

Chapter 13: Landscape and Visual

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13 Landscape and Visual

13.1 Introduction

This chapter presents the process and findings of the Landscape and Visual Impact Assessment (LVIA) for the South Stream Offshore Pipeline – Russian Sector (the Project).

There are two elements to the LVIA; first, the actual physical changes to the landscape (impacts on landscape character and quality) and second, the perceived changes and the impacts that those have on a visual receptor (impacts on views and visual amenity). For the purpose of the ESIA process, a clear distinction is drawn between landscape and visual impacts as follows:

- **Landscape Impacts:** These relate to the degree of change to physical characteristics or components of the landscape, which together form the character of that landscape, e.g. landform, vegetation and buildings; and
- **Visual Impacts:** These relate to changes to elements of existing views and the amenity of visual receptors, e.g. residents of dwellings, users of public footpaths or motorists passing through the area.

An understanding of the nature of any project is vital to the LVIA process, including all Project activities that could affect landscape and visual amenity during a project's lifecycle, from construction through to decommissioning.

The baseline information, obtained through comprehensive desk and field studies, includes description, classification and analysis of the landscape and visual resource. Due to the nature of the Project and the fact that it entails operations on both land and sea, an assessment of the seascape resource is included in addition to the landscape resource.

Whereas this chapter assesses the character and visual amenity of the landscape and seascape in the vicinity of the Project, details of their ecological make-up are assessed in **Chapter 11 Terrestrial Ecology** and **Chapter 12 Marine Ecology**. The perceptions of people living and working locally, as well as visiting the area, are fundamental to the assessment and, as visual receptors, are identified in this chapter; details of the communities and population are provided in **Chapter 14 Socio-Economics**. The combination of human activity and natural processes are fundamental to the evolution of landscape, and heritage aspects are covered in **Chapter 16 Cultural Heritage**.

The assessment process establishes the sensitivity to change of each receptor, identifies likely landscape and visual impacts and determines the magnitude and significance of those impacts. Mitigation measures designed to avoid, reduce or remedy adverse impacts, are identified and their likely effectiveness also assessed.

13.2 Scoping

The anticipated scope of the LVIA was set out in the 'South Stream Offshore Pipeline – Russian Sector: Scoping Report'.

The scope of the LVIA for the Project was defined through a scoping process which identified receptors and potentially significant impacts related to the Project. Baseline information which informed the scoping process largely drew on satellite imagery, topographical data and photographic records. Key steps in the scoping process for landscape and visual assessment comprised the following:

- A review of relevant national and international legislative requirements and lender requirements was undertaken to ensure legislative and policy compliance;
- The Project description was reviewed to identify activities with the potential to significantly affect receptors;
- Receptors within the Project Area of Influence were identified for landscape character and visual amenity. This was done through a process of secondary data review (Section 13.4.2), previous studies undertaken for the South Stream Offshore Pipeline and professional expertise; and
- Discussions were held with South Stream Transport representatives and project engineers to establish which activities were expected to interact with receptors, and whether this would result in a positive or negative impact.

The assessment has been informed through this process of impact and receptor identification.

The consultation undertaken as part of the ESIA process is provided at **Chapter 6 Stakeholder Engagement**. Comments were made during the consultation process by local communities about potential significant adverse impacts on landscape and visual amenity of an area that attracts large numbers of tourists and visitors (written comments from local communities 20th November 2012 to 31st January 2013). Several of these comments relate to the key objective of the LVIA which is to identify and assess the significance of potential adverse impacts on the landscape and visual amenity. Appropriate management and mitigation measures will then be identified and implemented to address these impacts on potentially sensitive visual receptors. Consultation with stakeholders is recognised as an effective way to better understand the receptor sensitivity and more accurately use professional judgement to assess the significance of residual impacts.

13.3 Spatial and Temporal Boundaries

The Project Area is described within **Chapter 5 Project Description**, a brief description of the elements pertinent to potential landscape and visual impacts are summarised below. The Project Area is subdivided into three sections of the Pipeline: the landfall, nearshore and offshore. It also includes proposed transport access routes from the existing M25 highway at Rassvet; these include bypass roads around Gai Kodzor and Varvarovka, and then further access roads to the Project. Access roads are proposed to be used for deliveries and worker transportation associated with the Project. Some of these access roads are temporary and are only required for the Construction and Pre-Commissioning Phase. Details of the access roads and associated construction are provided within **Chapter 5 Project Description**.

For the purpose of this LVIA the following areas have also been defined and are referred to within this chapter:

Study Area

The landscape Study Area has been defined to include the landfall, the nearshore and offshore sections of the Project Area, and the access roads leading from the Project to the M25 junction at Rassvet. This has been selected to encompass the area where there is potential for impacts on landscape character and/or visual amenity. It includes areas where views of the Construction and Pre-Commissioning and Operational Phases of the Project could potentially be perceived, including areas with views of vehicles on land (including on the access roads) and the movement of construction vessels up to 10 km from the shore (including potential sea delivery routes to Novorossyisk Port). A 10 km limit has been chosen as that is considered to be the furthest distance that views of vessels could potentially be perceived, based upon their size and an assumed level of visual acuity.

The location of the Study Area is shown in its regional context in Figure 13.1, in particular with reference to two key geographical features: the Azov-Kuban lowland and the Greater Caucasus Main Range Mountains. The Study Area itself is shown in greater detail on Figure 13.2.

Survey Area

Within the Study Area, a smaller area has been defined where it is considered, based on previous experience of similar development projects, that there is greatest potential for significant direct or indirect impacts on landscape character and visual amenity arising from the Construction and Pre-Commissioning and Operational Phases. This area extends between the proposed microtunnel entry shafts and the proposed connection point with the upstream United Gas Supply (UGS) System. The determining factor in the extent of this area is the topography and vegetation in the vicinity, which influences intervisibility¹ and encloses the proposed development. This was verified by a combination of desktop study, Zone of Theoretical Visibility² (ZTV) analysis and field reconnaissance. The boundary for this Survey Area is therefore limited to 4 km radii from both the microtunnel entry shafts and landfall facilities (as illustrated on Figure 13.3).

The Survey Area includes the following:

- Areas of land and sea from which the landfall section (between the proposed microtunnel entry points and the proposed connection with the Russian gas network) could potentially be visible based on landform only (i.e. without taking account of woodland or built-up areas); and
- Areas of land and sea from which the landfall facilities (including above ground structures and the stack) could potentially be visible based on landform only (i.e. without taking account of woodland or built-up areas).

¹ Intervisibility is defined by the state of being mutually visible

² ZTV: The Zone of Theoretical Visibility represents the geographical area (zone) within which the landscape and/or seascape where the Project is theoretically visible, based upon a 'bare-earth' digital model of the Study Area.

Potential indirect impacts are also considered in this assessment, such as impacts of construction vehicles using the access roads on settlements outside of the Survey Area.

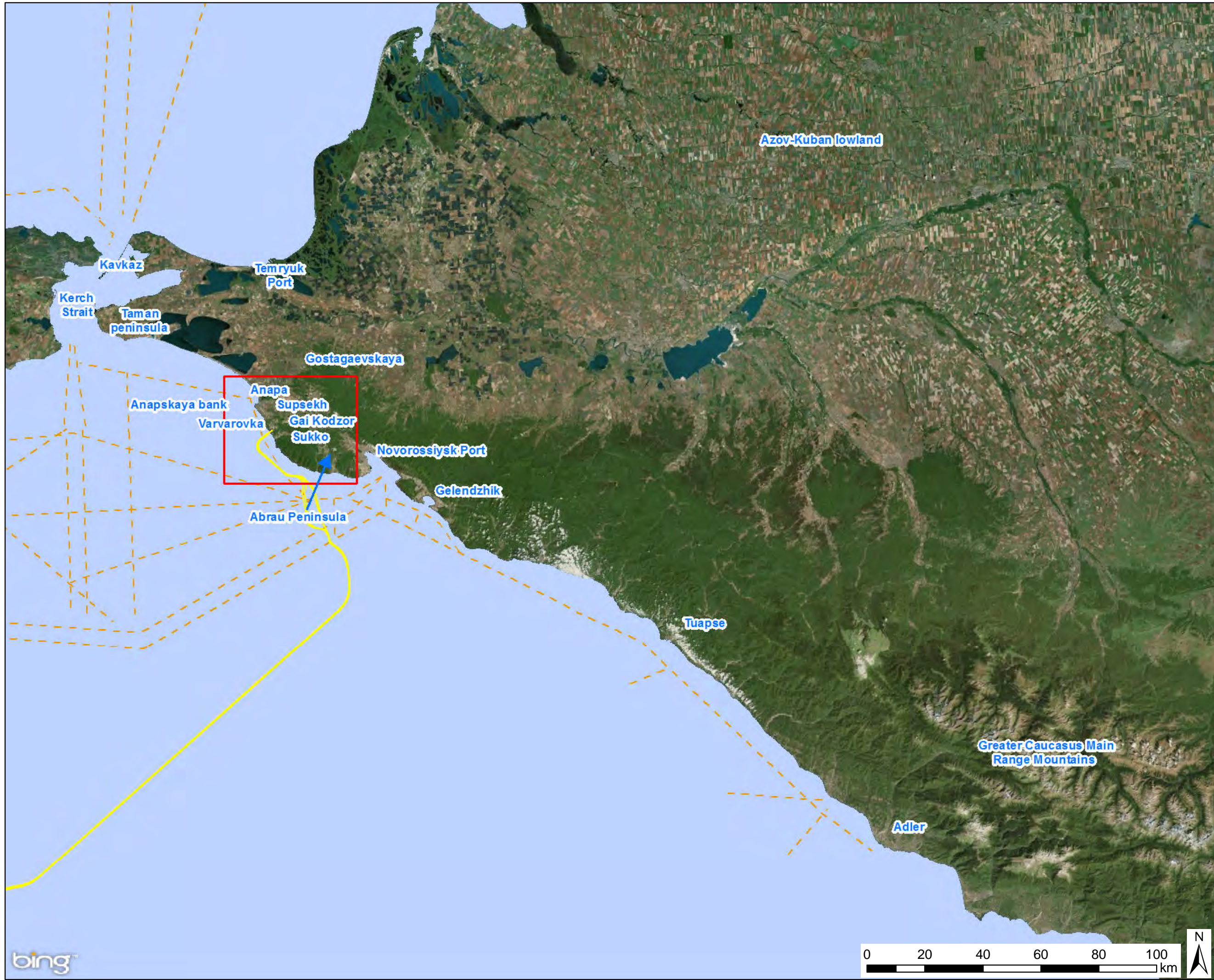
Zone of Theoretical Visibility

The Zone of Theoretical Visibility drawings (ZTVs), referred to above, were generated using computer modelling using ESRI ArcGIS software with a Spatial Analyst extension (refer to Section 13.4.2 for further detail of the data used). These images depict the area within which the Project would theoretically be visible and as such has potential to influence or impact on visual amenity. However, it should be noted that the ZTV is calculated using a *bare earth model*, i.e. one which does not reflect the screening effect of intervening structures such as buildings, or vegetation. As such, it is subject to further on-site verifications to verify actual visibility on the ground.

The ZTV is used primarily for identifying the location of potential visual receptor groups which are then subject to an on-site verification process to determine the context and extent of actual views, and potential views, of the Project.

Further details of the modelling undertaken to determine the ZTVs of the offshore and nearshore sections, the landfall facilities, and the landfall section are provided in Section 13.5.4.1.

Plot Date: 25 Feb 2014
File Name: 13004 - Information Systems\46369082_South_Stream\MXD\Report Maps - Russian\Russian ESIA v2\Chapter 13 Landscapes\Figure 13.1 Map of Wider Area.mxd



LEGEND

Russian Sector of South Stream Offshore Pipeline

Proposed offshore pipelines

Study area (see Figure 13.2)

Town/settlement

Shipping lanes (current)

Projection: Lambert Conformal Conic

Revision Details	By	Check	Check Date	Suffix

Purpose of Issue: For Information

Client: South Stream Offshore Pipeline

Project Title: SOUTH STREAM OFFSHORE PIPELINE

Drawing Title: MAP OF WIDER AREA

Drawn	Checked	Approved	Date
DH	RW	MW	25/02/14

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

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Plot Date: 27 Feb 2014
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LEGEND

- 4 km survey area
- Shipping lanes (current)
- Boundary of the state nature reserve "Utrish"
- Russian Sector of South Stream Offshore Pipeline
 - Proposed landfall section pipelines
 - Landfall facilities
 - Proposed microtunnels
 - Proposed offshore pipelines
 - Proposed access roads from M25
 - Permanent access road to be constructed by SSTTBV
 - Varvarovka bypass road (used by Project during construction only)
- United Gas Supply System
 - Permanent access road to be constructed by Gazprom Invest
 - Gazprom Invest temporary bypass road to be utilised by SSTTBV

Projection: Lambert Conformal Conic

Revision Details		By	Check	Date	Suffix

Purpose of Issue: For Information

Client: **South Stream** Offshore Pipeline **ENERGISING EUROPE**

Project Title: **SOUTH STREAM OFFSHORE PIPELINE**

Drawing Title: **LANDSCAPE STUDY AREA**

Drawn	Checked	Approved	Date
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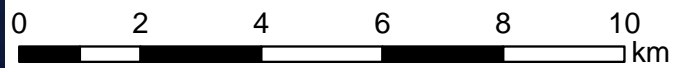
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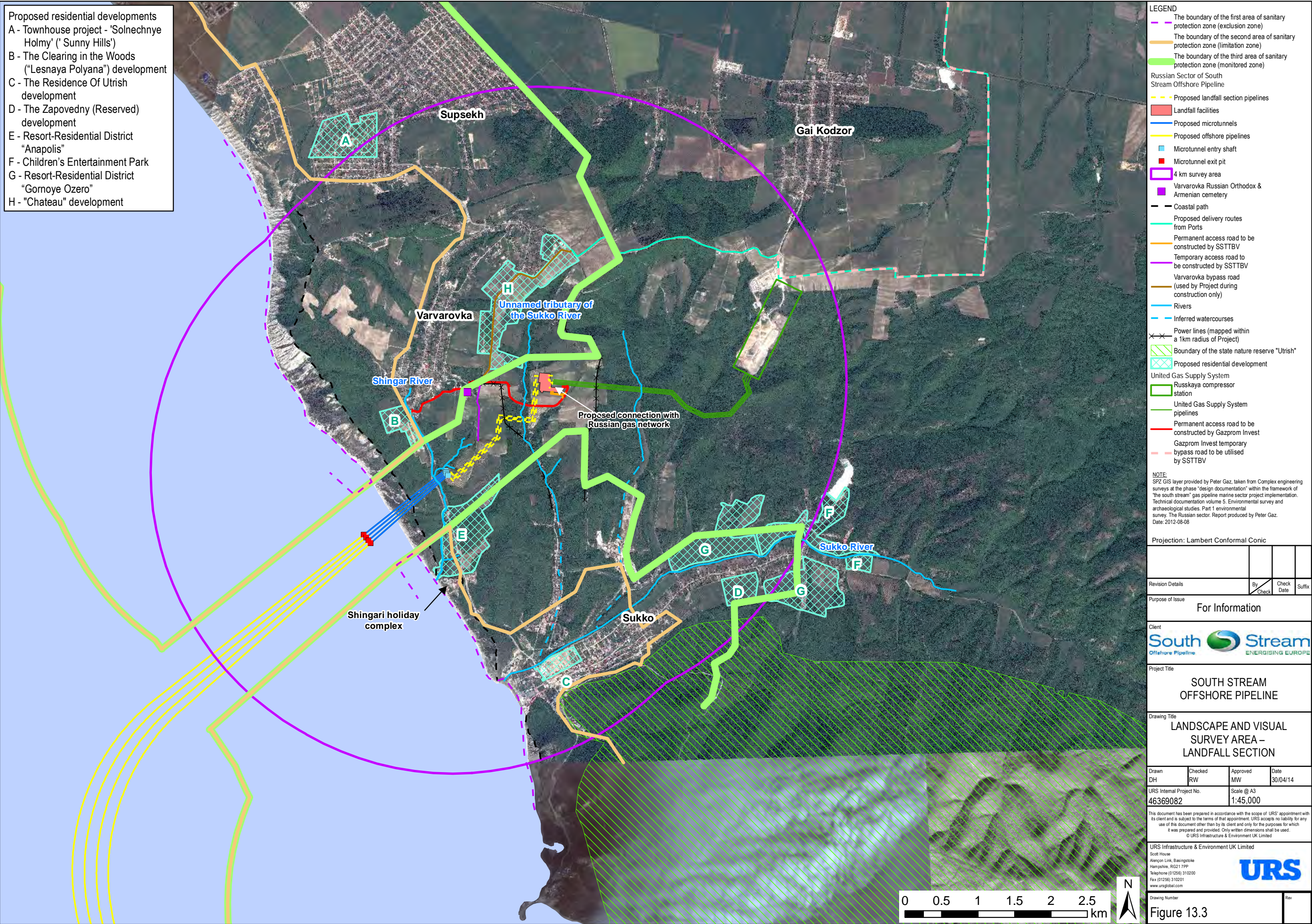
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13.4 Baseline Data

13.4.1 Methodology and Data

A desk study of secondary data available including reports on designated Protected Areas in the vicinity of the Project, satellite imagery, topography, site layouts and photographs was initially undertaken to inform the assessment of landscape and visual amenity. In particular, existing topographic data was used as the basis for a Geographical Imaging Systems (GIS) terrain model; known elevations of the various parts of the Project were then overlaid onto this to determine the ZTVs associated with the Project and hence, to estimate the locations from which elements of it would be visible. Following this, a gap analysis was undertaken to inform the need for primary data sources to fill the data gaps. Field work was then undertaken to obtain primary data relating to landscape character and visual amenity. The secondary and primary data used to inform this LVIA is detailed in the following sections.

13.4.2 Secondary Data

The following sources of secondary data have been reviewed as part of this assessment:

- ESRI High resolution satellite imagery;
- ASTER 30 m resolution Digital Terrain Model;
- ASTER 10 m resolution Digital Terrain Model; and
- Photographs.

13.4.3 Data Gaps

Following the collation of the above data, the following gaps were identified:

- Condition of existing landscape;
- Classification of landscape and seascape character at a regional and local scale; and
- Condition of existing views experienced by sensitive visual receptors.

13.4.4 Primary Data and Baseline Surveys

Visual receptors are specific individuals or groups who are expected to have views of the Project and therefore may experience effects on their amenity. In order to identify visual receptors, a combination of computer-generated ZTV models and assessment work in the field is required.

Landscape and visual surveys of various parts of the Survey Area (Figure 13.3) were undertaken in June and December 2012, April and August 2013, and April 2014. The purpose of the surveys was to understand the existing landscape character, to verify the ZTV and identify potential visual receptors, and to confirm that the available secondary data was representative of the Survey Area. A photographic record of landscape types and views from publicly accessible vantage points has been collected during the course of the surveys including recording the

Geographically Positioning System (GPS) location data of individual images. The work carried out during each visit is summarised in Table 13.1.

Table 13.1 Site Survey Summary

Survey Date	Survey Work Undertaken
19 and 20 June 2012	Two daytime visits were undertaken at the potentially affected settlements in the local area. The immediate area around the landfall section was also observed on foot, observing land use, footpaths, access routes etc. GPS measurements were taken when possible of towns, paths, roads and features of importance. Photographs were taken of all locations visited and notes taken on views of the landfall section from the local settlements and roads. The following areas / towns were visited: landfall section, Varvarovka, the Shingari and Don holiday resorts, Supsekh, Gai Kodzor, Bouzhor, Sukko and Anapa.
10 December 2012	Single daytime visit undertaken to confirm all the publicly accessible points and private dwellings and settlements from which the landfall section is visible and collect photographs for each viewpoint looking towards the Project site, along with GPS coordinates. These results were compared to the results gathered in June 2012.
03 April 2013	The following further information was gathered during a site visit to fill gaps previously identified in data: <ul style="list-style-type: none"> • Views out to sea from the residential receptors. • Views of the landfall section from areas in the surrounding area. • Views of potential construction traffic through Sukko.
August 2013	Field work and photography for photomontages – all viewpoint and photomontage baseline photographs taken.
April 2014	Field work and photography – updating baseline viewpoint photographs 6 and 7, and confirming no notable change to other viewpoint locations.

13.4.5 Data Assumptions and Limitations

It has not been possible to ascertain the full extent of recreational paths or tracks within the Survey Area, although it is acknowledged that during summer months, recreational activities, such as horse riding may take place. However, the Study Area has widespread forest cover with pockets of open land utilised for agriculture and viticulture. Since views within the forested areas would naturally be screened by the trees it is assumed that the receptors would be confined to locations within the open agricultural landscape, on the coastal paths and on local beaches etc.

Assumptions on the extent of some views have been based upon satellite imagery, topographical data, desktop analysis and professional judgement alone, due to inaccessibility. This has been used to determine the likely views towards the nearshore and offshore sections of the Project and effects on landscape character for locations which are not publicly accessible, such as private residences in Sukko, holiday complexes and private beaches at Shingari and Don, and the 'Utrish' state nature reserve.

Assumptions on the proposed Russkaya compressor station (currently under construction) have been made for inclusion in the cumulative assessment in **Chapter 20 Cumulative Impact Assessment**. In that chapter it is noted that the scale of the Russkaya compressor station is far greater than that of the Project, it has been assumed that the proposals for the Russkaya compressor station will be similar in character and style, including similar appearance of Right of Way (RoW), infrastructure and fencing, etc. It is also assumed that a landscape restoration plan, including the management requirements, and all other mitigation would be applied similarly to those proposed for the Project; effectiveness of these measures in mitigating adverse impacts from the Russkaya compressor station would be reduced due to the larger scale of that development in comparison to the Project.

13.5 Baseline Characteristics

13.5.1 Context

This section presents a description of the existing landscape and visual characteristics within the Study Area (Figure 13.2), with particular emphasis on the landscape character and visual amenity of the Survey Area (Figure 13.3).

The Study Area contains two key landscapes, the foothills of the Caucasus mountain range (to the south) and Abov-Kuban (lowland to the north and east), and the Black Sea makes up the western area.

Within the Study Area is the city of Anapa, a popular holiday destination in Russia noted for its beaches, warm climate and the presence of sites of historical and natural interest. Of particular note is the state nature reserve “Utrish”, protected for its rare flora (refer to Section 13.5.2.5 for more detail). The land throughout the Study Area is mostly used for viticulture with the majority of grapes used for local wine production. Tourism activities are associated with Anapa, and the surroundings within the Study Area are also well known for its onshore and offshore cultural heritage (refer to **Chapter 16 Cultural Heritage** for more information).

The Study Area (Figure 13.2) shows the Project within the surrounding landscape context, including access roads. Figure 13.2 also identifies the two small settlements located along these roads which may experience potential impacts.

The key focus of this LVIA is the Survey Area; this encompasses a 4 km radius around the area of the landfall section, and any activity in the nearshore and offshore sections including vessels on the open sea surrounding the coast. The Survey Area itself is largely dominated by agriculture but also contains small settlements and pockets of development. The Survey Area is characterised by the wooded, undulating topography in the vicinity of the landfall section, comprising the land generally defined by the Black Sea coastline to the west, Supsekh to the north and Sukko to the south, with the wide expanse of open sea extending to the west. Photographs indicating the baseline can be seen in Section 13.5.4.3, Viewpoints 1b, 2a, 5a, 6, 7 and 8.

The landfall section of the Project, which includes the proposed microtunnels, passes through a landscape of potentially sensitive character and visual amenity, comprising a pattern of woodland, fields, coastal slopes, cliffs and foreshore. It does not, however, lie within or close to

any protected landscapes, although, as noted, the state nature reserve “Utrish” lies approximately 4 km southeast of the landfall section, extending just to within the Survey Area beyond Sukko. A number of vineyards and areas of state forest are located within the Survey Area on the proposed Pipeline route.

Based on the visual quality of the woodland and agricultural landscape, the scoping exercise identified that the local landscape within the Survey Area is important for both residents and tourists who visit the region.

13.5.2 Existing Landscape and Seascape of the Survey Area

The landfall section lies in an approximately south-western direction approximately 0.5 km southeast of Varvarovka and 2.5 km northwest of Sukko. The four pipelines are proposed to be microtunnelled beneath the coastal cliffs to the Black Sea, as shown in Figure 13.3. The pipelines will be laid on the seabed in the offshore section. The Black Sea is frequently crossed with commercial shipping vessels, shipping and tourist boats. Within the Survey Area the coastline is formed largely of cliffs with a few small bays and beaches to the south.

The location of the landfall section has been driven primarily by the need to connect with the location of the proposed Russkaya compressor station and the four connecting pipelines which form part of the “Expansion of the UGS to provide gas to South Stream pipeline” that is being developed separately by Gazprom. The Project’s landfall facilities would be located immediately adjacent to these four Gazprom pipelines, approximately 2.5 km west of the Russkaya compressor station.

13.5.2.1 Landscape Setting

The landscape is largely characterised by woodlands and open fields across the undulating topography of the Shingar River valley to the northwest and Sukko River valley to the south and southeast. The landscape is also defined by cliffs of the Black Sea coastline to the West (Figure 13.3).

The onshore part of the Survey Area is characterised by gently rolling hills with a combination of agricultural fields, principally viticulture, and forest sloping down towards the south and southwest. The microtunnelled section (where the Pipeline transitions from the sea onto land) runs beneath the coastal cliffs and the Shingar River.

There are only a few man-made features within the onshore part of the Survey Area; the most significant built features are the urban areas of Varvarovka and Sukko. The area is therefore considered to have a relatively high natural amenity value. However, the landfall section is fairly secluded from views from the surrounding settlements and the local limited road network, as it is intermittently screened by forest and topography. The Project’s nearshore and offshore sections are, however, visible from parts of the shoreline across the open water.

Panoramic views within the lower reaches of the valleys are limited. However, areas of more open land in the upper catchments allow lines-of-sight across the valleys, chiefly from elevated locations, for example, at Southern Sukko and Eastern Varvarovka with distant hills forming the horizon to the South and East.

13.5.2.2 Topography

The Survey Area is located in foothills between the Greater Caucasus Main Range Mountains and the Azov-Kuban lowland (Figure 13.1) at an approximate elevation of 200 m. The majority of the onshore Survey Area comprises an undulating plateau extending northeast from a steep coastal slope with the shoreline of the Black Sea at its base (as shown in Figure 13.4). This topography forms valleys to the watercourses in the Survey Area include the Shingar River (1.5 to 2.5 m wide), the Sukko River and an unnamed tributary of the Sukko River (as shown in Figure 13.3).

The plateau has been eroded with gullies in places, as described in more detail in **Chapter 7 Physical and Geophysical Environment**. Further information on watercourses, including valley and water channel features associated with intermittent waterways that flow during periods of high rainfall, can be found in **Chapter 8 Soils, Groundwater and Surface Water**.

13.5.2.3 Land Use and Vegetation

Land use in the Survey Area is a combination of forest, viticulture, residential development, tourism facilities and road infrastructure. Viticultural activity consists primarily of the cultivation of grapes for wine production. There is a mix of mature and young vineyards, as well as large areas where vines have been previously planted but are currently abandoned or left as fallow fields. These fields are often divided with narrow tree belts and hedges, or edged (unfenced) by roads and unsealed tracks (refer to **Chapter 14 Socio-Economics**).

A broad range of naturalistic land cover is present within the Survey Area including forest, juniper woodland, meadow, tomillyar (areas of herbaceous species associated with dry, hot environments), rocky outcrops, coastal shingle and vast areas of scrub and tall shrubs known as shiblyak. Shiblyak covers the greatest of this land area. Stepped meadow consisting of grasses and herbaceous species is also a prevalent and characteristic land cover, typically resulting from derelict agricultural land. Agriculture is widespread and dominated by vineyards. As such, the linear parallel rows of grapevines are a key component of the landscape character. Juniper woodland and scrub occurs on the rocky south-western exposed slope along the coastline. A more detailed description of the forest vegetation is included in **Chapter 11 Terrestrial Ecology**.

The distribution of land use is mainly agricultural fields located around the outskirts of the residential developments i.e. in greater concentrations in the north-east and south-west of the Survey Area; and woodland further afield i.e. to the east, and centrally within the Survey Area (Figure 13.3).

The agricultural lands vary in appearance through the changing seasons, creating a green, lush and vegetated appearance during the summer and a more sparse, earthen, brown-coloured appearance during the winter, due to the extent of this land use, this has an impact on the character and visual amenity of these areas.

There are two lines of overhead power cables within the Survey Area, one of which crosses the landfall section (Figure 13.3).

13.5.2.4 Settlements

The landfall section of the Project is located approximately 10 km southeast of Anapa. With the exception of Anapa, the surrounding area is largely rural and typified by small to medium-sized settlements near the landfall section, set amongst rolling hills behind the cliffs on the shore of the Black Sea. The term 'settlements' is used here to represent the geographical features and not the communities which live within them, descriptions of the communities within these settlements can be found in **Chapter 14 Socio-Economics**.

The two main settlements within the Survey Area are Varvarovka and Sukko. The southern edge of Supsekh also falls within the Survey Area to the north but is visually separated by the intervening topography; the small settlement of Gai Kodzor is located just outside of the Survey Area, to the northeast (Figure 13.3).

The nearest main settlement to the landfall section is Varvarovka; a town with a population of approximately 2,300, typified by its built form and infrastructure being spread along the well-treed hill which slopes through the settlement. The settlement pattern of Varvarovka is predominantly linear, formed between high undulating ridges to the east and west, low-lying to the south and elevated to the north, with the main road forming the central axis for development.

The nearest existing buildings are located approximately 800 m north of the proposed microtunnel entry points; however, "Lesnaya Polyana" - the Clearing in the Woods – a proposed extension to Varvarovka, which is located approximately 500 m to the north-west, is currently under construction although no structures have yet been built on the property. In the north-eastern area of Varvarovka there are several elevated modern properties with long distance panoramic views across the adjoining landscape to the south, east and west. To the east of Varvarovka is the location of the proposed 'Chateau' residential development. Varvarovka consists of two main streets (one sealed) connected by a number of dirt roads, most houses being single- or two-storey detached structures arranged along the hill which slopes through the town. Varvarovka has a number of amenities such as a nursery and a general school, a community centre and a sports centre along with a few small shops. The Kavkaz Winery, a grape producer and wine maker, is located on the main sealed road. Varvarovka is also the headquarters of Briz, one of two small commercial fishing organisations in the Anapa area. There is a Russian Orthodox and Armenian cemetery located on the edge of the settlement (Figure 13.3), from which there are wide spreading panoramic long distance views which include parts of the landfall section.

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Residential properties on the northern outskirts of the town of Sukko are located 2 km southeast of the landfall section, with the intervening land consisting of dense woodland. Sukko is a town with a population of approximately 1,700 organised along a single, long road that runs through the middle of the town with the western end leading to the beach, which is the main, easily accessible public beach between the town of Anapa and the state nature reserve “Utrish”. The development is also broadly linear restrained by the Sukko River to the north and therefore lies on the southern valley side. Sukko has a kindergarten, a sports centre and a health-care facility, as well as many restaurants, shops and kiosks catering for visiting tourists. Many of the buildings are four to five storeys high and appear to be hotels. Most other buildings are one to two storey detached houses, similar to those found in Varvarovka. Next to the public beach, Sukko also has a children’s holiday camp, called Smena or ‘Time Off’, which is well known in the area.

13.5.2.5 Protected Areas

An overview of policy relevant to the Project is provided in **Chapter 2 Policy, Regulatory and Administrative Framework**. The following Krasnodar Krai legislation is, however, relevant to landscape aspects of the Project. These allocations are not statutory designations and furthermore, are not based on the protection of landscape character or visual amenity specifically.

Utrish Nature Reserve

Federal law ‘On Specially Protected Natural Areas’ 14.03.1995, No. 33-FZ establishes a system of specially protected natural areas, specifies conditions of their use and protection of natural resources (Figure 13.2). The protected area ‘Utrish’ is located approximately 4 km southeast of the landfall section of the Project. The establishment of state nature reserve “Utrish” is required for the preservation of ancient Mediterranean ecosystems, their biota and landscapes. The establishment of the nature reserve is considered to be the only appropriate measure to stop the destruction of the Mediterranean landscapes, in particular flora and fauna, resulting from the haphazard development of recreational facilities. These woodland areas provide functions including habitat formation, water conservation, soil protection and erosion control value (Ref. 13.1). Whilst this protection is predominantly ecological based, the reserve and the associated flora and fauna contribute to the landscape character of the Survey Area and it is therefore considered further in this assessment.

Sanitary Protection Area of Anapa

The Resort Town of Anapa (see Figure 13.2) was assigned the status of a federal resort by President Decree No. 1954 dated 22 September 1994. It was given this status due to its recreational value as a ‘health improving’ (spa) resort area.

Although the Project does not fall within any part of the Sanitary Protection Area, the Survey Area does contain the sanitary protection area of Anapa exclusion zones, limitation zones and monitored zones (refer to Figure 13.3 for locations, and **Chapter 2 Policy Regulatory and Administrative Framework** for further detail on these zones), the quality of the environment within this area attracts high visitor numbers and as such it is considered sensitive to changes in

views and landscape character. Due to the relative close proximity to the Project and potential for views of vessels along sea delivery routes, it is considered relevant to this chapter.

13.5.2.6 Tourism

Anapa is an area recognised for its importance for tourism (it was formalised by a presidential decree in 1994 and Russian Government Executive Order in 1996, No. 591-p.) the main resort is located 10 km to the north of the microtunnel entry points.

Tourism is also well established in Sukko and marine activities include recreational scuba diving, yachting, paragliding, recreational fishing, ferries and beach activities.

Shingari holiday complex and Don holiday complex are located approximately 1.3 km south of the microtunnel entry points (the closest element of the Project to these tourist areas), built on the cliff-top with a private beach accessible by stairs from the former, and by a path from the latter. For further information about these complexes, refer to **Chapter 14 Socio-Economics**.

13.5.2.7 Roads and Paths

The main Varvarovka-Sukko road and the coastal path along the cliff top, running approximately parallel with the coast in a north to south alignment, both cross the landfall section (Figure 13.3). There are numerous other unsealed (dirt) tracks along field boundaries associated with agricultural access.

The settlements of Rassvet, Gai Kodzor and Varvarovka are located in close proximity to the proposed access roads between the M25 and the landfall section (Figure 13.2). These settlements are connected by sealed (hard surfaced) roads. Within the Survey Area, the majority of other roads and access points are unsealed (dirt tracks). Within this Chapter, consideration is given to Project-related traffic from the M25 junction at Rassvet and along the access routes towards the construction sites. Where Project-related traffic uses the major existing highway network (from the M25 junction and beyond) it is not considered relevant to potential landscape character and visual amenity impacts within this assessment.

13.5.2.8 Offshore and Nearshore Activities

Passengers and crew on commercial shipping and fishing boats are the closest receptors in Russian coastal waters to the offshore and nearshore areas.

Tourism is well established in Anapa and Sukko where water-based activities, principally during summer months, include recreational scuba diving, yachting, water-skiing and passenger / tourist transport (including ferries) close to the shorelines of these towns. Beach users and recreational fishing would also gain views of the offshore and nearshore areas.

13.5.3 Landscape and Seascape Character

Landscape and seascape character assessments are used to assist in understanding and articulating the character of the landscape. It helps to identify the features that give a locality its sense of place and elements that contribute to the landscapes distinctiveness, to make it different from neighbouring areas.

Landscape is defined as an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors (Ref. 13.2). Seascape is used to indicate landscapes with views of the coast or seas, and coasts and the adjacent marine environment.

Landscapes and seascapes are experienced as a combination of elements (physical features and perceptual qualities) and which are ascribed value by human receptors. Typical landscape components include landform, land cover and land use. The aesthetic and perceptual aspects of the landscape and seascape include such aspects as scale, openness / enclosure, form, pattern, unity, colour, movement etc.

Landscape and seascape resources in the Survey Area have been classified into landscape character areas (LCA) and seascape character areas (SCA) and are categorised according to sensitivity, determined essentially by the quality and value of the LCA / SCA, and its ability to accommodate change.

The majority of the onshore part of the Survey Area is covered with mixed native forest and interspersed with varying amounts of open ground. No published assessments have been identified within the secondary data which characterise the landscapes or seascapes within the entire Study Area, as such, and therefore for the purpose of this assessment, the following LCA and SCA have been defined in line with the Guidance on Landscape Character Assessment (Ref. 13.3), namely:

- Undulating Plateau LCA; and
- Black Sea Coastal SCA.

These are shown on Figure 13.5. Also shown on Figure 13.5 are the urban areas of Supsekh, Varvarovka and Sukko (photograph viewpoint 8 in Section 13.5.4.3), which are separate from their surrounding LCA, exhibiting different characteristics, development, resources and setting. They are too extensive to be accommodated as features within that LCA and are therefore excluded from the character assessment. Both the LCA and the SCA comprise constituent character types, as described below. These correspond with the habitat types described in **Chapter 11 Terrestrial Ecology**.

13.5.3.1 Undulating Plateau LCA

The Undulating Plateau LCA, being the rolling, extensively wooded, rural landscape extending inland away from the coast, comprises three main character types (photograph viewpoint 6 and as shown in **Chapter 11 Terrestrial Ecology**), as follows:

- **Forest** – typically characteristic of Krasnodar Krai, undersized, arid woodland known as shiblyak, being diverse in structure and floristically rich;
- **Wooded valleys** – linear relief depressions created by the watercourses and intermittent waterways, chiefly wooded (mesophilic forest) but interspersed with open areas (mesophilic meadow); and
- **Cultivated land** – open vineyards, orchards and meadows (stepped secondary meadows); some herbaceous vegetation typical of colonised disturbed ground (Photograph viewpoints 2a, 4, 5b and 7 in Section 13.5.4.3).

13.5.3.2 Black Sea Coastal SCA

The Black Sea Coastal SCA, being the open sea and the line of landscape along the Black Sea coast made up of a combination of characteristically coastal geomorphology and vegetation, typically shoreline and cliffs, comprises three main character types, (refer to photograph viewpoints 1c and 2b in Section 13.5.4.3 and in **Chapter 11 Terrestrial Ecology**), as follows:

- **Coastal slope** – steep earth banks with primarily juniper woodland and some scrub (tomillyar), steepening at several points to become rocky outcrops and high coastal cliffs. The slope is interrupted in places where watercourses discharge into the sea, for example the Sukko River. Elevated views out over the sea are a key feature contributing to the character of this type (photograph viewpoints 1a-c and 2b in Section 13.5.4.3);
- **Shoreline** – gravel beach and rocky outcrops along the seashore (photograph viewpoint 1c in Section 13.5.4.3); and
- **Open sea** – extending beyond the Survey Area to the horizon. The open sea comprises the open water beyond the shoreline with its expansive skies and light conditions constantly changing with the season, time of day and weather. The water can be flat calm on still days and constantly moving on windy days, with the sound and motion of waves greatly adding to its drama. The sea is crisscrossed by shipping lanes (refer to Figure 13.1), so at times vessels form temporary features within the otherwise empty seascape and during the summer, pleasure craft are present.

13.5.4 Visual Amenity

Existing views within the Survey Area are comprised mainly of open gently undulating landscapes, with panoramic views across the woodland canopies and fields, and vast open flat panoramic views of the Black Sea. The sequential views, such as those experienced by road users, vary from open to restricted views caused by the intervening hills and woodlands. Within urban locations views are more restricted by buildings and only elevated residences gain long distance views. Key visual elements are formed of the brightly coloured built form within the settlements, the seasonal bare earth on agricultural fields, and the elevated extent of the northern ridge beyond Varvarovka and along the North-Western coast.

13.5.4.1 Zone of Theoretical Visibility

Visual receptors have been identified through a combination of computer-generated ZTV models and assessment work in the field. Individual receptors within the ZTV are categorised into receptor groups and assigned sensitivity, relating primarily to the receptors' activities and value of existing view.

A series of ZTVs have been defined to demonstrate a range of scenarios, as illustrated in the following figures:

- Figure 13.6 Offshore Construction – areas on land where offshore Pipeline construction work could theoretically be visible (generated using data points along the offshore Pipeline route at sea level;

- Figure 13.7 Landfall Section – areas on land and sea where the landfall section could theoretically be visible (generated using data points along the onshore Pipeline route at ground level); and
- Figure 13.8 Landfall Facilities – areas on land where the landfall facilities could theoretically be visible (generated using a 30 m high data point at the location of the proposed vent stack to provide a worse-case scenario; however a height of 21 m has now been confirmed for the vent stack – refer to **Chapter 5 Project Description** – and would produce a slightly reduced ZTV).

On-site field reconnaissance survey work undertaken to validate the ZTVs has identified that, because the landfall section is in a dip enclosed by woodland, it is substantially screened from dwellings within the Survey Area, including most parts of Varvarovka and Sukko. However, the landfall section is partially visible from upper storeys of some properties in Sukko, notably on the north-facing slope on the south-eastern side of the town, and from “Lesnaya Polyana”, the extension of Varvarovka currently under construction.

For the most part, residents would be unable to see any of the proposed landfall facilities, as potential views are screened by the surrounding topography and woodland.

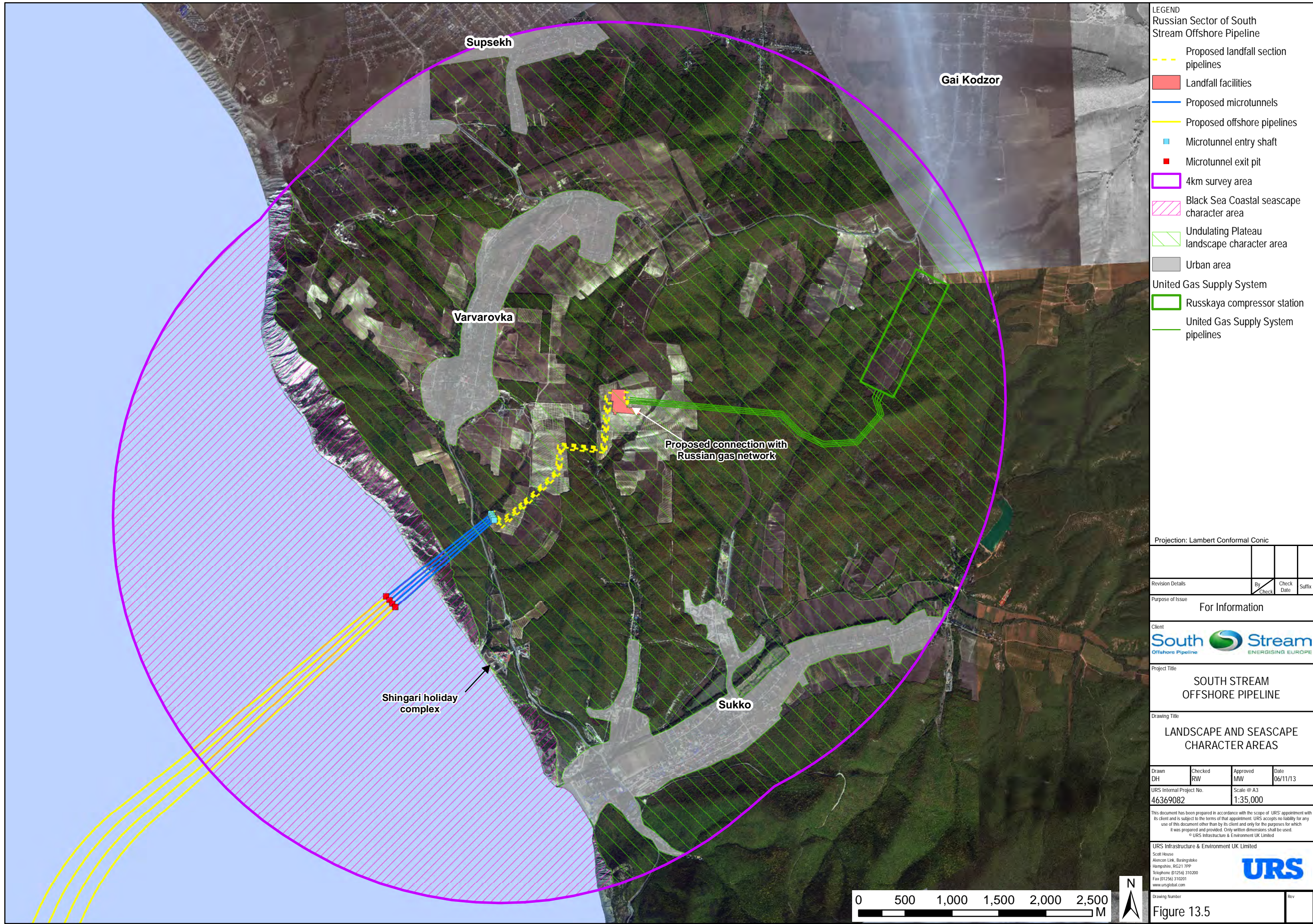
The landfall section is visible from the Russian Orthodox and Armenian cemetery on the eastern edge of Varvarovka and from the coastal path which crosses the landfall section. The number of users is likely to vary depending on weather conditions and time of year.

There are also views towards the landfall section from the Varvarovka-Sukko road, which crosses above the microtunnels in the landfall section, and depending on the height of the proposed facilities at the microtunnel entry points, they would be likely to be visible from the road.

Elsewhere, the proposed landfall section is only visible from the tops of the ridges in the surrounding landscape, where, with the exception of agricultural workers, no visual receptors are present because, as far as it has been possible to ascertain, there are no formal public footpaths. However, this situation is considered to be different during summer months when recreational activities, such as horse riding take place across private land and in the vicinity of the coast.

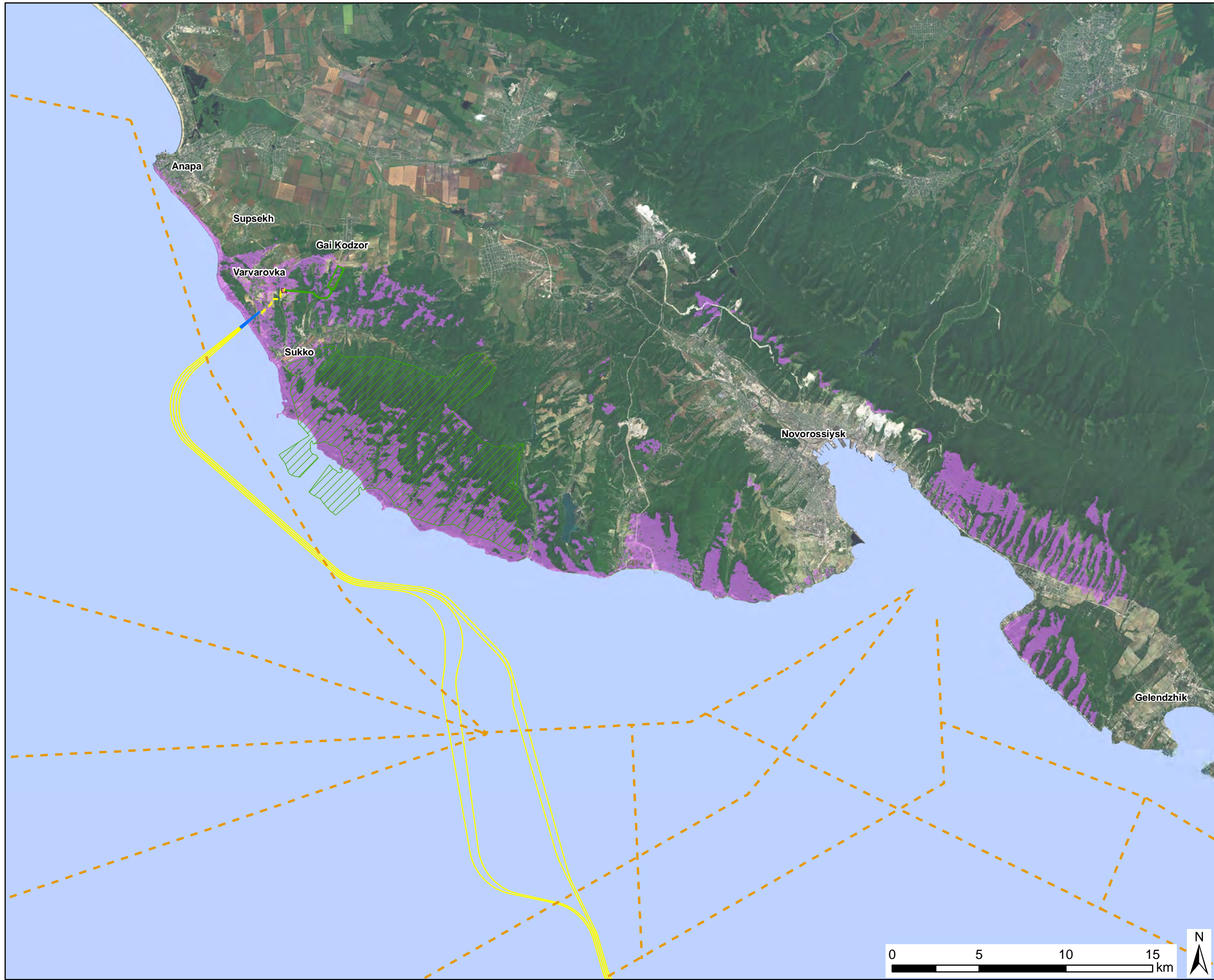
Views of the nearshore and offshore sections are possible from pleasure craft, passenger ferries and commercial vessels, as well as the coast path and much of the coastline.

Plot Date: 06 Nov 2013
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Plot Date: 06 Nov 2013
File Name: 15004 - Information Systems\46369082_South_Stream\MXDs\Report Maps - Russian\Russian ES\A\Chapter 13 Landscape\Figure 13.6 Zone of Theoretical Visibility - Offshore Construction.mxd



LEGEND


Russian Sector of South Stream Offshore Pipeline

- Proposed landfall section pipelines
- Landfall facilities
- Proposed microtunnels
- Proposed offshore pipelines
- Areas where offshore pipeline works could be visible
- Shipping lanes (current)
- Boundary of the state nature reserve "Utrish"

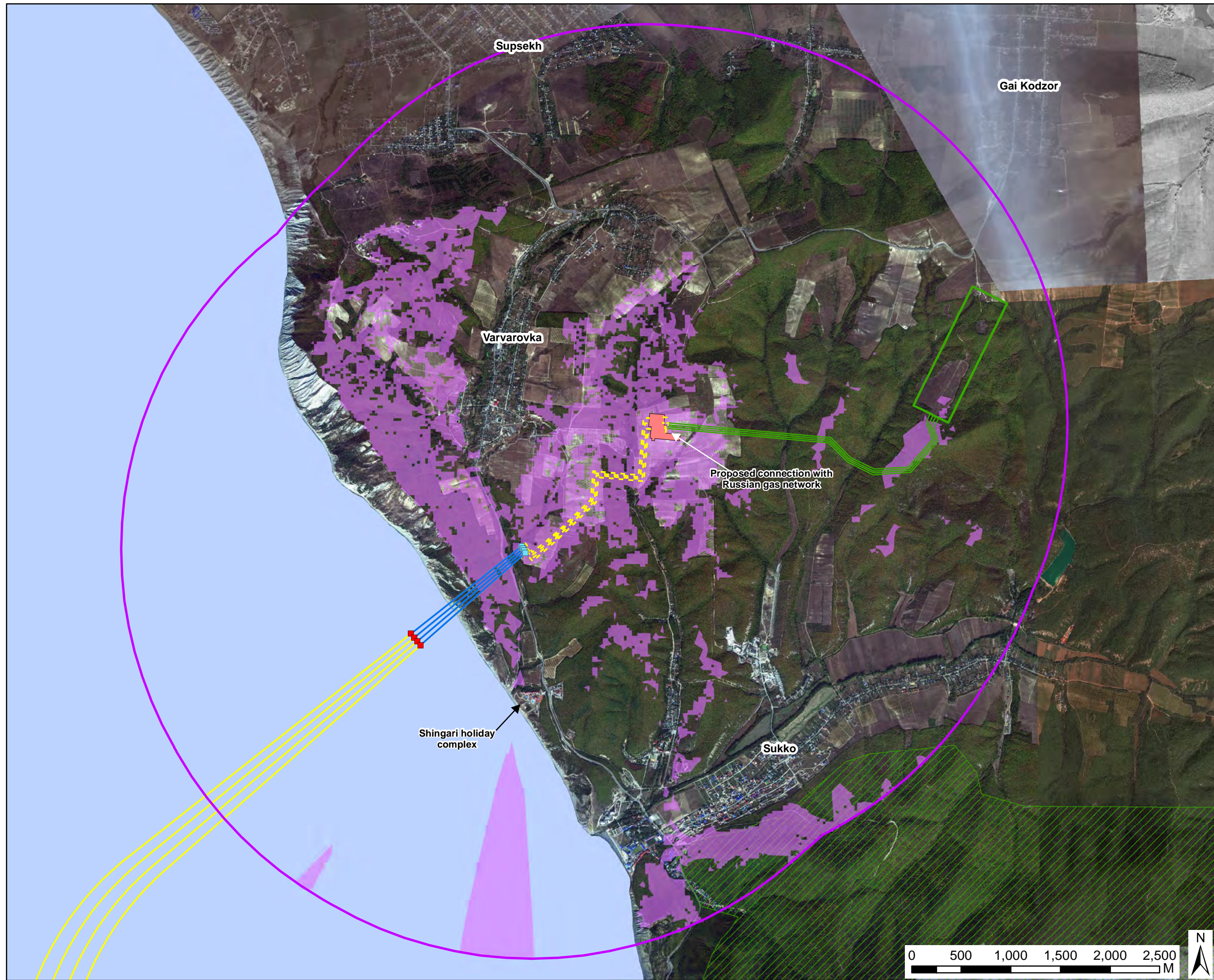
United Gas Supply System

- Russkaya compressor station
- United Gas Supply System pipelines

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 ZONE OF THEORETICAL VISIBILITY - OFFSHORE CONSTRUCTION			
Drawn DH	Checked RW	Approved MW	Date 06/11/13
URS Internal Project No. 46369082		Scale @ A3 1:200,000	
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<small>URS Infrastructure & Environment UK Limited Scott House Aston-on-Link, Basingstoke Hampshire, RG21 7PP Telephone: (01256) 310200 Fax: (01256) 310201 www.ursglobal.com</small>			
Drawing Number Figure 13.6			Rev

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LEGEND

- Russian Sector of South Stream Offshore Pipeline
- Proposed landfall section pipelines
- Landfall facilities
- Proposed microtunnels
- Proposed offshore pipelines
- Microtunnel entry shaft
- Microtunnel exit pit
- 4km survey area
- Areas where landfall section could be visible
- Boundary of the state nature reserve "Utrish"
- United Gas Supply System
- Russkaya compressor station
- United Gas Supply System pipelines

Projection: Lambert Conformal Conic

Revision Details		By	Check	Check Date	Suffix

Purpose of Issue: For Information

Client: **South Stream**
Offshore Pipeline

Project Title: **SOUTH STREAM OFFSHORE PIPELINE**

Drawing Title: **ZONE OF THEORETICAL VISIBILITY - LANDFALL SECTION**

Drawn	Checked	Approved	Date
DH	RW	MW	06/11/13

URS Internal Project No. 46369082

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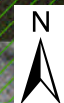
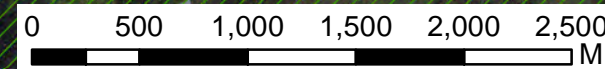
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Scott House
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Fax: (01256) 310201
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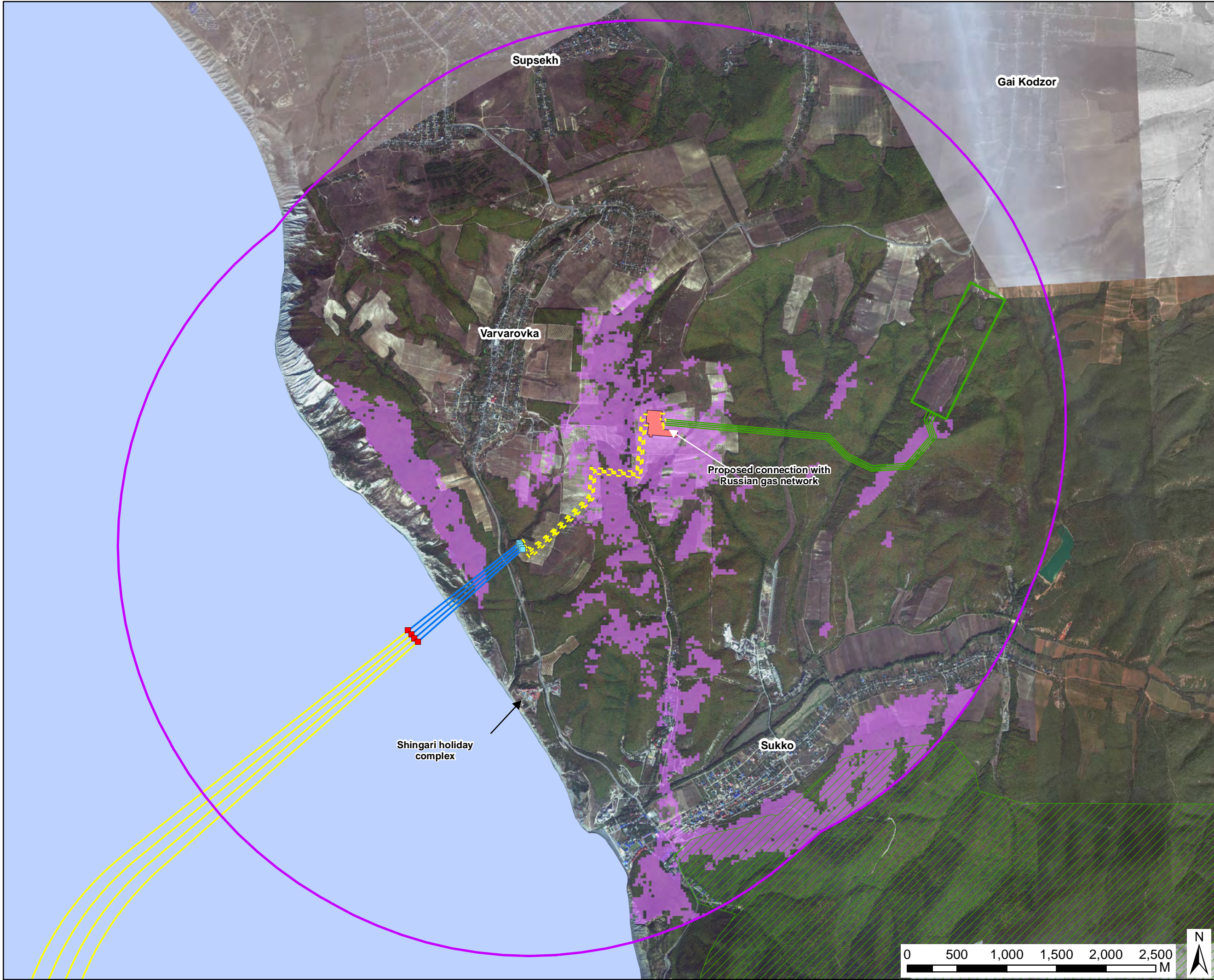
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File Name: 13004 - Information Systems\46369082_South_Stream\MXD\Report Maps - Russian\Russian ES\A\Chapter 13 Landscape\Figure 13.8 Zone of Theoretical Visibility - Landfall Facilities.mxd



LEGEND


- Areas where proposed landfall facilities could be visible
- 4 km survey area
- Russian Sector of South Stream Offshore Pipeline
- Proposed landfall section pipelines
- Landfall facilities
- Proposed microtunnels
- Proposed offshore pipelines
- Microtunnel entry shaft
- Microtunnel exit pit
- Boundary of the state nature reserve "Utrish"
- United Gas Supply System
- Russkaya compressor station
- United Gas Supply System pipelines

Projection: Lambert Conformal Conic

Revision Details	By	Check	Suffix
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Purpose of Issue			
For Information			
Client			
			
Project Title			
SOUTH STREAM OFFSHORE PIPELINE			
Drawing Title			
ZONE OF THEORETICAL VISIBILITY – LANDFALL FACILITIES			
Drawn	Checked	Approved	Date
DH	RW	MW	10/05/2013
URS Internal Project No.		Scale @ A3	
46369082		1:35,000	
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Figure 13.8			

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13.5.4.2 Visual Receptor Groups

Within the Survey Area, potential visual receptor groups and their distance to the Project have been identified and are listed in Table 13.2. A number of locations have been selected to illustrate typical views for the majority of the receptor groups, referred to as representative viewpoints; these locations are shown on Figure 13.9. Photographs taken from the representative viewpoints showing views for the receptor groups are shown in Section 13.5.4.3. It is noted that all of the viewpoint locations are publicly accessible, with one exception; one photograph has been taken from private property under construction - Viewpoint 8 in Sukko.

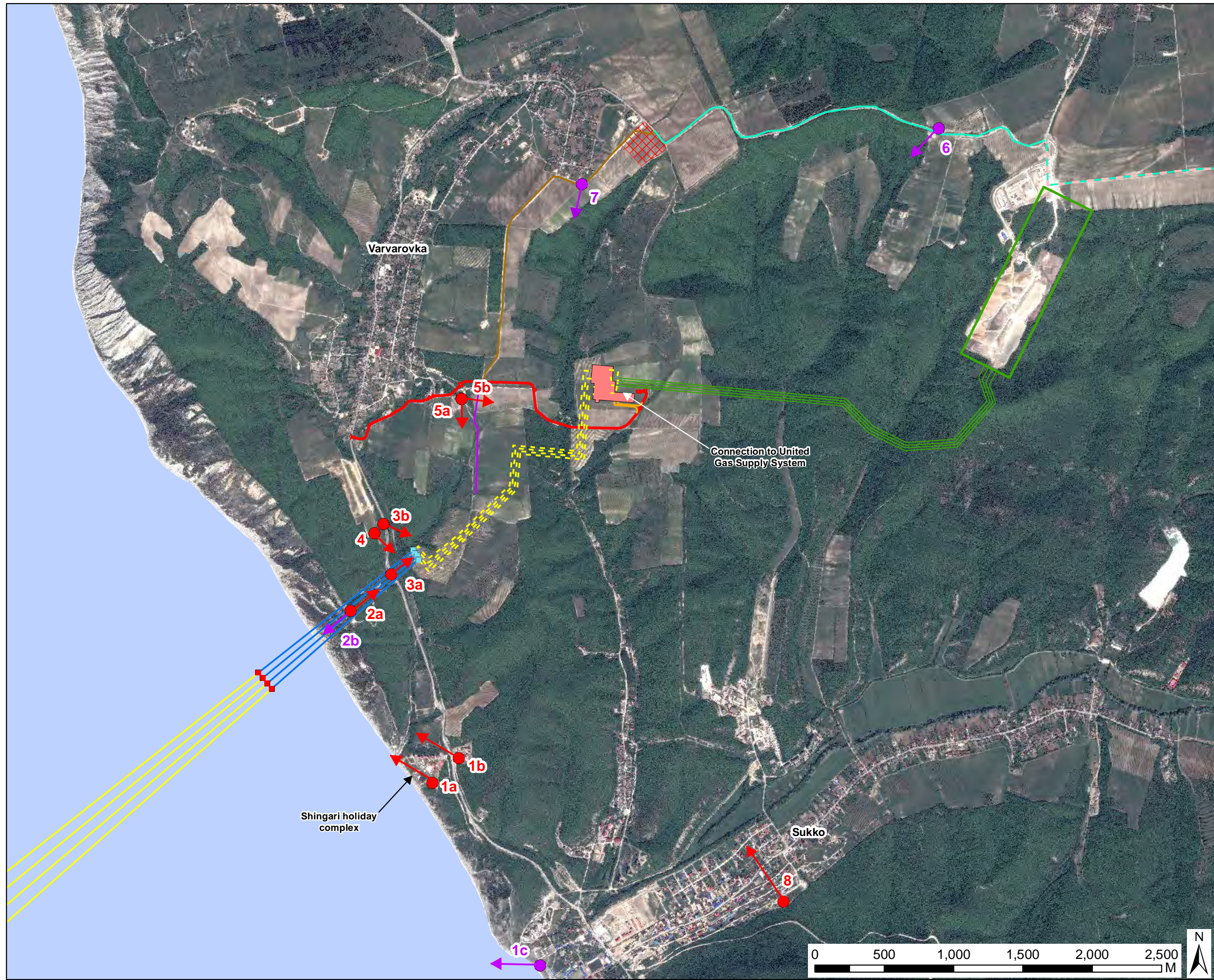
Table 13.2 Visual Receptor Groups

Representative Viewpoint Photographs	Approximate Distance to the Project (m)	Receptor Group
1a, 1b 1c	1360 1460 2820	Recreational visitors to the seashore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes.
2a 2b	630 800	Walkers (including recreational users e.g. horse-riders) on the coastal path along the cliff top.
3a 3b	230 290	Travellers on the Varvarovka-Sukko road.
4	300	Potential residents of "Lesnaya Polyana" the Clearing in the Woods development currently under construction.
5a 5b	500 500	Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka.
6	2940	Travellers on the Varvarovka to Gai Kodzor road
7	1310	Residents living at North-East Varvarovka
8	3800	Residents living at Sukko.
2a, 4, 5a, 5b, 6 and 8	Varies	Agricultural workers on the land.
No Representative Viewpoint	Approximately 4 km	Visitors (only permitted under government license) to state nature reserve "Utrish".

Continued...

Representative Viewpoint Photographs	Approximate Distance to the Project (m)	Receptor Group
No Representative Viewpoint	Varies	Recreational boat users.
No Representative Viewpoint	Varies	Residents living close to the access roads (passing through or around Rassvet, Gai Kodzor, and Varvarovka).

Complete.



LEGEND

- Representative viewpoint locations and direction of view – no photomontage
- Representative viewpoint locations and direction of view – with photomontage
- Russian Sector of South Stream Offshore Pipeline
- Proposed landfall section pipelines
- Landfall facilities
- Proposed microtunnels
- Proposed offshore pipelines
- Microtunnel entry shaft
- Microtunnel exit pit
- Proposed delivery route from Ports
- Permanent access road to be constructed by SSTTBV
- Temporary access road to be constructed by SSTTBV
- Varvarovka bypass road (used by Project during construction only)
- Gazprom Invest temporary bypass road to be utilised by SSTTBV
- Transfer site
- United Gas Supply System
- Russkaya compressor station
- United Gas Supply System pipelines
- Permanent access road to be constructed by Gazprom Invest

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: **REPRESENTATIVE VIEWPOINT LOCATIONS**

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13.5.4.3 Viewpoint Photographs

Viewpoint location photographs for the majority of representative receptor groups are set out below. For scaled viewpoint photographs, refer to Appendix 13.1: Photographs. The Project phases during which Project activities or structures will be visible from these viewpoints are detailed in Table 13.8.

Viewpoint 1a: from Shingari Holiday complex (Recreational Visitors)



Viewpoint 1b: from Don Holiday Complex (Recreational Visitors)



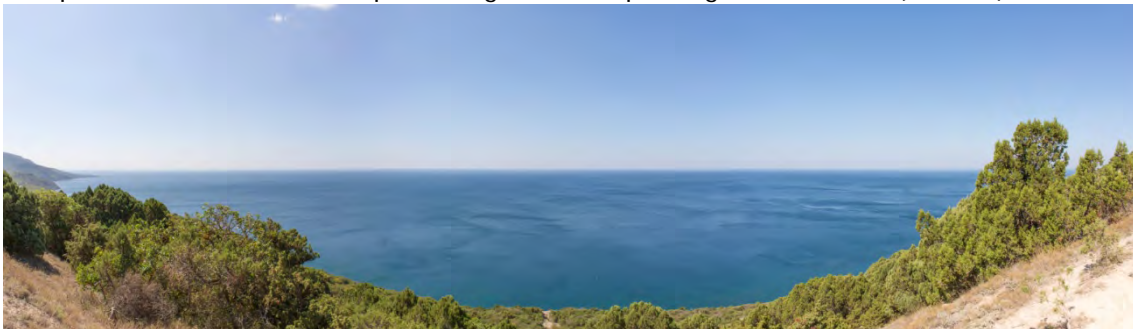
Viewpoint 1c: from Sukko Beach (Recreational visitors)



Viewpoint 2a: from the coastal path along the cliff top facing inland (Walkers)



Viewpoint 2b: from the coastal path along the cliff top facing the Black Sea (Walkers)



Viewpoint 3a: from the Varvarovka-Sukko road (Travellers)



Viewpoint 3b: from the Varvarovka-Sukko road near "Lesnaya Polyana" (Travellers)



Viewpoint 4: from the Clearing in the Woods “Lesnaya Polyana” development (Future Residents)



Viewpoint 5a: from the Russian Orthodox and Armenian cemetery at Varvarovka facing South (Recreational Visitors)



Viewpoint 5b: from the Russian Orthodox and Armenian cemetery at Varvarovka facing East (Recreational Visitors)



Viewpoint 6: from the Varvarovka to Gai Kodzor road (Travellers)



Viewpoint 7: from North-East Varvarovka (Residents)



Viewpoint 8: from Southern hills of Sukko (Residents)



13.5.4.4 Access Roads

The proposed access roads used to transport materials, machinery and workforce on and off the construction sites to existing major road network are shown in Figure 13.2 and Figure 13.3. These routes are proposed mostly along existing roads and tracks, with some areas using the routes of minor, currently unsealed, roadways. The location of the access roads pass in proximity to a number of small residential areas. In these areas some residential properties gain views across these roads and to the open landscape beyond. However, the vast majority of these routes are on roads passing through the extensive agricultural land and adjacent to woodland areas where receptors are limited to agricultural and forestry workers as shown in Figure 13.9.

13.5.5 Baseline Summary

13.5.5.1 Landscape and Seascape Character

Within the Survey Area, one LCA and one SCA have been identified. The Undulating Plateau LCA comprises the rolling, extensively wooded, rural landscape extending inland away from the coast, made up of three main character types, namely forest, wooded valleys and cultivated land. The Black Sea Coastal SCA comprises the open sea and the line of characteristically coastal geomorphology and vegetation along the Black Sea coast, made up of two main character types, namely coastal slope and shoreline.

The landfall facilities are proposed across predominantly cultivated agricultural land and a small section of wooded valley within the Undulating Plateau LCA. The Eastern section of the microtunnelled pipelines is beneath the wooded sloping landscape which backs on to the coastal slopes of the Black Sea Coastal SCA. The microtunnelled pipelines emerge below sea level and therefore impacts on this character area are likely to be limited to periods during the Construction and Pre-Commissioning Phase only; this applies to the microtunnelled section of the pipelines within the LCA also.

The distinctive linear patterned vegetation and seasonally changing appearance of the agricultural fields would provide opportunity to tolerate change such as temporary removal of vegetation cover and excavation during construction, and the undulating nature of the topography provides opportunity to tolerate and conceal localised development, such as spoil storage and site plant, without degrading the overall character of the LCA. This tolerance and lack of susceptibility to change of the type proposed by the Project is important to note and is discussed further in the impact assessment section of this chapter.

13.5.5.2 Visual Amenity

Within the Survey Area, a number of receptor groups with potential to experience an impact on their visual amenity have been identified (as listed in Table 13.2). Within this list, residential receptors include people living at Sukko and Varvarovka, potential residents of "Lesnaya Polyana" the development currently under construction south of Varvarovka, and residents living close to the access roads. Recreational receptors comprise visitors to the seashore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes, walkers on the coastal path, visitors (only permitted under Government license) to

state nature reserve “Utrish” and recreational boat users. Other receptors whose visual amenity could potentially be affected are visitors to the Russian Orthodox and Armenian cemetery at Varvarovka, travellers on the Varvarovka-Sukko and Varvarovka-Gai Kodzor roads, and agricultural workers on the land.

Due to the largely rural nature of the landscape in the Survey Area the number of potential receptor groups is relatively low. Relative numbers of visual receptors is accepted to vary greatly dependent upon seasons, with tourists visiting during summer months experiencing a shorter duration of exposure to views than permanent residents. Furthermore, it is noted that the tourist receptors are likely to be experiencing views during summer months when vegetation is in leaf and more effective at filtering views.

As noted above for the baseline character summary, the undulating topography of the Survey Area provides opportunities for concealed pockets of development to be carried out without potential views being impacted. This is a benefit of the location of the Project and is discussed further in the impact assessment section of this chapter.

13.6 Impact Assessment

This section presents and discusses the impact of the Project on landscape and visual receptors (see Sections 13.5.3 and 13.5.4). The approach to the impact assessment is based on the Guidelines for Landscape and Visual Impact Assessment (Ref. 13.4) and is outlined below:

- The magnitude of potential impacts is described as high, moderate, low or negligible based on criteria shown in Table 13.3 and Table 13.5;
- The sensitivity of each landscape and visual receptor was then classified as either: high, moderate or low based on pre-defined criteria shown in Table 13.4 and Table 13.6;
- The principal sources of potential significant effects associated with the Project are then described;
- The likely pre-mitigation impact significance (**High, Moderate, Low** or **Not Significant**) are assessed, and where possible quantified;
- Mitigation measures to avoid or reduce any **Moderate** or **High** category (significant) impacts are then developed in conjunction with other elements of the design (including mitigation for other environmental disciplines);
- The residual effects of the Project (i.e. the remaining effects taking account of proposed mitigation measures) are reported;
- Cumulative impacts of the Project in relation to other developments in the proximity of the Project Area are described and assessed in **Chapter 20 Cumulative Impact Assessment**; and
- Further consideration is then also given with regard to unplanned events; refer to **Chapter 19 Unplanned Events** for further detail.

Refer to **Chapter 3 Impact Assessment Methodology** for details of the methodology applicable throughout this ESIA Report. This includes the matrix used for determining the level of significance. Impacts with a significance ranking of **Moderate** or **High** are considered to be

'Significant Impacts'. Effects can result directly from the development itself or as a consequence of the development, in the form of indirect or secondary effects, such as traffic on surrounding roads. As noted in **Chapter 5 Project Description**, the assessment is made for three phases of the Project: Construction and Pre-Commissioning, Operational (including Commissioning) and Decommissioning; the duration of these phases is also outlined in that chapter.

13.6.1 Impact Assessment Methodology

This section discusses the methodology used to assess potential impacts associated with the Project on the existing baseline conditions described in Section 13.5.

13.6.1.1 Impact Assessment Criteria

Criteria for Landscape and Seascape Character Impacts

Impact Magnitude

Impact magnitude criteria were developed based on the recognised Good International Industry Practise (GIIP) guidance document Landscape Character Assessment Guidance for England and Scotland (Ref. 13.3). These are summarised in Table 13.3. As detailed in **Chapter 3 Impact Assessment Methodology**, the impact magnitude is considered to be a function of extent, duration, frequency and reversibility; where possible these aspects have been considered in the development of the LVIA criteria. The Guidelines for Landscape and Visual Impact Assessment (Ref. 13.4) also notes the criteria for impact magnitude should consider scale, extent and duration or reversibility. It is noted, however, that some of these criteria are subjective in terms of LVIA and professional judgement in assigning impact magnitude ratings is considered a key part of the LVIA process.

Table 13.3 Impact Magnitude – Landscape and Seascape Character

Magnitude	Description
High	Ranging from a limited change in landscape and seascape characteristics over an extensive geographical area, to an intensive or pronounced change over a more limited area. Impact is more likely to be high if change is long-term or permanent.
Moderate	Moderate change in a localised area (e.g. limited woodland clearance without compromising the overall integrity of the wider woodland area). Could include high impact change of a short-term or temporary nature.
Low	Minor change in scale and geographical extent (e.g. loss of small areas of vegetation or indirect impact resulting from intervisibility with development in adjoining character type). Impact is more likely to be low if change is short-term or temporary.
Negligible	Virtually imperceptible change to the baseline context.

Receptor Sensitivity

The sensitivity of a receptor is both a reflection of how robust (resilient or vulnerable) it is to a change in baseline conditions, as well as a description of the value ascribed to the affected landscape.

The existing landscape and seascape can be assessed in terms of the number and type of discrete landscape and seascape character areas that comprise the overall setting. The criteria for evaluating sensitivity of character areas include their susceptibility to the proposed development specifically, and the value attached to the landscape in general; these are summarised in Table 13.4. These criteria have been developed based upon the recognised GIIP guidance document, Landscape Character Assessment Guidance for England and Scotland (Ref. 13.3).

Table 13.4 Receptor Sensitivity – Landscape and Seascape Character

Sensitivity	Description
High	Landscape of distinctive components and characteristics, or a relatively undisturbed, pristine landscape, where changes or disruptions to the existing landscape would be noticeable and difficult to mitigate or restore; a small change is likely to be prominent or even dominant; a change to the landscape could alter the classification and integrity of the landscape character or quality and its perceived value relative to the scale and openness.
Moderate	Landscape of relatively widespread, featureless, common components and characteristics, able to tolerate some changes or modifications without altering the classification of landscape character or quality. Landscape lacking in structural landform would also be considered of medium sensitivity.
Low	Landscape of relatively indiscernible components and characteristics, the nature of which is likely to be tolerant of substantial change, where modifications are unlikely to alter its character or quality classification. Landscape of poor condition, and low perceived value relative to their scale and form. Where a landscape holds a high potential for mitigation it would also be considered to be of low sensitivity.
Negligible	N/A – it is not considered appropriate to include this category since no landscape is considered so unimportant that it may safely be disregarded.

Criteria for Visual Amenity Impacts

Impact Magnitude

Based on the Guidelines for Landscape and Visual Impact Assessment (Ref. 13.4) a series of visual impact magnitude category definitions were developed. These are detailed in Table 13.5. As with landscape impact magnitude elements of extent, duration, frequency and reversibility have been considered in the development of the LVIA criteria. However, it is noted that some of these characters are subjective in terms of LVIA and professional judgement in assigning impact magnitude ratings is considered a key part of the LVIA process.

Table 13.5 Impact Magnitude – Visual Amenity

Magnitude	Description
High	Extensive change to existing view, loss of key characteristic features; introduction of anomalous and highly prominent or dominant new elements. Impact is more likely to be high if change is long-term or permanent.
Moderate	Notable change to existing view (e.g. partial loss of key characteristic features); introduction of prominent, but essentially localised new features or elements; could include high impact change of a short-term or temporary nature.
Low	Minor change to existing view (e.g. limited loss of characteristic features), changes are evident, but not especially prominent and are generally localised impact is more likely to be low if change is short-term or temporary.
Negligible	Barely perceptible change to existing view and/or very brief exposure to view.

Receptor Sensitivity

Receptor sensitivity for visual amenity is a function of both the degree to which the receptor has an expectation of/or appreciation of a view or landscape, and the degree to which the receptor is physically able to access the view or landscape in question. The subjective criteria adopted have been defined in accordance with the Guidelines for Landscape and Visual Impact Assessment (Ref. 13.4) are detailed in Table 13.6. Visual amenity is defined in GIIP (Ref. 13.4) as *"the overall pleasantness of the views they enjoy of their surroundings"*.

Table 13.6 Receptor Sensitivity – Visual Amenity

Sensitivity	Description
High	Receptors with a key interest and expectation of enjoying the view (e.g. residential receptors, tourists or people engaged in outdoor recreation whose attention is focused on the landscape) and/or a greatly valued existing view (e.g. a designated landscape, unspoilt countryside, recognised viewpoint or conservation area).
Moderate	Receptors at locations where the view is valued but not fundamental to the location or activity (e.g. people engaged in outdoor recreation that does not focus on an appreciation of the landscape). Visual receptors are less sensitive to changes to their view if the quality, condition and extent of the existing view is unexceptional (e.g. some high density suburban townscapes).

Continued...

Sensitivity	Description
Low	Receptors engaged in activities that either distract from the view or require concentration on the foreground, resulting in a minimal interest or appreciation of the view (e.g. people at work or motorists travelling through the area with the sole purpose of getting from one place to another and not for the specific enjoyment of the scenery). Receptors might very well appreciate the view if they chose to, but visual amenity is not the principal reason for them to be present. Visual receptors are less sensitive to changes to their view if the quality of the existing view is poor (e.g. industrial areas or derelict land).
Negligible	N/A – it is not considered appropriate to include this category since no visual receptor is considered so unimportant that it may safely be disregarded.

Complete.

13.6.1.2 Modelling Undertaken

Receptor Sensitivity

Landscape character sensitivity is primarily a function of how robust (resilient or vulnerable) the existing landscape resource is to a given change in baseline conditions. In contrast, visual amenity is a function of how important the specific views and the general visual amenity of the landscape is to individuals or user groups.

Landscape and Seascape Character

Landscape and seascape character areas (LCA and SCA) were identified within the Survey Area, namely:

- Undulating Plateau LCA; and
- Black Sea Coastal SCA.

With regard to the Undulating Plateau, this LCA comprises a deeply undulating, extensively wooded landscape, which is common and characteristic of large areas of the plateau. The woodland is interspersed with open, cultivated land. Woodland is slow to establish and is valued as a natural habitat, but conversely it is effective at 'absorbing' development. In conjunction with the landform and with careful site selection, the woodland has the potential to accommodate development. Additionally, the use of existing open areas provides opportunities to minimise the need for woodland clearance. As such, based upon the criteria within Table 13.4, it is considered that the Undulating Plateau LCA is a moderate sensitivity receptor.

In contrast, based upon the criteria in Table 13.4, the Black Sea Coastal SCA is considered to be a high sensitivity receptor. It contains a relatively contained, linear landscape, limited to the coastline. This is valued for its combination of wildness and long ranging and expansive, panoramic views of the coastline and open sea, where any change has the potential to be highly visible and also to cause the coastal landscape to become fragmented. The combination of steep slopes, cliffs, rocky outcrops, beach and maritime vegetation, fronting the Black Sea, is sensitive to relatively small changes. However, importantly the open expanse of the sea is

interrupted by commercial shipping that regularly uses the Black Sea shipping lanes off the coast in the vicinity of the Project, and is therefore less sensitive to the introduction of the Project fleet (anticipated to be an average of three vessels at any one time, refer to **Chapter 5 Project Description**).

Visual Amenity

In order to establish potential visual receptors a series of ZTVs have been created using the tallest structure, i.e. the vent stack. The ZTVs were generated using ASTER 30 m resolution Digital Terrain Model (bare earth) and analysed using ESRI ArcGIS 3D Analyst to determine ZTV based on line of sight.

Visual receptors were identified as those within the modelled ZTVs (Figure 13.6 to Figure 13.8) and have been calculated based on landform only (i.e. without taking account of woodland or built-up areas) and therefore represent a worst case scenario. In the case of the landfall facilities, on the basis of the visibility of the 30 m high vent stack (as noted above, the actual proposed height of the vent stack is now 21 m). The modelling shows where any part of the stack could possibly be visible, even if it will be only the very top. As such, it is considered to be a highly conservative (i.e. worst case) estimate of the ZTV.

Table 13.7 describes the visual receptors within the ZTV and assesses the level of sensitivity of these receptors to changes in visual amenity in accordance with the criteria set out in Table 13.6. Viewpoint photographs are shown in Appendix 13.1.

Table 13.7 Sensitive Receptors within the ZTV

Receptor Group	Description of Receptor Group Views	Receptor sensitivity
Recreational visitors to the shore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes.	The area is popular for its unspoiled nature and attractive views of coastal scenery and the sea. People on the beaches have open views out to sea to the west, and of the varied coastline to north and south. Views of coastal scenery tend to be highly valued by both local people and visitors using the beach for recreational purposes. From the beaches at Anapa, Sukko, the Shingari and Don holiday complexes, and other parts of the coast around the Taman Peninsula, there are open views towards the nearshore / offshore sections and construction vessels would be visible. However, all construction vessels would be seen in the context of commercial vessels on the existing shipping lanes and current port-related activities. Potential views inland towards the landfall section are prevented by the intervening coastal landform and woodland. In accordance with the criteria set out in Table 13.6, these receptors are judged to have a key interest or appreciation of the view and greatly value the existing view, refer to Viewpoint Photographs 1a, 1b and 1c.	High
Walkers on the coastal path along the cliff top.	Visual amenity is likely to be an important aspect for people choosing to use the coastal path. Views vary considerably depending on location and direction of view. There are panoramic views along the coastline, views inland over the rolling, wooded, plateau landscapes and open views out to sea. On other stretches, views are foreshortened by vegetation enclosing the path. There are views looking both inland of the landfall section from a short stretch of the path in its immediate vicinity and also looking out across the sea towards the nearshore / offshore sections. These receptors are judged to have a key interest or appreciation of the view and greatly value the existing view, refer to Viewpoint Photographs 2a and 2b.	High
Travellers on the Varvarovka to Sukko road.	People in vehicles have views over the rolling, wooded, plateau landscapes, the extent of which varies depending on levels of vegetation and whether the stretch of road is on a ridge or in a valley. These are kinetic views, fleeting and constantly changing for people in moving vehicles. Views include the landfall section from a short stretch of the road in its immediate vicinity. These road users are judged not to place importance on the existing view, refer to Viewpoint Photographs 3a and 3b.	Low

Continued...

Receptor Group	Description of Receptor Group Views	Receptor sensitivity
Potential Residents of the Clearing in the Woods "Lesnaya Polyana" development currently under construction.	There are views from this development site of part of the landfall section, which lies approximately 500 m away at its closest point. These potential receptors are judged to have a key interest or appreciation of the view, refer to Viewpoint Photograph 4. It is currently proposed that residential receptors will not be present until ca. 2015 or later (refer to Chapter 14 Socio-Economics).	High
Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka.	People are likely to visit the cemetery for spiritual and emotional reasons, rather than specifically to enjoy the scenery. There are open views from the cemetery across the wooded valley selected for the landfall section, with the rolling landform of ridgelines forming the skyline beyond and the Black Sea in the distance. The landfall section area is partially visible, as is the area of the proposed access roads along the existing dirt tracks adjacent to the northern and eastern boundaries of the cemetery. In accordance with the criteria set out in Table 13.6 these receptors are judged to value the view but not find it fundamental to the activity of visiting the cemetery, refer to Viewpoint Photographs 5a and 5b.	Moderate
Travellers on the Varvarovka to Gai Kodzor road.	People in vehicles have very limited glimpse views of part the landfall section beyond the intervening hills and woodland from this road; these receptors are approximately 3 km North-East and they experience a wide panoramic view; the extent of these glimpse views of the Site would depend upon the type of vehicle. This section of road is included in the proposed access road. These receptors are judged not to place a lot of importance on the existing view, refer to Viewpoint Photograph 6.	Low
Residents living at North-East Varvarovka.	There are views of the existing unsealed road in the foreground where the proposed upgraded road would form part of the access road. This largely unsealed road is to be converted into a sealed road under existing permitted residential construction. There are also views of part of the landfall section from properties on the Eastern elevated area of Varvarovka facing South. The existing views are panoramic and long-range. The main Site is viewed at a distance of approximately 1.5 km. These receptors are judged to have a key interest or appreciation of the view and greatly value the existing view, refer to Viewpoint Photograph 7.	High

Continued...

Receptor Group	Description of Receptor Group Views	Receptor sensitivity
Residents living at Sukko.	Properties on the seafront and some taller buildings set back from the front have open, uninterrupted views across the beach over the Black Sea. Levels of intervening activity on the beach vary according to the season. Other buildings in elevated locations further back from the seafront, including some development currently under construction; also have views towards the nearshore / offshore section. The landfall section is visible from upper storeys of some properties in elevated locations on the south-eastern side of the village, looking north and at distances of over 3 km. Receptors have fixed views from windows, with no alternative direction of view. In accordance with the criteria set out in Table 13.6. These receptors are judged to have a key interest or appreciation of the view and greatly value the existing view, refer to Viewpoint Photograph 8.	High
Agricultural workers on the land.	Views comprise agricultural land of vineyards, orchards and meadows in a wooded setting. People are likely to be working on the open land, which forms clearings of varying size within the wider wooded landscape. The extent of their views depends on whether they are on a ridge or in a valley and is also influenced by the proximity of woodland. Workers are likely to also gain views of the access roads; in particular the construction of the access road to the north-east of the landfall facilities will be clearly visible from certain locations for these receptors. In accordance with the criteria set out in Table 13.6 these receptors are judged not to place a lot of importance on the existing view, refer to Viewpoint Photographs 2a, 2b, 4, 5a, 5b, 6 and 8.	Low
Visitors to state nature reserve "Utrish".	Visual amenity is likely to be an important aspect for the limited number of people choosing to visit the reserve; visitors must acquire a Government license to gain access. There are views from the south- and west-facing, wooded slopes of the reserve, looking out across the Black Sea. Depending on levels of intervening vegetation at any particular location, construction vessels would be visible working along the nearshore / offshore section, broadly parallel to and around 4 km off the coast, along with non- Project related vessels using the shipping lanes. In accordance with the criteria set out Table 13.6 these receptors are judged to have a key interest or appreciation of the view and greatly value the existing view.	High

Continued...

Receptor Group	Description of Receptor Group Views	Receptor sensitivity
Recreational boat users.	From the sea, receptors have 360° views ranging from open sea to the west, to the coastal slopes and undulating inland landscapes beyond to the east. People have changing views and a variety of directions of view. However, the views for boat users would be restricted to the marine construction spread on the nearshore and offshore sections, not the landfall section. In accordance with the criteria set out in Table 13.6 these receptors are judged to value the view but not find it fundamental to the boat activity, such as fishing or diving.	Moderate
Residents living close to the access roads.	This receptor group is defined by residents living close to the access roads between the M25 junction at Rassvet and the Project facilities. The visual amenity of residents could be affected by required roadwork construction including limited ground remodelling, and construction vehicles passing through. In accordance with the criteria set out in Table 13.6 these receptors are judged to have a key interest or appreciation of the view and greatly value the existing view.	High

Complete.

Photomontages

Photomontages have been produced to illustrate anticipated views experienced by a number of sensitive visual receptors, the locations of these are shown on Figure 13.9, and the photographs are shown in Appendix 13.1. The methodology used to produce these photomontages is included in Appendix 13.2: Photomontage Methodology. A list of the photomontages is set out in Table 13.8. Predicted impacts at these viewpoints are discussed in the following sections on the assessment of potential impacts and residual effects.

Table 13.8 Photomontage Locations

Photograph No.	Photomontage Location	Phase Represented
13.1.1a.1	Viewpoint 1a: from Shingari Holiday complex (Recreational Visitors)	Construction and Pre-Commissioning Phase
13.1.1b.1	Viewpoint 1b: from Don Holiday Complex (Recreational Visitors)	Construction and Pre-Commissioning Phase
13.1.2a.1	Viewpoint 2a: from the coastal path along the cliff top facing inland (Walkers)	Construction and Pre-Commissioning Phase
13.1.2a.2	Viewpoint 2a: from the coastal path along the cliff top facing inland (Walkers)	Year One Operational Phase
13.1.3a.1	Viewpoint 3a: from the Varvarovka-Sukko road (Travellers)	Construction and Pre-Commissioning Phase
13.1.3b.1	Viewpoint 3b: from the Varvarovka-Sukko road near "Lesnaya Polyana" (Travellers)	Construction and Pre-Commissioning Phase
13.1.4.1	Viewpoint 4: from the Clearing in the Woods "Lesnaya Polyana" development (Potential Residents)	Construction and Pre-Commissioning Phase
13.1.4.2	Viewpoint 4: from the Clearing in the Woods "Lesnaya Polyana" development (Potential Residents)	Year One Operational Phase
13.1.5a.1	Viewpoint 5a: from the Russian Orthodox and Armenian cemetery at Varvarovka facing South (Recreational Visitors)	Construction and Pre-Commissioning Phase
13.1.5a.2	Viewpoint 5a: from the Russian Orthodox and Armenian cemetery at Varvarovka facing South (Recreational Visitors)	Year One Operational Phase

Continued...

Photograph No.	Photomontage Location	Phase Represented
13.1.5b.1	Viewpoint 5a: from the Russian Orthodox and Armenian cemetery at Varvarovka facing East (Recreational Visitors)	Construction and Pre-Commissioning Phase
13.1.5b.2	Viewpoint 5a: from the Russian Orthodox and Armenian cemetery at Varvarovka facing East (Recreational Visitors)	Year One Operational Phase
13.1.8.1	Viewpoint 8: from Southern hills of Sukko (Residents)	Year One Operational Phase
13.1.8.2	Viewpoint 8: from Southern hills of Sukko (Residents)	Commissioning and Operational phases – Wireframe

Complete.

13.6.2 Assessment of Potential Impacts: Construction and Pre-Commissioning

13.6.2.1 Introduction

This section identifies and evaluates the magnitude of the various predicted impacts that are likely to arise in relation to the Landscape and Seascape Character Areas and visual receptors identified in Section 13.5, as a result of the Construction and Pre-Commissioning Phase of the Project.

13.6.2.2 Project Activities with potential to cause landscape and visual impacts

The implementation of the Project involves activities that have the potential to impact both the terrestrial and the marine environments during the Construction and Pre-commissioning Phase.

Landscape and visual impacts would be most apparent during this phase and potentially due to unplanned events (see Section 13.7).

Terrestrial construction, pre-commissioning and operational activities affecting landscape and visual amenity, including habitat removal, site grading and the erection of industrial structures, will generate permanent modifications to the landscape. Temporary impacts to the landscape will also occur as a result of construction activities, which will include the operation of large mechanical equipment, power generators, soil stockpiles, parking of large construction machinery, and the generation of dust from construction activities. For further detail on the size of specific elements required for these activities, refer to **Chapter 5 Project Description**.

It will be necessary to clear all vegetation from the Pipeline route corridor and from any areas for temporary facilities. This will include vines planted in the vineyards, which cover a large proportion of this area. The areas cleared will be reinstated with some form of vegetation

following the completion of the Construction and Pre-Commissioning Phase so this is considered to be a short-term and reversible impact (refer to Section 13.6.3 for details of assumed reinstatement). However, there will be a permanent change in the land use for the area occupied by the permanent landfall facilities and the permanent RoW as reinstatement of previous vegetation would not be possible in all areas, in particular on the permanent RoW. In areas directly adjacent to the RoW, graded bands of vegetation will be planted to re-vegetate the cleared areas.

The preparation and construction of the access roads between the M25 and the construction sites will include some new temporary hard surface roads, resurfacing of existing roads, upgrading dirt tracks to sealed roads, installation of localised sections of acoustic fencing (where necessary), and other minor improvements. It is anticipated that the majority of roads which are constructed on new routes will be reinstated after use; however, some are proposed to be retained where appropriate as agricultural access tracks, or for maintenance of Project facilities.

Offshore and nearshore construction impacts on seascape and visual amenity will result from pipe-laying vessels and support vessels (the construction spread) in the proximity of the shore and in the line of sight on the sea.

For further details on the duration of these phases refer to the construction schedule within **Chapter 5 Project Description**. For the purposes of this assessment, the Construction and Pre-Commissioning activities are estimated to be undertaken over a period of less than two years.

The relevant activities of the Project are summarised in Table 13.9.

Table 13.9 Construction and Pre-Commissioning Activities

Activity	Onshore	Offshore	Nearshore
Mobilisation of vessels to and from site, and vessel movements within marine construction spread.		✓	✓
Construction traffic on access roads to and from the site.	✓		
Delivery, storage and handling of pipe, plant and equipment for offshore, nearshore and landfall section construction, including containers, mobile cranes and reach stackers along the access roads.	✓		
Preparation of the construction site: fencing of the working section, clearance of trees and shrubs, grading of access roads and temporary construction sites.	✓		
Transfer of construction machinery to construction sites, installation of infrastructure required.	✓		

Continued...

Activity	Onshore	Offshore	Nearshore
Excavation and backfilling works: stockpiling of topsoil and subsoil, digging of trenches for pipe laying, channels etc.	✓		
Transportation of pipes and auxiliary materials to the Pipeline route and temporary storage. Welding and other works required for pipe laying and control works for checking the Pipeline safety.	✓	✓	✓
Building of facilities required for Pipeline operation, including construction of 21 m* high vent stack.	✓		
Pipeline construction at microtunnel exit point		✓	✓
Restoration of temporary roads and temporary construction sites.	✓		
Replanting of disturbed areas using appropriate local species in line with the detailed landscape restoration plan.	✓		
Pre-Commissioning works.	✓		

* The vent stack has been reduced from 30 m to 21 m since the ZTV analysis was undertaken

Complete.

13.6.2.3 Assessment of Potential Impacts (pre-mitigation)

During the Pre-Commissioning Phase works likely to affect landscape and visual amenity would be limited to two activities – three days of vessel operation to aid in the pumping of sea-water as part of hydrotesting, and onshore traffic movements to dispose of the small volume of liquid waste associated with cleaning and drying of the pipes. The landscape and visual amenity impacts associated with these activities are considered to be **Not Significant** and therefore not considered further. Consequently, the impacts discussed below relate only to construction activities.

As noted above, refer to **Chapter 3 Impact Assessment Methodology** for details relating to calculating the level of significance.

Landscape Character

With regard to the Undulating Plateau LCA, it is noted that this landscape of moderate sensitivity (as defined in Section 13.6.1.1) would be subject to direct impacts as a result of site clearance and construction work (e.g. clearance of existing vegetation and establishment of man-made structures). The extent and nature of this clearance (approximately 21.8 hectares (ha)), in comparison with the total area of the Undulating Plateau LCA within the Survey Area, is considered to be a limited geographical area. Additionally, it is a characteristic of the agricultural land cover that its impact on the landscape fabric varies, appearing as bare earth alternating to lush vegetation cover, throughout its seasonal management. The LCA would also experience impacts from other general construction elements, such as vehicular and labour

force movements within the road infrastructure, potential noise and light emission. The Construction and Pre-Commissioning Phase associated impacts are considered likely to be adverse, direct, temporary, short-term and local (i.e. only in the Pipeline route corridor and access roads).

Some indirect impacts are also predicted such as the potential for coating of soil and vegetation with dust during the construction activities. The impact is assessed as adverse, direct, short-term (only during construction - estimated to be a maximum of two years), local (within the area of the Pipeline route) and reversible, because of the restoration of the landscapes after construction period. However, the outcomes of some of the construction activities, such as woodland clearance would be longer-term and effectively permanent but would not compromise the overall integrity of the wider woodland.

The reversibility of construction impacts would be largely dependent upon the successfulness of the restoration of the landscapes following the construction period in line with the Project restoration management measures set out in **Chapter 22 Environmental and Social Management**. Overall, it is considered that the magnitude of impact of construction activities on landscape character within the Undulating Plateau LCA is moderate, resulting in a **Moderate** and adverse impact which is considered significant.

Within the Black Sea Coastal SCA, it is noted that this seascape of High sensitivity would be impacted by the microtunnelling construction proposed for crossing the coastline, the only visible construction activities would be offshore, which would result in some limited, adverse, direct, temporary, short-term deterioration of the seascape, considered to be of low impact magnitude, resulting in a **Moderate** adverse impact.

Visual Amenity

Table 13.10 details the perceived magnitude of impact during construction for each of the receptors identified in terms of visual amenity. Refer to photomontages for the majority of receptor groups showing the Construction and Pre-Commissioning Phase, in Appendix 13.1.

Offshore construction vessels would be visible from much of the coastline, including the coastal path. From Sukko, offshore construction activity would be visible both from the beach and from properties on the seafront, in addition to some elevated or taller properties further inland. The offshore construction corridor would also be visible to people on the beach at the Shingari and Don holiday complexes and other beach users on Anapa beach, which stretches from Anapa Bay south towards the landfall section. Anapa Bay is a popular beach directly in front of Anapa, from where construction vessels would not be visible due to the screening offered by the headland to the south. It is not anticipated that sediment disturbed by the construction process will be visible in the sea from the coastline and therefore this is not considered as a potential visual impact, for details of plume modelling, refer to **Chapter 12 Marine Ecology**, which also notes that this impact will be monitored.

Table 13.10 Visual Impact Significance (pre mitigation) upon Receptors within the ZTV during Construction and Pre-Commissioning Phase

Visual Receptor	Sensitivity	Impact Magnitude	Significance	Description
Recreational visitors to the seashore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes.	High	Moderate	High	People on the beaches have open views out to sea to the west. Construction vessels working on the nearshore / offshore section would be visible from beaches and other stretches of seashore. On the beach at Sukko, these would be at distances of between approximately 3 to 4 km, and the proposed microtunnel exit points would be behind the headland to the north and therefore not visible. All construction vessels would be seen in the context of commercial vessels on the existing shipping lanes. From the beach at the Shingari and Don holiday complexes, there would be open views of construction vessels working on the nearshore / offshore sections, including the microtunnel exit points, over 1 km away. Potential views inland towards the landfall section are prevented by the intervening coastal landform and woodland.
Walkers on the coastal path along the cliff top.	High	Low	Moderate	Views for people on the coastal path vary considerably depending on location and direction of view. From a short stretch of the path in the immediate vicinity of the landfall section, construction works would be visible looking inland. The extent of views of construction vessels working on the nearshore / offshore sections would vary greatly depending on the location of the viewer along the path. The closest element to the shore – the microtunnel exit points – would be approximately 800 m from the coastal path at its closest point. Further south, construction vessels may be seen working at around 4 km off the coast. North of the microtunnel exit points, supply vessels from Temryuk Port would be seen amongst other vessels on the existing shipping lanes.

Continued...

Visual Receptor	Sensitivity	Impact Magnitude	Significance	Description
Travellers on the Varvarovka-Sukko road.	Low	Low	Low	Views of construction activity on the landfall section would be gained from a short stretch of the road in its immediate vicinity; the microtunnel entry points are approximately 200 m from the road at its closest point. From stretches of the road where the sea is visible through the woodland, for example the stretch between Sukko and the Shingari Holiday complex, there are likely to be glimpses of construction vessels working around 4 km off the coast. Generally, these are kinetic views, fleeting and constantly changing for people in moving vehicles.
Residents of the Clearing in the Woods "Lesnaya Polyana" development currently under construction.	High	Negligible	Low	Whether or not the visual amenity of residents of the Clearing in the Woods development would be affected, will depend on the progress of that residential development in relation to the Construction Phase of the landfall section (approximately 500 m away at its closest point). At the time of survey, there were no properties where the visual amenity of residents would be affected. Assuming the development is constructed prior to the commencement of the Project, partial views of the construction activities from a small number of properties is likely to be possible.
Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka.	Moderate	High	High	There are open views from the cemetery across the wooded valley selected for the landfall section, where construction activity would be visible at distances of between around 500 m and 1 km. Construction vessels would be visible in the distance on the Black Sea, at least 2.5 km away, beyond the rolling landform of wooded ridgelines. There would be clear views of the construction and use of the access road along the northern and eastern boundaries of the cemetery for these receptors.
Travellers on the Varvarovka – Gai Kodzor road.	Low	Negligible	Not Significant	It is not considered that there would be views of the construction activity from this road due to the intervening topography and woodland vegetation. This road would be used as an access road for the Construction Phase only. Due to the significance, these receptors are scoped out of this assessment from this point.

Continued...

Visual Receptor	Sensitivity	Impact Magnitude	Significance	Description
Residents living at North-East Varvarovka.	High	Moderate	High	People living in the new development on the elevated locations of the northeast of Varvarovka with windows oriented towards the landfall section and access roads are likely to gain clear views of the upgraded road and temporary acoustic barrier in the immediate vicinity. It is noted however, that this road is to be upgraded (to a sealed road) as part of existing permitted residential construction, irrespective of the Project. Further south, they may also view tall construction plant such as cranes and distant glimpses of the Project construction activities. The majority of construction operations would be screened by landform and woodland, however, construction of the access road (including the temporary acoustic barrier) would be short term. The impact of the construction of the access road and its use for Project-related traffic would be adverse, direct, temporary and short-term. The road would then be left in situ for future residential users of the proposed 'Chateau' residential development.
Residents living at Sukko.	High	Low	Moderate	Construction vessels working on the nearshore and offshore sections would be visible from properties overlooking the sea at distances of between 3 and 4 km. The proposed microtunnel exit points would be behind the headland to the north of Sukko and therefore not visible. From some properties in elevated locations with windows oriented towards the landfall section, upper parts of tall construction plant, such as cranes, are likely to be visible looking over and between buildings within Sukko, beyond the intervening, undulating, wooded landscape. The majority of construction activities would be screened by landform and woodland. The impact would be adverse, direct, temporary, short-term and local (only looking in one direction and at a distance of around 3 km).
Agricultural workers on the land.	Low	Low	Low	People working on the agricultural land of vineyards, orchards and meadows within the immediate vicinity of the landfall section would experience views of construction work and potentially the access roads. The extent of their views would depend on whether they are on a ridge or in a valley and would also be greatly influenced by the proximity of woodland.

Continued...

Visual Receptor	Sensitivity	Impact Magnitude	Significance	Description
Visitors to state nature reserve "Utrish".	High	Low	Moderate	Depending on levels of intervening vegetation at any particular location, construction vessels would be visible from south- and west-facing, wooded slopes of the reserve. Vessels would be working along the nearshore and offshore section, broadly parallel to and around 4 km off the coast, in the context of other vessels on the existing shipping lanes.
Recreational boat users.	Moderate	Moderate	Moderate	Due to the nature of the coastal topography and woodland, construction activities on the landfall section are unlikely to be visible. Boat users would have open views of construction vessels working on the nearshore / offshore sections. Supply vessels would be seen in the context of other commercial shipping in the vicinity.
Residents living close to the access roads.	High	Low	Moderate	The visual amenity of some residents living close to the access roads would be affected by increased numbers of vehicles passing through or close to affected settlements. Appendix 9.1: Traffic and Transport Survey notes an average increase in vehicular movements of less than 10% at the highest peak during construction on existing roads (refer to Chapter 14 Socio-Economics and Chapter 5 Project Description for more detail of specific routes and type of vehicle). Furthermore, certain residents would be also visually affected by the construction works required to upgrade a limited amount of these roads to the standards required for construction traffic, this would predominantly involve resurfacing works.

Complete.

13.6.2.4 Mitigation and Monitoring: Construction and Pre-Commissioning Phase

Taking account of the potential impacts identified above, a Russian Landfall Construction Management Plan (CMP) will be prepared and communicated to contractors before any on-site works begin (**Chapter 22 Environmental and Social Management**). The CMP will detail the mitigation and monitoring measures, including requirements for the detailed landscape restoration plan, outlined in this section.

A range of design controls have been incorporated into the Construction and Pre-Commissioning Phase of the Project to ensure that the impact is minimised, as follows:

- Site selection away from settlements to minimise potential visual impact on residents;
- Alignment of proposed Pipeline to cause minimal damage to existing vegetation as far as practicable;
- Wooded nature of surrounding landscape minimises extent of direct visual impact and indirect impact on landscape character;
- Use of existing open land (agricultural fields) to minimise the need for further woodland clearance;
- Coastal crossing by means of microtunnelling to avoid the need for excavation of cliffs; and
- A buried pipeline is proposed as opposed to an above ground pipeline.

Where design controls have not fully mitigated an impact, further mitigation measures have thus been introduced. As described above, the key landscape and visual impacts would be associated with the Construction and Pre-Commissioning Phase; hence the majority of proposed mitigation measures are also related to that phase of the Project. Landscape and visual impacts during this phase would be minimised through:

- Protection of woodland and other vegetation to be retained, with the use of appropriate protective measures including fencing where appropriate;
- Erection of construction fencing and screening, and where necessary and practicable, the contractor shall use hoardings to screen unsightly, low-level construction activity close to publically accessible areas or residential properties;
- Phasing of construction where possible, to enable adverse impacts to be restricted to specific areas of the construction corridor at any one time;
- Phased consecutive programme of excavation and restoration (including prompt installation of proposed planting where practicable) to minimise areas of disturbed ground at any one time and to provide for direct placement of soils which would, in turn, minimise the amount of soil that has to be stockpiled and provide for a rapid reinstatement of the site;
- Progressive reinstatement of RoW in accordance with a landscape restoration plan following installation of the Pipeline;
- Rehabilitation and re-vegetation as soon as practicable;

- Avoidance of night-time construction activities as far as practicable;
- Utilisation of directional shielding for all lights used (including on construction associated vessels with the exception of navigational lights);
- Contractual requirement for an ethos of tidy working and regular removal of debris etc. and other materials with potential negative effect on the visual amenity and landscape character;
- Utilisation of suitable dust suppression methods where practicable to avoid dust plumes that would increase the prominence of the works, and which may otherwise coat nearby vegetation;
- Suitable weed control on temporary soil stockpiles and disturbed ground in accordance with the landscape restoration plan;
- Adoption of GIIP restoration practices and suitably experienced contractors;
- Appropriate planting in accordance with a landscape restoration plan (or equivalent). This plan would stipulate the planting of native vegetation in areas which do not have to remain open for operational reasons, to compensate for vegetation which has been cleared or disturbed; in particular areas around the landfall facilities and along the edges of the RoW where practicable including appropriately selected vegetative screening should be applied around the landfall facilities, and some retained access roads;
- Use of suitable vehicles and good vehicle maintenance on a regular basis to reduce visibility of exhaust emissions;
- An access road to bypass Varvarovka shall be routed so as to minimise disturbance to as many residences as reasonably possible;
- The proposed access road in proximity to the cemetery has been routed away from the cemetery boundary, in order to minimise the impact on visual amenity and landscape character. The selected route to the east is therefore separated from this receptor by intervening ground and furthermore, is proposed to be partially screened by planting in accordance with the landscape restoration plan. This planting shall be installed at the start of construction to maximise establishment time and effectiveness, and shall be maintained during the Operational Phase whilst the road continues to be used by the Project;
- Removal of acoustic barriers as soon as possible; and
- Reinstatement of newly constructed roads after construction where practicable or retention as agricultural access tracks and for maintenance.

The majority of construction impacts are considered to be reversible through the implementation of an appropriate landscape restoration plan during and after the Construction and Pre-Commissioning Phase. As such non-reversible impacts are limited to built elements, as they are completed within the Construction and Pre-Commissioning Phase, that may be visible to sensitive receptors (i.e. the vent stack and the permanent RoW).

13.6.2.5 Residual Impacts: Construction and Pre-Commissioning Phase

Table 13.11 presents a summary of the potential residual impacts to landscape and visual amenity arising from the Project during the Construction and Pre-Commissioning Phase, taking into account of the identified mitigation measures. Measures, stated in full above, are summarised, for ease of reference, in Table 13.11. In some occurrences the application of these measures may lead to a reduction in the adverse impact but may not be reflected in a lower categorisation of impact significance.

The majority of residual impacts are identified to be either of **Low** significance or **Not Significant** following mitigation and, as such, do not require any further management by the Project. However, a small number of **Moderate** (significant) impacts were identified for the following receptors:

- Parts of the Undulating Plateau LCA such as along the access roads, the landfall section, in the vicinity of the landfall facilities and at the microtunnel entry shaft;
- Recreational visitors to the seashore;
- Construction impacts upon the visual amenity of walkers on the coastal path at certain locations along the cliff top;
- Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka;
- Residents living at North-East Varvarovka; and
- Recreational boat users.

These impacts would be short-term and result from the installation of physical infrastructure in a currently rural environment.

One key measure likely to further reduce these impacts is seen to be consultation with the affected stakeholders and their individual subjective assessment and concerns associated with the potential impacts associated with the Project (refer to **Chapter 6 Stakeholder Engagement** for further details). In particular, this may include:

- Further consultation with affected stakeholders (e.g. residents of Varvarovka, beach users, Shingari and Don holiday complex) to alert them of the proposed activity in detail as to what visual impacts may be expected;
- Discussion with the affected stakeholders as to their subjective opinion on the importance of temporary visual amenity impacts; and
- Detailed discussions with regard to scheduling of any particularly intrusive works, so as to ensure they occur at the time least likely to generate impacts to sensitive receptors.

Table 13.11 Assessment of Potential Residual Impacts: Construction and Pre-Commissioning Phase

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Land clearance; • Bulk earthworks and spoil stockpiles; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	<p>Temporary alteration to landscape through loss of vegetation, altered landforms, construction equipment, vehicle movement, and material storage.</p>	<p>Undulating Plateau LCA</p>	<p>Moderate</p>	<p>Moderate</p>	<p>Moderate</p>	<p>Phasing of construction.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	<p>Moderate adverse, direct, temporary, short-term.</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken as part of the nearshore / offshore sections, including:</p> <ul style="list-style-type: none"> Nearshore dredging; Anchoring of pipe-lay winches; Transfer of materials and equipment from the port(s); and Operation of marine construction vessels. 	Temporary alteration to the coastal SCA through operation of construction and supply vessels.	Black Sea Coastal SCA	High	Low	Moderate	<p>Phasing of construction.</p> <p>Avoidance of night-time construction activities as far as practicable.</p> <p>Directional shielding for lighting, other than navigational lights on vessels.</p>	Low adverse, direct, temporary, short-term.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	Distant views of landfall section construction works.	Residents living at Sukko.	High	Low	Moderate	<p>Phasing of construction.</p> <p>Avoidance of night-time construction activities as far as practicable.</p> <p>Directional shielding for lighting.</p>	Low adverse, direct, temporary, short-term.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	<p>Views of construction work on the landfall section and access roads. Refer to Photomontages 13.1.5a.1 and 13.1.5b.1.</p>	<p>Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka.</p>	Moderate	High	High	<p>Phasing of construction.</p> <p>Routing of access road (as shown in photomontages) east of cemetery and installation of mitigation planting and minimal duration of use.</p> <p>Screening planting to be installed at start of construction to establish and maximise effectiveness of screening access road in proximity to Cemetery.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	<p>Moderate adverse, direct, permanent.</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	Views of the acoustic barrier along the access road. Limited views of construction work on the landfall section.	Residents living at North-East Varvarovka.	High	Moderate	High	<p>Use of suitable vehicles and good vehicle maintenance on a regular basis to reduce visibility of exhaust emissions.</p> <p>Removal of acoustic barriers as soon as possible.</p> <p>Phasing of construction.</p> <p>Avoidance of night-time construction activities as far as practicable.</p> <p>Directional shielding for lighting.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	Moderate adverse, direct, temporary, short-term.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and 	<p>Limited views of construction work on the landfall section. Refer to Photomontage 13.1.2a.1</p>	<p>Walkers on the coastal path along the cliff top.</p>	<p>High</p>	<p>Low</p>	<p>Moderate</p>	<p>Phasing of construction;</p> <p>Construction fencing and screening;</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline;</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	<p>Moderate adverse, direct, temporary, short-term.</p>
<ul style="list-style-type: none"> • Transfer of materials, equipment and workers on / off site. 	<p>Limited views of construction work on the landfall section. Refer to Photomontages 13.1.3a.1 and 13.1.3b.1.</p>	<p>Travellers on the Varvarovka-Sukko road.</p>	<p>Low</p>	<p>Low</p>	<p>Low</p>	<p>Phasing of construction.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	<p>Low adverse, direct, temporary, short-term.</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	<p>Views of the construction traffic on this access road.</p> <p>Limited views of construction work on the landfall section.</p>	<p>Travellers on the Varvarovka-Gai Kodzor road.</p>	Low	Low	Low	<p>Phasing of construction.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	<p>Low adverse, direct, temporary, short-term.</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	<p>Change to visual amenity through loss of native vegetation, altered landforms, construction equipment, access roads, vehicle movement and material storage. Refer to Photomontages 13.1.2a.1, 13.1.2b.1, 13.1.4.1, 13.1.5a.1, 13.1.5b.1, and 13.1.8.1.</p>	<p>Agricultural workers on the land.</p>	<p>Low</p>	<p>Low</p>	<p>Low</p>	<p>Phasing of construction.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	<p>Low adverse, direct, temporary, short-term.</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> • Clearance; • Bulk-earthworks; • Infrastructure installation; • Operation of vehicles, plant and equipment; and • Transfer of materials, equipment and workers on / off site. 	<p>At the time of survey, there were no properties where the visual amenity of residents would be affected. Refer to Photomontage 13.1.4.1.</p>	<p>Residents of the Clearing in the Woods "Lesnaya Polyana" development currently under construction.</p>	High	Negligible	Low	<p>Phasing of construction.</p> <p>Construction fencing and screening.</p> <p>Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline.</p> <p>Rehabilitation and re-vegetation as soon as practicable.</p>	Not Significant

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken as part of the nearshore / offshore sections, including:</p> <ul style="list-style-type: none"> Nearshore dredging; Anchoring of pipe-laying winches; Transfer of materials and equipment from the port(s); and Operation of marine construction vessels. 	<p>Views of construction vessels along the nearshore / offshore sections and supply vessels running to and from the port(s) Refer to Photomontage 13.1.8.1</p>	<p>People living and working at Sukko and visitors to the town.</p>	<p>High</p>	<p>Low</p>	<p>Moderate</p>	<p>Phasing of construction.</p> <p>Avoidance of night-time construction activities as far as practicable.</p> <p>Directional shielding for lighting, other than navigational lights on vessels.</p>	<p>Low adverse, direct, temporary, short-term</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken as part of the nearshore / offshore sections, including:</p> <ul style="list-style-type: none"> Nearshore dredging; Anchoring of pipe-laying winches; Transfer of materials and equipment from the port(s); and Operation of marine construction vessels. 	<p>Temporary presence of non-recreational vessels in the waters off the holiday complexes, comprising construction vessels along the nearshore/ offshore sections and supply vessels running to and from the port(s). Refer to Photomontages 13.1.1a.1 and 13.1b.1.</p>	<p>Recreational visitors to the seashore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes.</p>	High	Moderate	High	<p>Phasing of construction.</p> <p>Avoidance of night-time construction activities as far as practicable.</p> <p>Directional shielding for lighting, other than navigational lights on vessels.</p>	<p>Moderate adverse, direct, temporary, short-term</p>

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
All construction activities undertaken as part of the nearshore / offshore sections, including: <ul style="list-style-type: none"> Nearshore dredging; Anchoring of pipe-laying winches; Transfer of materials and equipment from the port(s); and Operation of marine construction vessels. 	Views of vessels working along the nearshore/ offshore sections and supply vessels running to and from the port(s).	Walkers on the coastal path along the cliff top.	High	Low	Moderate	Phasing of construction. Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline. Rehabilitation and re-vegetation as soon as practicable.	Moderate adverse, direct, temporary, short-term
	Views of construction vessels along the nearshore/ offshore sections and supply vessels running to and from the port(s).	Visitors to state nature reserve "Utrish".	High	Low	Moderate	Phasing of construction. Avoidance of night-time construction activities as far as practicable. Directional shielding for lighting, other than navigational lights on vessels. Progressive reinstatement of RoW in accordance with the detailed landscape restoration plan following installation of the Pipeline. Rehabilitation and re-vegetation as soon as practicable.	Low adverse, direct, temporary, short-term.
	Views of all onshore construction activities.						

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>All construction activities undertaken as part of the nearshore / offshore sections, including:</p> <ul style="list-style-type: none"> Nearshore dredging; Anchoring of pipe-laying winches; Transfer of materials and equipment from the port(s); and Operation of marine construction vessels. 	<p>Temporary presence of non-recreational vessels in the coastal waters, comprising construction vessels along the nearshore/ offshore sections and supply vessels running to and from the port(s).</p>	Recreational boat users.	Moderate	Moderate	Moderate	<p>Phasing of construction.</p> <p>Avoidance of night-time construction activities as far as practicable.</p> <p>Directional shielding for lighting, other than navigational lights on vessels.</p>	Moderate adverse, direct, temporary, short-term.
<p>All construction activities undertaken onshore as part of the landfall section, including:</p> <ul style="list-style-type: none"> Transfer of materials and equipment from the major existing road networks; and Transport of construction workers. 	<p>Upgrade to existing infrastructure.</p> <p>Additional vehicles along existing minor roads.</p>	Residents living close to the road access roads from the M25 at Rassvet.	High	Low	Moderate	<p>Use of suitable vehicles and good vehicle maintenance on a regular basis.</p> <p>Reinstatement of newly constructed roads after construction where practicable or retention as agricultural access tracks and for maintenance.</p>	Low adverse, indirect, temporary, short-term

Complete.

13.6.3 Assessment of Potential Impacts: Operational (including Commissioning) Phase

13.6.3.1 Introduction

This section identifies and evaluates the magnitude of the various predicted impacts that are likely to arise in the relation to the landscape and seascape character and visual receptors identified in Section 13.5, as a result of the Operational and Commissioning Phases of the Project. This phase shall be referred to as Operational Phase henceforth as it is considered that the landscape and visual effects would be identical for these phases. The above-ground landfall facilities will be operated throughout the Project lifecycle and they will therefore cause a permanent impact to the landscape during the Operational Phase of the Project.

13.6.3.2 Project Activities with potential to cause landscape and visual impacts

During the Operational Phase, impacts would be mainly experienced from locations within the terrestrial environment with potential for additional impacts due to unplanned events (refer **Chapter 19 Unplanned Events**).

The above-ground landfall facilities would be operated throughout the Project lifecycle and they would therefore cause a permanent impact to the landscape during the Operational Phase of the Project. There would be a permanent change in the land use for the area occupied by the permanent landfall facilities and the RoW as reinstatement of previous, deep-rooted vegetation (such as grape vines) would not be possible in all areas, in particular within the permanent RoW area which is required to be kept clear (except for low growing vegetation such as grasses) (See **Chapter 14 Socio-Economics** for more details).

For the purposes of this assessment, it is assumed that all areas of vineyards which would have been cleared for construction would have been replanted with some form of crop or vegetation (except in those areas directly over the RoW area which is required to be kept clear (except for low growing vegetation such as grasses) and the landfall facilities, as required). This is reflected in the relevant photomontages.

All offshore activities would have ceased. The relevant activities of the Project are summarised in Table 13.12.

Table 13.12 Operational Phase Activities

Activity	Onshore	Offshore	Nearshore
Permanent above-ground plant, including a 21 m high vent stack.	✓		
Permanent woodland clearance on plant site and along permanent RoW.	✓		
Intermittent maintenance and clearance of tree and shrub regrowth along the pipeline easement.	✓		

* The vent stack has been reduced from 30 m to 21 m since the ZTV analysis was undertaken

13.6.3.3 Assessment of Potential Impacts (Pre-Mitigation)

Landscape Character

Direct impacts on the Undulating Plateau LCA would result from the presence of permanent, above-ground plant and land cleared for the permanent RoW. The proposed landfall section facilities include a metering facility, pipeline inspection gauge (PIG) traps and electrical and instrumentation installations, for further details refer to **Chapter 5 Project Description**. All of the plant would be well below the top of the canopy top of adjoining woodland, except for the proposed 21 m high vent stack, which is likely to protrude above the existing canopy cover by a few metres. The effects on the landscape fabric itself would be largely confined to the landfall facilities, however, the impacts upon the landscape character would be adverse, direct, long-term (for the entire duration of operation) and localised.

Maintenance activity would be infrequent and relatively low-key.

However, the extensive woodland surrounding the Project is effective at 'absorbing' development by screening much of the Project. On this basis the operational impact upon the Undulating Plateau LCA would be low, resulting in a **Moderate** impact; therefore this is considered a significant impact, but a localised one relative to the scale of the LCA.

The short section of the coastal belt within the Black Sea Coastal SCA that would be crossed by the Pipeline route would experience very minor residual impacts on the SCA once installed, such as reinstatement of the vegetation above the micro-tunnelling route and occasional maintenance vessels. It is therefore considered that the impact magnitude upon the Black Sea Coastal SCA is negligible, resulting in a **Low** effect which is not considered a significant impact.

Visual Amenity

Table 13.13 details the perceived magnitude of impact during operation for each of the receptors identified in terms of visual amenity. Refer to photomontages for the majority of receptor groups shown in in Appendix 13.2.

Table 13.13 Visual Impact Significance (pre mitigation) upon Receptors within the ZTV during Operation

Visual Receptor	Impact Magnitude	Sensitivity	Significance	Comment
Recreational visitors to the seashore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes.	Negligible	High	Low	Occasional maintenance vessels would be visible on the nearshore / offshore sections in the context of other commercial shipping.
Walkers on the coastal path along the cliff top.	Low	High	Moderate	Occasional glimpses of the top of the vent stack amongst the trees and occasional views of the landfall facilities and RoW are likely from a very local stretch of the route in the vicinity of the landfall section. Occasional maintenance vessels would be visible on the nearshore and offshore sections.
Travellers on the Varvarovka-Sukko road.	Negligible	Low	Not Significant	Occasional glimpses of the top of the vent stack amongst the trees and occasional views of the RoW are likely from a very local stretch of the road in the vicinity of the landfall section.
Residents of the Clearing in the Woods "Lesnaya Polyana" development currently under construction.	Low	High	Moderate	Residents of newly constructed dwellings at the southern end of the residential development would have views of the western end of the landfall section, including the location of the microtunnel entry points (approximately 500 m away). Operational and maintenance vehicles would also be visible.

Continued...

Visual Receptor	Impact Magnitude	Sensitivity	Significance	Comment
Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka.	Moderate	Moderate	Moderate	The landfall facilities would be partially visible amongst woodland and the cleared RoW would be apparent. Infrequent maintenance vehicles would also be visible. Reinstatement of the access road adjacent to the cemetery boundary would be completed where possible, and installation of vegetative screening would be established. If the access road is re-aligned during construction to bypass the cemetery this would be left in situ and would be partially screened also by the established planting.
Residents living in north east Varvarovka and future residents of the Chateau development.	Low	High	Moderate	The acoustic barrier along the access road directly in view for this receptor will have been removed and residents will gain clear views of the sealed road which will form infrastructure for access within their development. The top of the vent stack and the operation compound is likely to be barely perceptible beyond the intervening agricultural land from properties with windows facing south towards the landfall section, at distances of approximately 1.5 km. These operational structures will not protrude above the wooded hills behind and will therefore be well integrated into the landscape. Occasional maintenance vessels would be barely visible on the nearshore and offshore sections in the context of other commercial shipping.
Residents living at Sukko.	Negligible	High	Low	The top of the vent stack is likely to be visible above the woodland from properties in elevated positions with windows facing north or north-west towards the landfall section; at distances of between 3 and 4 km. Occasional maintenance vessels would be visible on the nearshore and offshore sections in the context of other commercial shipping.

Continued...

Visual Receptor	Impact Magnitude	Sensitivity	Significance	Comment
Agricultural workers on the land.	Moderate	Low	Moderate	People working on the agricultural land of vineyards, orchards and meadows within the immediate vicinity of the landfall section would experience views of the landfall facilities and RoW. Operational and maintenance vehicles would also be visible. The extent of their views would depend on whether they are on a ridge or in a valley and would also be greatly influenced by the proximity of woodland.
Visitors to state nature reserve "Utrish".	Negligible	High	Low	Occasional maintenance vessels would be visible on the nearshore and offshore sections in the context of other commercial shipping. Occasional distant glimpses of the re-vegetated RoW would be barely perceptible in the wider landscape from this distance.
Recreational boat users.	Negligible	Moderate	Low	Occasional maintenance vessels would be visible on the nearshore and offshore sections, in the context of other commercial shipping.
Residents living close to the access roads.	Negligible	High	Low	Upon completion of construction, the amount of additional traffic associated with the Project is likely to be imperceptible. Roads in close proximity to the landfall facilities which were newly constructed would have been reinstated as far as reasonably possible or retained as agricultural access tracks and for maintenance.

Complete.

13.6.3.4 Mitigation and Monitoring: Operational

In terms of mitigation measures and monitoring, adverse effects on the landscape and visual amenity would be reduced where possible as set out in the landscape restoration plan, this would continue from the Construction and Pre-Commissioning Phase and throughout the Operational Phase.

To address the limited remaining operational landscape and visual impacts the following mitigation measures are recommended:

- Directional shielding for any permanent lighting at landfall facilities;
- On-going management and monitoring of appropriate native tree and shrub woodland;
- Planting in areas which do not have to remain open for operational reasons, to compensate for woodland removed. This would include areas of vegetative screening around the main plant and also along the edges of the RoW where practicable, including appropriately selected vegetative screening should be applied around the landfall facilities. Management of all planting must continue in accordance with the detailed landscape restoration plan, for the duration of the Operational Phase;
- Use of suitable vehicles and good vehicle maintenance on a regular basis to reduce visibility of exhaust emissions and vehicular noise;
- Appropriate vessel maintenance; and
- Roads and transfer sites in close proximity to the landfall facilities which were newly constructed to be reinstated as far as reasonably possible or roads retained for agricultural access and maintenance, in accordance with the landscape restoration plan.

13.6.3.5 Residual Impacts: Operational

Table 13.14 presents a summary of the potential residual impacts on landscape and visual receptors arising from the Project during the Operational Phase of the Project, following application of the identified mitigation measures. Measures, stated in full above, are summarised, for ease of reference, in the Table 13.14. In some occurrences the application of these measures may lead to a reduction in the adverse impact but may not be reflected in a lower categorisation of impact significance.

It can be seen that all of the residual impacts are identified to be either of **Low** significance or **Not Significant** following mitigation and, as such, are not considered to be of significance to visual or landscape receptors.

Table 13.14 Assessment of Potential Residual Impacts: Operational

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Operation of permanent landfall facilities, including: <ul style="list-style-type: none"> • 21 m high vent stack; • Permanent RoW; and • Occasional maintenance of vehicle movements. 	Permanent presence of landfall facilities and permanent RoW as part of the landscape; nuisance light pollution at night associated with facility lighting.	Undulating Plateau LCA	Moderate	Low	Moderate	On-going management of all new planting. Vegetative screening around permanent infrastructure. Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Low adverse, direct, permanent.
Occasional operation of marine maintenance vessels.	Views of maintenance vessels.	Black Sea Coastal SCA	High	Negligible	Low	No mitigation required.	Low adverse, direct, local, intermittent.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Operation of permanent landfill facilities, including: <ul style="list-style-type: none"> • 21 m high vent stack; • Permanent RoW; and • Occasional maintenance of vehicle movements. 	Distant views of upper parts of vent stack; nuisance light pollution at night associated with facility lighting. Refer to photomontage 13.1.8.2.	Residents living at Sukko	High	Negligible	Low	Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Not Significant.
Operation of permanent landfill facilities, including: <ul style="list-style-type: none"> • 21 m high vent stack; • Permanent RoW; and • Occasional maintenance of vehicle movements. 	Permanent presence of landfill facilities and permanent RoW as part of the visual landscape; short-term presence of maintenance vehicles within the visual landscape.	Residents living at North-East Varvarovka.	High	Low	Moderate	Use of suitable vehicles and good vehicle maintenance on a regular basis to reduce visibility of exhaust emissions. Rehabilitation and management of access roads and transfer sites as soon as possible with appropriate species. Maintenance of all planting. Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Low adverse, direct, permanent.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
<p>Operation of permanent landfall facilities, including:</p> <ul style="list-style-type: none"> • 21 m high vent stack; • Permanent RoW; and • Occasional maintenance of vehicle movements. 	<p>Permanent presence of landfall facilities and permanent RoW as part of the visual landscape; short-term presence of maintenance vehicles within the visual landscape. Refer to photomontages 13.1.5a.2 and 13.1.5b.2.</p>	<p>Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka.</p>	Moderate	Moderate	Moderate	<p>Rehabilitation and management of access roads and transfer sites as soon as possible with appropriate species.</p> <p>Maintenance of all planting.</p> <p>Appropriate design and colour choice for fencing and permanent infrastructure.</p> <p>Directional shielding on all facility lights.</p> <p>Reinstatement of track adjacent to eastern boundary (as shown in photomontages) and establishment of mitigation vegetative screening.</p>	Low adverse, direct, permanent.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Operation of permanent landfall facilities, including: <ul style="list-style-type: none"> 21 m high vent stack; Permanent RoW; and Occasional maintenance of vehicle movements. 	Permanent presence of landfall facilities and permanent RoW as part of the visual landscape; short-term presence of maintenance vehicles within the visual landscape. Refer to photomontage 13.1.2a.2.	Walkers on the coastal path along the cliff top.	High	Low	Moderate	Rehabilitation and management of access roads and transfer sites as soon as possible with appropriate species. Maintenance of all planting. Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Low adverse, direct, permanent.
	Permanent presence of landfall facilities and permanent RoW as part of the visual landscape; short-term presence of maintenance vehicles within the visual landscape.	Travellers on the Varvarovka-Sukko road.	Low	Negligible	Not Significant	Rehabilitation and management of access roads and transfer sites as soon as possible with appropriate species. Maintenance of all planting. Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Not Significant

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Operation of permanent landfall facilities, including: <ul style="list-style-type: none"> 21 m high vent stack; Permanent RoW; and Occasional maintenance of vehicle movements. 	Permanent presence of landfall facilities and permanent RoW as part of the visual landscape; short-term presence of maintenance vehicles within the visual landscape. Refer to photomontage 13.1.2a.2, 13.1.4.2, 13.1.5a.2, 13.1.5b.2 and 13.1.8.2.	Agricultural workers on the land.	Low	Moderate	Moderate	Rehabilitation and management of access roads and transfer sites as soon as possible with appropriate species. Maintenance of all planting. Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Low adverse, direct, permanent.
	Permanent presence of landfall facilities and permanent RoW as part of the visual landscape; short-term presence of maintenance vehicles within the visual landscape. Refer to photomontage 13.1.4.2.	Residents of the Clearing in the Woods "Lesnaya Polyana" development currently under construction.	High	Low	Moderate	Rehabilitation and management of access roads and transfer sites as soon as possible with appropriate species. Maintenance of all planting. Appropriate design and colour choice for fencing and permanent infrastructure. Directional shielding on all facility lights.	Low adverse, direct, permanent.

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Marine vessel maintenance operations.	Temporary presence of non-recreational vessels in the waters off the coast.	Resident living at Sukko.	High	Negligible	Low	Appropriate vessel maintenance.	Not Significant
	Temporary presence of non-recreational vessels in the waters off the coast.	Recreational visitors to the seashore, including the public beaches at Sukko and Anapa, and the private beach at the Shingari and Don holiday complexes.	High	Negligible	Low	Appropriate vessel maintenance.	Not Significant
	Temporary presence of non-recreational vessels in the waters off the coast.	Walkers on the coastal path along the cliff top.	High	Negligible	Low	Appropriate vessel maintenance.	Not Significant

Continued...

Activity	Potential Impact	Receptor	Receptor Sensitivity	Impact Magnitude	Pre-Mitigation Impact Significance	Mitigation Measures	Residual Impact Significance
Marine vessel maintenance operations.	Temporary presence of non-recreational vessels in the waters off the coast.	Visitors to state nature reserve "Utrish".	High	Negligible	Low	Appropriate vessel maintenance.	Not Significant
	Temporary presence of non-recreational vessels in the waters off the coast.	Recreational boat users.	Moderate	Negligible	Low	Appropriate vessel maintenance.	Not Significant
Transport of maintenance workers and materials.	Retention of some upgraded roads. Additional vehicles along existing roads.	Residents living close to the access roads	High	Negligible	Low	Use of suitable vehicles and good vehicle maintenance on a regular basis to reduce visibility of exhaust emissions. Reinstatement as far as reasonably possible, of access roads.	Not Significant

Complete.

13.6.4 Assessment of Potential Impacts: Decommissioning Phase

13.6.4.1 Introduction

The Project is designed to be operational for 50 years. The decommissioning programme would be developed during the late Operational Phase. The decommissioning strategy is set out in **Chapter 5 Project Description**. It is likely that the technological options and preferred methods for decommissioning of such transportation systems will be different after 50 years, and the status of the Pipeline at the time of decommissioning would also impact on the chosen decommissioning methods. The eventual decommissioning requirements will be taken into account in the final design stage by ensuring that a range of possible options will be available.

Under all circumstances, decommissioning activities would be carried out according to prevailing statutory international and national legislation and regulations and GIIP regarding environmental and other potential impacts. An assessment will be undertaken and approval obtained during operation to confirm that the planned decommissioning activities are the most appropriate to the prevailing circumstances and future land use. The assessment would outline management controls and aim to demonstrate that the decommissioning activities would not cause unacceptable environmental and social impacts.

13.6.4.2 Assessment of Potential Impacts (pre-mitigation)

At this stage in the Project, the full extent of the decommissioning requirements is not known. However, it is likely that the receptors and impacts will be similar albeit less than those presented for the Construction and Pre-Commissioning Phase. These are outlined in detail in Section.

Given the timeframe involved there is also considerable uncertainty associated with what the baseline conditions will be like in 50 years, and whether the receptor sensitivity is likely to differ. There may also be additional sensitive receptors due to development and changes in land use.

Essentially two options are available for the decommissioning of the landfall section in particular; namely in situ decommissioning or pipe removal.

13.6.4.3 Mitigation and Monitoring

The potential impacts during the Decommissioning Phase will be similar to that of the Construction and Pre-Commissioning Phase. Mitigation and monitoring measures as outlined in Section 13.6.2.4 will therefore be relevant. If pipework is left in situ, and only above ground structures are removed, impacts on landscape character and visual amenity will be greatly reduced. Areas which had to remain open for operational reasons could also be available for appropriate tree and shrub planting, if other requirements for the land had not arisen. This would also be incorporated into a decommissioning landscape restoration plan in accordance with GIIP as applicable at that time.

13.6.4.4 Residual Impacts: Decommissioning Phase

Table 13.12 represents a summary of the potential residual impacts to landscape character and visual amenity arising from the Project during the Construction and Pre-Commissioning Phase and these would be similar albeit less during the Decommissioning Phase following application of the identified mitigation measures.

The **Moderate** residual impact significance upon the Undulating Plateau LCA, and the visual receptors (visitors to the seashore, walkers along the coastal path, users of the cemetery and recreational boat users) would be unavoidable, but short-term.

It is not anticipated that any long term significant impacts to the landscape character and visual amenity will arise from the Decommissioning Phase of the Project, due to the landscape restoration plan.

13.7 Unplanned Events

The potential for unplanned events is discussed in **Chapter 19 Unplanned Events**, factors noted there which could form adverse impacts on landscape and visual receptors are as follows:

- Fuel and oil spillages potentially leading to damage of vegetation - landscape and visual effects;
- Forest fires potentially leading to devastation of vegetation - landscape and visual effects; and
- Oil spillage potentially leading to temporary adverse impacts on the seascape character and visual amenity.

13.8 Cumulative Impacts Assessment

As part of the ESIA process, potential cumulative impacts as associated with the Project have been considered and are presented in **Chapter 20 Cumulative Impact Assessment**.

13.9 Conclusions

Based on the preceding assessment, it is concluded that during the Construction and Pre-Commissioning Phase both the Undulating Plateau LCA and the Black Sea Coastal SCA would be subject to **Moderate** adverse (significant) impacts. However, such impacts would be short term. Remediation measures such as planting and vegetation screening also help reduce the significance of impacts as vegetation becomes increasingly established.

During the Construction and Pre-Commissioning Phase the majority of residual impacts are identified to be either of **Low** significance or **Not Significant** following mitigation and, as such, are not considered to be of concern to the visual and landscape receptors, and therefore not significant to the Project (in accordance with the **Chapter 3 Impact Assessment Methodology**). However, a number of **Moderate** (significant) impacts have been identified in respect of the following receptors:

- Recreational visitors to the seashore;
- Walkers on the coastal path along the cliff top;
- Visitors to the Russian Orthodox and Armenian cemetery at Varvarovka;
- Residents living at North-East Varvarovka; and
- Recreational boat users.

It is considered that the visual impacts upon recreational receptors in the vicinity of the coast (visitors to the seashore and holiday complexes, coastal path walkers and boat users) during the Construction and Pre-Commissioning Phase would potentially experience the more major impacts associated with the Project. These impacts are direct, temporary and short-term.

The residual impacts for landscape character and visual amenity during the Operational Phase are all identified to be either of **Low** significance or **Not Significant** and therefore not significant when design controls and mitigation measures are taken into account.

In conclusion, based upon this assessment of landscape character and visual amenity impacts, it is considered that the Project would not cause significant, permanent adverse effects to the identified receptors within the Study Area.

References

Number	Reference
Ref. 13.1	Federal Law 'On Specially Protected Natural Areas' 14.03.1995, No. 33-FZ.
Ref. 13.2	Council of Europe (2000). European Landscape Convention.
Ref. 13.3	The Countryside Agency and Scottish Natural Heritage (2002). Landscape Character Assessment: Guidance for England and Scotland. Edinburgh, Scotland.
Ref. 13.4	Landscape Institute and Institute of Environmental Management & Assessment (2013). Guidelines for Landscape and Visual Impact Assessment (Third Edition). Abingdon, UK.