UK (URS), with local expertise and support from Turkish environmental consultancy ELC Group.

Relationship to Other Reports

The ESIA Report for the Turkish Sector forms only part of the overall documentation related to the assessment of impacts for the South Stream Offshore Pipeline.

For the Turkish Sector, a Scoping Report was disclosed and consulted on in 2013, and input from this process has informed the scope and content of the ESIA Report. In addition, an Environmental Impact Assessment (EIA) Report has been prepared specifically for the Turkish Sector. The EIA Report was completed in accordance with regulatory and permitting requirements in Turkey. The final EIA Report was submitted to the Ministry of Environment and Urbanisation (MoEU) in May 2014.

Additional impact assessment documentation has been also prepared for the South Stream Offshore Pipeline – Bulgarian Sector and the South Stream Offshore Pipeline – Russian Sector:

- For the Bulgarian Sector:
  - A Scoping Report informed the scope and content of both the EIA and ESIA reports;
  - An EIA Report was prepared in line with Bulgarian requirements; and
  - An ESIA Report was also prepared.
- For the Russian Sector:
  - A Terms of Reference for the EIA Report informed the scope and content of the EIA Report;
  - An EIA Report was prepared in line with Russian requirements;
  - A Scoping Report informed the scope and content of the ESIA Report; and
  - An ESIA Report was also prepared.

Furthermore, an Environment and Social Overview Report will also be prepared for the entirety of the South Stream Offshore Pipeline, providing a summary view across all three countries.

ESIA Report: Disclosure and Consultation

The draft ESIA Report has been publicly disclosed, along with this NTS. South Stream Transport welcomes feedback on the Project and the ESIA Report from all stakeholders and interested parties.

The official consultation period for the ESIA Report will run for 30 days from the date of disclosure. During this period, the Report (including NTS and appendices) can be accessed in a number of ways.

- Online at www.south-stream-offshore.com.
- Printed copies are available for review at the following locations:
  - Istanbul: ELC Group Headquarters (contact details outlined below); and
  - Trabzon: Zorlu Grand Hotel, Banquet Office, Maraş Caddesi No: 9, 61100 Trabzon.
- Upon direct request to South Stream Transport (contact details outlined below).

Stakeholder engagement events, including public meetings, are also planned. A summary schedule is provided below. Announcements regarding public meetings and other events have been made in national, regional and local newspapers, and online (www.south-stream-offshore.com) in advance of these events. Documents and announcements have also been provided directly to the key stakeholders identified to date.

Summary of ESIA Events

Istanbul – public meeting	25 June 2014 09.30 – 10.30	The Plaza Hotel Istanbul Barbaros Bulvarı 165 34349 Balmumcu / Beşiktaş - Istanbul
Ankara – public meeting	26 June 2014 09.30 – 10.30	JW Marriott Hotel Ankara Kızılırmak Mahallesi Muhsin Yazıcıoğlu Caddesi No:1 Söğütözü, 06520 Ankara
Trabzon – public meeting	27 June 2014 16.00 – 17.00: ESIA Presentation 17.00 – 19.00: Project Information Session	Zorlu Grand Hotel Maraş Cad. No:9, 61100, Trabzon

* Dates may be subject to change; check announcements and online (www.south-stream-offshore.com) for updates

Additional meetings with specific stakeholders, such as fisheries, may also be organised as appropriate.

Contacting the Project

Stakeholders are welcome to contact South Stream Transport at any time to provide questions and comments. Alternatively, communications can also be addressed to the Project's impact assessment consultants in the United Kingdom or their in-country consultants in Turkey as shown below.

Contact Details

Project Proponent:	South Stream Transport B.V. Parnassusweg 809, 1082 LZ Amsterdam, The Netherlands Email: esia@south-stream-transport.com
ESIA Consultants:	URS Infrastructure and Environment Ltd. St George's House, 5 St George's Road, London, SW19 4DR, United Kingdom Email: southstream@urs.com
In Country Consultants:	ELC Group Rüzgarlı Bahçe Mah. Çınar Sok. No:2, Energy Plaza Kat:6 Kavacık, Beykoz, İstanbul, Turkey Email: southstream@urs.com

Table of Contents

Tables

Figures

1 Introduction

1.1 South Stream Offshore Pipeline

The South Stream Offshore Pipeline is the offshore component of the South Stream Pipeline System that will transport natural gas from Russia to the countries of Central and South-Eastern Europe (Figure 1).

Figure 1 South Stream Pipeline System

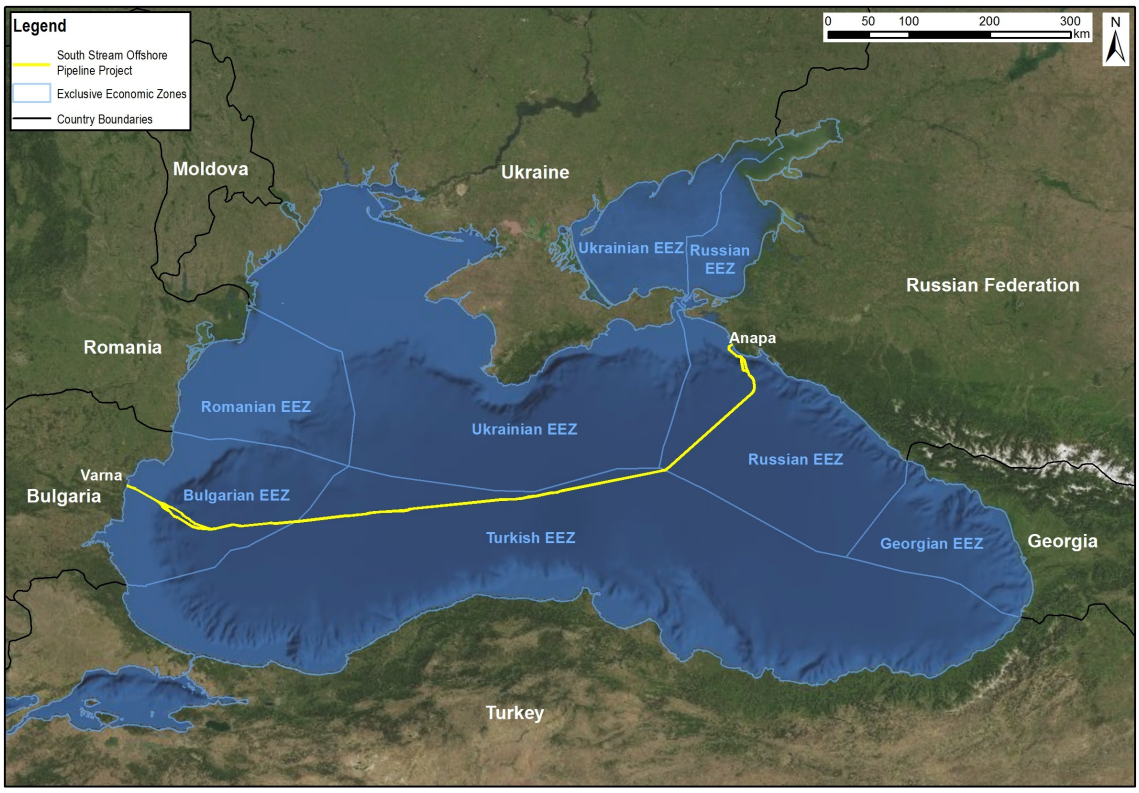
The South Stream Offshore Pipeline will comprise four adjacent pipelines extending approximately 931 kilometres (km) across the Black Sea from the Russian coast near Anapa, through the Russian, Turkish, and Bulgarian Exclusive Economic Zones (EEZs), to the Bulgarian coast near Varna (Figure 2). In addition to the offshore pipelines, the South Stream Offshore Pipeline will consist of short onshore sections in Russia and Bulgaria, with facilities to meter the gas prior to and after transportation through the Black Sea. The South Stream Offshore Pipeline will be able to transport 63 billion cubic metres (bcm) of natural gas annually when fully operational.

The Proponent

The South Stream Offshore Pipeline is being developed by South Stream Transport B.V. (hereafter South Stream Transport), an international joint venture established for the planning,

construction, and subsequent operation of the offshore gas Pipeline through the Black Sea. The Russian company Gazprom holds a 50% stake in South Stream Transport, the Italian company Eni. has a 20% stake. French energy company EDF Group and German company Wintershall Holding (BASF Group) each hold 15%.

Figure 2 South Stream Offshore Pipeline



Note: All geographic boundaries depicted in maps relate to February 2014.

Need for the South Stream Offshore Pipeline

Natural gas plays a significant role in Europe's energy supply. In 2011, approximately one quarter of the energy consumed by the 28 European Union (EU) member states came from natural gas, around a third of which was from domestic gas fields within the EU (Ref. 1). The EU's traditional suppliers are Russia, Norway and Algeria; however, natural gas is also obtained in the EU from a variety of different sources.

Forecasts by the International Energy Agency (Ref. 1) and other institutes predict that European natural gas production will fall by around a half by 2035. This reduced domestic production means that approximately 80% of the forecasted demand for natural gas in 2035 will have to be met through gas imports.

Based on the scenario forecasts above, at full capacity (63 bcm), the South Stream Pipeline System would be able to contribute to between 11% and 22% of total projected import demand in 2035 (Ref. 1). Therefore, the South Stream Offshore Pipeline (as a component of the

South Stream Pipeline System) will contribute to improving energy security of supply in Europe in a safe, reliable and environmentally responsible way.

1.2 The Turkish Sector

The ESIA Report (and this Non-Technical Summary) specifically addresses the Turkish part of the South Stream Offshore Pipeline, which is known as the 'South Stream Offshore Pipeline – Turkish Sector' and referred to as 'the Project' henceforth.

The Project extends through the northern part of the Turkish EEZ of the Black Sea (Figure 3) from the border between the Russian and Turkish EEZs in the east, to the border between the Turkish and Bulgarian EEZs in the west. In the Turkish Sector, the Pipeline will be laid directly on the seabed in water depths in excess of 2,000 m.

The Project Area

The Project Area is the geographical area on the seabed within which the pipelines will be laid. It is approximately 470 km in length and 2 km in width. Its width is defined by the initial proposed Pipeline route corridor in which the pipelines would be laid.

Since the initial proposed Pipeline routing, it is anticipated that the pipelines will be laid within a 420 m width corridor, in agreement with the relevant Turkish authorities. This corridor accommodates the four pipelines and a Safety Zone either side of the outermost pipelines in which other activities on the seabed (such as drilling) will be prohibited.

There are no onshore facilities in Turkey and no Turkish ports will be used for the Project.

1.3 Jurisdiction

The legal framework and permitting process for the Project is unique as it is located entirely offshore within Turkey's EEZ with no landfall facilities. The Project is subject to Turkish legal requirements within the framework described in the *"Decision on the Turkish Exclusive Economic Zone"* (1986) (Ref. 2) enacted by the Turkish government which states that legislation of Turkey shall be complied with. The Project is also subject to bilateral agreements between the governments of Turkey and Russia, which include certain conditions that the Project must fulfil before construction can start, such as the preparation and approval of an EIA according to Turkish regulatory requirements.

TERMS TO KNOW

The **South Stream Pipeline System** will stretch from Russia to the countries of Central and South-Eastern Europe.

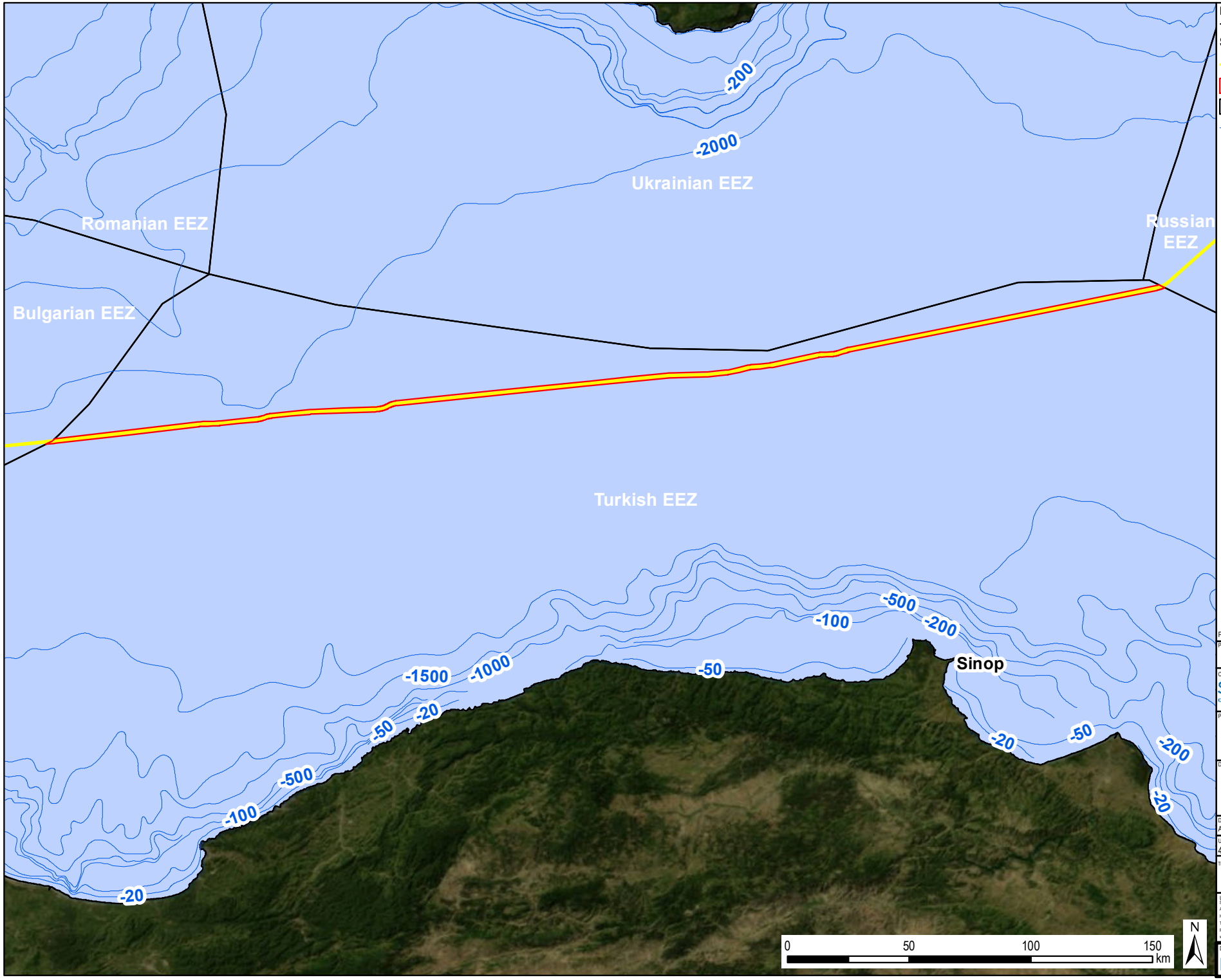
The **South Stream Offshore Pipeline** is a component of the South Stream Pipeline System, specifically, the component that travels through the Black Sea. It will traverse waters of Russia, Turkey and Bulgaria, and includes short landfall sections in Russia and Bulgaria.

The **Turkish Sector** of the South Stream Offshore Pipeline is the focus of this document. The Turkish Sector travels through the Turkish EEZ between the Russian and Bulgarian Sectors of the South Stream Offshore Pipeline.

In this document, "**the Pipeline**" refers to the entire South Stream Offshore Pipeline (Russian, Turkish, and Bulgarian sectors), whereas "**the Project**" refers only to the Turkish Sector of the Pipeline.

The **Project Area** is the geographical area on the seabed within which the pipelines will be laid. The Project Area is defined to be 470 km long and 2 km wide.

The **EEZ (Exclusive Economic Zone)** is a seazone for which a state has special rights over the exploration and use of marine resources, including production of energy from water and wind. Its boundary is 200 nautical miles from its coast, or to a border of a neighbouring EEZ.



LEGEND

Turkish Sector of South Stream Offshore Pipeline

- Proposed offshore pipelines
- Turkish Project Area
- Exclusive Economic Zones
- Isobaths

Projection: Lambert Conformal Conic

Purpose of Issue: For Information

Client: South Stream Offshore Pipeline — ENERGISING EUROPE

Project Title: SOUTH STREAM OFFSHORE PIPELINE

Drawing Title: **SOUTH STREAM OFFSHORE PIPELINE – TURKISH SECTOR**

Drawn	Checked	Approved	Date
AH	RW	MW	05/06/2014

URS Internal Project No.	Scale @ A4
46369082	1:2,000,000

URS Infrastructure & Environment UK Limited
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.ursglobal.com

0 50 100 150 km

N

Drawing Number: **Figure 3**

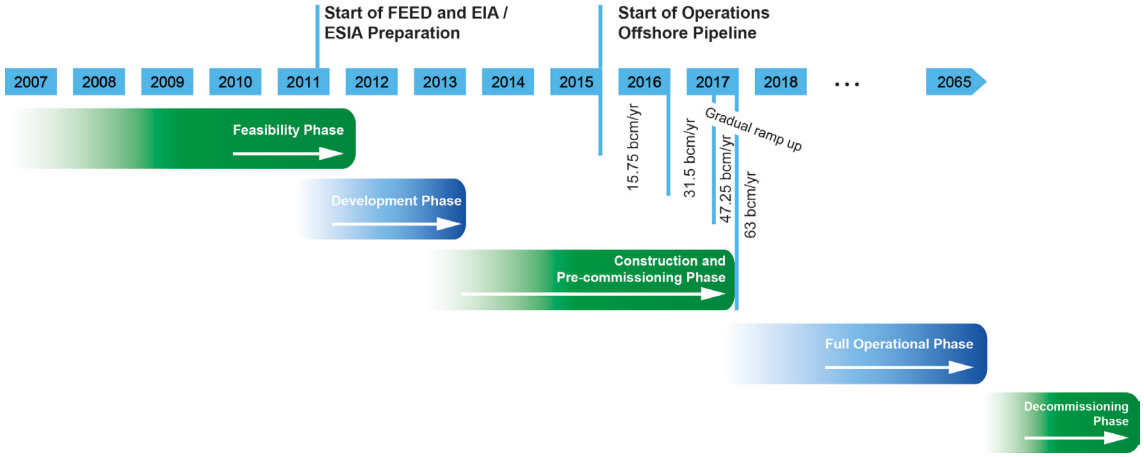
Rev:

Plot Date: 05 Jun 2014
File Name: I:\5004 - Information Systems\46369082_South_Stream\MXD\dReport Maps - Turkey\Non Technical Summary\Figure 3 South Stream Offshore Pipeline – Turkish Sector.mxd

1.4 South Stream Offshore Pipeline Phases and Schedule

The key phases of the Project are summarised in Box 1, and an indicative timeline is shown in Figure 4.

Figure 4 South Stream Offshore Pipeline Timeline



As with all large construction projects the schedule may be subject to change as a result of unforeseen delays. Potential delays may be related to factors such as weather conditions, logistics problems, geological conditions, and/or permitting procedures.

Box 1. PHASES OF PROJECT

The **Feasibility Phase** (2007 to early 2012) involved the development of feasibility studies in which a number of gas pipeline routes and landfall options were assessed and a preliminary engineering (conceptual) design was developed. This phase was initiated by Gazprom.

The **Development Phase** (late 2011 to late 2013) undertaken by South Stream Transport. This phase involves engineering and design work together with the preparation of the Environmental Impact Assessment (EIA) for national permitting requirements. This phase also includes the development of the Environmental and Social Impact Assessment (ESIA) Report and Environmental and Social Management Plan (ESMP) to meet the international standards and guidelines for financing.

The **Construction and Pre-Commissioning Phase** (2014 to late 2017) will involve construction activities and a number of activities, known as pre-commissioning activities, which will be undertaken after each pipeline has been installed to ensure that the pipelines meet operational requirements.

The **Full Operational Phase** (late 2017 to 2065) involves the transport of gas over the Project's operational design life of 50 years. The Operational Phase will involve a gradual ramp-up, with gas beginning to flow once the first pipeline is constructed in 2015.

The **Decommissioning Phase** (2065 onwards) involves the closure of the Project once it has reached the end of its operational life.

2 Impact Assessment Framework

The Project is being carried out to meet the requirements of Turkish legislation and standards, including those related to the Environmental Impact Assessment (EIA) process, as well as international standards and guidelines for financing, which relate to the preparation of an Environmental and Social Impact Assessment (ESIA), as discussed in Section 2.2 of this NTS.

2.1 Turkish EIA Process

As the Project is located within the jurisdiction of the Republic of Turkey, the Project has submitted an EIA Report in accordance with Turkish regulatory requirements. Table 1 summarises the milestones of the EIA process for the Project.

Table 1 EIA Process for the South Stream Offshore Pipeline – Turkish Sector

Milestone	Date	Description
EIA Application File	Publicly disclosed in June 2013	Defined the proposed scope and content of the Turkish EIA Report, including a description of the Project and anticipated impacts. A public meeting to consult on the Application File was held in Sinop in early July 2013.
Draft EIA Report	Submitted in November 2013	The draft EIA Report was submitted to the Ministry of Environment and Urbanisation (MoEU) in November 2013. Under the Turkish EIA process, the MoEU then led the disclosure of and consultation on this Report.
Final EIA Report	Submitted in May 2014	The final EIA Report was submitted to the MoEU in May 2014.

Competent Authorities

The MoEU is the competent authority for the EIA process in Turkey. However, due to the Project's location in the Turkish EEZ (and not within the territory of Turkey), the Ministry of Foreign Affairs (MoFA) is the primary coordinator of the Project's permitting process. As the primary coordinator, the MoFA, in coordination with other departments of the Turkish Government, determines the applicability of Turkish permitting procedures.

Relationship to the ESIA

Information from the national EIA process has informed the ESIA process. Technical specialists coordinated the development of both the ESIA and EIA reports to ensure consistency of methodology, approach and content, as far as practicable. Where there are differences between the two documents, these are due mainly to the difference between the Turkish EIA regulatory requirements and conventional ESIA practice as set out by the international standards and guidelines detailed in Section 2.2 of this NTS.

2.2 ESIA Standards and Guidelines

In addition to seeking national approvals South Stream Transport is also pursuing financing for the Project from export credit agencies and commercial banks. Therefore, an ESIA Report has also been prepared in order to meet international standards and guidelines for financing. These international standards and guidelines provide prospective borrowers with information regarding the environmental and social performance required of the Project, and have been drawn from:

- The Organisation for Economic Co-operation and Development (OECD) Common Approaches, which apply to export credit agencies;
- The Equator Principles (EPs), which apply to commercial banks; and
- The guidance of the Japan Bank for International Cooperation (JBIC).

The Common Approaches, and the Equator Principles and the JBIC Guidelines are all underpinned by the International Finance Corporation (IFC) Performance Standards. As such, the IFC Performance Standards have guided many aspects of the ESIA, in particular Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts (Ref. 3, Box 2).

Box 2. OBJECTIVES OF IFC PERFORMANCE STANDARD 1: Assessment and Management of Environmental and Social Risks and Impacts

As defined by IFC Performance Standard 1, South Stream Transport's objectives in terms of environmental and social performance are:

- To identify and evaluate environmental and social risks and impacts of the Project;
- To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and, where residual impacts remain, compensate or offset for risks and impacts to workers, affected communities, and the environment;
- To promote improved environmental and social performance of clients through the effective 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 life on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.

2.3 ESIA Report

The ESIA Report has been developed in accordance with the standards and guidelines listed above, and in line with good international industry practice. The ESIA process illustrates South Stream Transport's commitment to develop and operate the Pipeline in an environmentally and socially responsible manner.

The ESIA has considered the potential impacts of Project Activities over all phases, as associated with:

- The physical environment (non-living components of the environment such as water, air, and sediments);
- The biological environment (including living organisms such as fish, mammals, birds, and marine habitats);
- Cultural heritage (namely shipwrecks);
- Waste management (including solid and liquid wastes);
- Socio-economics (people, communities, and livelihoods); and
- Ecosystem services (the ways in which people benefit from natural ecosystems).

Content of the ESIA Report

The ESIA Report describes the main characteristics of the Project and the measures that will be implemented to avoid and minimise potential environmental and social impacts. The ESIA Report includes descriptions of:

- The Project Activities that will take place during Construction and Pre-commissioning Phase, Operational Phase and Decommissioning Phase;
- The impact assessment methods that have been used;
- The alternatives that have been considered;
- The existing ("baseline") environmental and social conditions;
- The potential environmental and social impacts associated with the Project;
- The mitigation measures that will be used to avoid or minimise these impacts;
- The impacts that will still remain after mitigation measures (the "residual impacts");
- The potential transboundary (crossing international borders) issues and impacts associated with the Project;
- The potential for unplanned events (such as accidents) and related impacts;
- The potential for cumulative impacts (where Project impacts may interact with the impacts of other developments in the area); and
- The environmental and social management system that is being established.

3 Stakeholder Engagement

3.1 Overview

Stakeholder engagement (including dialogue, consultation and the disclosure of information) is a key element of project planning, development and implementation. South Stream Transport is committed to a transparent and respectful dialogue with stakeholders throughout the life of the Project. The engagement approach for the Project includes a range of activities designed to consult stakeholders. It provides opportunities for stakeholders to ask questions, make comments and suggestions and to raise any concerns that they may have. The stakeholder engagement programme for the Project has been developed to align with the national legislative requirements, as well as international standards and guidelines for financing (Chapter 2 of this NTS).

Stakeholder Engagement Plan

South Stream Transport's Stakeholder Engagement Plan (SEP) for Turkey provides a stakeholder engagement framework for all phases of the Project from development through to decommissioning. The SEP provides a plan for future consultation and disclosure and is regularly updated. It also provides a record of consultation and disclosure activities that have already been conducted. The latest version of the SEP is available on the South Stream Transport website at www.south-stream-offshore.com.

Stakeholders

South Stream Transport welcomes input from all interested parties, and has been actively engaging with a broad spectrum of stakeholders since 2012. Feedback received from stakeholders has been an important part of the planning, permitting and impact assessment processes. Some of the stakeholder groups engaged to date includes:

- Turkish national and regional governmental authorities;
- Marine area users, including fishing groups; and
- Local, regional, national and international non-governmental organisations (NGOs).

South Stream Transport will continue to engage with stakeholders beyond the Environmental and Social Impact Assessment (ESIA). Throughout the life of the Project, stakeholders will have access to various means and opportunities to submit feedback to South Stream Transport. All feedback is valued, including questions, concerns, and recommendations.

3.2 Past Activities

Introductory Meetings

Introductory meetings were held with the Ministry of Environment and Urbanisation (MoEU) on 11 June 2012 and with the Ministry of Foreign Affairs (MoFA) on 6 September 2012, to inform them about the Project and to notify them of the intention to conduct an Environmental Impact

Assessment (EIA) and ESIA. The first communication with the MoFA regarding the Project was undertaken at intergovernmental level, between the Turkish MoFA and the Russian Ministry of Foreign Affairs in December 2011.

EIA Process and EIA Report

South Stream Transport prepared an EIA Application File (EIAAF) for the national EIA process and the public engagement process for the EIAAF officially commenced on 5 June 2013. A public meeting was held in Sinop on 2 July 2013. On 4 July 2013, the EIA Scope and Special Format Determination (SSFD) Meeting was held with the MoEU and Review and Evaluation Commission (REC) members (consisting of representatives from various ministerial departments and government agencies) to discuss the scope and content of the EIA, and any requirements which should be taken into consideration in the EIA process or EIA Report.

The Draft EIA Report was published on the MoEU's website on 19 December 2013, and was available for public review and comment. An EIA Review and Evaluation meeting was held on 8 January 2014 in Ankara, with the MoEU and REC members, to receive feedback to be incorporated into the final EIA Report. The final EIA Report is expected to be approved by the MoEU by mid-2014.

ESIA Scoping Report

For the ESIA process, the Scoping Report, including a non-technical summary, was disclosed on 17 July 2013 and was available for public review and comment until 19 August 2013. The documents were published on the South Stream Transport website, and printed copies were also sent to stakeholders identified as being potentially affected by or have an interest in the Project. An announcement was made in Turkish local and national newspapers to let the public know where they could access the report and how they could provide comments. A comment box was also set up in Sinop where stakeholders could submit comments securely.

Consultations on the Scoping Report were held in July and August 2013 with national NGOs, marine research institutes and fishing unions and cooperatives. These meetings provided an opportunity to introduce the Project and for stakeholders to express their comments and concerns in relation to the Project and to identify environmental and social issues to be addressed in the ESIA Report.

At the meetings, representatives of South Stream Transport and their consultants presented information about the Project, the Scoping Report and the ESIA process, and answered questions from participants. Stakeholders were also able to comment by email or post or via the secure comment box.

3.3 ESIA Disclosure and Consultation

The draft ESIA Report, including this non-technical summary, has been publicly disclosed, and all interested stakeholders are invited to review and comment on the Project and the ESIA Report. South Stream Transport will also be arranging a series of consultation meetings and events to facilitate feedback on the ESIA Report. The details of the disclosure and consultation process are provided in the Preface of this document.

3.4 Input from Stakeholders to Date

Comments and feedback received from stakeholders to date—whether for the EIA or ESIA process—have informed the ESIA Report in many ways. Input from stakeholders has been incorporated into baseline studies, and helped to guide the identification and assessment of potential impacts, as well as mitigation and management measures, where necessary.

In Turkey, the issues most frequently raised by stakeholders have understandably been focused on potential impacts to the marine environment, particularly in relation to the potential for construction activities to disrupt fish migration across the Black Sea. In response to these concerns, an additional fisheries study was undertaken. This study included further investigation of fisheries activities and stakeholders in Turkey, and an assessment of the potential impacts of Project activities on fish and migratory routes.

Other concerns expressed by stakeholders to date have included questions about the safety of the Project and the safety measures that would be put in place. Information on safety measures is provided within the ESIA Report.

3.5 Ongoing Engagement

Stakeholder engagement will continue over the life of the Project, including throughout pre-construction preparations, construction and pre-commissioning activities. Engagement will also continue over the operational life of the Project. Throughout the life of the Project, stakeholders will be able to provide feedback and receive responses to questions and comments. A formal complaints procedure (also known as a Grievance Procedure) will also be in place to ensure that complaints are addressed in a timely and consistent manner.

Engagement approaches for these later phases will be somewhat tailored to each Project phase, and are further described in the Turkish SEP. This plan is available, in English and Turkish, on South Stream Transport's website (www.south-stream-offshore.com).

4 Project Description

The Project (i.e. the Turkish Sector of the South Stream Offshore Pipeline) starts at the border of the Russian and Turkish Exclusive Economic Zones (EEZs) and traverses the northern part of the Turkish EEZ to the border of the Turkish and Bulgarian EEZs. The following sections give a brief description of the construction methods that will be used and the permanent infrastructure that will remain for operation of the Project. The route and layout of the Project is illustrated in Figure 3 (in Section 1.2 of this NTS).

Pre-commissioning tests, commissioning, daily operations, and eventual decommissioning are also discussed below, although it is important to note that the majority of activity in the Turkish Sector will be concentrated during construction. There will be no pre-commissioning activities within the Turkish Sector (i.e., the Project). Following the laying of pipes during construction, the Project will be largely static, with four pipelines lying immobile on the seabed in water depths of over 2,000 metres (m).

Beyond the Turkish Sector, the broader South Stream Offshore Pipeline includes subsea pipelines as well as onshore pipelines and landfall facilities in Russia and Bulgaria. These components are beyond the scope of the ESIA Report for the Turkish Sector; however, Box 3 provides an overview of these components in order to provide a more complete picture of the South Stream Offshore Pipeline, whereas the remainder of this chapter focuses on the Turkish Sector.

Box 3. THE SOUTH STREAM OFFSHORE PIPELINE

When operational, the South Stream Offshore Pipeline will include the following permanent elements. These elements are discussed from east (Russia) to west (Bulgaria), following the flow of gas.

Landfall facility (Russia): a landfall facility in Russia will include facilities for pipeline inspection, emergency shutdown, and monitoring. The landfall facility will connect with the Russkaya compressor station and the United Gas Supply network in Russia.

Buried pipelines and Microtunnels (Russia): from the landfall facility, the four pipelines will be buried on land for 2.4 kilometres (km). The pipelines then cross from land to sea via four microtunnels, each 1.4 km long. The microtunnels will emerge in the seabed approximately 400 m from the shore.

Subsea pipelines (Russia, Turkey and Bulgaria): after exiting the microtunnels, the four pipelines will be laid underwater, along the seabed, through Russian territorial waters, the Russian EEZ, the Turkish EEZ, the Bulgarian EEZ, and into Bulgarian territorial waters. The subsea pipelines will be approximately 225 km in length in Russia, 470 km in Turkey, and 230 km in Bulgaria.

Microtunnels and Buried Pipelines (Bulgaria): the pipelines will cross from sea to land via four microtunnels in Bulgaria, each 1.0 km long. The pipelines will enter the microtunnels in the seabed approximately 420 m from the shore. From the onshore exit of the microtunnels, the pipelines will be buried for 2.4 km, travelling westward from the coast.

Landfall facility (Bulgaria): a landfall facility in Bulgaria will also include facilities for pipeline inspection, emergency shutdown, and monitoring. The landfall facility will connect with the receiving terminal and compressor station of South Stream Bulgaria, which is developing the onshore project through Bulgaria.

4.1 Overview

The pipelines will be laid directly on the seabed, more than 2,000 m below the surface, and within a 420 m wide corridor as agreed with the Turkish authorities. To protect the pipelines from damage, other activities (such as oil and gas exploration drilling) will be prohibited within this 420 m pipeline corridor. The Project is located 110 km from the Turkish coast.

Construction will be based on a pipe-lay vessel, where the pipe sections will be welded together and lowered into the sea. During construction, a navigational Safety Exclusion Zone will restrict access to the area around the vessel spread.

After construction, the pipelines will remain on the seabed for the operational life of the Project. The condition of the pipelines will be monitored remotely, with regular inspections.

Pipeline Design

The entire South Stream Offshore Pipeline including the Turkish Sector has been designed for an operational life of 50 years. The design is in accordance with internationally recognised standards for the engineering, fabrication, construction, testing, operation and maintenance of pipeline systems. Furthermore, the design aims to minimise impacts to the environment.

When fully operational, each of the four pipelines will have a capacity of 15.75 billion cubic metres (bcm) per year; totalling a designed transport capacity of 63 bcm of natural gas per year. The entire South Stream Offshore Pipeline, including the Turkish Sector, is designed to accommodate pressures of 300 bar, although the expected maximum operating pressure is anticipated to be only 284 bar. The first of the four pipelines is expected to be operational (i.e. natural gas flowing through the Pipeline) in late 2015, and all four pipelines should be operational by late 2017.

The pipelines will be constructed of steel pipes made of 12 m long sections, each with an internal diameter of 32 inches (813 millimetres (mm)), which will be welded together during construction on-board the pipe-lay vessel. The pipe sections will be covered with an anti-friction coating on the inside to improve the flow of gas, and an anti-corrosion coating on the outside. Figure 5 illustrates the pipe sections and cross-sections.

The pipelines will also be protected against corrosion using sacrificial anodes; these are metal components that are installed

TERMS TO KNOW

Pipe-lay vessel: a large ship used for installation of the subsea pipelines, upon which pipe sections will be welded together and lowered into the water.

Navigational Safety Exclusion Zone: the area around the pipe-lay vessel which will restrict access of vessels not related to the Project during construction. This is for safety reasons, and to allow supply and support vessels to move about as needed.

Remotely Operated Vehicle (ROV): a submersible vessel that helps investigate the underwater environment. These vessels can travel very deep, and may include cameras, as well as sensors for measuring properties of seawater.

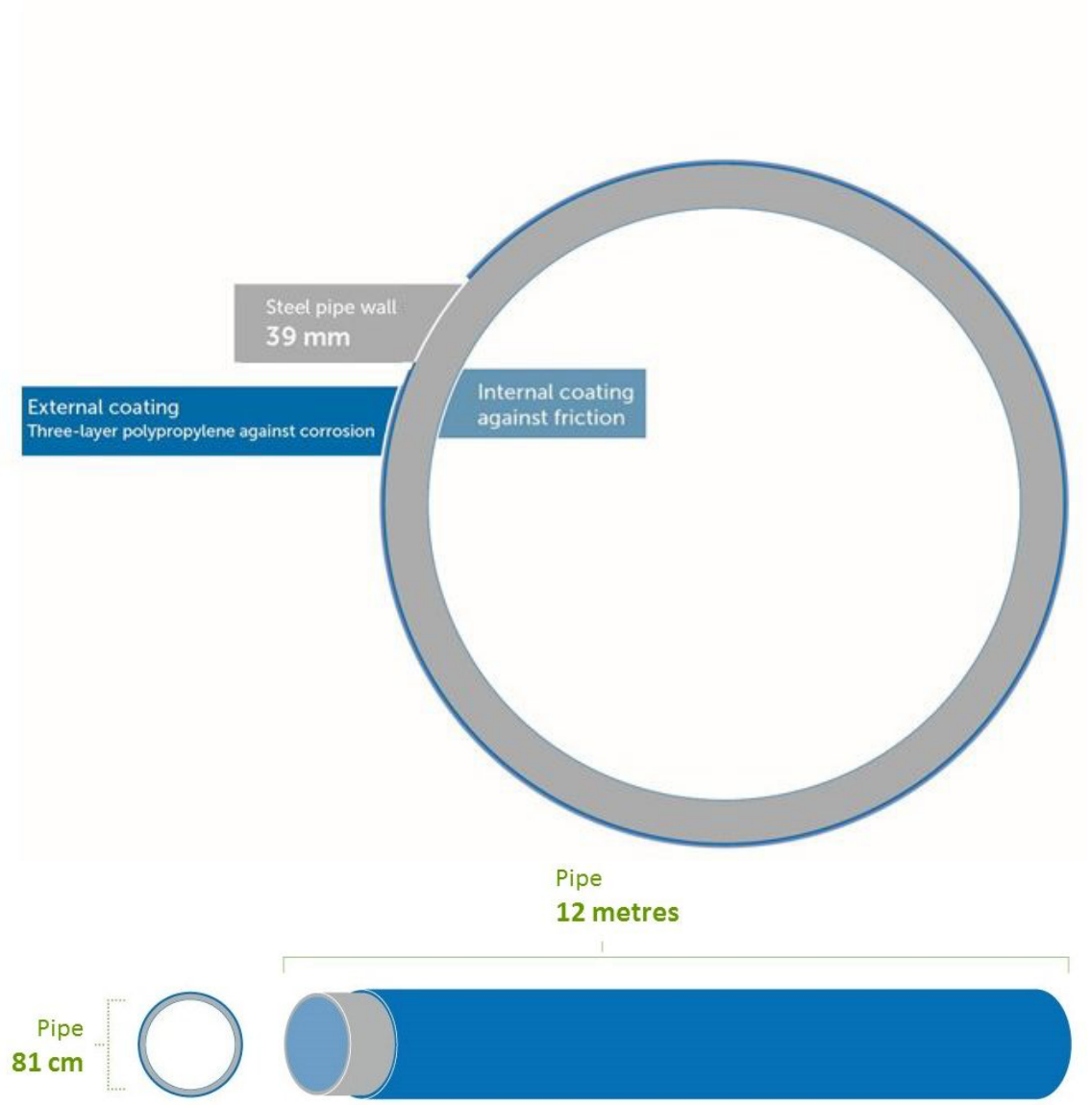
Unexploded ordnance (UXO): explosive items (such as bombs, shells, grenades, mines, etc.) that did not explode when they were originally deployed. As such, these items may still pose a risk of detonation and need to be carefully identified and addressed.

Vessel spread: the network of ships and other vessels that will be located in the vicinity of the pipe-laying activity. This includes the pipe-lay vessel as well as support and supply vessels.

Pipeline Inspection Gauges (PIGs): specialised equipment inserted into the pipelines during cleaning and inspection. They travel through the inside of the pipeline without stopping the flow of gas.

for the explicit reason that they have a higher potential for corrosion and thus "attract" corrosion away from the steel pipelines. These anodes will be placed at regular intervals along each pipeline.

Figure 5 Pipe Section Schematic



Phases

The phases of the Project are introduced in Section 1.4 of this NTS, and described in further detail below. However, as previously noted, the nature of the Project in Turkey means that the majority of activity is concentrated in the Construction and Pre-Commissioning Phase when pipe-laying is underway. The later phases (operational and decommissioning) do not involve substantive activity in Turkey, as the pipes will be static on the seabed. These later phases are more relevant to the Russian and Bulgarian sectors where there will be facilities on land and

connections to the upstream and downstream gas networks, and further information is provided in the corresponding ESIA reports and non-technical summaries for these sectors.

4.2 Construction Phase

This section describes the activities that will be undertaken during the construction of the Project, which are scheduled to begin in Turkey in early 2015 with Line 1. The pipe-lay vessel will enter the Turkish EEZ at the border with the Russian EEZ in the east, and will move westward towards the Bulgarian EEZ. Construction activities are expected to run until 2017 when pipeline 4 is scheduled for completion.

Between Russia, Turkey and Bulgaria, there may be more than one pipe-lay vessel working simultaneously. However, it is not anticipated that more than one pipe-lay vessel will be operating in Turkish waters at any one time.

The main construction activities in the Turkish Sector will be:

- Surveys of the Pipeline route prior to, during and after the pipe-laying process; and
- Laying pipe on the seabed.

These are detailed further below.

Offshore Construction Vessel Spread

A range of ships and other vessels will be used during construction; collectively, this is referred to as the "vessel spread" (Figure 6). The main vessel will be the pipe-lay vessel, upon which the pipe sections will be welded together, inspected, coated and lowered into the sea.

Other vessels will also be involved in the pipe-laying activities. A variety of support vessels will be involved with surveying the route ahead of, and following, the pipe-lay vessel, and ensuring that the navigational Safety Exclusion Zone is respected. Supply vessels will also travel to and from land, bringing pipe sections, fuel and provisions, and removing waste.

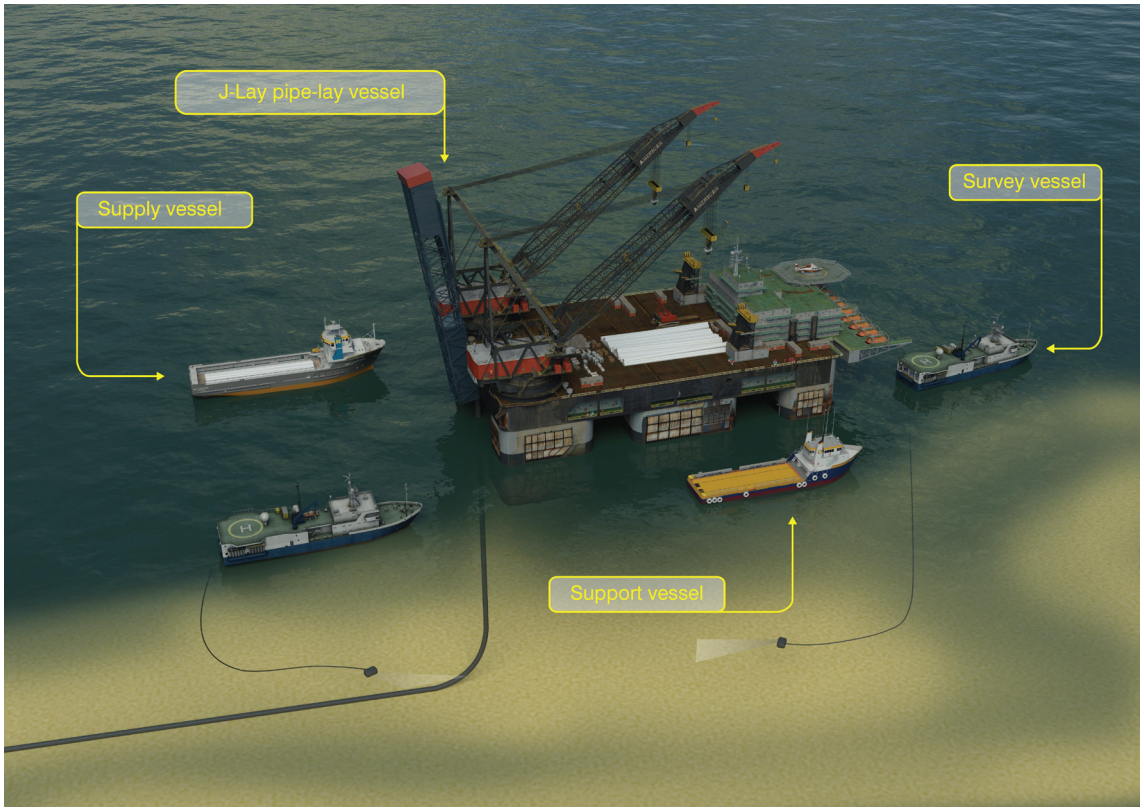
Surveys

Surveys of the Pipeline route will be conducted before, during and after installation of the pipelines to ensure they avoid any obstacles, are laid along the correct route and are laid without defect.

Pre-construction surveys will investigate the exact route of each pipeline before any pipe-laying begins. These surveys will include standard geophysical surveys, and/or visual surveys using, where necessary remotely operated vehicles (ROVs) which are fitted with cameras to allow surveyors to examine the route from the surface. These surveys will help to optimise the route and confirm the absence of any obstructions along the route (to be avoided by minor re-routing). An unexploded ordnance (UXO) survey will be carried out along each pipeline route well in advance of pipe-laying.

During and after the pipe-lay process, surveys and monitoring will seek to verify that the Pipeline is installed correctly. This will include real-time visual inspection as the pipeline is laid.

Figure 6 Typical Offshore Pipeline Vessel Spread



Note: Not to scale, water depth is greater than 2,000 m.

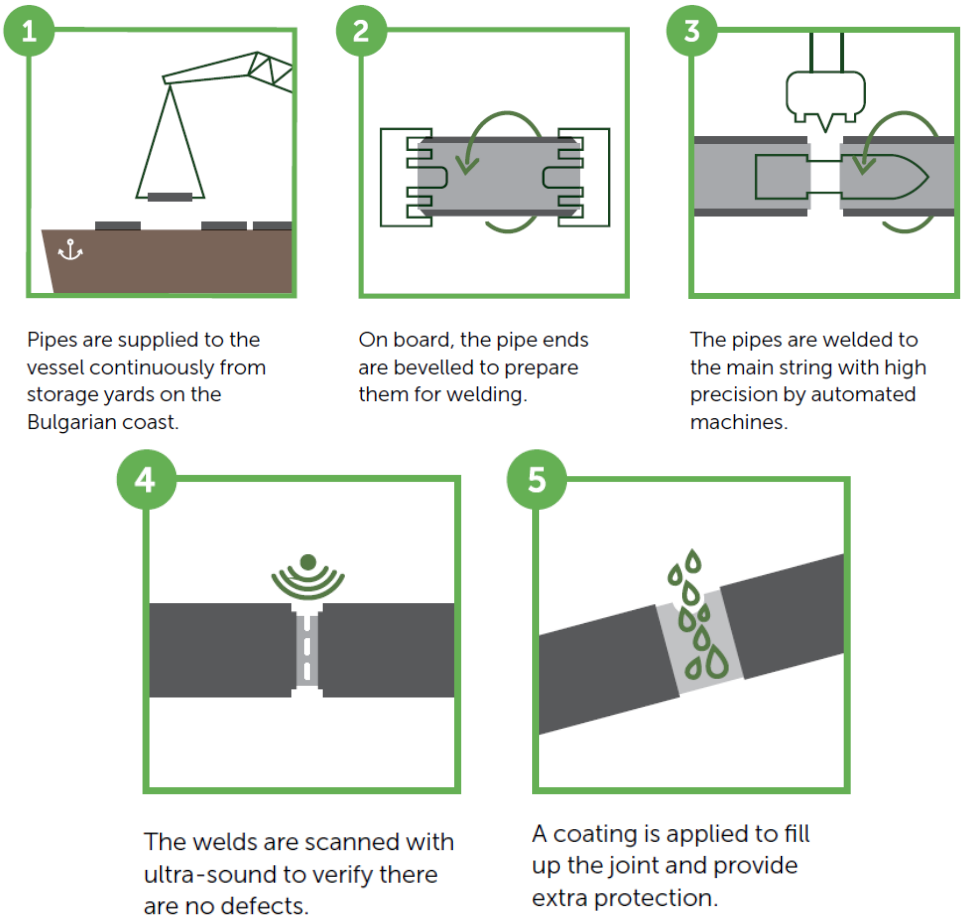
Pipe-Laying Process

The pipe-laying process involves the sequential alignment, welding and lowering of pipe from the pipe-laying vessel (Figure 7). Pipe sections are aligned on-board the vessel. Following alignment, the sections are clamped and joined together using automated welding equipment. Welds are tested and inspected and additional coatings are then put in place. The newly welded, coated and inspected pipeline section is then moved into the water. The pipe-lay vessel advances to an appropriate distance, and work begins on the next pipeline section.

As the pipeline is progressively lowered off the pipe-lay vessel, it will be laid on top of the seabed. There will be no seabed intervention (e.g. dredging or placing of additional materials on the seabed). There are also no existing pipelines or cables that will be crossed by the Pipeline.

Offshore pipe-laying may be performed using S-Lay and/or J-Lay techniques, depending on the type of pipe-lay vessel that is used. Box 4 summarises these two techniques, which are illustrated in Figure 8 and typical S-Lay and J-Lay vessels are shown in Figure 9.

Figure 7 Pipe Welding Process



Box 4. S-LAY AND J-LAY PIPE-LAY TECHNIQUES

The vessels and techniques used for pipe-laying are named due to the shape the pipelines make in the water as they exit the pipe-lay vessel.

S-Lay: can be used in shallow or deep water. This method involves horizontally welding the pipe sections, and continuously moving the welded sections off the back of the vessel as the vessel moves forward. In this way, the pipeline forms an "S" shape from where it leaves the vessel, to where it touches down on the seafloor.

Using the S-Lay technique, pipe-laying typically progresses around 3.50 km per day.

J-Lay: developed for laying pipe in deep waters. The pipeline sections are assembled and welded vertically in a tower erected on the pipe-laying vessel. In this way, the pipeline forms a "J" shape as it descends to the seabed.

Using the J-Lay technique, pipe-laying typically progresses around 2.75 km per day.

Figure 8 Schematic of S-Lay and J-Lay Pipe-Laying Method

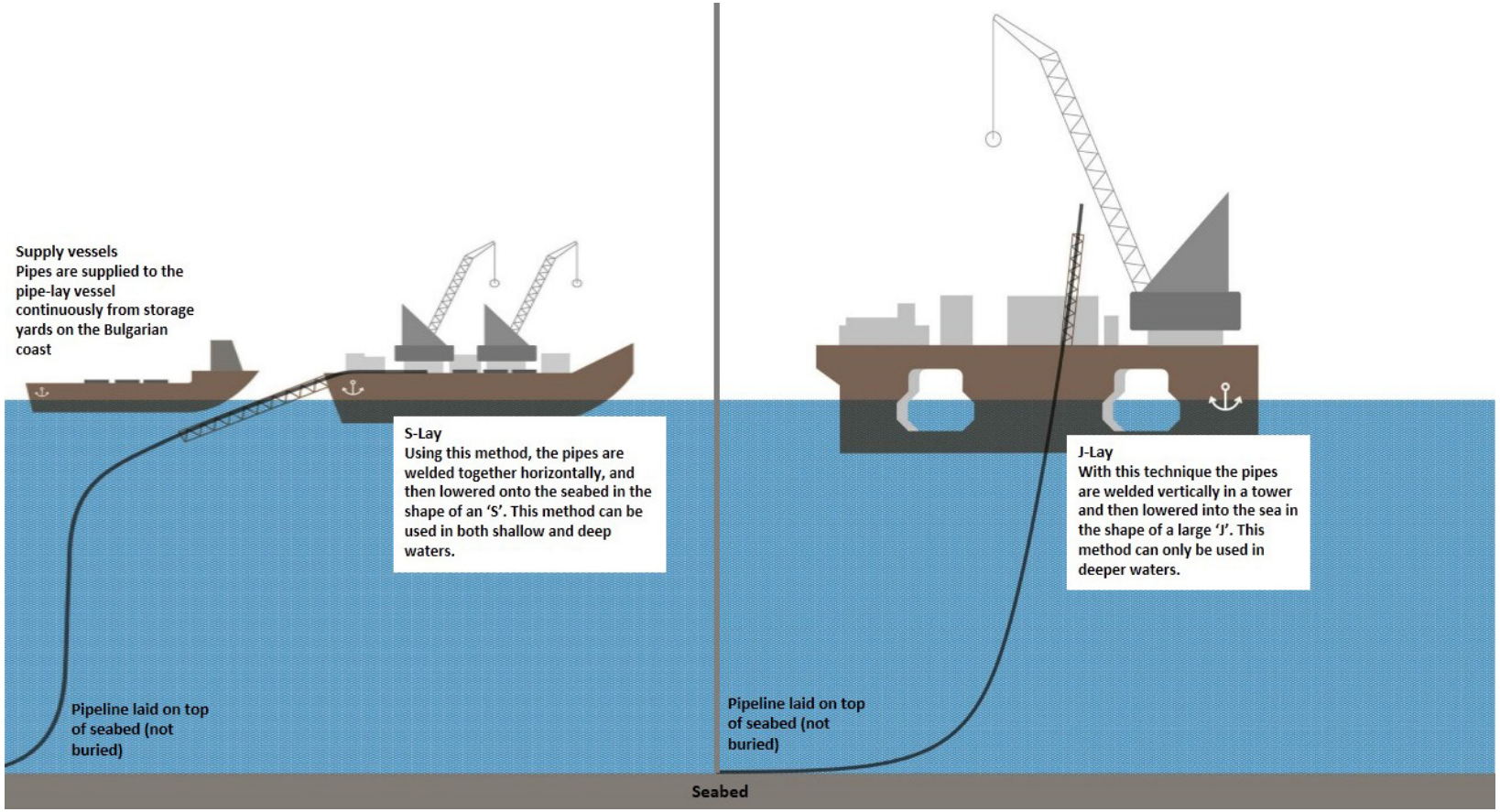


Figure 9 Typical S-Lay and J-Lay Vessels

Image of S-Lay vessel supplied courtesy of Allseas, Switzerland

Image of J-Lay vessel supplied courtesy of Saipem

Inspection

All critical processes on-board the pipe-lay vessel—including welding—will be first inspected by a quality assurance crew on behalf on the Contractor, and later inspected by representatives of the certification company and South Stream Transport.

Navigational Safety Exclusion Zone

A navigational Safety Exclusion Zone will be created around the vessel spread for safety and navigation reasons. This is expected to be defined as a 2 km radius around the pipe-lay vessel; however, the size of the zone will be agreed with the relevant maritime authorities.

This zone will be temporary and will move with the pipe-lay vessel as construction progresses from east to west. There are no plans for more than one navigational Safety Exclusion Zone to be operating within the Turkish EEZ at any one time.

4.3 Pre-Commissioning Phase

Pre-commissioning involves a series of tests and preparations that are made to ensure that the Pipeline has been properly constructed and is ready to be filled with gas. This phase will occur after each pipeline is completed in its entirety (i.e. between the landfalls in Russia and Bulgaria). Each of the four pipelines will be pre-commissioned separately after its construction is complete.

In the Turkish Sector, pre-commissioning activities will comprise cleaning, gauging and drying each pipeline. Additional tests will be undertaken in Russia and Bulgaria related to the landfall sections and to sections of the pipelines closer to shore.

Pipeline inspection gauges (PIGs) will be used to clean, gauge and dry the pipelines. PIGs will be inserted into a pipeline (e.g. from the landfall in Russia) and will travel the length of the Black Sea inside the Pipeline, from which they will emerge at the landfall in Bulgaria. As these activities will be confined inside the Pipeline, there are no expected impacts to the Turkish Sector related to pre-commissioning.

4.4 Commissioning Phase

Commissioning involves the introduction of natural gas to the pipelines and the start of gas transportation. Each of the four pipelines will be commissioned and come into operation independently after pre-commissioning activities are completed.

Natural gas will be injected at the Russian end after which each of the pipelines will be gradually pressurised. It is anticipated that each pipeline will take approximately ten days to fill with gas and overall commissioning activities will take approximately two weeks to complete. All control and monitoring systems in Russia and Bulgaria will be operational before the pipelines are commissioned.

As for pre-commissioning, all commissioning activities will be confined inside the Pipeline, and there are no expected impacts associated to the Turkish Sector related to commissioning.

4.5 Operational Phase

This section summarises the activities that will be undertaken during the Operational Phase of the Project.

During operations, natural gas will flow through the pipeline from Russia to Bulgaria, and will be monitored from a central control room in Amsterdam (The Netherlands). Some routine inspections and maintenance works will be conducted, but the overall level of activity will be low.

Monitoring, Maintenance and Repair

The condition of the underwater pipelines will be monitored on a regular basis. Monitoring will include the use of vessels undertaking sonar scans and visual inspections using cameras and ROVs. Inspections will occur annually, and a more comprehensive survey of the entire route will be performed every five years. The inside of the pipelines will also be regularly monitored using PIGs within the same timeframe as other maintenance works.

Each pipeline will also be monitored remotely from the central control room in Amsterdam, and gas flows will be adjusted as needed and if required shut down. Monitoring equipment will also include built-in safety systems designed to automatically shut down the Pipeline in certain circumstances, although it is unlikely this precaution will be needed.

The chance that a properly designed and installed deep-water pipeline will experience a failure is small, and South Stream Transport is committed to ensuring that the design and construction processes are suitably robust. However, there will also be an overall Emergency Pipeline Repair Strategy for the South Stream Offshore Pipeline in the event of any damage.

4.6 Decommissioning Phase

At the end of its service lifetime, the Pipeline will be decommissioned, meaning that gas transport will end and the pipeline infrastructure will be deactivated and/or removed. However,

as the expected operational lifetime of the Pipeline is 50 years, decommissioning activities are decades away.

It is likely that, in 50 years' time, there will be new technological options and preferred methods for decommissioning of gas transportation systems. As such, a detailed plan is not provided at this time. Instead, a review, and relevant studies if necessary, will be undertaken during the Operational Phase to confirm that the planned decommissioning activities utilise good international industry practice and are the most appropriate to the prevailing circumstances.

4.7 Labour and Procurement

Construction Phase

The numbers of workers that will be employed during the construction of the Project is roughly estimated based on typical vessels to be used within the vessel spread and typical persons on-board. It is expected that up to approximately 1,100 workers would be employed, depending on the type and number of vessels used.

Due to the specialised nature of offshore pipeline construction, the majority of the construction work force will require specific skills. Worldwide, there are only a few companies that undertake this type of construction work, and they will likely bring in much of their skilled workforce. For construction within the Turkish Sector, all workers will be accommodated on-board the vessels at sea, and not onshore.

Occupational Health and Safety (OH&S) for procurement, construction, installation and operations will be managed by South Stream Transport and their respective contractors. Internationally recognised procedures to ensure the OH&S of the workforce will be adopted along with the necessary equipment and training to make these effective.

Operational Phase

There will be no full time workers employed after construction is complete, other than a workforce stationed permanently at the central and back-up control rooms in Amsterdam. There will also be occasional periods when workers will be on-board vessels for inspection and maintenance of the pipelines.

4.8 Analysis of Alternatives

The current Project description—as summarised above (Sections 4.1 to 4.7 of this NTS) is the result of a lengthy process of examining various alternatives, with the goal of developing a pipeline that is both technically and financially feasible, and that minimises environmental and social impacts.

As such, a range of alternatives have been examined, including alternative locations and routes, construction methods, engineering and design. The potential of using other means of gas transportation was also considered. The process started with consideration of high level strategic options and progressively focused in on more detailed alternatives, including refinement of the Pipeline route.

The 'Zero' Alternative

The 'zero' or 'no project' alternative would mean that the Project would not be constructed, thus avoiding the Project's potential environmental and social impacts as described in the ESIA Report. However, should the Project—and therefore the entire South Stream Offshore Pipeline—not proceed, the objective to provide a new natural gas supply route connecting Russia with countries in Central and South-Eastern Europe via the Black Sea would not be met. This would deprive these countries of a means of diversifying existing supply routes and additional supplies of natural gas to meet its growing energy demand. The zero alternative was thus rejected.

Alternative Means of Gas Transportation

Based on the premise that gas will be transported via a new route across the Black Sea, consideration was then given to alternative ways of transporting natural gas across the Black Sea between Russia and Central and South-Eastern Europe.

If a pipeline was not used, the main alternative would be the liquefaction of natural gas at a location on the Russian Black Sea coast. Liquefied Natural Gas (LNG) would then be transported by tanker ships to either a port on the Western Black Sea coast (Bulgaria or Romania) or directly to a location in Southern Europe beyond the Turkish Straits.

However, the liquefaction and transportation of LNG is usually undertaken for 'stranded gas' deposits where the source of gas is so distant and isolated as to make transportation by pipeline uneconomic. Liquefaction would also require the construction of a liquefaction plant on the Russian coastline and a re-gasification plant on the shores of the receiving country. The onshore environmental impacts associated with the construction and operation of an LNG plant would be greater than those of a pipeline and associated compressor station. This alternative would also require an estimated 600 to 700 LNG carrier movements per year across the Black Sea. For these reasons, the LNG option was rejected and further alternatives focused on pipeline options.

Route Alternatives

Eight potential offshore Pipeline corridors were initially considered across the Black Sea, four of which passed through the Turkish EEZ and four through the Ukrainian EEZ. With the selection of Anapa as the site of the Russian compressor station, four options were discarded, leaving two options crossing the Ukrainian EEZ and two options crossing the Turkish EEZ. In the west of the Black Sea, these options would come ashore in either Bulgaria or Romania. The alternatives analysis identified two preferred shore crossing areas: one near the Bulgarian port of Varna and one near the Romanian port of Constanta. After strategic transit agreements were made with the Bulgarian government, the Varna option became the preferred option. In the end, as the Ukrainian EEZ options could not be surveyed in time for the assessment, the route from Anapa to Varna, passing through the Turkish EEZ was selected.

Further small scale routing was undertaken within the Turkish EEZ. As no significant environmental or engineering constraints were identified from initial Pipeline route surveys, the route was designed to be as direct as possible, subject to minor adjustments to avoid specific areas of interest (e.g. shipwrecks) based on survey data and consultations with the Turkish authorities.

5 ESIA Approach and Methods

Environmental and Social Impact Assessment (ESIA) is a systematic approach to identifying the potential impacts of a project, and describing the mitigation, management and monitoring measures that will be implemented to address these impacts. Ultimately, the results of the ESIA allow relevant organisations to make informed decisions about development proposals, and allow potentially affected stakeholders to participate in the process.

This section describes the main features of the impact assessment and how it was conducted.

5.1 ESIA Approach and Stages

The impact assessment process can be simply summarised with the following steps:

- **Understand the Project**: including what will happen at various times in all phases of the Project. Assessors need to understand physical activities (e.g. laying pipe) as well as supporting activities (e.g. transportation) and socio-economic activities (e.g. employment);
- **Understand the existing environment**: including the physical, biological, socio-economic and cultural heritage baseline conditions;
- **Predict impacts**: using the knowledge about the existing environment, and the proposed Project activities, assessors can then predict what impacts are likely to occur. They also predict what/who the receptors of these impacts will be; and
- **Develop mitigation measures**: to address impacts. Mitigation measures are designed to avoid, reduce and manage and/or offset adverse impacts, or enhance benefits. This is ultimately the most important element of the ESIA Report as it focuses on managing impacts so that adverse changes are minimal, and benefits are enhanced.

The above steps are much simplified but convey the general approach to an environmental and social impact assessment. The following sections describe how these steps have been applied for the Project through the ESIA stages (Box 5).

It is important to understand that the ESIA process is not just a way to minimise impacts, but also a tool for decision-making. In reality, it is rarely possible to avoid or reduce all adverse impacts of a Project. In the end, the ESIA process should clearly highlight what impacts of the Project will be beneficial and adverse, so that decision-makers can make an informed judgement about the future of the Project.

Value of Stakeholder Engagement

Stakeholder engagement is also recognised as an important part of the ESIA process, from start to finish (and beyond the ESIA into the construction and operation of the Project).

Formal stakeholder engagement periods have been structured around the disclosure of the Scoping and ESIA Reports. However, stakeholder input is sought and considered throughout the development of the ESIA, including baseline data collection and discussions with government

agencies, and other interest groups such as non-governmental organisations (NGOs), fisheries and the public, as discussed in Section 3 of this NTS.

Box 5. ESIA STAGES

Screening: An early exercise to identify how the Project might interact with the environment. Screening focuses the ESIA on the most likely interactions and receptors and assists in incorporating environmental, social and cultural heritage considerations into Project planning and design.

Baseline Studies: Understand the existing environment through desk-based and field-based research so that impacts can be more accurately predicted, and to provide a baseline against which changes can be measured.

Scoping: Utilises more detailed engineering data along with some preliminary baseline data and feedback from stakeholders. Scoping asks; what adverse impacts might occur? What benefits might the Project have? How significant might these impacts be? What can be done to mitigate them? The Scoping Stage also identifies the topics and methodologies which will be included within the main ESIA Report.

- **Output**: Scoping Report for the ESIA.
- **Stakeholder Engagement**: to present the results of the Scoping Stage (including the Scoping Report and NTS) to stakeholders for feedback, in order to ensure the ESIA Report is addressing issues of interest and relevance and to identify any further data gaps along with potential impacts and mitigation measures.
- **Baseline studies**: continue during this stage.

Impact Assessment: Predict and assess the expected impacts of the Project, based on the Project description, baseline studies, feedback from stakeholders, and professional expertise. The impact assessment categorises potential impacts based on their significance, which may be rated as either **Not Significant**, or of **Low**, **Moderate** or **High** significance. This also includes the development of mitigation and management measures and the re-evaluation of the impacts after measures are applied (residual impacts).

- **Outputs**: ESIA Report, Environmental and Social Management Plan (ESMP).
- **Mitigation, Management, and Monitoring**: commitments relating to proposed mitigation measures in order to avoid, reduce, or offset adverse impacts, and enhance beneficial measures, will be contained in the ESIA Report and associated ESMP.
- **Stakeholder Engagement**: to present the results of the impact assessment to stakeholders for feedback, including public hearings and written comments. Where needed, stakeholder feedback will be used to refine the impact assessment and mitigation measures.

Cumulative, Transboundary and Unplanned Impacts

In addition to the core assessment and management of the potential impacts of the Project, the ESIA Report also assesses cumulative and transboundary impacts, and impacts that could arise from unplanned events:

- **Cumulative impacts**: While an impact may be relatively small when considering the Project on its own, the impact may be magnified in combination with impacts from other existing and/or future developments; these combined effects are known as "cumulative" impacts. When assessing the overall acceptability of a project, it is important that potential

cumulative impacts are considered. The significance of cumulative impacts is evaluated qualitatively using the same method as the impact assessment.

- **Transboundary impacts**: some of the Project's impacts may not be confined by international borders and thus may affect countries other than the host country (in this case, other than Turkey). The assessment of potential transboundary impacts is evaluated qualitatively using the similar method as the impact assessment.
- **Unplanned events**: Impacts mays also arise as a result of unplanned events (i.e. activities or events that are not anticipated to occur in the normal course of operations of the Project, including accidents and malfunctions). These impacts are also assessed as part of the ESIA process, along with measures to manage risks and respond to unplanned incidents.

Scoping In/Out

An important part of the impact assessment is focussing the assessment on the issues that matter, where there is potential for a significant impact to occur. As such, many theoretical impacts are considered, but may not be explored in detail in the assessment as it becomes clear that in practice there is no real potential for the impact to occur. In these cases, the impact is rationally and transparently 'scoped out' of further assessment. This allows the assessment to clearly address the impacts of greatest interest, i.e. where impacts may more realistically occur.

5.2 Assessing Impact Significance

The impact assessment methodology takes into consideration an impact's nature (adverse or beneficial), type (direct, secondary or cumulative) and magnitude, and the sensitivity of the affected receptors, to yield a prediction of the impact's overall 'significance'. After the potential impacts have been identified and a preliminary assessment has been conducted, strategies to avoid or mitigate the impacts are then developed. This may also include measures to enhance or optimise potential benefits of the Project.

TERMS TO KNOW

Baseline conditions are the environmental or socio-economic characteristics that exist before the Project. Baseline conditions are studied and documented so that future changes can be measured against them.

Impacts are defined as a change to the existing environment, whether adverse or beneficial, wholly or partially arising from the Project.

Receptors are environmental components, people and cultural heritage assets that may be affected (adversely or beneficially) by an impact.

Impact significance is a measure of how important or consequential an impact is, based on its magnitude, and the sensitivity of the affected receptors.

Mitigation measures are strategic ways of avoiding, minimising, managing and/or offsetting adverse impacts, or enhancing benefits.

Design controls are measures intended to avoid or mitigate impacts, which have been integrated into the design of the Project. They are considered a part of the Project and not an "added" mitigation measure.

Residual impact is the impact that remains after mitigation measures have been applied.

Cumulative impacts result when the impacts from one project interact with those of another project or development.

Next, the significance of the impacts is then re-evaluated based on these mitigation measures. The resulting impact is known as the 'residual' impact, and represents the impact that will remain following the application of mitigation and management measures, and thus the ultimate level of impact associated with the Project. The basic process adopted for assessing potential Project impacts is illustrated in Figure 10.

Impact Magnitude

The magnitude of a given impact is a measure of the degree of change from the baseline conditions, and is determined through the consideration of the following factors:

- **Extent**: the spatial extent (e.g. the area impacted) or population extent (e.g. proportion of the population/community affected) of an impact;
- **Duration**: how long the impact will last (e.g. hours, weeks or months);
- **Frequency**: how often the impact will occur (e.g. a one-off event, periodic, or continuous); and
- **Reversibility**: the length of time for baseline conditions to return (e.g. reversible in the short-term or long-term, or irreversible).

The magnitude of an impact may be rated as negligible, low, moderate, or high. The criteria for each of these ratings is tailored for each study topic, and defined in the ESIA Report.

Receptor Sensitivity

Receptors may be people, ecological and physical components of the environment, or cultural sites. Receptor sensitivity considers how a particular receptor may be more or less susceptible to a given impact. More sensitive receptors may experience a greater degree of change, or have less ability to deal with the change, compared with less sensitive receptors that may be more resilient or adaptable. As with magnitude, the concept of receptor sensitivity is based on multiple characteristics, namely:

- **Vulnerability**: the degree to which a receptor is vulnerable to change (i.e. higher sensitivity) or resilient to change (i.e. lower sensitivity); and
- **Value**: the degree to which a receptor is valued or protected, with higher value receptors (based on ecological, cultural, social, economic, or other grounds) having a higher sensitivity.
- The sensitivity of a receptor may be rated as negligible, low, moderate or high. The criteria for each of these ratings is tailored for each study topic, and defined in the ESIA Report.

Impact Significance

Once the receptor sensitivity and impact magnitude have been rated, the overall significance of the impact is predicted. This is assisted by an impact assessment matrix (Table 2) and the impact significance definitions (Table 3) which ensure a consistent approach throughout the impact assessment. The significance matrix provides basic guidance for the determination of impact significance. However, the resulting significance level was also interpreted based on professional judgement and expertise, and adjusted if necessary.

Figure 10 Impact Identification and Assessment Process

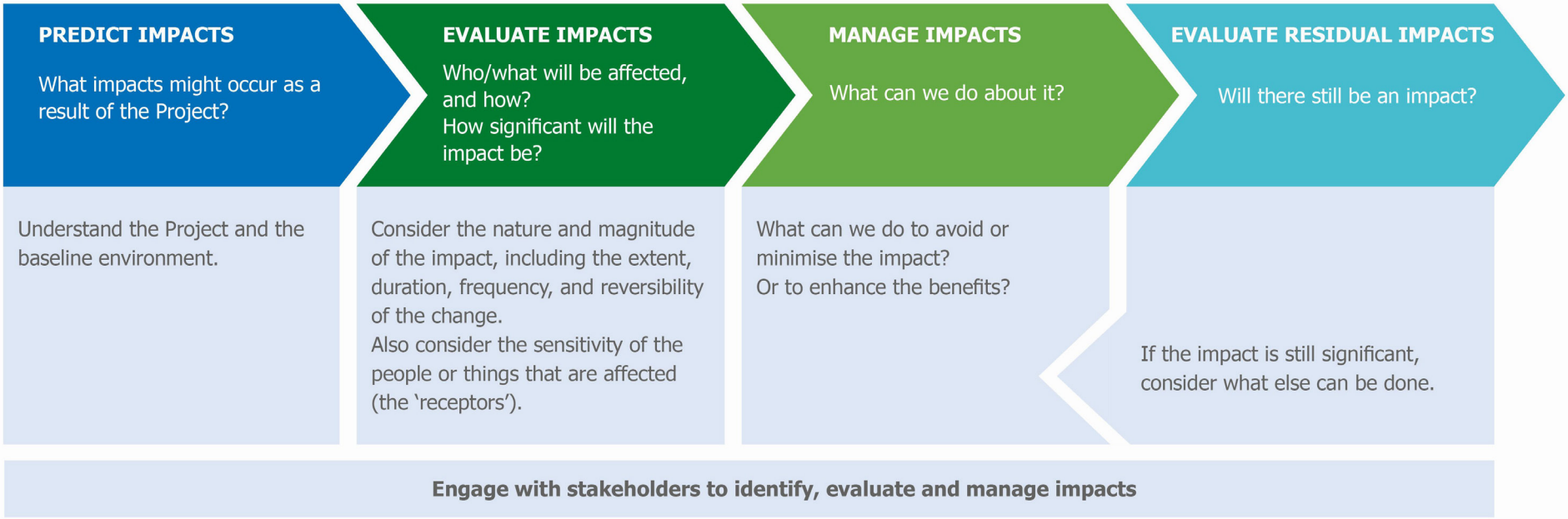


Table 2 Impact Significance Matrix

		Receptor Sensitivity (Vulnerability and Value)			
		Negligible	*Low*	*Moderate*	*High*
Impact Magnitude (Extent, Frequency, Reversibility, Duration)	*Negligible*	Not significant	Not significant	Not significant	Not significant / Low*
	Low	Not significant	Low	Low / Moderate†	Moderate
	Moderate	Not significant	Low / Moderate	Moderate	High
	High	Low	Moderate	High	High

* Allows technical discipline author to decide if impact significance is **Not significant** or **Low**
† Allows technical discipline author to decide if impact significance is **Low** or **Moderate**

Table 3 Impact Significance Definitions (Adverse Impacts)

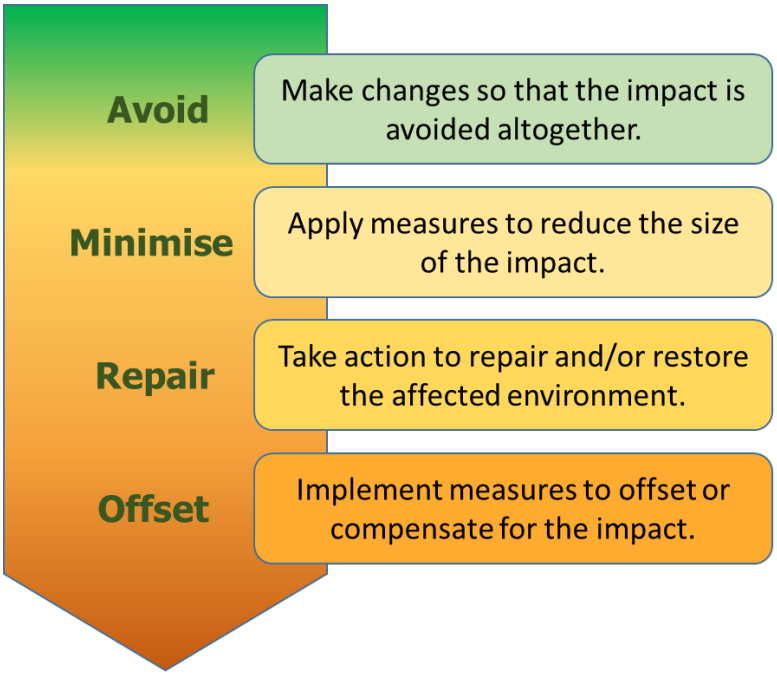
High significance	**Significant**. Impacts with a "**High**" significance are likely to disrupt the function and value of the resource/receptor, and may have broader systemic consequences (e.g. ecosystem or social well-being). These impacts are a priority for mitigation in order to avoid or reduce the significance of the impact.
Moderate significance	**Significant**. Impacts with a "**Moderate**" significance are likely to be noticeable and result in lasting changes to baseline conditions, which may cause hardship to or degradation of the resource or receptor, although the overall function and value of the resource or receptor is not disrupted. These impacts are a priority for mitigation in order to avoid or reduce the significance of the impact.
Low significance	**Detectable but not significant**. Impacts with a "**Low**" significance are expected to be noticeable changes to baseline conditions, beyond natural variation, but are not expected to cause hardship, degradation, or impair the function and value of the resource or receptor. However, these impacts warrant the attention of decision-makers, and should be avoided or mitigated where practicable.
Not significant	**Not Significant**. Any impacts are expected to be indistinguishable from the baseline or within the natural level of variation. These impacts do not require mitigation and are not a concern of the decision-making process.

The matrix and significance definitions have been used to assess adverse impacts of the Project. Significance ratings have not been determined for beneficial impacts; instead these are described in qualitative terms and, where applicable, measures to maximise benefits have also been described.

5.3 Mitigation and Management

Where an adverse impact is identified, efforts have been made to develop strategies to primarily avoid or minimise the impact. The selection of mitigation measures has considered a standard mitigation hierarchy (Figure 11) whereby preference is given to avoiding impacts altogether and subsequently to minimising the impact, repairing its effects, and/or offsetting the impact through actions in other areas.

Figure 11 Mitigation Hierarchy



When this document refers to "mitigation" it is referring to measures identified during the ESIA process that may be applicable to any of the steps in the mitigation hierarchy. Additionally, mitigation measures may also include strategies designed to enhance potential benefits. Measures incorporated into the Project design, known as 'design controls' are considered a part of the Project, not an "added" mitigation measure and are considered to be in place during the pre-mitigation impact assessment.

After suitable mitigation measures have been identified, the significance of each impact is re-evaluated to predict the post-mitigation ('residual') significance. It is this residual significance that is used to support decision making and conclusions about the Project.

The mitigation measures developed during the ESIA process feed into the Project's Environmental and Social Management System (ESMS) which includes an Environmental and Social Management Plan (ESMP). This captures all mitigation, safeguards and environmental and social commitments made within the ESIA Report and associated documentation. Further information on the ESMP can be found in Section 10 of this NTS.

6 Impact Assessment Summary

The following sections summarise the key impacts that have been identified and assessed in the ESIA Report for the Turkish Sector. This includes:

- A summary of the relevant baseline characteristics;
- The identification and assessment of potential impacts;
- The design controls and mitigation measures to avoid or address potential Project impacts; and
- The residual impacts and conclusions.

Project Phases

Impacts have been assessed for the Construction and Pre-commissioning Phase and the Operational Phase of the Project. However, construction activities are the focus of the assessment for all topics, as activities during pre-commissioning do not have the potential to affect the environment in the Turkish Sector, and there will be minimal activity during the Operational Phase.

Potential impacts arising from the Decommissioning Phase of the Project have not been assessed in detail in the ESIA Report as the planned Project lifetime is 50 years. Within this time period there may be changes to statutory decommissioning requirements, as well as advances in technology and knowledge so at this stage the full extent of the decommissioning requirements are not known.

The following sections are organised by topic, and focus on the more important or interesting results of the ESIA process.

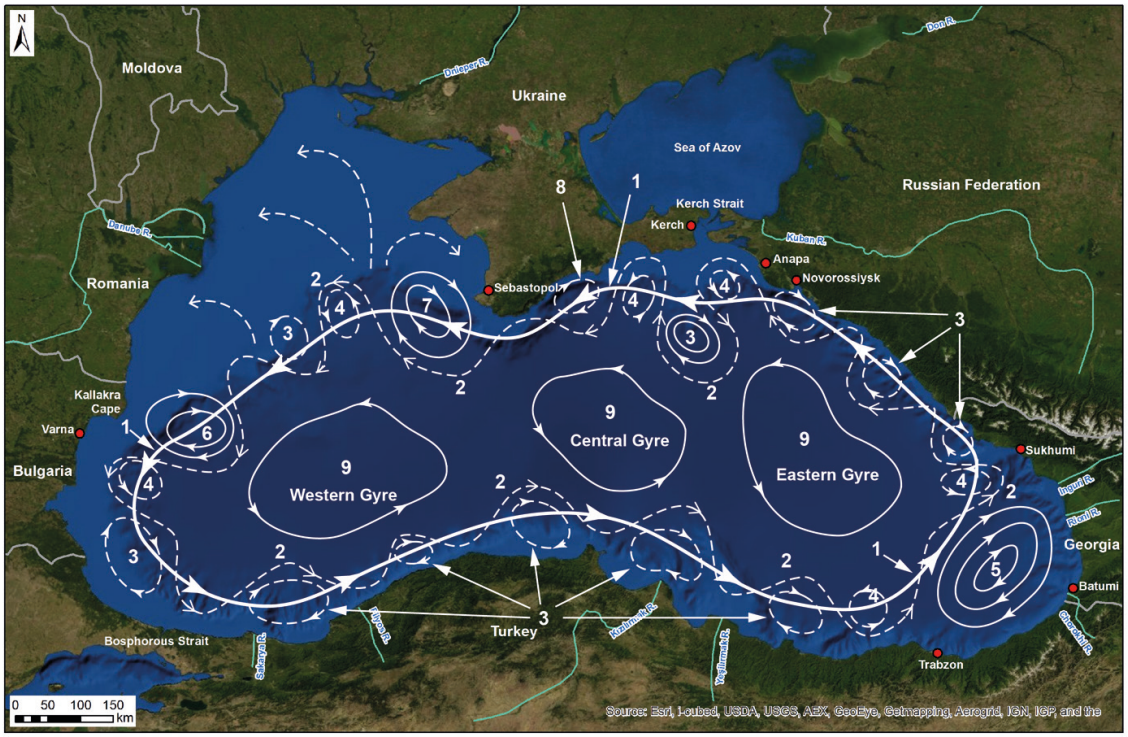
6.1 Physical Environment

The physical environment assessment covers potential impacts related to the non-living environment of the Black Sea, including oceanography (waves, currents, and water characteristics), geology, sediments and meteorological conditions such as air quality and climate.

Baseline

The Black Sea is a semi-enclosed sea connected to the Sea of Azov through the Kerch Straits, and to the Mediterranean Sea through the Turkish Straits. Within the Project Area, water depth varies between 2,000 and 2,200 m, the seabed is essentially flat and is part of the 'abyssal plain' of the Black Sea. The main current systems of the black Sea are shown in Figure 12.

Figure 12 Schematic Diagram of Currents in the Black Sea



Key:

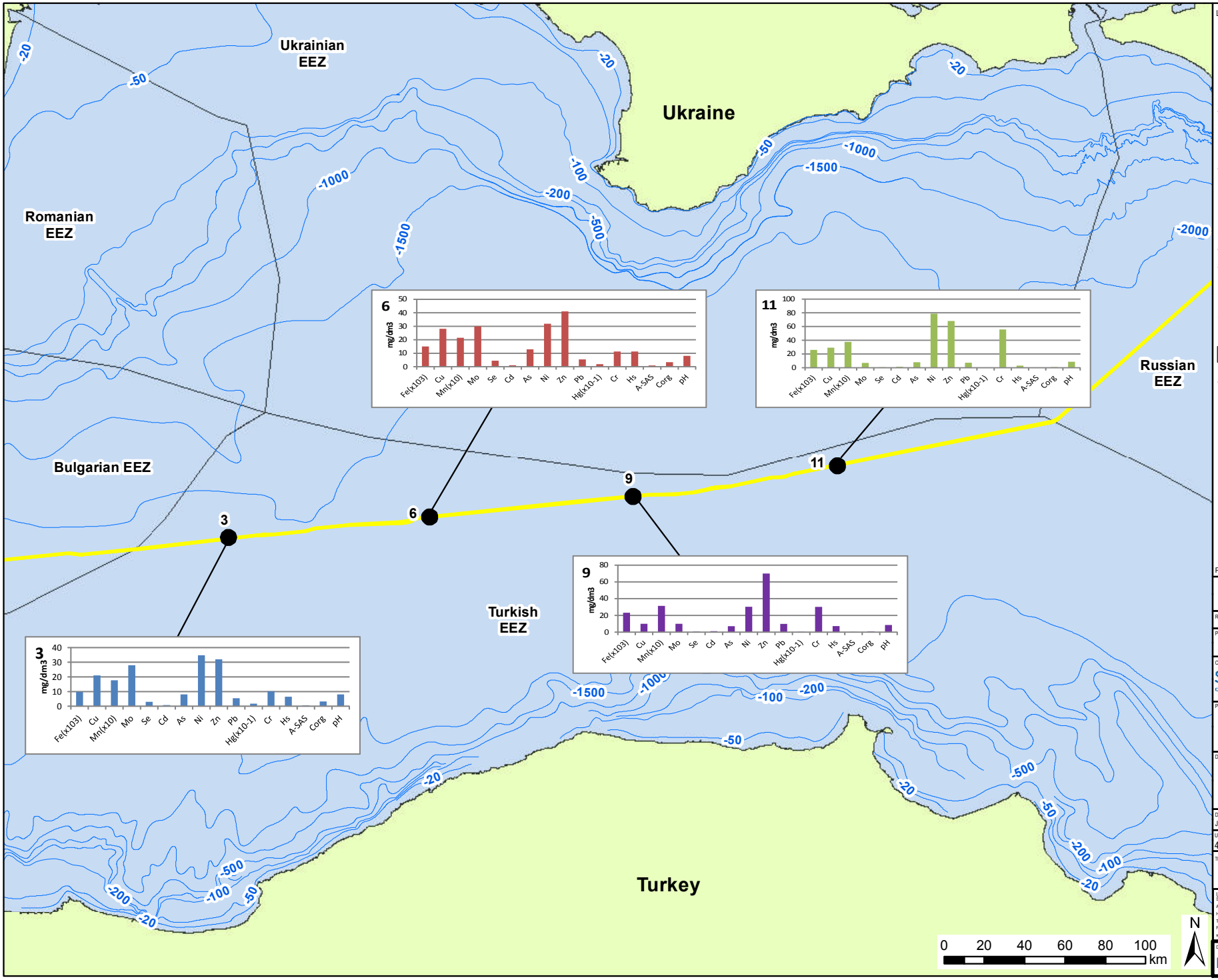
1: mean position of the cyclonic Rim Current jet current
2: Rim Current meanders
3: anticyclonic coastal eddies
4: cyclonic eddies
5: Batumi anticyclonic eddy
6: Kaliakra anticyclonic eddy
7: Sebastopol anticyclonic eddy
8: Crimea anticyclonic eddy
9: quasi-stationary cyclonic gyres

Source: Ref. 4

Seawater samples collected in 2011 (Figure 13) indicated the following:

- Turbidity levels (i.e. cloudiness caused by suspended solids) are relatively low throughout the water column;
- There are no detectable concentrations of inorganic pollutants or pesticides; and
- Seawater quality has likely been affected by human influences.

The marine surveys also indicated that seabed sediments are mostly clay and had considerable organic content.



LEGEND

1 Sampling stations and their numbers

Content of Iron (Fe), Copper (Cu), Manganese (Mn), Molybdenum (Mo), Selenium (Se), Cadmium (Cd), Arsenic (As), Nickel (Ni), Zinc (Zn), Lead (Pb), Mercury (Hg), Chrome (Cr), Petroleum Hydrocarbons (HC), Anion-Active Surface-Active Substances (A_SAS), Organic Carbon (Corg), mg/kg, pH value(bottom sediments)*

* values not shown at diagrams were under detection limit

Turkish Sector of South Stream Offshore Pipeline

Proposed offshore pipelines

Exclusive Economic Zones

Isobaths

Projection: Lambert Conformal Conic

Revision Details	By / Check	Check Date	Suffix

Purpose of Issue: For Information

Client: South Stream Offshore Pipeline — Energising Europe

Project Title: SOUTH STREAM OFFSHORE PIPELINE

Drawing Title: **SEDIMENT SURVEY CHEMICAL CONCENTRATIONS**

Drawn	Checked	Approved	Date
JM	CP	MW	05/06/2014

URS Internal Project No.: 46369082

Scale @ A4: 1:2,500,000

URS Infrastructure & Environment UK Limited
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 310201
www.ursglobal.com

Drawing Number: **Figure 13**

Rev:

Plot Date: 05 Jun 2014
File Name:I:\SD\4 - Information Systems\46369082_South_Stream\MXDs\Report Maps - Turkey\Non Technical Summary\Figure 13 Sediment Survey Chemical Concentrations.mxd

Potential Impacts

The potential that the Project will impact the physical environment is low and all potential impacts were scoped out of the assessment. The assessment identified three potential impacts that could arise from the construction activities:

- *Air quality*: the assessment considered the potential that exhaust emissions (e.g. from vessels) could lead to a deterioration of air quality. However, as the Project activities will occur at least 110 km from the nearest human receptors (i.e. onshore in Turkey), this potential impact was scoped out and not considered further;
- *Water quality*: the assessment considered the potential that waste or wastewater discharges from vessels could deteriorate seawater quality. However, any impacts on water quality would be extremely localised to the sea surface, and to the immediate vicinity of the vessel spread, and changes would be short-lived. As such, potential impacts on water quality were also scoped out and not considered further; and
- *Sediment quality*: in theory, the quality or structure of sediments may be affected as the pipeline is laid on the seabed. However, the 'clayey' nature of the sediments will inherently limit the amount of sediments which are stirred up. Therefore, there is limited potential for impacts related to sediments, and these impacts were also scoped out.

Given the limited scope of activities, no potential impacts on the physical environment are expected during the Operational Phase.

Mitigation and Management

Although no significant impacts on the physical environment are expected, the following design controls and management measures will be implemented as a matter of good international industry practice:

- All vessel discharges and wastes will be compliant with the international and national regulations, e.g. the International Convention on the Prevention of Pollution from Ships (MARPOL);
- An integrated Waste Management Plan will be developed by contractors;
- Fuels, engines and equipment used will be compliant with the international and national regulations;
- Engines and equipment will be regularly maintained to ensure they function properly and to minimise emissions; and
- An inventory of greenhouse gases emissions based on actual fuel usage will be maintained during construction activities.

Conclusions

As Project Activities have very little potential for impact on the physical environment, these were scoped out of further assessment prior to the impact assessment stage. No additional mitigation measures are required in addition to the design controls stated above and no residual impact is expected.

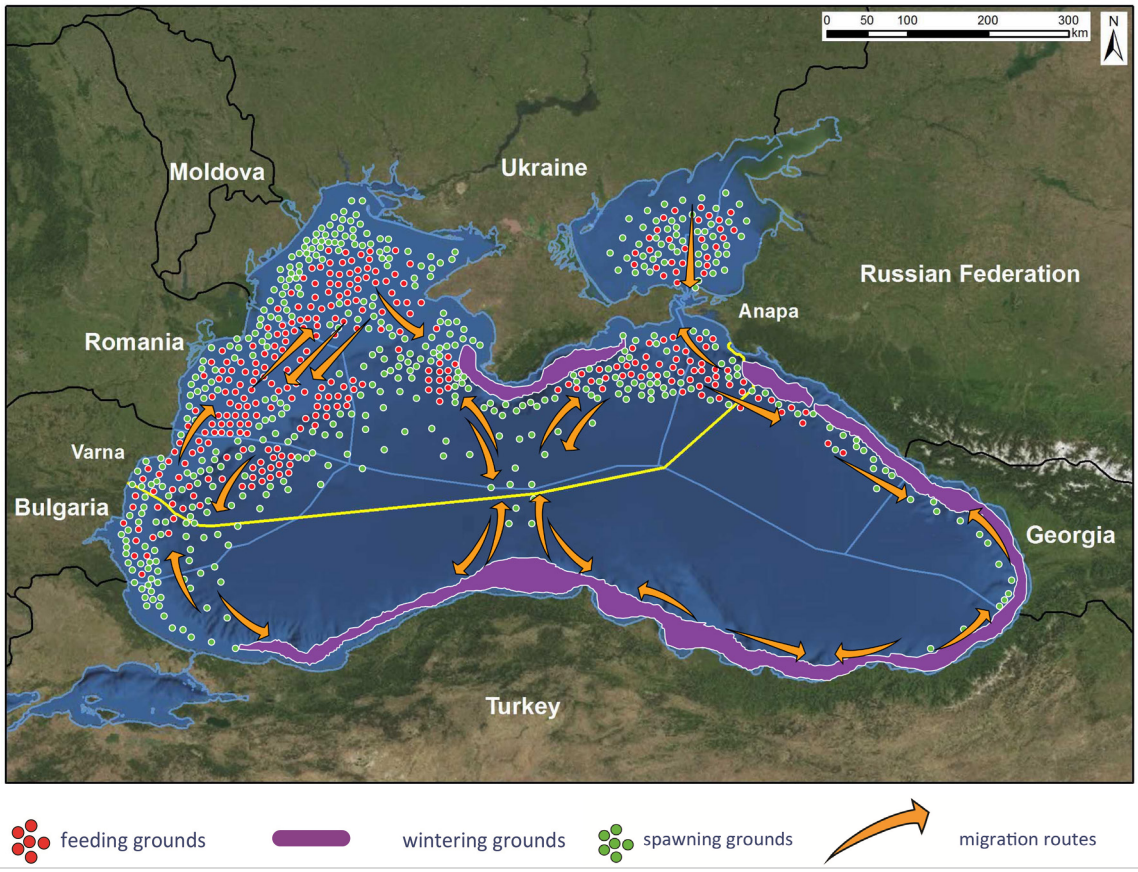
6.2 Biological Environment

The marine ecology assessment addressed potential impacts on both marine life (including fish, mammals and birds) and marine habitats.

Baseline

The bottom of the Black Sea, at more than 2,000 m depth, is unable to support animal life due to a lack of oxygen and high concentrations of hydrogen sulphide (H_2S). Microbial reefs are known to occur in deep waters but have not been observed in the Project Area. A Fishing Study was conducted in 2013, examining Black Sea fisheries and potential impacts from the Project. Anchovy (*Engraulis encrasicolus*) are the only fish known to migrate across the Project Area. Anchovy display two seasonal migrations (Figure 14); a southward migration in October and November from spawning areas in the north coasts of the Black Sea to wintering grounds along the Turkish Black Sea coast and a reverse migration in the spring.

Figure 14 Migratory Routes, Spawning Grounds and Feeding Grounds of Anchovy in the Black Sea



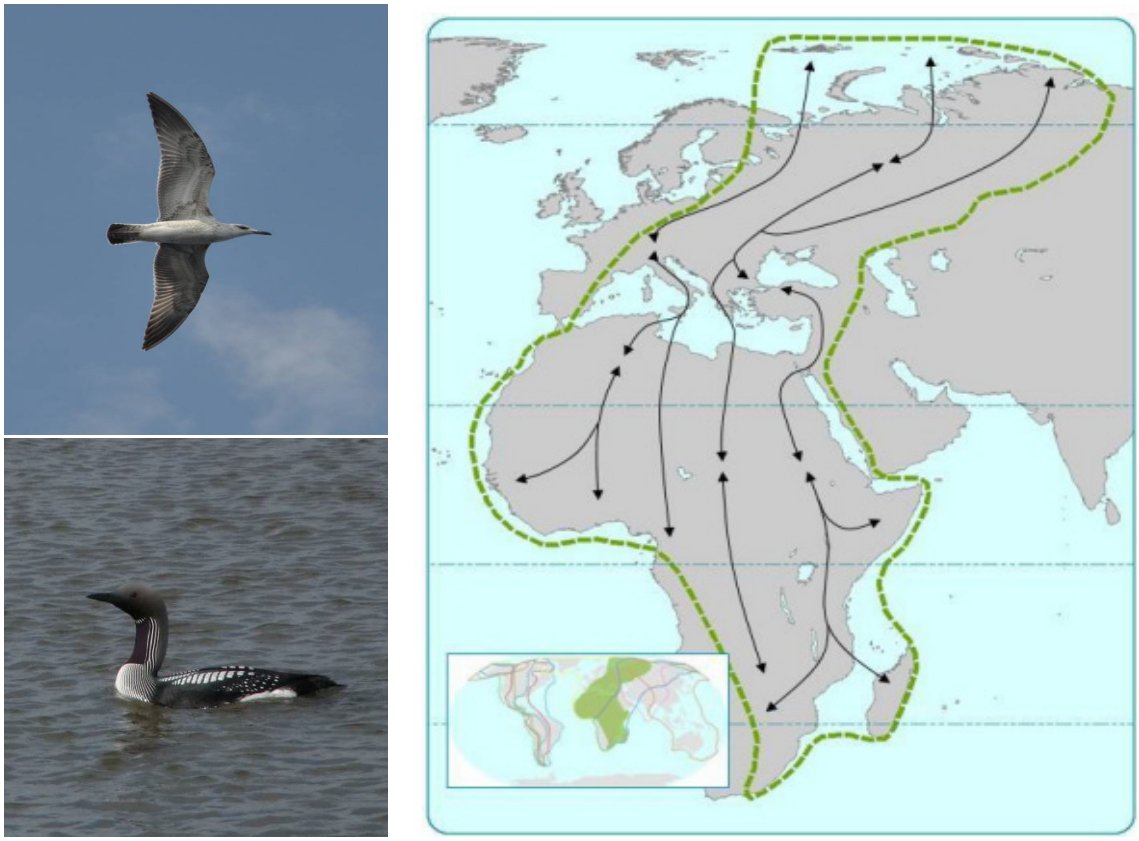
Source: Ref. 5

With respect to bird species, the Black Sea is part of the Mediterranean/Black Sea Flyway migration route (Figure 15), one of the largest migrations routes in the world, encompassing

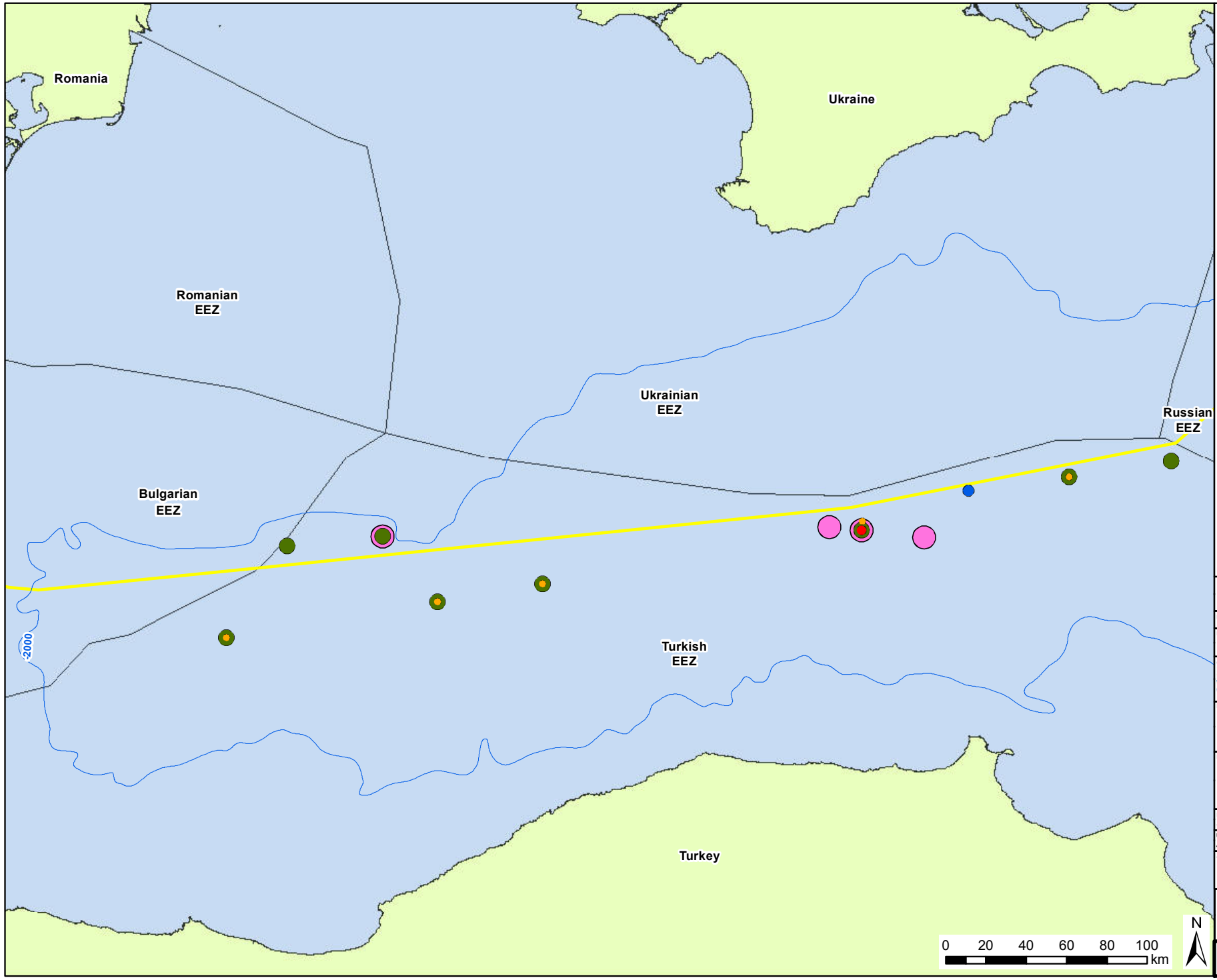
much of Europe and Africa. In surveys undertaken in 2011, most of the birds observed were, as expected, seabirds. The most common species were the little gull (*Larus minutus*), the Caspian gull (*Larus cacchinans*) and the Mediterranean shearwater (*Puffinus yelkouan*). Two species of falcon (*Falco peregrinus* and *F. cherrug*) were also recorded in the surveys, most likely on their migrations, albeit in low numbers.

Marine mammals surveys were also conducted in 2009 and 2011, and two species of marine mammal, the Black Sea bottlenose dolphin (*Tursiops truncatus ponticus*) and Black Sea common dolphin (*Delphinus delphis ponticus*), were observed. However, the total number of observations of both species was very low (Ref. 6); this is likely due to the distance from shore, the low availability of prey and the fact the Central Black Sea is not known to be a significant breeding or feeding area.

Figure 15 Photos of Lesser Black-backed Gull (*Larus fuscus*) and Black Throated Loon (*Gavia arctica*) observed during marine surveys (Left) and the Mediterranean/Black Sea Flyway (Right)



A number of species of conservational concern were recorded during surveys in 2009 and 2011 in the Survey Area (Figure 16). These species have been identified through their inclusion in the *Red Data Book of the Black Sea* (RDBBS) and the *Red List* of the International Union for Conservation of Nature (IUCN), where their conservation status is rated as "vulnerable" or above.



LEGEND

Protected Species

- *Puffinus yelkouan*
- *Falco peregrinus*
- *Falco cherrug*
- *Tursicops truncatus*
- *Delphinus delphis*

Turkish Sector of the South Stream Pipeline

- Proposed offshore pipelines
- Exclusive Economic Zones
- Isobaths

Projection: Lambert Conformal Conic

Revision Details	By / Check	Check Date	Suffix

Purpose of Issue: For Information

Client: South Stream Offshore Pipeline — Energising Europe

Project Title: SOUTH STREAM OFFSHORE PIPELINE

Drawing Title: **SPECIES OF CONSERVATIONAL CONCERN**

Drawn	Checked	Approved	Date
JM	CP	MW	06/12/2013

URS Internal Project No.	Scale @ A4
46369082	1:2,500,000

URS Infrastructure & Environment UK Limited
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (01256) 310200
Fax (01256) 312001
www.ursglobal.com

Drawing Number: **Figure 16**

Rev:

Plot Date: 05 Jun 2014
File Name:I:\SOU4 - Information Systems\46369982_South_Stream\MXDs\Report Maps - Turkey\Non Technical Summary\Figure 16 Species of Conservational Concern.mxd

These species include:

- Black Sea bottlenose dolphin (*Tursiops truncatus ponticus*);
- Black Sea common dolphin (*Delphinus delphis ponticus*);
- Mediterranean shearwater (*Puffinus yelkouan*);
- Peregrine falcon (*Falco peregrinus*); and
- Saker falcon (*Falco cherrug*).

As the cetaceans observed in the Project Area are classed as separate Black Sea sub-species (bottlenose and common dolphin), the area qualifies as critical habitat for endemic or range-restricted species under the international Finance Corporation (IFC) Performance Standards 6 determination. The area also qualifies under the migratory species criteria due to the potential presence of migratory species, such as anchovy and the Mediterranean shearwater.

Potential Impacts

Potential impacts on the biological environment were assessed. As previously noted, construction is where the majority of impacts are predicted to arise. During the Operational Phase, activities will be limited to periodic use of vessels during inspection surveys.

The key potential receptors which could be impacted by construction activities are fish, mammals and birds, in particular, the generation of underwater noise and vibration, discharges from vessels, and the attraction of species to vessel lighting were considered the most important potential impacts. The potential interaction with fish, and their migration patterns, was identified as a primary concern for stakeholders.

In theory, noise from vessels could cause changes in mammal or fish behaviour, or in extreme cases, can cause physical injury and harm. Underwater noise modelling conducted for the Project indicated that sound levels generated by pipe-laying are insufficient to cause mortality or physical injury to fish or mammals. For behavioural reactions, the maximum impact range modelled was 0.5 km. In practice this only covers a small area (0.5 km radius) in the vicinity of the pipe-lay vessel, and fish and mammals are highly mobile and able to avoid areas of disturbance thus limiting the potential for impacts.

Vessel waste discharges will be undertaken in line with MARPOL and other relevant regulations. Potential impacts associated will be limited to the immediate vicinity of the vessels. No significant impacts are anticipated on any marine species from discharges.

Organisms may also be attracted to vessel lights, which could lead to collisions between vessels and animals. This is particularly a concern for birds. The potential for collisions between cetaceans and vessels is low.

Mitigation and Management

A number of design controls and mitigation measures will be adopted during construction and operation to minimise potential impacts on the biological environment. In all cases, there will be adherence to the relevant national and international environmental standards.

The majority of impacts are related to emissions of light, noise and vibration. Noise and vibrations will be controlled by reducing vessel speed when flocks of seabirds are present on the water surface and/or marine mammals are observed. In addition, there will be procedures for activities in the presence of marine mammals and birds and trained Marine Mammal Observers (MMO) will be present during pipe-laying operations to assist in managing such interactions. To minimise the impacts of construction lighting, appropriate lighting will be used during night-time works.

Ecological monitoring will be undertaken to verify that the mitigation measures are successful, and to ensure that there are no lasting impacts. The scope of the monitoring will be finalised in the overarching Environmental and Social Monitoring Programme which is being developed for the South Stream Offshore Pipeline as a whole and contains all necessary monitoring requirements.

As the Central Black Sea, including the Project Area is considered critical habitat, additional biodiversity monitoring/research is required in order to achieve net biodiversity gains. Net biodiversity gains will be obtained by identifying additional opportunities to protect and conserve biodiversity and must be appropriately designed to enhance scientific knowledge and thereby improve conservation measures for those species of conservation concern. The scope of such programmes will be developed in consultation with relevant parties to ensure the maximum benefit is delivered and will be described in a Biodiversity Action Plan (BAP) which will be part of the Project ESMP.

Residual Impacts and Conclusions

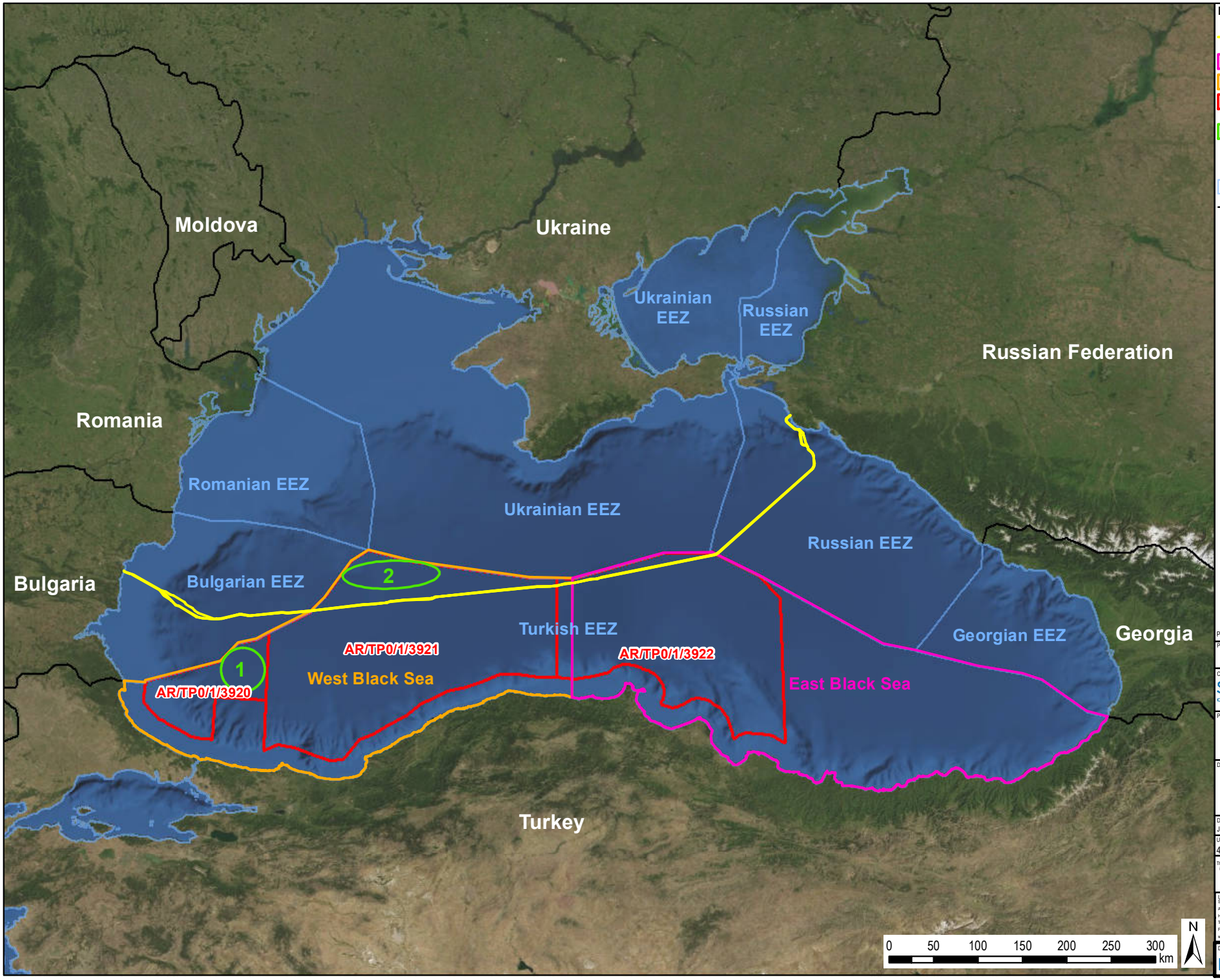
Through the adoption of design controls and the implementation of mitigation measures, all residual impacts on biological receptors, from construction or operation, have been assessed as **Low** significance or **Not Significant** and are generally short-term and limited within the vicinity of the Project Area. The Project has committed to a programme of ecological monitoring and focused research that will include the species for which the Black Sea is considered a critical habitat. The implementation of monitoring and research programmes represents a biodiversity benefit, by strengthening the scientific basis on which conservation programmes may be based.

6.3 Socio-Economics

The socio-economic assessment considered the potential for impacts on people, communities, and livelihoods (including fisheries) associated with the Project.

Baseline

As the Project is located more than 110 km from the shore, the socio-economic assessment focused on how Turkish people and communities use the Black Sea marine area. The primary activities in this area are commercial shipping, oil and gas exploration and fishing.In terms oil and gas exploration in Turkey, the responsible agency is the Turkish Petroleum Corporation (TPAO). TPAO has confirmed that there are two possible projects which may coincide with construction activities in the northwest of License Area 3921 and in License Area 3920 (Figure 17).



LEGEND

- South Stream Offshore Pipeline Project
- East Black Sea
- West Black Sea
- TPAO license areas
- Areas for proposed TPAO activities
  1. Şile prospect
  2. Tuna prospect
- Exclusive Economic Zones
- Country Boundaries

Projection: Lambert Conformal Conic

Purpose of Issue: For Information

Client: South Stream Offshore Pipeline — Energising Europe

Project Title: SOUTH STREAM OFFSHORE PIPELINE

Drawing Title: OIL AND GAS LICENSE AREAS

Drawn	Checked	Approved	Date
JM	VS	MW	05/06/2014

URS Internal Project No.: 46369082

Scale @ A4: 1:5,500,000

URS Infrastructure & Environment UK Limited
Scott House
Alencon Link, Basingstoke
Hampshire, RG21 7PP
Telephone (0 1256) 310200
Fax (0 1256) 310201
www.ursglobal.com

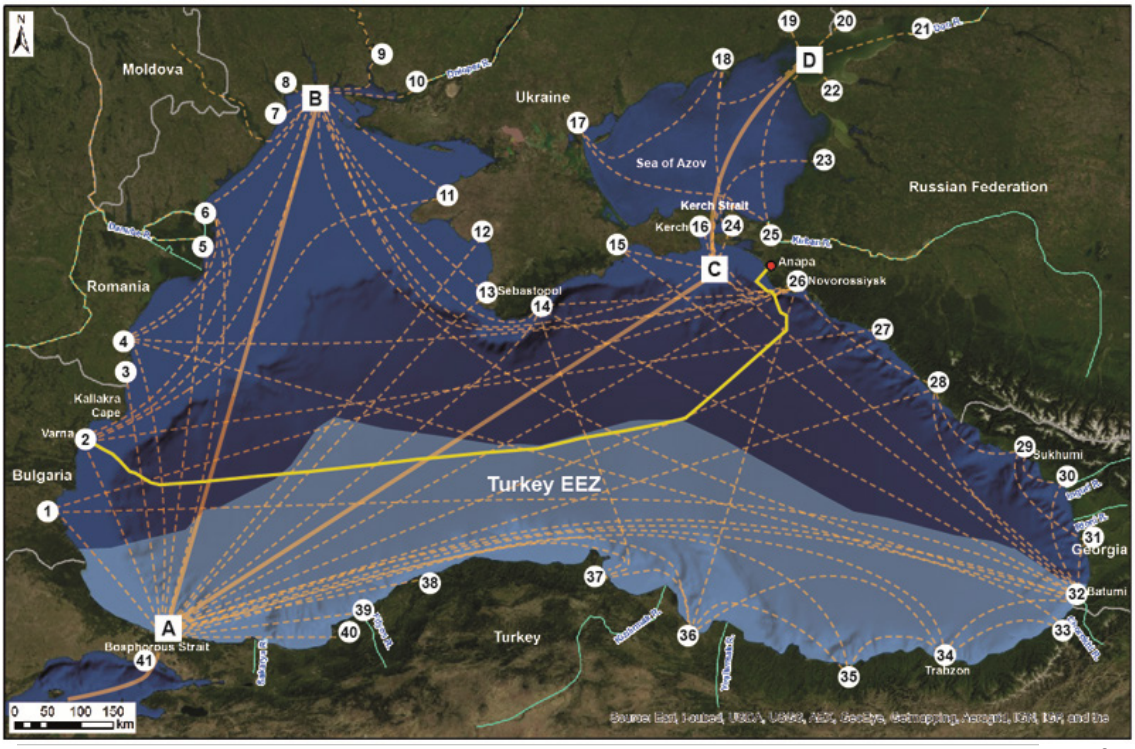
Drawing Number: Figure 17

Rev:

Plot Date: 05 Jun 2014
File Name: I:\50\04 - Information Systems\46369082_South_Stream\MXDs\Report Maps - Turkey\Non Technical Summary\Figure 17 Oil and Gas License Areas .mxd

Within Turkey, commercial shipping routes connect the ports of Istanbul, Samsun and Trabzon. There are also numerous international shipping routes that cross the Turkish EEZ between neighbouring Black Sea countries (Figure 18).

Figure 18 Shipping and Navigation Routes in the Black Sea



Ref. 7

Key:

Pipeline

A: Bosporus shipping junction (Istanbul)
B: North western harbour agglomeration (Odessa)
C: Kerch Strait shipping junction
D: North eastern harbour agglomeration

1: Burgas	**12:** Evpatoria	**23:** Primorsko-Akhtarsk	**34:** Trabzon
2: Varna	**13:** Sevastopol	**24:** Port Kavkaz	**35:** Giresun
3: Mangala	**14:** Yalta	**25:** Temryuk	**36:** Samsun
4: Constantza	**15:** Feodosia	**26:** Novorossiysk	**37:** Sinop
5: Sulina	**16:** Kerch	**27:** Tuapse	**38:** Amasra (Bartin)
6: Ust'-dunayski	**17:** Genichesk	**28:** Sochi	**39:** Zonguldak
7: Illichivsk	**18:** Berdyansk	**29:** Sukhumi	**40:** Eregli
8: Odessa	**19:** Mariupol	**30:** Ochamchire	**41:** Istanbul
9: Nikolayev	**20:** Taganrog	**31:** Poti	
10: Kherson	**21:** Rostov-na-Donu	**32:** Batumi	
11: Chemomorskoye	**22:** Yeysk	**33:** Hopa	

In terms of production, Turkey is the biggest fishing nation in the Black Sea, accounting for up to approximately 90% of all catch (by volume and by value). In comparison to other Turkish fishing areas, the Eastern Black Sea is the most productive in terms of fisheries.

Fishing targets commercial species such as anchovy, sprat (*Sprattus sprattus*), Atlantic bonito (*Sarda sarda*) and mackerel (*Trachurus mediterraneus ponticus*). Anchovy is the most important

fishery in terms of catch volume and value, and is also the only species that migrates across the Project Area (as described in Section 6.2 of this NTS).

Since 2013, South Stream Transport has engaged with the Turkish fishing industry, including fishing cooperatives in Trabzon (a major Turkish fishing port). A comprehensive fishing study was also conducted, examining both the ecological and socio-economic perspectives of potential Project impacts on fisheries.

These activities have indicated that most fishing efforts are concentrated in waters relatively close to the Turkish coast, approximately 100 km south of the Project Area. Fishing activities in deeper parts of the sea (including the Project's location in water depths of more than 2,000 m) are not common. Fisheries stakeholders were mainly concerned about whether the Project could affect the health or migration routes of commercial fish species (particularly anchovy).

The ESIA process has sought to identify any potentially vulnerable or disadvantaged individuals and groups in Turkish Black Sea coastal communities. Vulnerable groups are those who may be differently or disproportionately affected by the Project. Small-scale and artisanal fishers are the only potentially vulnerable group that has been identified with respect to the Turkish Sector, accounting for approximately 86% of Turkish fishing vessels. This group may be differentially affected by the Project as they are likely to have fewer financial resources, which in turn could make them vulnerable to economic fluctuations if their fishing activities or harvests were to be adversely affected.

Potential Impacts

Potential impacts on commercial shipping were scoped out of the assessment (and not considered further) due the fact that construction activities will be temporary and continually moving, and standard maritime navigation practices will be in place, so that commercial ships can avoid the area of construction.

The socio-economic assessment considered the potential for impacts of the Project on:

- Turkish fisheries and fishermen, including interactions between fishing vessels and construction vessels, and impacts on potentially vulnerable artisanal and small-scale fishermen; and
- Offshore oil and gas exploration.

No potential impact on fishing or fisheries from construction activities is anticipated due to the fact that the Turkish fishing fleet concentrates their fishing efforts in shallower waters, relatively close to the Turkish coast. Also, as anchovy migration patterns are unlikely to be affected by construction activities (Section 6.2 of this NTS), no secondary impact on the associated fisheries or fishermen, including potentially vulnerable artisanal and small-scale fishers, is anticipated.

It is possible that future oil and gas exploration or development could be constrained due to the presence of the pipelines. South Stream Transport has liaised with the TPAO regarding the width of the Pipeline corridor and, in response to TPAO's concerns, undertaken re-routing of the pipelines to narrow the width of the pipeline corridor to 420 m. Due to this narrowing in relation to the broad expanse of the seabed, the presence of the Project will not affect the feasibility of these activities should they occur in the vicinity of the Project.

In the event that oil and gas activities are proposed in the vicinity of the Project, South Stream Transport will engage with TPAO, per standard permitting processes, with regard to safety arrangements and proximity agreements.

However, based on the proposed Project Activities, no significant potential impacts were identified for fishing or oil and gas exploration.

Mitigation and Management

The socio-economic assessment concluded that there will be no socio-economic impacts associated with the Project Activities. This is in line with the conclusions of the fisheries study, as well as the assessment of impacts on the biological environment described in Section 6.2 of this NTS.

However, in accordance with good international industry practice, South Stream Transport is committed to maintaining an open and informed relationship with all stakeholders. This will include ongoing stakeholder engagement throughout construction of the Project to inform and update stakeholders (including fishing cooperatives) about the progress of the construction programme. Stakeholders will also be able to contact South Stream Transport at any time with concerns, questions or comments, and a formal Grievance Procedure will be in place to ensure that complaints are appropriately identified and resolved.

Residual Impacts and Conclusions

Potential impacts have been considered in relation to fishing and offshore oil and gas, and no significant socio-economic impacts are expected. Nevertheless, management measures will be put in place to continue to engage stakeholders about the Project and to address any concerns or complaints should they arise.

6.4 Cultural Heritage

The assessment on cultural heritage considered how the Project might affect cultural heritage objects (CHOs)—namely, shipwrecks on the bottom of the Black Sea—within the Project Area.

Baseline

The baseline studies included a review of published information, complemented by surveys undertaken in 2011 and 2012 (Ref. 6). These studies sought to identify CHOs in the Project Area, such as sunken shipwrecks and other artefacts. Surveys included scans of the seabed to identify anomalies that could indicate the presence of a CHO, and visual investigations using Remotely Operated Vehicles (ROVs).

The baseline surveys identified two wooden shipwrecks within 150 m of the initially proposed pipeline route. These two objects date from the 18th or 19th century. Re-routing was undertaken in February 2014 to avoid these two shipwrecks by at least 150 m.

The cultural heritage assessment also considered the potential for other types of archaeology and cultural heritage receptors to be impacted in the Project Area. However, due to the distance

from the Turkish coastline (more than 110 km) and depth of the water (more than 2,000 m) no other CHOs have been identified.

Potential Impacts

The assessment considered potential impacts related to the disturbance of or damage to CHOs as a result of pipe-laying during construction, as well as the potential for underwater surveys (during construction, as well as monitoring surveys during operations) where ROVs could collide with or cause damage to CHOs.

As the two presently known CHO have been avoided by a distance of no less than 150 m (by micro re-routing of the pipeline in February 2014); they were scoped out of further assessment.

The assessment evaluated potential impacts on the CHOs that may be present but are not yet identified. Further surveys will be conducted prior to construction which may identify new CHOs in close proximity of any of the four pipelines. However, a review of already-collected marine data suggests that chance finds of new CHOs are highly unlikely to occur during Project construction and operation activities.

A key design control has been the readjustment of the Pipeline route to avoid the two identified shipwrecks by at least 150 m; therefore potential disturbances from construction activities would be avoided. This goes beyond the requirement of the Turkish Ministry of Culture and Tourism, whereby the shipwrecks must be avoided by at least 100 m. However, there is the potential for Project Activities to impact currently unidentified CHOs in the Project Area.

Mitigation and Management

Management Plans will be developed and implemented to support the protection of known and unknown CHOs, during construction and operation. There will be real-time monitoring of the pipe-laying process by a qualified archaeologist, which will provide a formal program for observing and recording potential CHOs. A Chance Find Procedure will also provide a clear set of actions and responsibilities in the event that currently unknown CHOs are discovered. Cultural heritage awareness training will also be given to construction workers.

Remotely Operated Vehicles (ROVs) use will be managed during construction and operational maintenance and inspection surveys, to avoid impacts on CHOs. Measures will include the careful piloting of these vehicles.

Residual Impacts and Conclusions

South Stream Transport has committed to avoiding known CHOs by at least 150 m. As such, the initial Pipeline route has been adjusted to avoid the two known shipwrecks in the Project Area. Potential impacts on known CHOs are therefore avoided. Nevertheless, mitigation and management measures will be developed to protect known and as yet unidentified CHOs. Should any currently unknown CHOs be identified, with the application of these mitigation and management measures, residual impacts on these receptors are anticipated to be of **Low** significance during construction and **Not Significant** during operations.

6.5 Ecosystem Services

The ecosystem services assessment looked at the ways in which people benefit from natural ecosystems, and how these benefits could be affected by the Project.

Consideration was given to a range of ecosystems that could potentially be affected by Project activities. The majority of these were 'scoped out' for further consideration either because there was no potential for the Project to impact them (e.g. crops, livestock and fodder, and timber), or the impacts were considered to be insignificant (e.g. fisheries).

Baseline

One ecosystem service, *Wild Species Diversity*, was identified as being potentially significantly impacted by Project activities. *Wild Species Diversity* relates to the value that people place on having a diverse array of wild species, as well as the contribution of these species diversity to the health of an ecosystem. The values people place on these species may extend locally, regionally, nationally, or even globally. For example, species identified as being vulnerable, endangered, or critically endangered, may be of particular importance to the regional or global conservation community.

The Project is located within a marine ecosystem that provides habitats for a number of species, including several threatened species of regional or international importance (refer to Section 6.2 of this NTS).

These species are important to conservation communities and any people who gain satisfaction from knowing that certain species or the habitats that support them exist. Further, marine mammal species such as dolphins are charismatic and valued by people across the Black Sea countries (for example, dolphinariums are popular in both Russia and Bulgaria).

Potential Impacts

The Project activities and potential impacts which may affect *Wild Species Diversity* are the same as those listed in Section 6.2 of this NTS. Owing to the protected status of several bird, fish and marine mammal species, these species are likely to be important to conservation communities and people who value such species. Impacts on these species could therefore impact these groups.

However, whilst construction activities may have some transitory impact on the distribution of these species' populations in the Project area, there are unlikely to be any significant changes in the size or health of populations of these species, as discussed in further detail in Section 6.2 of this NTS. As such, it is unlikely that the Project would detrimentally affect the value placed on this ecosystem service. No potential significant impacts are likely during the Operational Phase.

Mitigation and Management

As *Wild Species Diversity* is not likely to be significantly impacted during the Project, no additional mitigation measures are required beyond that set out for the biological environment (Section 6.2 of this NTS).

Residual Impacts and Conclusions

The design controls and mitigation measures in place discussed under Section 6.2 of this NTS mean that there is unlikely to be a significant residual impact on the *Wild Species Diversity* ecosystem service and, therefore it is unlikely that there will be a significant residual impact on the benefits that conservation communities and other people derive from this service.

The assessment identified one ecosystem service in which the Project is likely to have beneficial impacts; *Scientific and Knowledge Values* in relation to the potentially significant scientific contribution that marine surveys undertaken for the Project have contributed towards the understanding of the Black Sea abyssal plain which is considered beneficial to the scientific community.

6.6 Waste Management

The waste assessment considered the types and quantities of waste products that will be generated by the Project, and how these wastes would be managed and disposed of. Consideration is also given to onshore disposal options, though it should be noted that no wastes will be disposed of at Turkish facilities.

Potential Impacts

Impacts can potentially arise throughout the waste management chain and therefore the generation, storage, collection, transport, treatment and disposal of waste were considered.The waste management assessment has estimated the quantities of wastes that will be generated by the Project. Disposal methods, including suitable facilities for the receipt of waste, were identified and their suitability to accepting the waste was assessed.

Mitigation and Management

All waste generated by construction activities and workers on the construction vessels will be managed in accordance with national and international regulations. All vessel discharges will be compliant with the MARPOL convention, which addresses marine pollution from ships.

The Project will not use any waste disposal or storage facilities in Turkey. All waste transferred to shore will be disposed through existing waste management facilities with sufficient capacity in Russia and/or Bulgaria. Impacts related to the storage and transport of hazardous wastes (including the risk of accidental release) will be minimised by preparing and implementing comprehensive management plans which will cover all relevant waste management aspects.

Residual Impacts and Conclusions

The overall quantities of waste requiring management are within the capacity of the receiving facilities, and there is no concern regarding the availability of appropriate waste disposal facilities.

With the implementation of all the identified mitigation measures and management plans, the overall waste management impacts from the Project are not expected to be significant.

7 Unplanned Events

Unplanned events are events, such as accidents, that are not expected to occur during the Project's normal activities. Some unplanned events have the potential to result in a number of adverse impacts, varying in nature and magnitude depending on the type of event. The potential environmental and socio-economic impacts resulting from a range of unplanned events has been assessed. Unplanned events that have been subject to investigation include:

- Risk of vessel collisions and the resulting fuel and/or oil spillages;
- Introduction of invasive species (i.e. non-native species which could outcompete local species) by marine vessels; and
- Damage to the Pipeline resulting in the release of natural gas.

The Project follows safety and engineering design criteria that aim to avoid unplanned events that could lead to adverse environmental, social or health impacts. The ESIA Report is supported by a maritime risk assessment and oil spill modelling.

Although the likelihood of collisions occurring during construction is very low, fuel and/or oil spillages resulting from these could have adverse effects, particularly on marine species. In response to the potential risks, the Project will adopt appropriate operational procedures to further reduce the likelihood of a marine oil spill, such as coordination with relevant maritime authorities and notifications of the location of the pipe-lay vessel and dimensions of the navigational Safety Exclusion Zone. In addition, the Project will develop and implement Oil Spill Prevention and Response Plans to minimise the potential for adverse impacts on marine species and habitats.

The unplanned events assessment drew upon information in the biological and socio-economic impact assessments of the ESIA Report. Marine species could potentially be impacted either on the sea surface or in coastal areas, as a spill could travel up to 100 km from the Project Area.

The development and implementation of appropriate plans, such as an Emergency Preparedness and Response Plan, a Shipboard Oil Pollution Emergency Plans (SOPEP) and a Shipboard Marine Pollution Emergency Plans (SMPEP), will help to minimise the likelihood of an oil spill occurring, and develop response measures and reduce the potential adverse impacts to the marine environment. Potential impacts would also be reduced by the use, where practicable, of fuels considered non-persistent (Marine Gas Oil (MGO) and Marine Diesel Oil (MDO)) by Project vessels. From a socio-economic perspective, indirect impacts on fisheries and fishermen resulting from unplanned events have been evaluated; however, the likelihood of such events occurring is extremely remote and the mitigation and management measures in place to respond to such incidents further reduce any potential for adverse impacts.

The introduction of invasive species, although a rare event, could potentially have adverse environmental and socio-economic consequences. The Project has adopted a number of measures to reduce the likelihood of invasive species being introduced into the Black Sea. Measures include that vessels will implement a ballast water and sediments management plan.

The chance that a properly designed and installed deep-water pipeline will experience a failure is remote, and South Stream Transport is committed to ensuring that the design and construction processes are suitably robust. Likewise, the likelihood of third party damage to the pipelines resulting in the release of gas (such as a ship sinking on top of the Pipeline) is equally remote. Nevertheless, the Project design aims to minimise the potential for uncontrolled gas releases from the Pipeline in the event of damage. Should a rupture occur any escape of gas would be short-lived as the leak would be detected at the landfall facilities in Russia and/or Bulgaria and the Pipeline would be shut down.

Appropriate unplanned event contingency planning therefore minimises the likelihood of remote probability events occurring, as well as minimising the consequences of such events. Contingency and emergency response planning will be done in collaboration with the relevant government and emergency services.

8 Cumulative Impacts

While the impacts of an individual project may be judged to be acceptable, there is also a need to consider the potential for a project's impacts to interact with impacts that may be associated with other developments. These interactions may generate what is known as "cumulative" impacts.

The ESIA process has investigated the potential for cumulative impacts. Only residual impacts which had a **Low**, **Moderate** or **High** significance were considered for this assessment; residual impacts identified to be **Not Significant** were not assessed further.

The process adopted for the cumulative impact assessment (CIA) focused on identifying and evaluating planned and reasonably foreseeable/defined developments in the vicinity of the Project. This analysis identified the following activities taking place in the vicinity of the Project:

- Project connection with the offshore sections of the South Stream Offshore Pipeline: Russian and Bulgarian Sectors; and
- Proposed oil and gas exploration within the Turkish EEZ to be conducted by the TPAO.

The Project connections with the Russian and Bulgarian Sectors of the South Stream Offshore Pipeline were scoped out of the CIA as the vessel spreads, for pipelines with overlapping schedules, will be around 500 km apart at any given time. Given this distance and the limited spatial range of potential impacts associated with the construction activities (such as underwater noise impacts upon marine mammals extending approximately 0.5 km radius from the pipe-lay vessel), it is considered that concurrent activities within Turkey and Bulgarian/Russian offshore areas will not generate any significant cumulative impacts.

TPAO's activities, including potential seismic surveys, may be undertaken at the same time as Project construction vessels are present. This may result in a cumulative underwater noise impact on fish and marine mammal species, if they were to take place whilst the Project's construction vessels were in close proximity.

In the event that this occurs, impacts are likely to be temporary and localised. Given the wide ranges of potentially impacted species in the Black Sea and their ability to avoid areas of disturbance, cumulative impacts upon marine mammals and fish due to noise are not anticipated. Therefore, the assessment has not identified any cumulative impacts that are considered to be significant and in need of specific mitigation measures. Nevertheless, South Stream Transport will continue to liaise with TPAO regarding potential simultaneous activities.

9 Transboundary Impacts

It is recognised that there is the potential for transboundary impacts to occur from the Project, and these have been assessed in the ESIA Report. For the purposes of the assessment, national jurisdictions are defined by the EEZ boundaries of the Black Sea countries. The assessment considered impacts to the territories and receptors of Georgia, Ukraine, Russia, Bulgaria and Romania. Both planned and unplanned events have been considered.

Taking into account both the distances of the land territories of Georgia, Ukraine, Russia, Bulgaria and Romania from the Project (i.e. greater than 130 km) and the potential pathways between the source of the impact and the receptor, it was concluded that Project impacts that could occur from planned and unplanned activities would not result in significant transboundary environmental impacts on land.

There is a greater potential for transboundary impacts to occur in the marine environment as the Project is located entirely offshore. Potential transboundary impacts investigated during planned activities included underwater noise from vessels, disposal of ships' waste and disruption to migratory fish species. Transboundary impacts that might result from unplanned events included marine accidents resulting in oil spills that could affect Turkey's neighbouring Black Sea countries and the introduction of invasive species to neighbouring countries via ballast water exchange. However, the assessment concluded that with the implementation of the Project design controls, mitigation measures and adherence to international conventions (such as MARPOL), no significant transboundary environmental impacts are expected.

10 Environmental and Social Management and Monitoring

An overarching corporate management system will be used given that South Stream Offshore Pipeline will be constructed and operated as a single, coherent development across the jurisdictions of three countries (Russia, Turkey and Bulgaria).

HSSE-IMS

South Stream Transport is responsible for the environmental and social performance of the South Stream Offshore Pipeline, including the performance of its contractors, through its Health, Safety, Security and Environmental Integrated Management System (HSSE-IMS). This includes responsibility for ensuring that the Project and all supporting infrastructure are designed, constructed and operated in conformance with Turkish regulatory and international requirements and good international industry practice.

Management Plans

The South Stream Offshore Pipeline will be constructed and operated as a single coherent project across three national jurisdictions and is subject to international requirements and financing standards. In order to capture and manage these requirements, the HSSE-IMS will include an ESMP for Project construction and operation.

The ESMP will comprise a suite of activity-specific and overarching Construction and Operations Management Plans (CMPs and OMPs). Activity-specific CMPs will be designed for identifiable discrete Project activities (e.g. vessel use and marine transport). These plans will address environmental and social impacts that are likely to occur as a result of the relevant activities.

As an example, the Vessels and Marine Transport CMP will address South Stream Offshore Pipeline commitments (mitigation, management and monitoring) applicable to all Turkish EEZ construction activities as well as offshore activities in the Russian and Bulgarian Sectors of the South Stream Offshore Pipeline.

The overarching management plans will cover Project activities that are applicable to the South Stream Offshore Pipeline as a whole, independent of the location or nature of the activity in question. Overarching management plans that will be developed include plans for labour and working conditions, stakeholder engagement, cultural heritage, biodiversity and compensation.

Monitoring Plans

Each of the CMPs and OMPs will contain a monitoring plan component detailing the monitoring requirements based on the findings of the ESIA Report and other relevant Project documents, such as permits. 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.

Monitoring is required to demonstrate compliance with Turkish legal limits and applicable international standards and will provide verification of the overall design and effectiveness of

the implemented mitigation and management measures. Some of the monitoring activities that may be included in the overarching Monitoring Programme will relate to biodiversity, ecological and natural resources; offshore wastes; and cultural heritage.

11 Conclusions

The ESIA Report for the Project was carried out by a team of international and Turkish experts during the period of 2012 to 2014. The ESIA Report has assessed the potential for Project activities to impact the physical (non-living) environment, biological environment (living organisms such as fish, mammals, birds and marine habitats), cultural heritage, and socio-economics (people and livelihoods). It has also considered the potential impacts on the above in relation to waste management, unplanned events (such as accidents), cumulative impacts and transboundary impacts.

Where potential impacts were identified, a series of design controls, mitigation measures and monitoring requirements were identified in order to avoid, prevent and minimise potential adverse impacts and enhance potential beneficial impacts associated with the Project. The key issues that have emerged from the assessment are summarised below.

ESIA Findings

Given that the Project is located a minimum of 110 km away from the Turkish coast, in deep waters where there is minimal human activity, the primary impacts are related to those on the marine environment.

Construction activities have the potential to impact marine species and various Project design controls and mitigation measures, including adherence to relevant environmental standards, appropriate technology and comprehensive environmental management will be adopted to ensure that these impacts are mitigated.

In addition, the Black Sea is considered a critical habitat for endangered species such as Black Sea bottlenose dolphin and Black Sea common dolphin and migratory species such as the Mediterranean shearwater. The Project will therefore produce a Biodiversity Action Plan which will which will provide the mitigation strategy for identified critical habitats and include relevant stakeholders to help achieve net gain.

No potential impact on fishers or fisheries from Project activities is anticipated due to the distance of the Project from coastal waters where most fishing activity occurs and as anchovy migration patterns are unlikely to be affected by construction activities.

Similarly, there is limited scope for Project activities to impact the physical environment and as such, all physical receptors and attributes were scoped out of the impact assessment.

Impacts on known CHOs (i.e. two shipwrecks) will be avoided through the adoption of design control to re-route the pipelines to maintain a 150 m avoidance buffer. Potential impacts on unknown CHOs will be mitigated by monitoring of the pipe-laying process, archaeological watching briefs and the implementation of a Project specific Chance Find Procedure.

The overall waste management impacts of the Project are not expected to be significant, due to adoption of mitigation measures such as the adherence to MARPOL requirements in relation to discharge from ships.

Although the likelihood of unplanned events (such as vessel collisions) occurring is remote, the environmental and social consequences of an unplanned event, should it occur, can often be significant. As such the Project will use design controls to minimise the likelihood of an incident, and develop response measures in case of an unplanned event, such as an Emergency Preparedness and Response Plan.

Overall, with the implementation of the identified design controls and mitigation measures the residual impacts of the Project will be either **Not Significant** or of **Low** significance.

ESMP

An Environmental and Social Management Plan (ESMP) will capture all the requirements, design controls, mitigation measures and monitoring commitments made within the ESIA Report. This plan will be in place throughout the construction and operation of the South Stream Offshore Pipeline and adherence to this plan will be a condition of any Project construction and operation contracts awarded.

Stakeholder Engagement

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.

The draft ESIA Report, including this non-technical summary, has been publicly disclosed, and all interested stakeholders are invited to review and provide feedback. The details of the disclosure and consultation process are provided in the Preface of this document. The feedback received will further inform the management plans and systems that will be developed and implemented to ensure the environmental and social performance of the Project during construction and operation.

Stakeholder engagement will continue over the life of the Project, including throughout pre-construction preparations, construction and pre-commissioning activities, and the operational life of the Project. A Grievance Procedure will also be in place to ensure that complaints are addressed in a timely and consistent manner.

Summary

The studies and assessments undertaken for the Project presented within the ESIA Report and summarised in this NTS, show that the current Project design provides an environmentally and socially acceptable approach to the construction and operation of the Project. The Project will comply with the provisions of the Turkish legislative framework, international financing requirements, alignment with good international industry standards in pipeline design, construction and operation, and the implementation of design controls and mitigation measures for addressing environmental and socio-economic impacts as identified in the ESIA Report.

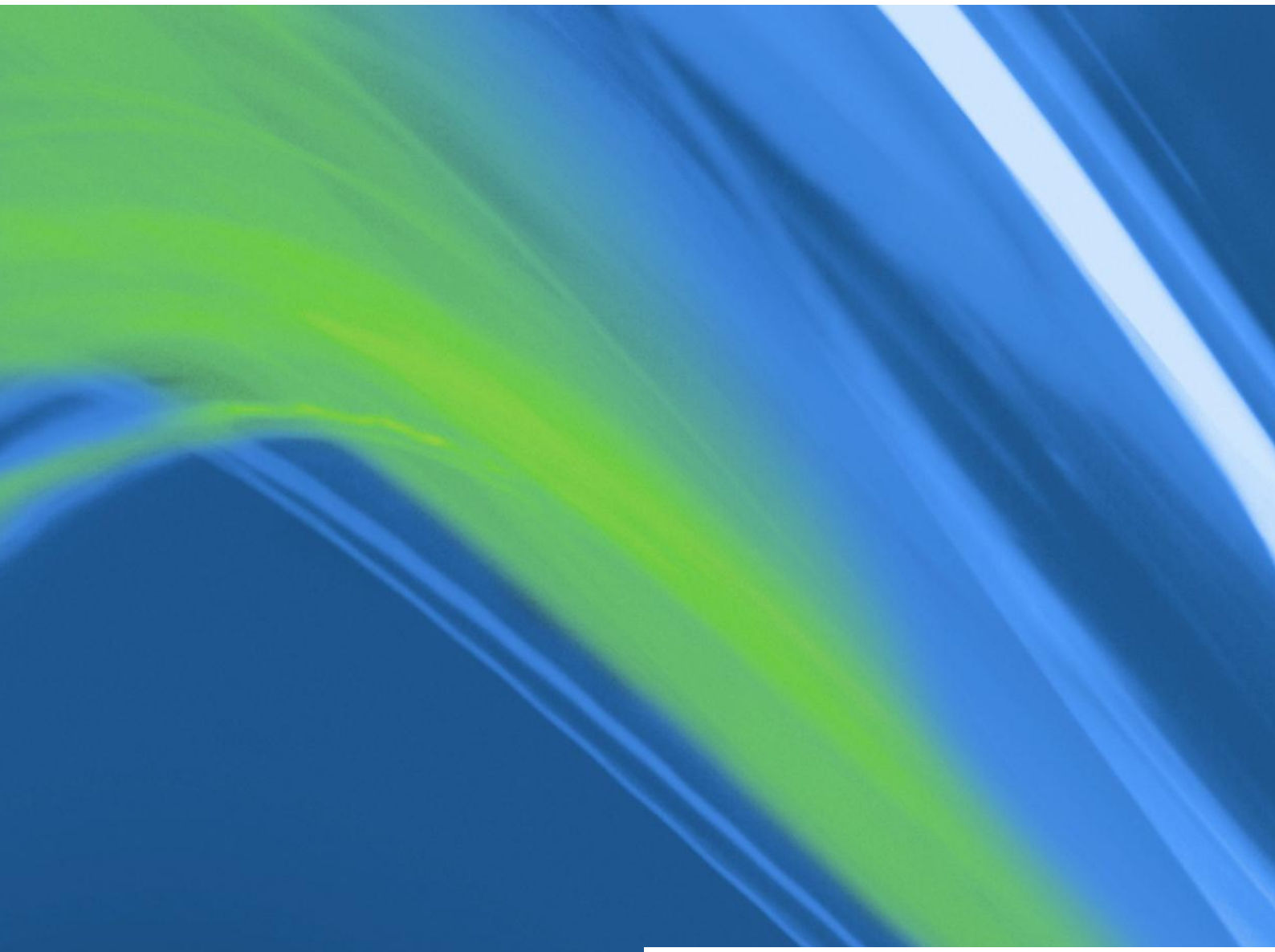
References

Number	Reference
Ref. 1	International Energy Agency, World Energy Outlook 2013, Annex A.
Ref. 2	Decision on Turkish Economic Exclusive Zone as an annex to the Decree. Date: 5 December 1986 and No: 86-11264.
Ref. 3	International Finance Corporation (IFC) 2012. Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts. http://www1.ifc.org. Accessed 21 January 2013.
Ref. 4	Ozsoy, E. and U. Unluata, 1997. Oceanography of the Black Sea: a review of some recent results. Earth Sci.Rev., 42, 231–272.
Ref. 5	Eudoxia Schismenou, Marianna Giannoulaki, Vasilis D. Valavanis, Stylianos Somarakis, 2008, Modeling and predicting potential spawning habitat of anchovy (*Engraulis encrasicolus*) and round sardinella (*Sardinella aurita*) based on satellite environmental information, Hydrobiologia (2008) 612:201–214, DOI 10.1007/s10750-008-9502-1
Ref. 6	Giprospetzgas (2011) Complex engineering surveys at the phase "design documentation" within the framework of the "South Stream" gas pipeline marine sector project implementation. Technical documentation Volume 5: Environmental survey and archaeological studies. Part 3 Environmental survey, The Turkish sector. Book 3: Technical report, and Book 4 Technical Appendices.
Ref. 7	Intecsea. 2012. Feasibility Study for Construction of South Stream Gas Pipeline – Volume 7 Basis of Design.

Acronyms and Abbreviations

Abbreviation/Term	Description
BAP	Biodiversity Action Plan
bcm	Billion Cubic Metres
CHO	Cultural Heritage Object
CIA	Cumulative Impact Assessment
CMP	Construction Management Plan
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIAAF	Environmental Impact Assessment Application File
EP	Equator Principles
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
EU	European Union
H_2S	Hydrogen Sulphide
HSSE-IMS	Health Safety Security and Environmental Integrated Management System
IFC	International Finance Corporation
IUCN	International Union for Nature Conservation
JBIC	Japan Bank for International Cooperation
km	Kilometre
km^2	Square kilometre
LNG	Liquefied Natural Gas
m	Metre
MARPOL	International Convention for the Prevention of Pollution from Ships

Abbreviation/Term	Description
MBSC	Main Black Sea Current
MDO	Marine Diesel Oil
MGO	Marine Gas Oil
mm	Millimetre
MMO	Marine Mammal Observers
MoEU	Ministry of Environment and Urbanisation
MoFA	Ministry of Foreign Affairs
NGO	Non-Governmental Organisation
NTS	Non-technical summary
OECD	The Organisation for Economic Co-operation and Development
OH&S	Occupational Health and Safety
OMP	Operations Management Plan
PIG	Pipeline Inspection Gauge
PS	Performance Standards
RDBBS	Red Data Book of the Black Sea
REC	Review and Evaluation Committee
ROV	Remote Operated Vehicle
SEP	Stakeholder Engagement Plan
SMPEP	Shipboard Marine Pollution Emergency Plans
SOPEP	Shipboard Oil Pollution Emergency Plan
SSFD	Scope and Special Format Determination
TPAO	Turkish Petroleum Corporation
UXO	Unexploded Ordnance



Contact

South Stream Transport B.V.
Head Office
Parnassusweg 809
1082 LZ Amsterdam
The Netherlands

Phone: +31 20 262 4500
Fax: +31 20 524 1237
E-mail: esia@south-stream-transport.com