

Chapter 14: Cumulative Impact Assessment

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14 Cumulative Impact Assessment

14.1 Introduction

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 associated with other developments - so called 'cumulative' impacts.

This chapter presents a cumulative impact assessment (CIA) of the Project. The sections herein present details of applicable CIA guidance, the adopted CIA methodology, CIA scoping, and impact assessment. The CIA takes account of planned and reasonably defined developments in the vicinity of the Project.

14.2 Definitions

International Finance Corporation (IFC) Performance Standard (PS) 1 (Ref. 14.1) defines cumulative impacts as:

"Impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted".

The impacts of the Project thus need to be considered in conjunction with the potential impacts from other future developments or activities that are planned and reasonably defined and are located within a geographical scope where potential environmental and social interactions could act together with the Project to create a more (or less) significant overall impact.

14.3 CIA Guidance

14.3.1 International Finance Corporation (IFC) Guidance

IFC PS1: *Assessment and Management of Environmental and Social Risks and Impacts* (Ref. 14.1) recognises that in some instances, developers need to consider cumulative impacts in their environmental and social impact and risk identification and management process.

PS1 states that the impact and risk identification process:

"...will take into account the findings and conclusions of related and applicable plans, studies, or assessments prepared by relevant government authorities or other parties that are directly related to the project and its area of influence" including, "master economic development plans, country or regional plans, feasibility studies, alternatives analyses, and cumulative, regional, sectoral, or strategic environmental assessments where relevant".

Furthermore, it goes on to state that:

"The client can take these into account by focusing on the project's incremental contribution to selected impacts generally recognised as important on the basis of scientific concern or

concerns from the Affected Communities within the area addressed by these larger scope regional studies or cumulative assessments”.

In order to provide guidance on undertaking a CIA, IFC released a guidance note in August 2013 titled *Cumulative Impact Assessment and Management – Guidance for the Private Sector in Emerging Markets* (Ref. 14.2). This guidance note uses the concept of Valued Environmental and Social Components (VECs), these being environmental and social attributes that are considered to be important in assessing risk¹, which can include:

- Physical features;
- Wildlife populations;
- Environmental processes;
- Ecosystem conditions (e.g. biodiversity);
- Social conditions (e.g. health, economics); and
- Cultural aspects.

The guidance note provides a six step process for assessing the potential for cumulative impacts upon VECs as follows:

- Scoping Phase I – identifying VECs, spatial and temporal boundaries;
- Scoping Phase II – other activities and environmental drivers;
- Establish information on the baseline status of VECs;
- Assess cumulative impacts on VECs;
- Assess significance of predicted cumulative impacts; and
- Management of cumulative impacts – design and implementation.

This CIA has used the guidance note as a framework for assessing potential cumulative impacts associated with the Project and from other ‘reasonably defined developments’.

14.3.2 Other Relevant Guidance

Cognisance has also been taken of the European Directive 2011/92/EU (Ref. 14.3):

“...on the assessments of effects of certain public and private projects on the environment”, which requires the assessment of:

...the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent or temporary, positive and negative effects of the project”.

¹ VECs are considered to be equivalent to “receptors” as defined in **Chapter 3 Impact Assessment Methodology**.

14.4 CIA Methodology

The CIA methodology adopted has been defined taking into account the six step process as detailed in the IFC guidance note referred to above, and has comprised the following:

- *Scoping Phase I:* This entailed defining which VECs need to be included within the CIA taking into account the characteristics of the Project and the prevailing environmental and social conditions within areas that are potentially impacted by the Project. The VEC identification process has been assisted through the completion of engagement activities with applicable stakeholders. This phase of the assessment has also required setting temporal and spatial boundaries of the CIA for specific VECs;
- *Scoping Phase II:* This required the identification of other projects or human activities that could potentially impact upon defined VECs that could result in cumulative impacts. An analysis has then been undertaken which aims to define those development projects that are scoped into the CIA given their potential ability to generate a cumulative impact associated with the Project (due to temporal or spatial interactions with the Project);
- *Establish Information on the Baseline Status of VECs:* Defining the baseline characteristics of VECs is an important stage in the CIA process, as this identifies their sensitivity to change. Note that relevant baseline information has been provided in Chapter 7 to 12 of this ESIA Report and is not reproduced here; and
- *Assess Cumulative Impacts Upon VECs:* Taking into account the Project's predicted impacts upon identified VECs, an assessment has been undertaken to evaluate the ability of the Project to interact with other planned or reasonably defined developments in such a manner that gives rise to a cumulative impact (where the temporal and spatial influences may coincide). Note that the assessment presented in this chapter only considers the residual impacts arising from the Project (i.e. impacts following the application of mitigation measures as detailed in this ESIA Report). It follows that the chapter only considers those VECs that will experience any degree of residual impact associated with the Project. Thus VECs for which there is a Project residual impact that is deemed to be insignificant in this ESIA, do not need to be included in the CIA in accordance with Ref. 14.2 (Table 14.1);

Table 14.1 Scoping Criteria for Including VECs in the CIA

Residual Impact			
Not significant	Low	Moderate	High
Scoped out of CIA	Reviewed for potential cumulative impacts	Scoped into CIA	

As detailed in Table 14.1, where VEC residual impacts are defined as being moderate or high, these are scoped into the CIA. Where VEC residual impacts are assessed as being not significant, these can be scoped out of the CIA (given that such VECs are either of negligible sensitivity or impact magnitudes are negligible – refer to impact significance matrix in **Chapter 3 Impact Assessment Methodology**). For VEC residual impacts that are defined as being

Low, the applicable VECs have been subject to further evaluation to see if there is scope for cumulative impacts to be generated:

- *Assess Significance of Predicted Cumulative Impacts:* Significant cumulative impacts have been evaluated as far as possible using the significance matrix presented in **Chapter 3 Impact Assessment Methodology**. Note that this has been possible only where the magnitude of impacts is capable of definition, for example, through readily accessible documents (e.g. other EIA or ESIA reports or project documentation). Where such information is not available, the assessment of potential cumulative impacts has been qualitative, and has relied on professional opinion using the impact significance definitions described in **Chapter 3 Impact Assessment Methodology**. The assessment has not considered unplanned events as discussed in **Chapter 13 Unplanned Events**; and
- *Management of Cumulative Impacts – Design and Implementation:* Should the CIA indicate that there is a potential cumulative impact which is of moderate or high significance, the need for additional mitigation or management actions (or monitoring) beyond those which are targeted at Project-induced impacts as reported within this ESIA Report, has been specified.

14.5 CIA Scoping Phase I: VECs, Spatial and Temporal Boundaries

14.5.1 VEC Identification

The ESIA Report considers the potential Project impacts across a range of VECs. These VECs have been defined by taking into account the prevailing environmental and social conditions in the Project Area, and the ability of the Project to impact upon these resources (during all Phases of the Project). Consultation with relevant stakeholders has been a key component of the environmental and social resource identification process – stakeholder engagement activities are detailed in **Chapter 6 Stakeholder Engagement**.

A summary of the VECs that have been considered within this ESIA Report, and thus within this CIA, comprise the following:

- Physical (i.e. non-living environmental components, including air quality and marine sediments and geology);
- Biological (i.e. fauna); and
- Human (i.e. marine users, social, health and cultural heritage).

14.5.2 Temporal and Spatial Boundaries

The temporal boundary of the CIA includes the Project Construction and Pre-Commissioning Phase and into the Operational Phase. However, the degree of uncertainty increases the further into the future the assessment extends. As such, potential cumulative impacts during the Decommissioning Phase have been scoped out of the assessment given that the decommissioning programme is uncertain and will be developed during the Operational Phase of the Project. A review, and relevant studies if necessary, will be undertaken during the

Operational Phase to confirm that the planned decommissioning activities are the most appropriate to the prevailing circumstances. The review would outline management controls and demonstrate that the decommissioning activities will not cause unacceptable cumulative environmental and social impacts should there be other developments in the vicinity of the proposed decommissioning works.

The spatial or geographic boundaries of the CIA have been defined taking into account the Project characteristics (**Chapter 5 Project Description**) and the assessment areas applied to defined VECs as included within the various technical assessments (Chapters 7 to 12) within this ESIA Report. A flexible approach has been maintained, such that the boundaries of the assessment vary depending upon the characteristics of the potentially impacted VEC. The geographic boundary thus varies from the space occupied by a small VEC feature (e.g. a discrete feature of cultural heritage value) to a large geographic region or habitat within which a particular VEC occurs (e.g. habitat occupied by a protected species). The spatial extent of relevant VECs is detailed in the various technical assessments as presented within this ESIA Report.

14.5.3 Scoping – Further Evaluation of Low Significance Impact to VECs

Table 14.2 presents a summary of the impact assessments within this ESIA Report and identifies residual impacts upon defined VECs during the Project Construction and Pre-Commissioning and Operational Phases.

Table 14.2 Summary of Project Residual Impacts

ESIA Chapter	VEC	Impact Source	Construction – Residual Impact	Operation – Residual Impact
Biological Environment (Chapter 8)	Plankton	Vessel movements and routine operations. ROV use during pre-lay, as-built surveys	Not Significant	Not Significant
	Benthos	(Construction and Pre-Commissioning Phase)	Not Significant	Not Significant
	Fish	Maintenance/repair to pipelines (including span correction etc.) (Operational Phase)	Low	Not Significant
	Birds		Low	Not Significant
	Mammals		Low	Not Significant

Continued...

ESIA Chapter	VEC	Impact Source	Construction – Residual Impact	Operation – Residual Impact
Cultural Heritage (Chapter 10)	Currently unknown cultural heritage objects	Pipe-laying (Construction and Pre-Commissioning Phase) Inspection and maintenance of pipelines (Operational Phase)	Low	Not Significant
Ecosystem Services (Chapter 11)	Wild species diversity	Vessel movements and routine operations (Construction and Pre-Commissioning and Operational Phases)	Low	Not significant
Waste Management (Chapter 12)	Natural resources and the receiving environment	Waste materials generated and disposed of (Construction and Pre-Commissioning and Operational Phases)	Low	Low

Complete.

As per the IFC guidance note (Ref. 14.2), this CIA considers those VECs that will be impacted by the Project with any degree of residual impact thus VECs for which there is an impact that is deemed to be not significant have been scoped out of this CIA. Where the Project residual impact significance is defined to be **Moderate** or **High**, the applicable VEC is scoped into the CIA. As there are no impacts of **Moderate** impact significance, residual impacts defined as **Low** have been subject to further evaluation in order to see if there is potential for cumulative impacts to be generated. Physical and social receptors, as discussed in **Chapter 7 Physical and Geophysical Environment** and **Chapter 9 Socio-Economic** are not considered within this CIA given the limited scope for Project activities to impact upon them. Table 14.2 illustrates that all impacts upon the biological environment, cultural heritage, ecosystem services and waste management are either **Not Significant** or of **Low** Significance. These are considered further in Section 14.7 together with commentary on selected VECs which experience **Low** residual impacts. The activities and potential impacts are discussed in detail in the technical Chapters 7 to 12 of this ESIA Report.

14.6 CIA Scoping Phase II: Other Developments

14.6.1 Introduction

This section defines the planned and reasonably defined developments in the vicinity of the Project. If the Project is able to interact with such developments (temporally and/or spatially), the Project may be able to exert a potential cumulative impact.

Information has been obtained from the Project stakeholder engagement and consultation process (**Chapter 6 Stakeholder Engagement**) and in particular information has been obtained from local, regional and national governmental organisations and from a review of

open literature. This has included information on potential developments obtained from the Ministry of Energy and Natural Resources (Transit Petroleum Pipelines Department, the General Directorate of Mineral Research and Exploration (MTA), and the Turkish Petroleum Corporation (TPAO)).

14.6.2 Development Proposals

The following planned and reasonably defined development proposals have been identified in the vicinity of the Project:

- Project connection with South Stream Offshore Pipeline (Russian and Bulgarian Sectors) at the Turkish and Russian EEZ border and the Turkish and Bulgarian EEZ border respectively; and
- Proposed oil and gas exploration and preliminary activities within the Turkish EEZ to be conducted by the TPAO (refer to Figure 14.1 for the locations of the license areas).

These developments are discussed in the sections below. No other developments have been identified in the vicinity of the Project.

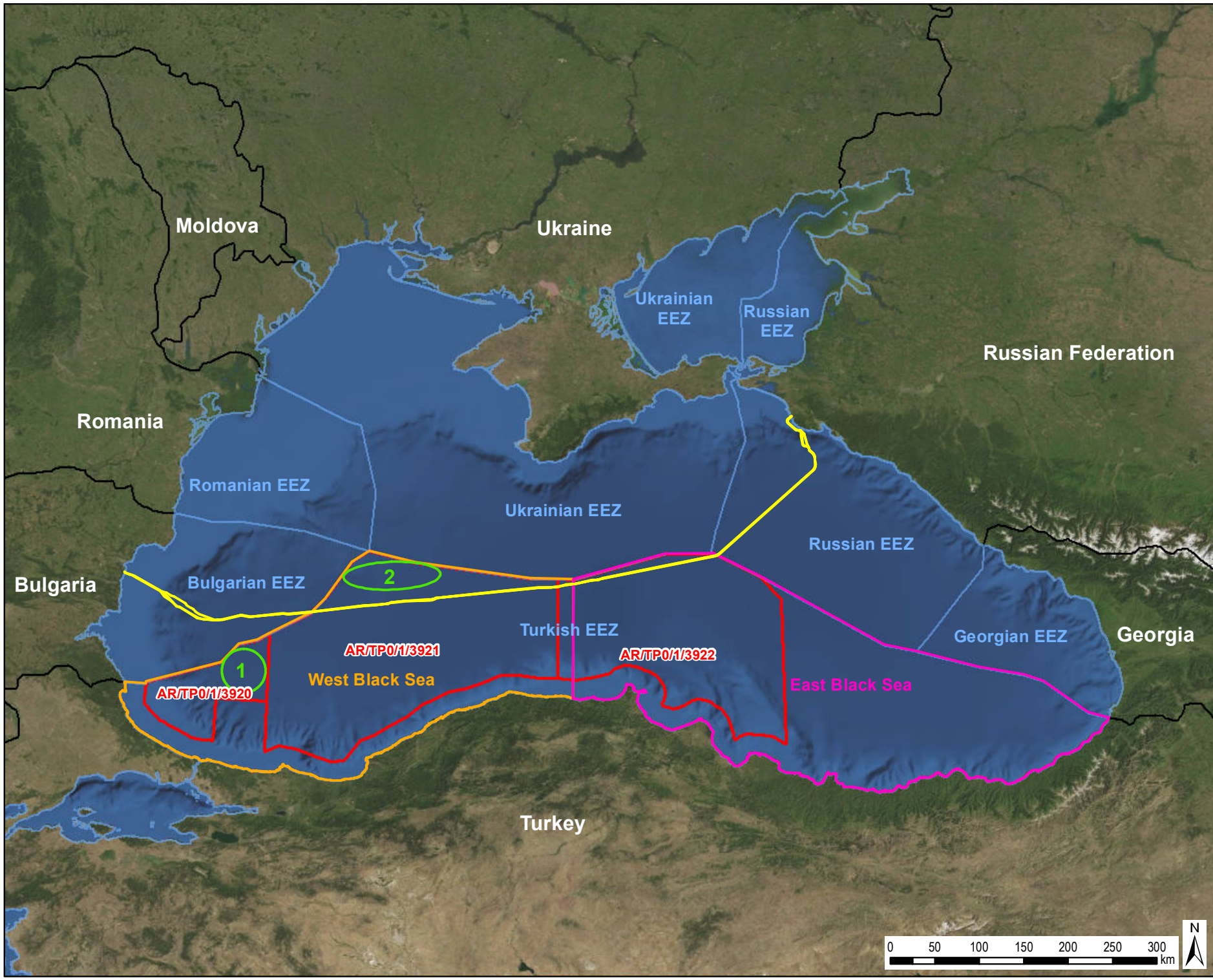
14.6.2.1 Project Connection with South Stream Pipeline at the Russian and Bulgarian EEZ Borders

The Project will interface with the South Stream Offshore Pipeline (Russian and Bulgarian Sectors) located in the Russian and Bulgarian EEZs. During the Construction and Pre-Commissioning Phase, activities taking place within Russian and Bulgarian waters will be similar to those taking place in the Turkish EEZ. A summary of the main offshore activities associated with the Bulgarian and Russian Sectors is given in Table 14.3.

Table 14.3 Summary of Offshore Construction Phase Activities in the Bulgarian and Russian Sectors

Sector	Activities
<p>Russia Offshore</p> <p>Approximately 225 km from 23 m (exiting of micro-tunnelling pits) water depth to boundary of Russian and Turkish EEZ</p> <p>Pipelines will be laid on the seabed</p>	<ul style="list-style-type: none"> • Mobilisation of vessels to and from Project Area and vessel movements within construction spread; • Perform as-laid, pre-laid and as-built survey ROV surveys etc.); • Delivery of fuel, pipe and other supplies including hazardous substances to pipe-lay vessel by supply vessel;
<p>Bulgaria Offshore</p> <p>Approximately 210 km from the border of the Turkish and Bulgarian EEZ to water depth of 36 m (where dredging starts)</p> <p>Pipelines will be laid on the seabed</p>	<ul style="list-style-type: none"> • Storage of fuel and other hazardous materials; • Refuelling of vessels, plant and machinery; • Helicopter operations for crew changes; • Waste generation from vessel operations; • Use of fresh water maker/desalination unit and vessel cooling water system; and • Night time working.

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 File Name: I:\004 - Information Systems\46369082_South_Stream\WCDa\Report\Maps - Turkey\Turkey_ESN\Chapter 14\Figure 14.1_Exploration License Areas of TPAO.mxd



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: EXPLORATION LICENSE AREAS OF TPAO

Drawn: JM	Checked: VS	Approved: MW	Date: 03/06/2014
URS Internal Project No. 46369082		Scale @ A4: 1:5,500,000	

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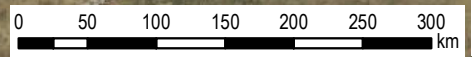


Figure 14.1

During the Operational Phase, the South Stream Offshore Pipeline in Russian and Bulgarian waters will be subject to the same monitoring and maintenance regime as being applied to the pipelines in Turkey (refer to **Chapter 5 Project Description**).

14.6.2.2 TPAO Developments

TPAO has confirmed to South Stream Transport that there are no existing oil and gas exploration or development activities taking place within the Project Area. TPAO has, however, advised of two possible oil and gas exploration and production projects which may be brought forward over the next three years, namely the 'Tuna Prospect', in the northwest of License Area 3921 and the Şile Prospect in License Area 3920. These areas are shown in Figure 14.1.

TPAO has advised that exploration drilling for both prospects may take place in 2016; preceded by seismic survey in 2015 (possibly late 2014 in the case of the 'Tuna Prospect'). The co-ordinates of the survey work and subsequent drilling have not yet been determined and will be informed by further geological and geophysical studies which are currently being conducted (Ref. 14.4).

Given that these two prospects are at a very early stage of evaluation, no information is available regarding the extent of development (e.g. number and extent of well heads or number and type of seismic surveys). TPAO has indicated that if oil or gas is discovered in the 'Tuna Prospect' license area 3921, it may be necessary to construct a pipeline(s) to carry the hydrocarbons south, thus potentially intersecting the Project. (Ref. 14.4). A summary of the main activities likely to be associated with the TPAO development are detailed in Table 14.4.

Table 14.4 Summary of Potential TPAO Development Activities

Development	Potential Activities
TPAO (Two prospects)	<ul style="list-style-type: none"> Geological and geophysical studies; Seismic survey(s) in 2015 (possibly late 2014 in the case of the 'Tuna Prospect') during Construction and Pre-commissioning Phase; Exploration drilling for two prospects may take place in 2016 (see locations on Figure 14.1); Potential oil/gas exploitation activities should oil or gas be discovered in the 'Tuna Prospect' license area 3921; and Potential construction of a pipeline(s) to carry the hydrocarbons south of the 'Tuna prospect', thus potentially intersecting the Project Area during the Operational Phase of the Project.

14.6.3 Development Proposal CIA Analysis

Section 14.6.2 describes planned and reasonably defined development proposals in the vicinity of the Project. An analysis has been undertaken of the possible characteristics (programme, distance from the Project activities, development footprint characteristics) of these projects in order to ascertain their potential to generate a cumulative impact during the Construction and Pre-Commissioning and Operational Phases. This analysis is presented in Table 14.5 and details which development proposals have been scoped in or out of the CIA.

Table 14.5 Project Cumulative Impact Analysis

Development	Interaction with Project	Scoped In/ Out of CIA
Offshore Section of the South Stream Offshore Pipeline – Russian and Bulgarian Sectors	<p>Construction works will be taking place within Russian and Bulgarian waters and Turkish waters at the same time, and thus there is the potential for concurrent activities to generate a cumulative impact. Based on the current Project programme, construction activities will be taking place in Russian and Turkish waters at the same time for approximately 170 days, whilst construction activities will be taking place in Bulgarian and Turkish waters at the same time for approximately 98 days. The construction spreads in Turkey, Bulgaria and Russia will be travelling at the same speed, whilst there will be around 500 km between these spreads at any given time. There are no plans to have two construction spreads in Turkish waters at the same time. Given this distance between the construction spreads and the limited spatial range of potential impacts associated with the works (such as underwater noise impacts upon marine mammals extending approximately 1 km from the vessels), it is considered that concurrent activities within Turkey and Bulgarian or Russian offshore areas will not be able to generate any significant cumulative impacts. Similarly any concurrent Operational Phase maintenance activities taking place are not anticipated to generate any significant cumulative impacts.</p>	Scoped out
TPAO Developments	<p>As illustrated in Figure 14.1, the Project passes through the TPAO exploration blocks. Anticipated activities that may be taking place within the exploration blocks include geological and geophysical studies, seismic surveys and exploration drilling. If oil or gas is discovered in the 'Tuna Prospect' license area 3921, following installation of exploitation infrastructure it may be necessary to construct a pipeline(s) to carry the hydrocarbons south, thus intersecting the Pipeline during the Operational Phase of the Project (Ref. 14.4).</p> <p>It is not anticipated that exploration activities within the exploration blocks will take place in close proximity to Project construction activities, although as described in Section 14.6.2.2, detailed information on exploration activities are not currently available. It is thus difficult to undertake a meaningful cumulative impact assessment due to a lack of available information. Nevertheless, given that this is the only marine development in proximity to the Project, the sections below consider the potential for cumulative impacts to be generated.</p>	Scoped in

14.7 CIA and Significance Assessment

Section 14.5.3 indicated that the significance of all Project impacts upon the biological environment, cultural heritage, ecosystem services and waste management are either **Not Significant** or of **Low** significance.

Section 14.6.3 identified that the TPAO development should be considered in the CIA given the potential interactions with the Project. The sections below thus consider the potential for the significant cumulative impacts to occur as associated with the TPAO development. This assessment focuses in particular upon the VECs and associated impact sources as highlighted in Table 14.4. If a cumulative impact is identified, the significance of the potential cumulative impact is either quantified or qualified (depending upon data availability).

14.7.1 Biological Environment

Chapter 8 Biological Environment (as summarised in Table 14.4) reports that residual marine ecological impacts are predicted to be **Not Significant**, except the following:

- **Low** significance to marine mammals due to noise impacts associated with pipe-laying works;
- **Low** significance impacts upon birds (particularly those that migrate at night) which may be attracted to lights and suffer damage as a result of collisions with vessels; and
- **Low** significance impacts upon fish (including impacts upon migratory species such as anchovy) due to noise generated by construction activities which may cause behavioural changes over a limited area.

Given that most residual ecological impacts are either **Not Significant** or of **Low** significance indicates that the Project has a very low ability to exert a potentially significant cumulative impact upon marine ecological VECs when considering other developments. Nevertheless, the sections below consider the potential for the Project and the TPAO development to generate a cumulative impact upon the marine ecological VECs as detailed above.

During the Construction and Pre-commissioning Phase of the Project, potential TPAO activities may include geological and geophysical studies which would involve the use of maritime vessels, seismic surveys and drilling. Whilst there is no information available regarding the extent, technical scope and precise location of TPAO development activities, it is considered that they are unlikely to take place in very close proximity to Project construction activities. The potential for vessel noise and noise associated with seismic surveys from TPAO development activities to interact with noise generated by Project construction activities is thus considered to be unlikely. The greatest impact would occur during potential seismic surveys as seismic equipment generates underwater noise. **Chapter 8 Biological Environment** states that behavioural reactions in fish can occur up to 0.5 km from the noise source and up to 1 km for marine mammals.

TPAO activities, including potential seismic surveys, would need to take place at the same time that the Project construction spread is present, and within sufficient range, in order for a cumulative noise impact to be generated. 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 thus not anticipated.

Chapter 8 Biological Environment also indicates the potential for a **Low** significance impact upon birds (particularly those that migrate at night) which may be attracted to lights and suffer

damage as a result of collisions with vessels. The TPAO activities would need to take place at the same time and near the vicinity of the Project construction spread at night, using numerous vessels with lights in order to generate a cumulative impact – this is considered to be unlikely. Cumulative impacts upon migrating birds are thus not anticipated.

Given the above, South Stream Transport will seek to further liaise with TPAO regarding any simultaneous activities.

During the Operational Phase, it is possible that the Tuna Prospect license area 3921 is developed if oil or gas is discovered. This could require the construction of a pipeline(s) which may intersect the Project Area (Ref. 14.4). As Project impacts during the Operational Phase upon marine mammals and other marine ecological VECs are **Not Significant**, the Project is not able to generate any cumulative impacts even if TPAO activities were taking place in close proximity to the Project.

14.7.2 Cultural Heritage

Chapter 10 Cultural Heritage (as summarised in Table 14.4) reports that residual impact significance on potential unknown cultural heritage objects (CHOs) would be **Low** during the Project Construction and Pre-Commissioning Phase. As TPAO activities are not planned to occur within the Project Area during the Construction and Pre-Commissioning Phase, there will be no cumulative impact upon potential unknown CHOs that may be potentially affected by the Project.

Residual impacts on potential unknown CHOs would be **Not Significant** during the Operational Phase, and as such cumulative impacts are not anticipated.

14.7.3 Ecosystem Services

As detailed in Section 14.3, the CIA methodology considers VECs which are environmental and social attributes which should:

"...reflect public concern for social, cultural, economic or aesthetic values, and also the scientific concerns of the professional community" (Ref. 14.2)

There are therefore strong parallels between VECs and ecosystem services, where the type and level of service provision (and the value this confers) is determined by:

- The condition of the underlying habitat or ecosystem type;
- The functioning of ecosystem processes and the interactions between them; and
- The importance of the services to beneficiaries (in terms of livelihoods, health, safety, and cultural heritage) and the Project (in terms of social, operational, financial, regulatory, and reputational risks).

IFC PS1 limits the cumulative impacts to be addressed to:

"...those impacts generally recognised as important on the basis of scientific concerns and/or concerns from Affected Communities" (Ref. 14.1).

However, as no *priority* ecosystem services have been identified in **Chapter 11 Ecosystem Services**, assessing the incremental impact of the Project on priority ecosystem services and their beneficiaries in relation to the combined impacts of multiple developments have been scoped out from further consideration in this CIA.

14.7.4 Waste

Chapter 12 Waste Management includes an assessment of waste management impacts arising from the Project as associated with the various waste streams that are anticipated to be produced during the Construction and Pre-Commissioning Phase and during the Operational Phase.

The chapter indicates that with regard to non-hazardous wastes, impacts would be negligible following the preparation and implementation of a comprehensive Integrated Waste Management Plan (described in **Chapter 16 Environmental and Social Management**) covering the entire Project and prepared by contractors. **Low** significance residual impacts are identified with regard to a number of hazardous wastes.

14.8 Cumulative Impact Mitigation, Monitoring and Management

The CIA has not identified any cumulative impacts that are considered to be significant and in need of mitigation measures, monitoring or management. However, the assessment has made a number of recommendations with regard to the alignment of mitigation strategies – this includes the following:

- South Stream Transport (or their contractors) will undertake regular liaison meetings with TPAO in order confirm if and when oil and gas exploration and development activities will take place. South Stream Transport will thus seek to further liaise with TPAO regarding simultaneous activities.

14.9 Assumptions and Limitations

This CIA has been undertaken based upon the available information contained within this ESIA Report. Key assumptions and limitations are detailed below:

- The CIA is restricted to Turkish VECs and only concerns potential cumulative impacts associated with the Project (i.e. within Turkey);
- The assessment only considers residual impacts after the implementation of mitigation measures as detailed in this ESIA Report;
- The assessment has not considered unplanned events as discussed in **Chapter 13 Unplanned Events**;
- The details regarding the TPAO development are limited (refer to Section 14.6.2.2) and it is unclear whether these activities have been subject to any formal environmental impact assessment process. This has limited the CIA to only consider potential cumulative impacts on a qualitative basis in some cases; and

- The CIA excludes potential cumulative impacts during the Decommissioning Phase given that the decommissioning programme is uncertain and will only be developed during the Operational Phase of the Project, whilst other developments that may be taking place at the same time are also unknown.

14.10 Conclusions

TPAO exploration and development proposals have been considered in the CIA. A cumulative noise impact would only occur in the event that potential TPAO seismic surveys are within sufficient range of the construction spread. In this event, cumulative noise impacts on marine mammals and fish are anticipated to be temporary and localised. The assessment has not identified any adverse cumulative impacts that are considered to be significant and in need of specific mitigation measures, monitoring or management. However, South Stream Transport will seek to further liaise with TPAO regarding any simultaneous activities.

References

Number	Reference
Ref. 14.1	IFC (2012) Performance Standard 1 - Assessment and Management of Environmental and Social Risks and Impacts. http://www.ifc.org/wps/wcm/connect/3be1a68049a78dc8b7e4f7a8c6a8312a/PS1_English_2012.pdf?MOD=AJPERES Accessed on 20 September 2013.
Ref. 14.2	IFC (2013) Good Practice Note: Cumulative Impact Assessment and Management – Guidance for the Private Sector in Emerging Markets (August 2013). http://www.ifc.org/wps/wcm/connect/c635da004e5fcb908dd3adfce4951bf6/CIA_PNG_ExternalReview.pdf?MOD=AJPERES Accessed on 20 September 2013.
Ref. 14.3	Directive 2011/92/EU of the European Parliament and of the Council (13 December 2011) on the Assessment of the Effects of Certain Public and Private Projects on the Environment. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:026:0001:0021:EN:PDF Accessed on 20 September 2013.
Ref. 14.4	Turkish Petroleum Inc. General Directorate. Exploration Department (2013). EIA opinion letter from the TPAO. Dated 20 September 2013. Ref. 30319279-109.99

