

Biodiversity Action Plan

Midia Gas Development

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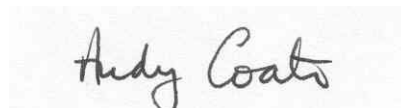
21 March 2022

Biodiversity Action Plan

Midia Gas Development



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1. INTRODUCTION

Black Sea Oil & Gas SRL (BSOG) are the operators of petroleum exploration, development and exploitations of Block XV Midia, offshore Romania. The Ana and Doina fields are located in the western Black Sea, approximately 110 km to the east of Constanta, Romania. BSOG intend to develop the Midia Gas Development Project (MGD, the Project) to produce and process natural gas from those reservoirs and route it to export to consumers within Romania and the European Union.

BSOG has secured the necessary environmental consents to allow the Project to proceed from the Romanian authorities, in accordance with the requirements of national legislation, and from the Danube Delta Biosphere Reserve Administration (ARBDD) to allow development in the Danube Delta Biosphere Reserve. The range of policies, legal and regulatory requirements and other applicable standards that apply is described in the Environmental and Social Impact Assessment (ESIA) and the separate Biodiversity Management Plan (BMP).

BSOG have also secured backing from a number of financial organisations, including the European Bank for Reconstruction and Development (EBRD) to facilitate the implementation of the Project. To align with the environmental standards of the principal lenders for the Project (including International Finance Corporation's (IFC) Performance Standard 6 (PS6) and EBRD's Performance Requirement 6 (PR6)), BSOG have undertaken a Critical Habitat Assessment (CHA) and supplementary assessment of impacts on biodiversity as part of the supplementary lenders information package (SLIP). The CHA identified residual impacts on natural and critical habitat and Priority Biodiversity Features (PBF) ¹, and hence the need to develop a Biodiversity Action Plan (BAP).

1.1 Purpose of Biodiversity Action Plan (BAP)

This document is the BSOG MGD Project BAP, and its purpose is to provide the following:

- an overview of how the mitigation hierarchy has been followed in the Project design;
- a summary of the residual impacts from the Project on critical and natural habitats and PBF;
- targets required to deliver no net loss (NNL), or net gain (NG);
- an explanation of the Project's mitigation strategy to achieve no net loss (NNL), or net gain (NG) including possible options;
- additional conservation actions to be implemented by BSOG to promote and enhance the conservation objectives of the protected areas impacted by the Project;
- long term biodiversity monitoring to measure implementation of the BAP;
- consultation requirements and likely key stakeholders;
- identification of the roles and responsibilities for delivering the actions set out in the BAP; and
- a summary of the budget and resource needs to deliver the BAP.

This Project BAP has been developed from the Framework BAP that was developed at the start of Project development in 2019. The BAP is a 'living document' that will be regularly updated as the Project develops, in line with the Environmental and Social Action Plan (ESAP) requirements, as well as the Project's adaptive management of project effects and Management of Change (MoC) process.

1.2 Requirements of IFC PS6 and EBRD PR6

Much of the onshore Project footprint and some of the offshore footprint, are within areas of the Danube Delta covered by one or more nature conservation designations, including the Danube Delta Biosphere Reserve and UNESCO World Heritage Site (*ie* the Project is within a legally protected and

(¹) See Critical Habitat Assessment Report for definitions.

internationally recognised area). BSOG recognises the importance of such areas and the requirements in both PS6 and PR6 where development is to occur in them, as described in Paragraph 20 of PS6 and Paragraphs 19-20 of PR6 respectively.

As part of the ESIA process, BSOG has engaged with the key stakeholders for the Danube Delta, including with Danube Delta Biosphere Reserve Administration (ARBDD), who issued a permit for the development to occur within the economic development zone of the Biosphere Reserve and World Heritage Site.

Updates to the management plans for the Danube Delta are ongoing and BSOG recognise the importance of engaging further with ARBDD and other key stakeholders to implement actions, as part of the BAP that are consistent with these updated plans. Stakeholder engagement is a key part of the implementation of the BAP and will continue as part of BAP implementation (see Section 5.4).

Given the importance of the protected area, BSOG are committed also to implementing Additional Conservation Actions (ACA) in the protected areas. These will supplement the current protection measures implemented by the competent authorities and further ensure that the overall conservation objectives of these areas are not negatively impacted by the Project.

The Project affects critical habitat and BSOG has undertaken the following to align with the requirements of PS6 (Paragraphs 17 - 19) and PR6 (Paragraphs 16 - 18):

- demonstrated that there are no viable alternatives (see Section 5.8 of Project CHA Report); and
- developed a mitigation strategy (including compensation measures) so that the Project meets the requirements of Paragraph 17 of PS6 and 16 of PR6 respectively, and achieves net gain (NG) of the biodiversity values of the critical habitat (see Section 5).

2. PROJECT DESCRIPTION AND GEOGRAPHIC SCOPE OF THE BAP

The Project will involve drilling four development wells at the Ana field and one at the Doina field (production wells) (see Figures 2.1 and 2.2). There will be a small normally unmanned platform to house the wellheads and only minimum facilities at the Ana field (Ana Platform). A subsea gas production system at the Doina field (Doina Subsea); will be joined to the Ana Platform via an 18 km 8" pipeline. A 16" pipeline comprising a 121 km offshore segment and a 4.5 km, onshore segment will route the gas from the Ana Platform to the gas treatment plant (GTP). The landfall of the offshore segment of the pipeline is located in the Vadu area, Corbu Commune, Constanta County.

This BAP covers both the terrestrial and marine parts of the Projects.

Figure 2.1 Project Location

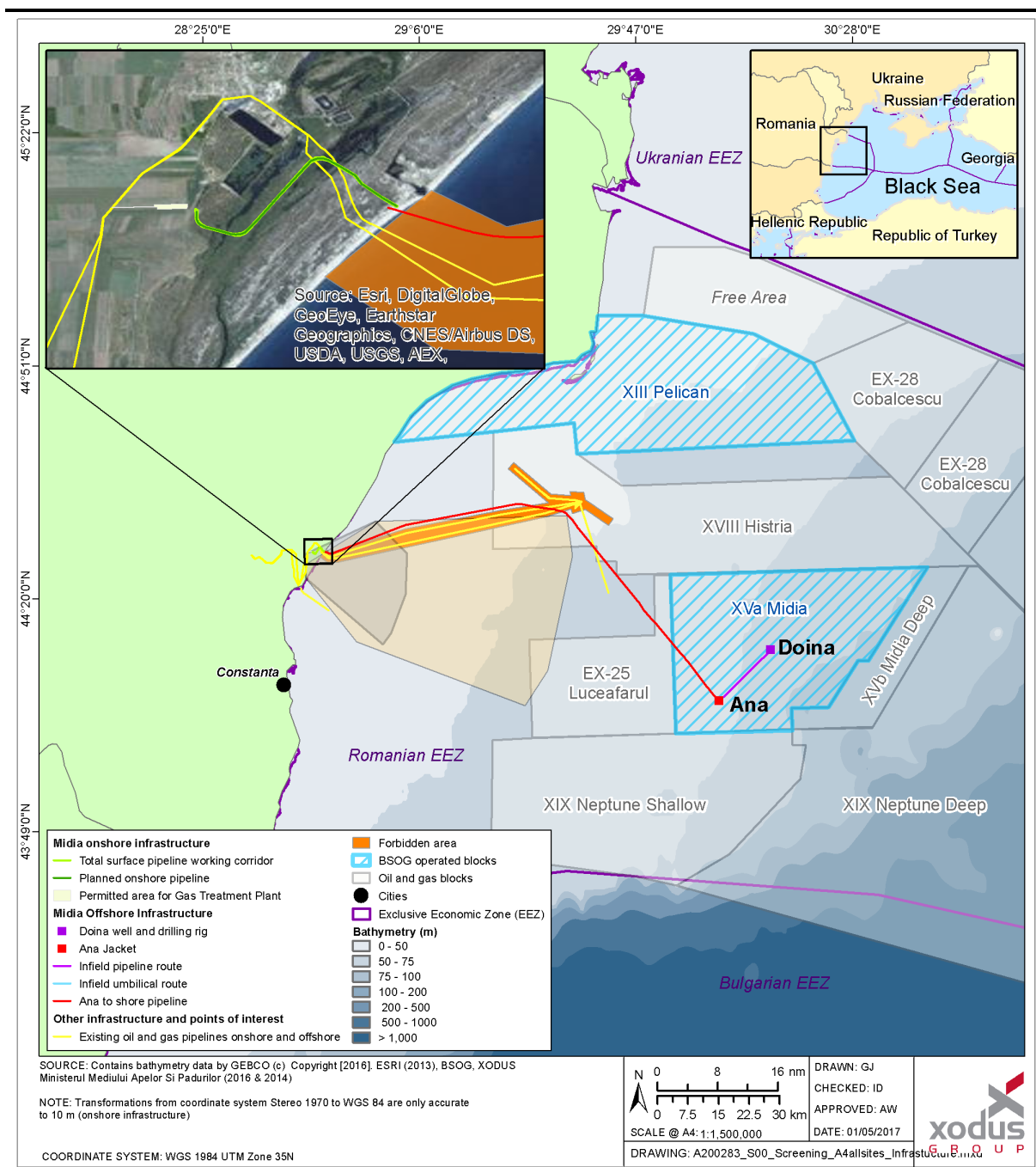
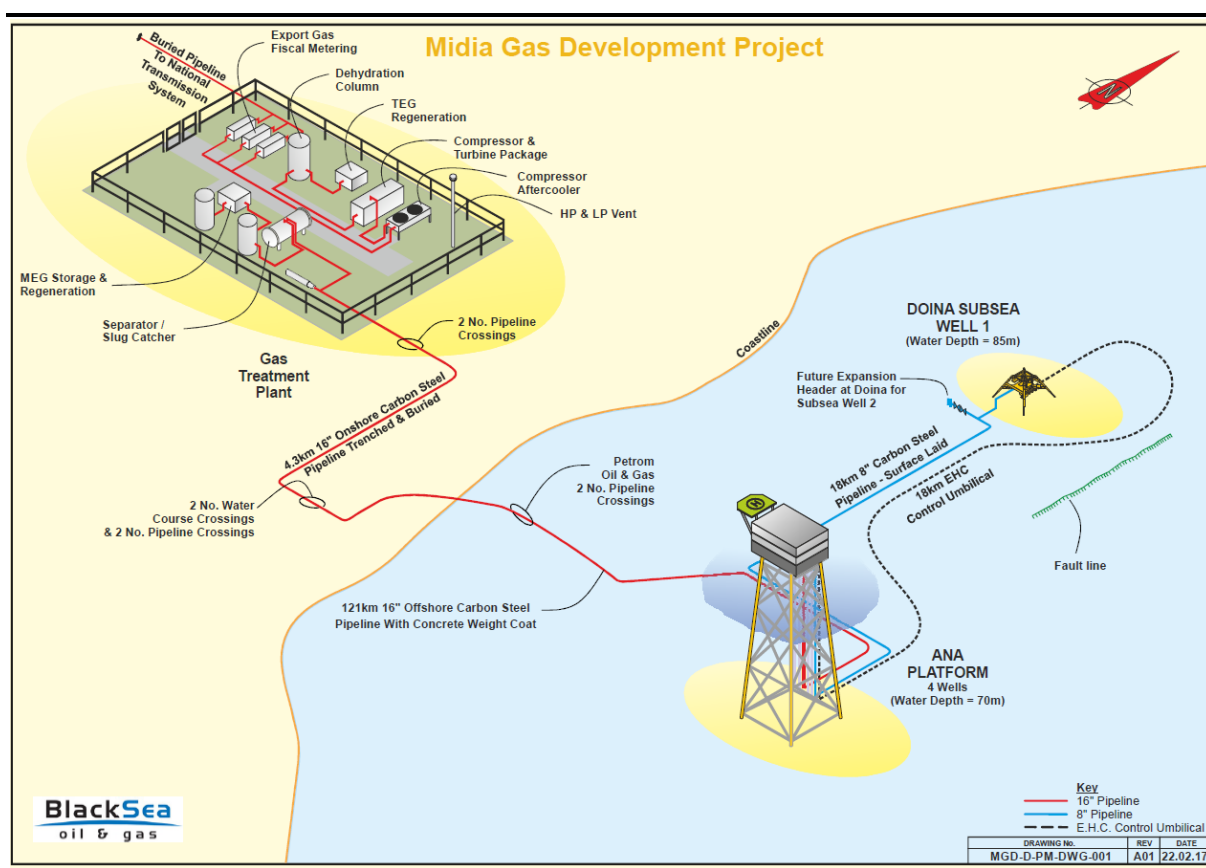


Figure 2.2 Project Overview



3. IMPLEMENTATION OF THE MITIGATION HIERARCHY

The Project design includes the following key measures to either avoid, or reduce, effects on natural and critical habitat and PBF:

- siting of the offshore platform and well in habitats that are not critical;
- siting of the GTP on modified habitat outside of the Danube Delta designated sites;
- use of Horizontal Directional Drilling (HDD) for the landfall of the onshore pipeline to reduce impacts to EU Habitats Directive Annex I habitats and other critical habitats as far as practicable;
- minimisation of the onshore pipeline working width; and
- implementation of seasonal constraints to reduce the risks of affecting fauna species (*eg* avoiding habitat clearance as well as other construction activity in the breeding bird season)

The location of the landfall and routing of the onshore pipeline routes were subject to a number of constraints as follows:

- sites of importance for nature conservation (*eg* those associated with the Danube Delta);
- areas used by the Romanian Military;
- areas of importance for tourism (*eg* Năvodari Commune);
- existing development (*eg* Capu Midia Harbour, Petromidia Refinery, existing Rompetrol pipelines); and
- rocky outcrops that provided engineering challenges.

Other constraints included additional engineering, economic, social and land availability.

Further details about the alternatives that were considered, to avoid having to develop in critical habitat, are provided in Section 5.8 of the CHA.

Specific offshore and onshore mitigation and management measures are provided in Tables 6.2 and 6.3 of the BMP. This BAP therefore focusses on measures to address the residual biodiversity impacts that remain following the implementation of the initial steps of the mitigation hierarchy, particularly in relation to delivering NNL and NG.

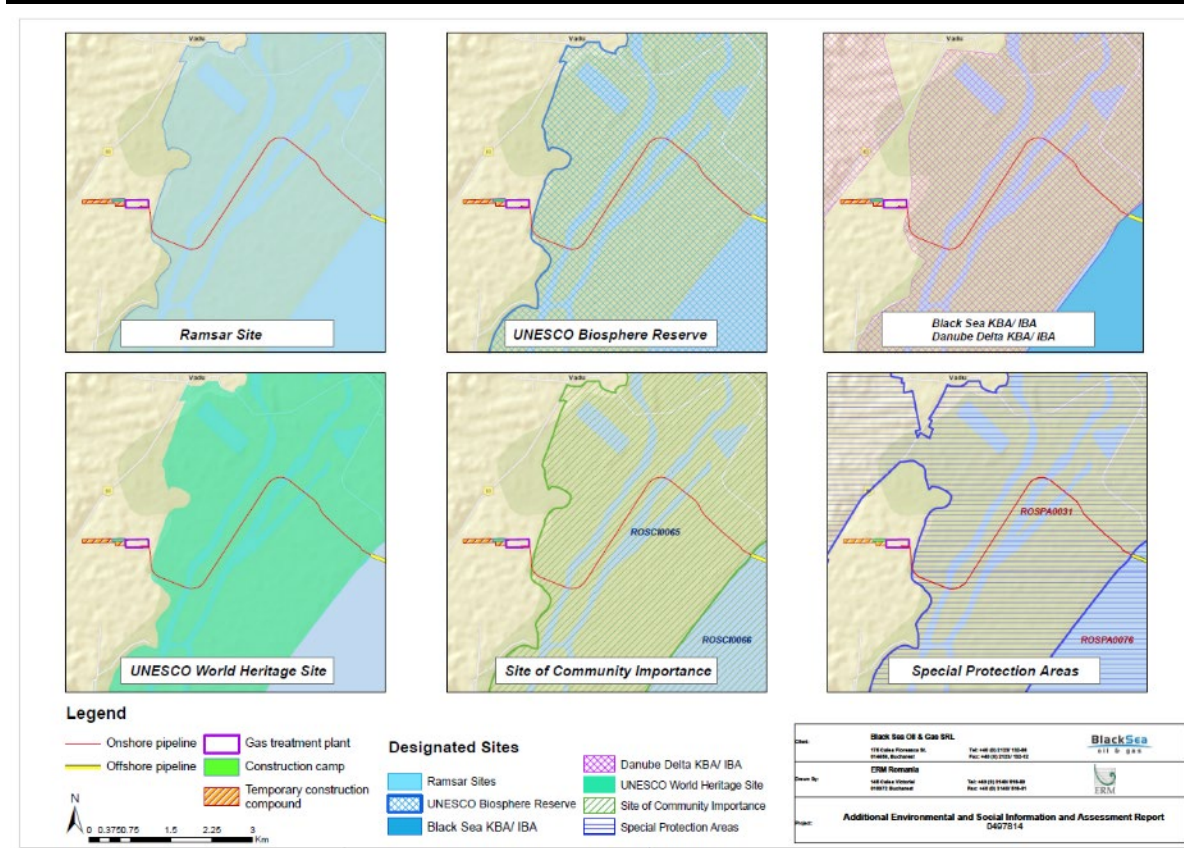
4. SUMMARY OF RESIDUAL IMPACTS ON NATURAL / CRITICAL HABITATS AND PRIORITY BIODIVERSITY FEATURES

Critical habitats on and offshore are correlated with the internationally protected and recognised areas (see Figure 4.1 and Figure 4.2).

4.1 Onshore Residual Impacts

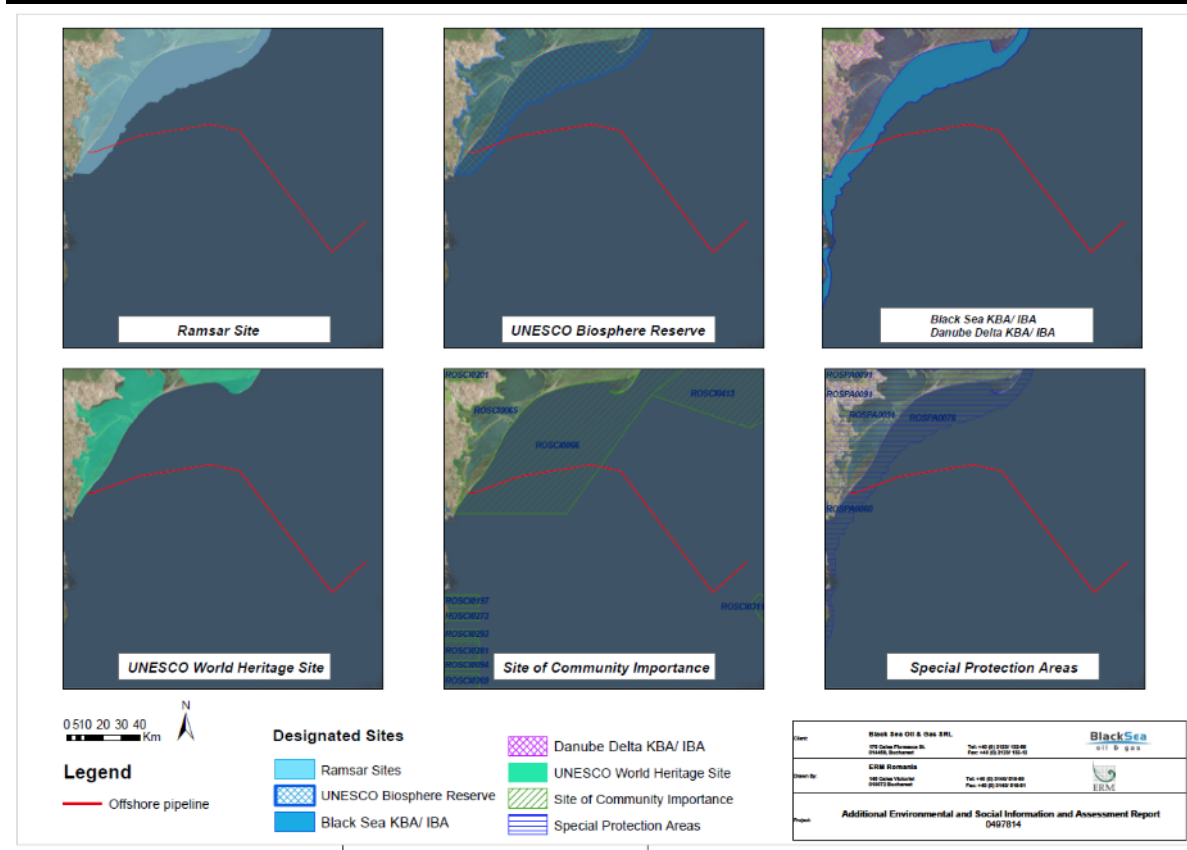
Onshore the critical habitat matches the natural habitat shown on Figure 4.3. The loss of onshore critical / natural habitat and PBF amounts to 12.09 ha that comprises approximately 0.0007% of the Danube Delta Biosphere Reserve / Natural World Heritage Site (580,000 ha).

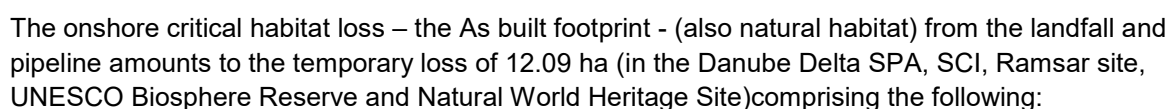
Figure 4.1 Onshore Nationally Protected and Internationally Recognised Areas ¹



(¹) The Romanian National Agency for Environmental Protection and the International Ramsar Secretariat provide different sizes for the Danube Delta Ramsar site. The Romanian Law 82/1993 with subsequent amendments and completions and government Decision 230/2003, which provides the legal designation for the UNESCO Biosphere Reserve, World Heritage Site and Ramsar Site, and agree with the National Agency for Environmental Protection data on the size and boundary of the Ramsar site, and this boundary has been used in this assessment.

Figure 4.2 Offshore Nationally Protected and Internationally Recognised Areas





- 4.00 ha of *Elymetum gigantei* with *Agropyretum elongati*;
- 1.59 ha of *Elymetum gigantei* with *Halimionetum verruciferae*;
- 3.56 ha of *Phragmitetum australis* with *Typhetum latifoliae*;
- 0.64 ha of *Agropyretum elongati*; and
- 2.30 ha of *Juncetum maritimi* (*Artemisio santonicae* - *Juncetum maritimi* with *Artemisio santonicae* - *Juncetum littoralis* and *Elymetum gigantei*), an Annex I habitat (also PBF);

The final as built construction footprint is larger than that predicted in the CHA, as a result of the following factors:

- the compound for the landfall HDD was larger than predicted;
- sections of the pipeline working width were larger than predicted;
- the first proposed HDD watercourse (Balta de Mijloc) crossing option proved not to be feasible because of technical and regulatory constraints and was executed through open cut (as originally envisaged and approved by authorities); and
- the second HDD watercourse (Balta Mare) crossing was attempted but could not be completed because of technical engineering conditions and an emergency open cut crossing method had to be used instead to complete the works while water levels were low and access possible. The

final footprint therefore includes both the HDD footprint (including entry and exit compounds, and the cleared pipe stringing strip) as well as the footprint of the emergency open cut crossing.

The construction of the pipeline has affected the dune and coastal wetland habitats, including habitats supporting six plant species that are critical habitat features (*Artemisia tschernieviana*, *Crambe maritima* (sea kale), *Dianthus bessarabicus*, *Eryngium maritimum* (sea holly), *Elymus farctus* ssp. *Bessarabicus*, *Cirsium alatum*, and two plant species (*Eryngium maritimum* and *Colymus hispanicus*) that are PBF.

As the majority of the construction of the onshore pipeline was undertaken by removing topsoil with turves that were then stored temporarily, some of them was covered with geotextile and progressively restored, significant effects on these species were minimised, as they were retained and reinstated once the turves were placed back on the pipeline working strip. Some residual impacts remain at the end of construction (eg where proper removal and storing of turves was not possible during the emergency open cut construction of the second water crossing) and actions to restore these areas and develop offsets to achieve NG have been included in this BAP.

The implementation of standard mitigation measures during the construction works was designed to reduce the risk of effects on fauna species from visual, noise and light disturbance, and traffic collisions or animals being trapped in trenches. The duration of construction of the onshore pipeline was short, and any disturbance effects temporary.

A team of Ecological Clerks of Works (ECoWs) were employed to undertake pre-construction surveys, of the works area and to oversee construction activities and habitat re-instatement work. The pipeline corridor was surveyed on a daily/weekly basis before any construction activity commenced and any fauna species found (eg amphibians and reptiles), were translocated to suitable receptor sites.

The working width was then fenced off with small mammal / reptile fencing (on segments) to prevent fauna re-entering the works area but also not to fragment the herpetofauna and mammals habitats. Construction activities including habitat clearance during the breeding bird season was avoided.

Some disturbance and displacement of fauna is likely to have occurred during the onshore construction works to individuals of four bird species that are critical habitat features: (squacco heron (*Ardeola ralloides*), purple heron (*Ardea purpurea*), great white egret (*Egretta alba*), little egret (*Egretta garzetta*), and seven species that are considered PBF: (common pochard (*Aythya farina*), Ferruginous duck (*Aythya nyroca*), black-winged stilt (*Himantopus himantopus*), pied avocet (*Recurvirostra avosetta*), red-footed falcon (*Falco vespertinus*), common redshank (*Tringa totanus*), common hoopoe (*Upupa epops*)).

Despite mitigation measures, as a result of works taking place within supporting habitat, construction activities may have resulted in disturbance to common tortoise (*Testudo graeca*) and European otter (*Lutra lutra*) and three PBF features (European ground squirrel (*Spermophilus citellus*), European pond turtle (*Emys orbicularis*), Danube crested newt (*Triturus dobrogicus*) and fire-bellied toad (*Bombina bombina*)).

Further details about the impacts and mitigation provided are available in the Project CHA (updated to reflect the final Project footprint) report and BMP.

4.2 Offshore Residual Impacts

Offshore, the pipeline will result in the loss of critical habitat to the edge of the of the Danube Delta SCI marine area, with natural habitat lost due to the remainder of the pipeline route and platform / well area. The loss of critical habitat within the designated site (approximately 2.5 ha) comprises approximately 0.07 % of the marine component of the SCI (336,200 ha).

Offshore there is a critical habitat loss of 2.34 ha from the Danube Delta marine zone SCI of which 0.5 ha is in the Black Sea SPA / IBA / KBA and 0.4 ha in the Danube Delta Ramsar site / UNESCO

Biosphere Reserve. A further 6.8 ha of offshore natural habitat will be lost under the footprint of the Ana platform, subsea in field infrastructure and export pipeline, and deposition of drill cuttings as a result of the Project. The vast majority of benthic habitat lost comprises soft sediments.

The nearest seeps and vents in sublittoral sediments (an Annex I habitat) identified from the surveys are approximately 115 m from the pipeline route and will not be directly affected. During the laying of the pipeline, measures were implemented to allow the pipeline to be micro-sited to avoid any seeps and vents that were not identified by the transect surveys.

Post construction monitoring of the installed pipeline by remotely operated vehicle (ROV) confirmed that no seeps and vents in sublittoral sediments were affected by the pipeline laying. The ROV survey also confirmed that no Annex I mussel beds (considered to be PBF) were recorded along the pipeline route¹.

Benthic habitats are predicted to recover as species colonise new hard substrate features (such as the pipeline and underwater infrastructure) and recolonise disturbed natural habitats. Based on the magnitude of the predicted and observed impacts residual impacts on benthic habitats are not considered significant.

Temporary effects were also predicted to the fauna species listed below.

- Temporary displacement from 1.73 km around piling activities and 380 m from vessel operations of Pontic shad (*Alosa immaculata*) and Black Sea shad (*Alosa tanaica*).
- Temporary displacement from 2.34 km around piling activities and 1.2 km from vessel operations of three cetacean species (Black Sea common dolphin (*Delphinus delphis ponticus*), Black Sea harbour porpoise (*Phocoena phocoena relicta*), Black Sea bottlenose dolphin (*Tursiops truncatus ponticus*)).

Monitoring of marine fauna during offshore construction activity (including preparatory geotechnical work, installation of the Ana Platform and installation of the offshore pipelines), did not record any significant displacement of marine mammals, and no signs of fish or marine mammal mortality associated with Project activities^{2,3,4,5}.

5. COMPENSATION / ENHANCEMENTS

5.1 Introduction

The Project has resulted in effects on natural / critical habitats and PBFs as described in Section 4. Where losses of natural / critical habitat and PBF occur, it is standard practice to deliver compensatory measures to achieve no net loss (NNL) for effects on natural habitat and PBF, and Net Gain (NG) for effects to critical habitat. This chapter defines those compensatory requirements and explains how they have been derived using a biodiversity metric.

(¹) Oceanic Club (2021) Analysis of the types of habitats present on the route of the 8 "pipeline, for natural gas transport from Ana Platform to Doina Platform - MGD Project

(²) Oceanic club (2021) Report on the presence and behaviour of birds and marine mammals during activities for the Vadu gas pipeline Ana and Doina platforms.

(³) Oceanic club (2021) Report regarding the presence and behaviour of birds and marine mammals during the activities for the placement of Ana well jacket

(⁴) Oceanic club (2021) Report regarding the presence and behaviour of birds and marine mammals during the activities for the geotechnical study for the location of the gas pipeline, from the 10 m isobath to the projection of the Ana and Doina platforms

(⁵) Oceanic club (2021) Report regarding the occurrence and behaviour of birds and marine mammals during stabilization/consolidation activities for gas pipeline – shallow zone Vadu (Cape Midia)

5.2 Approach – Biodiversity Metric

A commonly used approach to account for terrestrial habitat losses and to calculate the liability of a Project to deliver NNL / NG, is to use biodiversity metrics. Metrics allow quantification of the biodiversity loss and extent of quality hectares required, to deliver NNL. For critical habitat additional quality hectares need to be delivered to provide NG.

The metric used is based on the Habitat Hectares metric (Parkes *et al*, 2003 ¹), an approach designed so that it could be readily applied to any terrestrial habitat. It also rated highly in a recent study by Gamarra *et al* (2018) ² that evaluated established biodiversity metrics.

Simplifications made to the Habitat Hectares metric for the purposes of this assessment, include to the approach to condition assessment. The approach in Parkes *et al* (2003) requires detailed levels of information about percentage components of a pristine habitat type and criteria and scoring to inform condition status. As this level of information was not collected, the approach identified how intact and functioning a habitat type was based on the field survey findings, and allocated these to a quartile as follows:

- 1 = fully intact and functioning pristine habitat;
- 0.75 = mostly intact and functioning habitat;
- 0.5 = degraded, but still functioning habitat; and
- 0.25 = severely degraded and functionally compromised habitat.

The field surveys found the critical habitats affected by the onshore pipeline to be degraded yet still functioning, showing signs of influences from tourism, recreation and grazing (see Section 3.3.1 of the Project CHA Report). The existing conditions of the habitats have, therefore, been assigned a value of 0.5.

The aim of the reinstatement is to provide functioning habitat, and the aim to achieve a condition of at least 0.5, to reflect this. The approach acknowledges that reinstatement of habitat along the working width to functioning habitat will vary with habitat type, with some being more difficult and/or taking more time to re-establish. The metric to inform the NNL requirements has, therefore, incorporated multipliers (based on those used in the UK Defra metric ³), that reflect the expected time to achieve the target conditions of the habitat (see Table 5.1) and the risk of establishment (see Table 5.2). The effects of these multipliers are similar to offset ratios that are sometimes used, as they typically increase the number of hectares required to achieve NNL.

Table 5.1 Time to Condition

Time to Target Condition (Years)	Multiplier
1	0.343
5	0.49
10	0.7
20	0.837
30	0.965

Habitats which are dominated by low numbers of rapidly growing species (eg *Phragmitetum australis* with *Typhetum latifoliae*) have been assigned a time to target condition score of 5 years. All other habitats which will be affected are saltmarsh/slatmeadow and grassland and are expected to take up

(¹) Parkes D, Newell G & Cheal D (2003) Assessing the Quality of Native Vegetation: The Habitat Hectares Approach. *Ecological Management*, **Rest 4**, S29–S38.

(²) Gamarra M, Lassoiea J & Mildera J (2018) Accounting for No Net Loss: A Critical Assessment of Biodiversity Offsetting Metrics and Methods. *Journal of Environmental Management* **220** 36–43.

(³) <http://publications.naturalengland.org.uk/publication/6049804846366720>

to 10 years to re-establish. These habitats have more specific environmental requirements which are likely to have been affected during construction and may take some years to re-establish, exhibit slower growth or have higher floristic diversity which may take longer to re-establish from nearby others or the existing seedbank.

Table 5.2 Risk of Establishment

Risk of Establishment	Multiplier
Low	0.1
Medium	0.33
High	0.67
Very High	1.0

Offshore, there will be a permanent loss of soft seabed habitat from laying the pipeline on the seabed, that will restore naturally over the pipeline. However, this will take time, and creation of additional habitat is not possible. Instead the approach will be to provide funding for and / or implement other initiatives to compensate for the time taken for the natural process of recovery to take effect, and to provide NG (see Section 5.3.2).

5.3 Achieving No Net Loss / Net Gain

5.3.1 Onshore

5.3.1.1 Calculating Biodiversity Loss and Required Gains

Based on the biodiversity metric used, 14.35 quality hectares are required to achieve NNL (see Table 5.3), however, as the project affects critical habitat, additional quality hectares are required to achieve NG (see approach to that below Table 5.3).

Table 5.3 Quality Hectares Required to Achieve NNL

Habitat	2019 BAP Prediction Area Lost (ha)	Area Lost As Built Footprint (ha)	Existing Condition As Built Footprint	Existing Quality Ha	Time to Target Condition	Risk of Establishment	Quality Ha
1410 <i>Juncetum maritimi</i> (<i>Artemisia santonicae</i> - <i>Juncetum maritimi</i> with <i>Artemisia santonicae</i> - <i>Juncetum littoralis</i> and <i>Elymetum gigantei</i>)	0.26	2.30	0.5	1.15	0.7 (10 years assumed to achieve stable water table and representative floristic diversity)	1.0	3.11
<i>Phragmitetum australis</i> with <i>Typhetum latifoliae</i>	1.04	3.56	0.5	1.78	0.49 (5 years assumed to return to previous condition)	0.1	2.83

Habitat	2019 BAP Prediction Area Lost (ha)	Area Lost As Built Footprint (ha)	Existing Condition As Built Footprint	Existing Quality Ha	Time to Target Condition	Risk of Establishment	Quality Ha
<i>Agropyretum elongati</i>	0.29	0.64	0.5	0.32	0.7 (10 years assumed to achieve representative floristic diversity)	1.0	0.86
<i>Elymetum gigantei</i> with <i>Agropyretum elongati</i>	2.34	4.00	0.5	2.00	0.7 (10 years assumed to achieve stable water table and representative floristic diversity)	1.0	5.40
<i>Elymetum gigantei</i> with <i>Halimionetum verruciferae</i>	0	1.59	0.5	0.80	0.7 (10 years assumed to achieve stable water table and representative floristic diversity)	1.0	2.15
Total	4.32	12.09		6.05			14.35

BSOG is committed to delivering NG in critical habitat as part of the Project, and delivery onshore will be through the following approaches:

- re-instatement of habitats temporarily removed in the working width for the laying of the pipeline as described in the BMP;
- enhancements to “like-for-like” habitats outside the working width, but adjacent to it, in land plots owned by BSOG, where feasible; and
- additional conservation actions (ACAs) to promote and enhance the conservation objectives of the protected sites of the Danube Delta.

5.3.1.2 Habitat Re-instatement

The loss of habitat along the working width is temporary, and the Project has committed to re-instate the 12.09 ha of habitat affected to its pre-construction condition as part of the Project BMP. Habitat re-instatement as set out in the BMP was implemented along the onshore pipeline corridor at the end of construction.

Constraints when completing the final section of pipeline across the 2nd watercourse (Balta Mare) crossing meant that topsoil with turves removal in line with the method set out in the BMP was not fully implemented. As a result, additional habitat re-instatement measures will be implemented in this section of the construction footprint in 2022/2023, measures which will be detailed in a Habitat Restoration Plan which will be part of the BAP. Some of the measures will include:

- removal of ruderals, weeds and invasive plants from the working area in the modified and natural habitat;
- ground preparation for planting;
- purchase of seeds from a nursery or gathered from BSOG land plots;
- planting of seeds and (or) seedlings; and
- ongoing management of reinstated areas
- other measures which will be defined in the Habitat Restoration Plan

Taking account of the habitat condition score prior to loss of 0.5, re-instatement of the complete construction footprint to a similar target condition score of 0.5 will deliver 6.05 quality hectares of the 14.35 quality hectares required to achieve NNL. The objective of the habitat re-instatement will be to return the habitat affected by the project to its pre-construction extent and condition.

Following the successful re-instatement of the construction footprint, the additional 8.3 quality hectares of habitat required to deliver NNL, will comprise the following amounts for each individual habitat:

- 3.40 ha of *Elymetum gigantei* with *Agropyretum elongati*;
- 1.35 ha of *Elymetum gigantei* with *Halimionetum verruciferae*;
- 1.05 ha of *Phragmitetum australis* with *Typhetum latifoliae*;
- 0.54 ha of *Agropyretum elongati*;
- 1.96 ha of *Juncetum maritimi* (*Artemisia santonicae* - *Juncetum maritimi* with *Artemisia santonicae* - *Juncetum littoralis* and *Elymetum gigantei*), an Annex I habitat (also PBF).

It is recognised that the level of addition actions to deliver NNL is contingent on the successful re-instatement of the habitats within the working area. Therefore the success of the habitat re-instatement will be validated after 5 years and the habitat losses re-calculated to take into account the observed re-instatement outcomes. The scale and scope of habitat enhancement and offset measures will be re-assessed following this 5 year review (see Section 7 for monitoring plans).

5.3.1.3 Habitat Enhancement

To deliver biodiversity gains towards achieving the remaining 8.3 quality hectares required to deliver NNL, habitat enhancement of areas within BSOG land plots, within and outside of the construction footprint are proposed. Hence, access to the habitats to allow the measures to be implemented is available. BSOG land plots extend some distance away from the working width (see Figure 5.1), and comprise approximately 82 ha of habitat, however not all of this area is suitable for habitat enhancement.

Ground truthing surveys were undertaken within the BSOG land plots and opportunities for habitat enhancement were identified. Preliminary areas where habitat enhancement actions could be implemented were identified during this ground truthing, and a detailed Habitat Enhancement Plan will be prepared as part of the implementation of the proposed offset measures. Habitat enhancement measures which will be included in the Habitat Enhancement Plan will target the five types of habitat (plant communities) as well as the fauna species regarded as CHF and PBF. The measures that could be implemented to improve the habitat structure, species diversity and/or species abundance were:

- creation of dunes to increase habitat heterogeneity, enhance flora diversity and create habitat for reptiles (*Testudo graeca*);
- creation of dune slacks to increase habitat heterogeneity, enhance flora diversity and create habitat for passage and wintering birds and amphibians; and

- creation of areas of open water and islands within reed beds to increase habitat heterogeneity, and create habitat for otter, amphibians, reptiles and breeding, passage and wintering birds.
- creation of small ditches to increase habitat for amphibians (*Triturus sp.*, *Bombina bombina*)

The enhancement measures described above are all ones that are technically feasible, with guidance on how to achieve successful implementation of these measures (eg improving reedbeds, creating open water, breeding islands, improving dune systems ^{1 2 3 4}), and are in habitats that are intact and functioning. These techniques and approaches are applicable in this location, despite the fact they relate primarily to more northerly regions.

The summary of identified preliminary habitat enhancement areas are set out in Table 5.4 and shown in Figure 5.1.

The habitat enhancement measures identified will deliver 10.02 ha of habitat improvements. As the current habitat condition score of each of the proposed areas has been assessed as 0.5, the maximum quality hectares that can be achieved from these areas is half of the area of enhancement. In total 5.01 quality hectares will be achieved through habitat enhancements.

The enhancements that can be delivered will be refined further in the detailed Habitat Enhancement Plan, but based on the current identified areas, in order to deliver the additional biodiversity gains to deliver>NNL and then NG, further offset measures are proposed (see Section 5.3.1.4).

The objective of the habitat enhancement will be to improve the overall condition of the enhanced habitats, thereby deliver biodiversity gains for affected critical habitats within BSOG land plots.

Table 5.4 Habitat Enhancement Areas within BSOG Land Plots

Habitat	Area of Habitat Enhancement (Ha)	Quality hectares provided	Land Plot Numbers Where Enhancements will be Created
<i>Elymetum gigantei</i> with <i>Agropyretum elongati</i> ;	0.06	0.03	5, 6
<i>Elymetum gigantei</i> with <i>Halimionetum verruciferae</i>	2.35	1.18	2, 3, 4
<i>Phragmitetum australis</i> with <i>Typhetum latifoliae</i>	6.39	3.20	1-9
<i>Juncetum maritimi</i> (<i>Artemisio santonicae</i> - <i>Juncetum maritimi</i> with <i>Artemisio santonicae</i> - <i>Juncetum littoralis</i> and <i>Elymetum gigantei</i>	1.22	0.61	4,5,6
Total	10.02	5.01	-

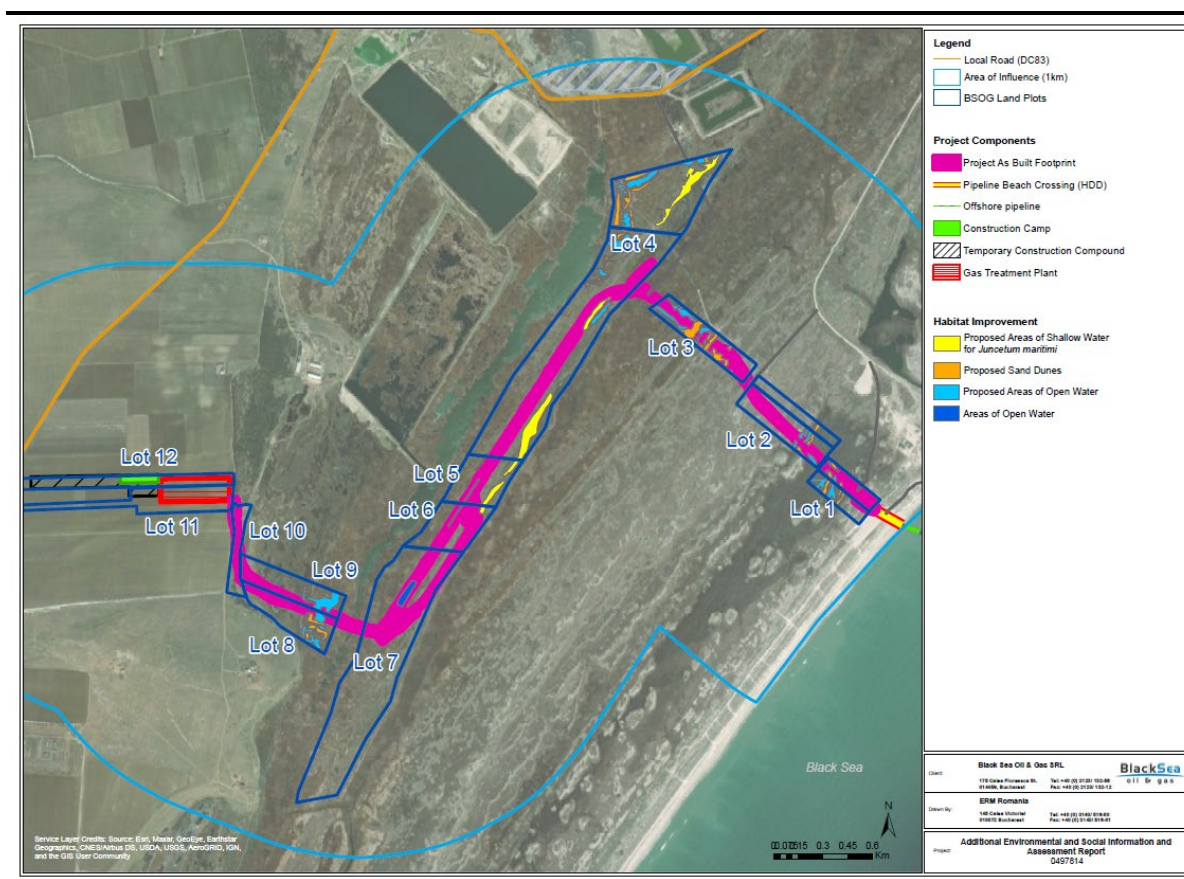
(¹) http://ww2.rspb.org.uk/Images/bringing_reedbeds_to_life_tcm9-385799.pdf

(²) C J Hawke and P V José (1996) - Reedbed management for commercial and wildlife interests. RSPB.

(³) http://databases.eucc-d.de/files/000214_Oil___Gas_Pipelines_Managerial_System_casestudies.pdf

(⁴) <https://www.conservationhandbooks.com/manage-sand-dunes/>

Figure 5.1 Proposed Indicative Habitat Enhancement Areas within BSOG Land Plots



5.3.1.4 Biodiversity Offsets

To achieve the biodiversity gains required to deliver NNL and then additional gains to achieve biodiversity NG, BSOG identified a number of potential biodiversity offset projects. Projects were screened for potential biodiversity gains they could deliver, and for feasibility of delivery. The selected projects are aimed at delivering biodiversity gains for affected habitats and species through averted loss, by improving public attitudes to and use of, Vadu beach where the Project landfall is. Although officially zoned as part of the Danube Delta Protected Area, the beach and dune habitats experience a high number of tourists and campers during the summer leading to habitat degradation. Those projects deemed feasible to deliver are set out in Table 5.5. Actions 2, 3 and 4 built on initial Corporate Social Responsibility (CSR) projects initiated by BSOG with local Romanian NGO Mare Nostrum and have the potential to deliver measurable biodiversity gains.

The offset measures identified are additional to those already described in the BMP, including for the re-instatement of the habitat temporarily affected along the working width.

The objective of the biodiversity offsets will be to deliver biodiversity gains across the wider Vadu beach area within the Danube Delta, to offset residual biodiversity impacts that remain following habitat re-instatement and enhancement and to deliver biodiversity NG for impacted critical habitat.

Table 5.5 Onshore Biodiversity Offset Measures

Measure Number	Offset Measure	Biodiversity Features Targeted	How Biodiversity Gains will be Achieved
1	Installation of signage and interpretation at Vadu Beach.	<ul style="list-style-type: none"> • <i>Juncetum maritimi</i> • <i>Elymetum gigantei</i> with <i>Agropyretum elongati</i>; • <i>Elymetum gigantei</i> with <i>Halimionetum verruciferae</i> • <i>Phragmitetum australis</i> with <i>Typhetum latifoliae</i> • common tortoise (<i>Testudo graeca</i>) • European pond turtle (<i>Emys orbicularis</i>) • Breeding birds: <i>Himantopus himantopus</i>, <i>Recurvirostra avosetta</i>, <i>Tringa totanus</i>, <i>Upupa epops</i> 	<p>Reduction in habitat degradation (eg through vegetation trampling, camping, campfires, parking).</p> <p>Reduction in disturbance to habitat for breeding birds and reptiles.</p>
2	Removal of litter and waste from Vadu Beach and dunes.	<ul style="list-style-type: none"> • <i>Juncetum maritimi</i> • common tortoise (<i>Testudo graeca</i>) • European pond turtle (<i>Emys orbicularis</i>) 	Enhancement of habitats by removal of waste and subsequent increase in area of good quality habitat.
3	Undertake direct engagement with tourists and users of Vadu Beach through 'soft patrols' and awareness raising.	<ul style="list-style-type: none"> • <i>Juncetum maritimi</i> • <i>Elymetum gigantei</i> with <i>Agropyretum elongati</i>; • <i>Elymetum gigantei</i> with <i>Halimionetum verruciferae</i> • <i>Phragmitetum australis</i> with <i>Typhetum latifoliae</i> • common tortoise • European pond turtle (<i>Emys orbicularis</i>) • breeding birds: <i>Himantopus himantopus</i>, <i>Recurvirostra avosetta</i>, <i>Tringa totanus</i>, <i>Upupa epops</i> 	<p>Reduction in habitat degradation (eg through vegetation trampling, camping, campfires, parking).</p> <p>Reduction in disturbance to habitat for breeding birds and reptiles.</p>
4	Support development of a Sustainable Development Plan for Vadu Beach.	<ul style="list-style-type: none"> • All critical habitat and PBF features 	Reduction or control of numbers of visitors to Vadu beach. Subsequent reduction in habitat and disturbance to habitat for breeding birds and reptiles.

5.3.1.5 Summary of Onshore BAP Actions

Table 5.6 Onshore BAP Measures

Action	Objective	Responsible
Re-instatement of Open Cut 2 nd Water Crossing	<ul style="list-style-type: none"> Return habitat affected by the project to its pre-construction extent and condition. 	<ul style="list-style-type: none"> BSOG Biodiversity Specialist Contractors
Habitat Enhancement within BSOG Land Plots	<ul style="list-style-type: none"> Improve the overall condition of the enhanced habitats, thereby deliver biodiversity gains for affected critical habitats within BSOG land plots. 	<ul style="list-style-type: none"> BSOG Biodiversity Specialist Contractors
Installation of signage and interpretation at Vadu Beach.	<ul style="list-style-type: none"> Deliver biodiversity gains across the wider Vadu beach area within the Danube Delta to offset residual biodiversity impacts that remain following habitat re-instatement and enhancement, and to deliver biodiversity NG for impacted critical habitat. 	<ul style="list-style-type: none"> BSOG Biodiversity Specialist
Removal of litter and waste from Vadu Beach and dunes.		<ul style="list-style-type: none"> BSOG Biodiversity Specialist Mare Nostrum
Undertake direct engagement with tourists and users of Vadu Beach through 'soft patrols' and awareness raising.		<ul style="list-style-type: none"> BSOG Biodiversity Specialist Mare Nostrum
Support development of a Sustainable Development Plan for Vadu Beach.		<ul style="list-style-type: none"> BSOG Biodiversity Specialists Mare Nostrum

5.4 Offshore

5.4.1.1 Calculating Biodiversity Loss and Required Gains

The most sensitive habitats identified are seabed vents and seeps, located approximately 115 m from the in-filled pipeline route. Monitoring of construction activities confirmed that seabed vents and seeps and mussel beds were avoided during pipeline construction, and impacted habitats are predicted to be recolonised during the lifetime of the Project. Given the magnitude of the impacts, the residual impacts on benthic natural habitats are not considered to be significant.

Significant displacement or injury of marine mammals and fish was not recorded during construction.

However, part of the offshore pipeline passes through critical habitat, and the pipeline will occupy 2.34 ha of this habitat, equivalent to 0.07 % of the marine component of the Danube Delta SCI (336,200 ha). BSOG is committed to achieving NG in the offshore environment as it is for the onshore. However the difficulties in restoring offshore habitats are emphasised by the residual loss of soft sediment habitats confirmed in the CHA. As a result of the lack of observed significant residual impacts on marine biodiversity, BSOG have committed to achieving NG through implementing additional conservation actions (ACAs) for key marine receptors.

5.4.1.2 Marine Additional Conservation Action

BSOG have identified the following ACA to deliver biodiversity gains in the marine environment:

- Romanian marine conservation NGO Oceanic Club have undertaken pre-and post construction benthic and marine fauna surveys for the Project, gathering a large volume of data on the

distribution of marine habitats and species across the Romanian coastal shelf. BSOG will support Oceanic Club to publish and promote Project survey data to:

- support capacity building for Black Sea conservation agencies;
- strengthen and build the evidence base for better marine management planning in Romania; and
- contribute to management plans for existing marine protected areas, threatened species and habitats.

The objective of the offshore ACA will be to deliver biodiversity gains for marine critical habitat features at a strategic level in Romania.

5.4.1.3 Summary of Offshore BAP Actions

Table 5.7 Offshore BAP Measures

Action	Objective	Responsible
Support Oceanic Club to publish and promote Project survey data to:	• Deliver biodiversity gains for marine critical habitat features at a strategic level in Romania.	• BSOG • Oceanic Club
○ support capacity building for Black Sea conservation agencies;		
○ strengthen and build the evidence base for better marine management planning in Romania; and		
○ contribute to management plans for existing marine protected areas, threatened species and habitats.		

5.5 Stakeholder Engagement

The onshore pipeline works, and the adjacent areas for habitat enhancements to achieve NNL/NG, are within the protected sites of the Danube Delta, and through measures to achieve NG, BSOG is committed to improving the designated sites. Consultations with the key stakeholders for the Danube Delta have been undertaken as part of the ESIA process, including with Danube Delta Reserve Biosphere Reserve Administration (ARBDD), who issued a permit for the development to occur with the Biosphere Reserve. The administration is currently updating the management plans for the Danube Delta, and the management plan will be reviewed once it has been published, to make sure that the actions set out in the BAP are align with the new plan.

It will be necessary to engage with ARBDD further to obtain the necessary permits before measures outside of the immediate Project footprint can be implemented. Consultation to make ARBDD aware of the aims of this BAP was started in December 2021. Consultation with ARBDD will continue throughout the duration of the BAP on an annual basis. The outcomes of the actions contained in this BAP, and the results of monitoring will be shared with ARBDD and any other stakeholders identified by them during the implementation of the BAP.

6. ROLES AND RESPONSIBILITIES

The roles and responsibilities of implementing specific management actions are provided in Section 6.2 of the BMP. The responsibility for the BAP and its implementation, including the delivery of NNL/NG, lies with BSOG and its biodiversity specialist. However, in delivering some of the targets to achieve NNL/NG and Additional Conservation Actions, it is expected that some specific responsibilities will lie with biodiversity specialists, or NGOs contracted to BSOG and authorities

responsible for the management and running of the designated sites. These roles and responsibilities are set out in Table 5.6 and Table 5.7.

BSOG will be responsible for monitoring the BAP implementation, and auditing its progress.

7. LONG TERM BIODIVERSITY MONITORING

In areas of critical habitat, IFC PS6 and EBRD PR6 states that (amongst other stipulations), project activities will not be implemented unless a robust, appropriately designed, and long term biodiversity monitoring and evaluation programme is integrated into the project's management programme.

The full suite of regulatory biodiversity monitoring commitments for construction, operation and decommissioning to monitor Project impacts and the implementation of mitigation measures are described in Sections 6.3.1 (offshore) and 6.3.2 (onshore) in the BMP.

A number of the longer term (eg post construction) regulatory biodiversity monitoring measures identified in the BMP will also help to monitor the success of the implementation of the BAP. These measures are set out in Table 7.1 (onshore) and Table 7.2 (offshore) alongside additional measures developed specifically to monitor the implementation and biodiversity outcomes of the BAP.

The success of the individual measures will be determined using a limit of acceptable change approach (eg if species diversity falls below a certain level, or the number of a species drops below a certain number). The limits of acceptable change for each relevant feature are set out in the monitoring summary tables. Remedial actions will be drawn up if these limits are exceeded.

To monitor the overall success of the implementation of the BAP Key Performance Indicators (KPIs) have been selected based on the monitoring measures. These are identified in Table 7.1 and Table 7.2.

There will be an ongoing process of review of the monitoring findings, KPIs, limits of acceptable change and the need for remedial actions. The monitoring findings will be shared with the ARBDD and relevant Romanian authorities.

Table 7.1 Onshore Monitoring

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
BAP Implementation Monitoring						
Habitat Reinstatement	Habitat reinstatement at 2 nd watercourse crossing completed: <ul style="list-style-type: none"> ○ Ruderals and weeds removed ○ Ground prepared ○ Seeds purchased from nursery or gathered from BSOG land plots ○ Seed or seedlings planted ○ Ongoing management of reinstated areas undertaken 	2022-2026	5 years	BSOG Contractor Biodiversity Specialist	Habitats at 2 nd watercourse crossing returned to their pre-construction extent and condition, or showing high likelihood of achieving this by end of 2024 All habitats reinstated within working strip showing	Habitats at 2 nd watercourse crossing not re-instated and showing progress towards long term recovery by end of 2024
Habitat Enhancement within BSOG Land Plots	<ul style="list-style-type: none"> ○ Design and permitting of habitat enhancement works completed ○ Habitat enhancement works completed ○ Ongoing management of habitat enhancement completed 	2022 - 2026	5 years	BSOG Contractor Biodiversity Specialist	Habitat enhancement measures implemented by 2026	Habitat enhancement measures not implemented by 2026
Installation of signage and interpretation at Vadu Beach.	<ul style="list-style-type: none"> ○ Design and permitting of signage and interpretation boards completed ○ Installation of signage and interpretation boards completed 	2022-2023	2 years	BSOG Contractor Biodiversity Specialist	Signage and interpretation installed by end of 2023	Signage and interpretation installed by end of 2023
Removal of litter and waste from Vadu Beach and dunes.	<ul style="list-style-type: none"> ○ Beach and dune clean up events at Vadu beach, dunes, car parks and campsites completed 	2022-2023	Weekly clean up events during June, July, August in 2022 and 2023	BSOG Mare Nostrum Biodiversity Specialist	24 beach and dune clean up events undertaken	Less than 20 beach and dune clean up events completed

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
Undertake direct engagement with tourists and users of Vadu Beach through 'soft patrols' and awareness raising.	<ul style="list-style-type: none"> Soft patrols of the Vadu beach, car parks and camping areas completed 	2022-2023	Weekly soft patrols undertaken during June, July, August in 2022 and 2023	BSOG Mare Nostrum Biodiversity Specialist	24 soft patrols undertaken	Less than 20 soft patrols completed
Support development of a Sustainable Development Plan for Vadu Beach.	<ul style="list-style-type: none"> Support provided to Mare Nostrum to continue to support Sustainable Development Plan for Vadu Beach Draft Sustainable Development Plan produced 	2022 – 2023	2 years	BSOG Mare Nostrum Biodiversity Specialist	Draft Sustainable Development Plan produced by end of 2023	Draft Sustainable Development Plan not produced by end of 2023
Regulatory Biodiversity Outcome Monitoring						
Habitats	All habitats within the temporary project footprint (including pipeline route, temporary laydown areas and compounds, HDD compounds and access tracks) will be monitored. Pre-construction condition surveys and photographs will be undertaken to establish baseline conditions for habitat restoration, in line with the Soil Waterbody Crossing and Reinstatement Management Plan. Post construction monitoring will be undertaken to monitor the success of habitat re-instatement using transect surveys, fixed point photography and habitat mapping.	Pre-construction, post construction/operation. 2022-2023 Re-instatement check survey across project footprint in 2027	Three visits in spring, early summer and late summer. Undertaken for at least two years post construction. If satisfactory habitat reinstatement has not been completed after two years, monitoring will be continued and reviewed annually. Follow up survey undertaken in 2027 after 5 years to check success of re-instatement	BSOG	Habitats returned to their pre-construction extent and condition, or showing high likelihood of achieving this by end of 2023. Check survey at 2027, and re-evaluation of scale and scope of habitat enhancement and offset actions to deliver NG	Habitats not re-instated and showing progress towards long term recovery by end of 2024 Habitats not fully re-instated by 2027.

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
Flora	Monitoring of flora of conservation concern (critical and priority habitat species and qualifying features of designated sites) individuals replanted within the temporary project footprint.	Post construction/ operation. 2022-2023 and potentially beyond.	Three visits (one in spring, early summer and late summer). Undertaken for at least two years post construction. If satisfactory re-colonisation has not taken place after two years monitoring will be continued and reviewed annually.	BSOG	Populations of flora of conservation concern established and in line with pre-construction levels by end of 2023	Populations of flora of conservation concern not established and in line with pre-construction levels by end of 2023
	Monitoring of flora of conservation concern (critical and priority habitat species and qualifying features of designated sites) individuals translocated to suitable receptor sites.	Post construction/ operation. 2022-2023 and potentially beyond.	Three visits (one in spring, early summer and late summer). Undertaken for at least two years post-construction. If satisfactory colonisation has not taken place after two years, monitoring will be continued and reviewed annually.	BSOG	Populations of flora of conservation concern established and in line with pre-construction levels by end of 2023	Populations of flora of conservation concern not established and in line with pre-construction levels by end of 2023
Birds	Breeding bird surveys will be undertaken, including identifying breeding migrants and breeding resident species. Transect methods will be used, using a similar survey area and approach as the baseline studies undertaken to inform the ESIA so pre and post construction survey results are comparable.	Post construction/ operation. 2022-2023	Two visits (one in early breeding season, one mid-breeding season). Surveys will be undertaken for two years post-construction.	BSOG	Populations of birds of conservation concern are in line with pre-construction populations and reference areas by end of 2023	Populations of birds of conservation concern are not in line with pre-construction populations and reference areas by end of 2023

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
	Wintering bird surveys will be undertaken using transect methods. A similar survey area and approach as used for the baseline studies undertaken to inform the ESIA will be used so pre and post construction survey results are comparable.	Post construction/ operation. 2022-2023	Three visits (one early winter, one mid-winter and one late winter). Surveys will be undertaken for two years post-construction.	BSOG	Populations of birds of conservation concern are in line with pre-construction populations and reference areas by end of 2023	Populations of birds of conservation concern are not in line with pre-construction populations and reference areas by end of 2023
	Migratory bird surveys will be undertaken using point based/vantage point methods. A similar survey area and approach as used for the baseline studies undertaken to inform the ESIA will be used so pre and post construction survey results are comparable.	Post construction/ operation. 2022-2023	Three visits (one early autumn, one mid-autumn and one late autumn). Surveys will be undertaken for two years post-construction.	BSOG	Populations of birds of conservation concern are in line with pre-construction populations and reference areas by end of 2023	Populations of birds of conservation concern are not in line with pre-construction populations and reference areas by end of 2023
Mammals	Mammal surveys will be undertaken using transect methods, including both day time and night time transects. A similar survey area and approach as used for the baseline studies undertaken to inform the ESIA will be used so pre and post construction survey results are comparable.	Post construction/ operation. 2022-2023	Two visits (one in early summer and one in mid-summer). Surveys will be undertaken for two years post-construction.	BSOG	Populations of mammals of conservation concern are in line with pre-construction populations and reference areas by end of 2023	Populations of mammals of conservation concern are not in line with pre-construction populations and reference areas by end of 2023
	Amphibian and reptile surveys will be undertaken using day time transects, active searching, and evening transects to record vocalisations of amphibians.	Post construction/ operation. 2022-2023	Two visits (one in spring during the amphibian breeding season and one in summer). Surveys will be undertaken for two years post-construction.	BSOG	Populations of amphibians and reptiles of conservation concern are in line with pre-construction populations and reference areas by end of 2023	Populations of amphibians and reptiles of conservation concern are not in line with pre-construction populations and reference areas by end of 2023

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
Invertebrates	Invertebrate surveys will be undertaken using transects and active searching. Food plants of priority or critical or designated feature butterfly and moth species will be recorded within the Project footprint.	Post construction/ operation. 2022-2023	Two visits (one in early summer and one in mid or late summer). Surveys will be undertaken for two years post-construction.	BSOG	Populations of invertebrates of conservation concern are in line with pre-construction populations and reference areas by end of 2023	Populations of invertebrates of conservation concern are not in line with pre-construction populations and reference areas by end of 2023
BAP Outcome Monitoring						
Habitat Enhancement Areas	All habitats within the habitat enhancement areas will be monitored. Pre-enhancement condition surveys and photographs will be undertaken to establish baseline conditions for. Post enhancement monitoring will be undertaken to monitor the success of habitat enhancement using transect surveys, fixed point photography and habitat mapping.	Post construction/ operation. 2023-2038	Three visits in spring, early summer and late summer. Undertaken in years 1, 2, 5, 10 and 15 after habitat enhancement measures are completed.	BSOG Biodiversity Specialist	Condition and species diversity of the enhanced habitats improved by year 5. Extent of enhanced areas remains stable.	Condition and species diversity of the enhanced habitats not improved by year 5. Extent of enhanced areas does not remain stable.
	Breeding bird surveys will be undertaken, including identifying breeding migrants and breeding resident species. Transect methods will be used, using a similar survey area and approach as the baseline studies undertaken to inform the ESIA so pre and post construction survey results are comparable.	Post construction /operation 2023-2038	Two visits (one in early breeding season, one mid-breeding season). Surveys will be undertaken in years 1, 2, 5, 10 and 15 after habitat enhancement measures are completed.	BSOG Biodiversity Specialist	Populations of birds of conservation concern are in line with pre-construction populations and reference areas by end of 2025	Populations of birds of conservation concern are not in line with pre-construction populations and reference areas by end of 2025
	Reptile surveys will be undertaken to monitor use of newly created open sand dune habitat. Active searching or GPS tagging will be used to monitor tortoise movements and use of habitat.	Post construction/ operation 2023-2038	Two visits (one in early summer, one late summer). Surveys will be undertaken for two years post-construction. Surveys will be undertaken in years 1, 2, 5, 10 and 15 after habitat enhancement measures are completed.	BSOG Biodiversity Specialist	Populations of reptiles of conservation concern are in line with pre-construction populations and reference areas by end of 2025	Populations of reptiles of conservation concern are not in line with pre-construction populations and reference areas by end of 2025

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
	eDNA analysis of open water habitats and dune scrapes will be undertaken to monitor use of habitats by birds, reptiles, amphibians and mammals.	Post construction/ operation 2023-2308	Sampling will be undertaken during spring and autumn. Surveys will be undertaken in years 1, 2, 5, 10 and 15 years after habitat enhancement measures are completed.	BSOG Biodiversity Specialist	Populations of birds, reptiles, mammals and amphibians of conservation concern are in line with pre-construction populations and reference areas by end of 2025	Populations of birds, reptiles, mammals and amphibians of conservation concern are not in line with pre-construction populations and reference areas by end of 2025
Overall Habitat Condition	Satellite imagery will be used to map habitat distribution and type and identify areas of habitat degradation. Interpretation will be informed by field surveys undertaken as part of other monitoring actions.	2023-2038	Image collection and analysis will be undertaken once per year in years 1, 2, 5, 10 and 15.	BSOG Biodiversity specialist	Habitat condition improves across wider Vadu beach area during monitoring period.	Habitat condition fails to improve across wider Vadu beach area during monitoring period.
Signage and Interpretation. Beach and dune clean up events. Direct engagement with tourists and users of Vadu Beach through 'soft patrols' and awareness raising.	<ul style="list-style-type: none"> Stakeholder and beach user interviews to monitor changes in attitudes to and use of Vadu Beach. 	2022- 2037	Once in June in years 1, 2, 5, 10 and 15.	BSOG	<p>15 stakeholders and beach users interviewed each year of monitoring.</p> <p>Attitudes to importance of biodiversity value of Vadu beach improve and remain positive</p>	<p>Less than 15 stakeholders interviews per year of monitoring.</p> <p>Attitudes to Vadu beach remain the same, or are more negative.</p>

Table 7.2 Long Term Offshore Monitoring

Receptor/ Action	Monitoring	Period	Frequency/Duration	Responsible	KPI	Limit of Acceptable Change
BAP Implementation Monitoring						
Implementation of marine ACA	<ul style="list-style-type: none"> Production of reports or papers using BSOG monitoring data. Presentation of results and engagement with relevant authorities/organisations. Incorporation of results into evidence bases for marine habitat and species management actions. 	2022 – 2025	4 years	BSOG Oceanic Club	Papers/publications produced. Stakeholder engagement undertaken.	Paper/publication not produced by 2024. Stakeholder engagement not undertaken by 2025.
Regulatory Biodiversity Outcome Monitoring						
Benthic habitats	Monitoring of marine habitats along the pipeline route and at the drill cutting disposal areas at the Anna and Doina wells. Monitoring campaigns performed every six months, every year and every two years after completion of the construction, in order to identify the degree of restoration of disturbed habitats (monitoring will be carried out along the pipeline route, in the areas where wells will be drilled and will discharge debris and water-based drilling fluid). Monitoring will comprise drop down video surveys.	Construction, operation, decommissioning	After six months, one year, and then every two years.	BSOG	No significant impacts to critical habitats, or PBF habitats, outside the pipeline footprint.	Impact outside the pipeline footprint detected.
Benthic habitats	Monitoring habitats, focusing on designated areas for their protection (ROSCI 0066 Danube Delta). Monitoring of habitats within the ROSCI 0066 Danube Delta will be reported as part of the wider benthic habitats monitoring.	Construction, operation, decommissioning.	After six months, one year, and then every two years.	BSOG	No significant impacts to critical habitats or PBF habitats, outside the pipeline footprint.	Impact outside the pipeline footprint detected

8. PROGRAMME FOR IMPLEMENTATION

The programme for implementing the BAP and associated BAP monitoring is shown in Figure 8.1. The programme will be reviewed on an annual basis.

Figure 8.1 Timetable for Achieving Net Gain

Year	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038
Onshore																	
Habitat Re-instatement																	
Design of habitat re-instatement works and supporting studies																	
Remove ruderals, prepare ground, gather/purchase seeds																	
Replant areas																	
Ongoing Management of re-instated areas																	
Habitat Enhancement																	
Design and Permitting of Habitat Enhancement Works and Interpretation Boards																	
Construction Costs for Habitat Enhancement																	
Habitat Enhancement Management and Follow Up																	
Biodiversity Offset Projects																	
Installation of Signage and Interpretation Boards																	
Removal of litter and waste from Vadu Beach and dunes																	
Direct Awareness Raising Among Tourists through 'soft patrols' and awareness raising																	
Support Sustainable Development Plan for Vadu Area																	
Biodiversity Monitoring																	
Habitat Condition Monitoring of Re-instated Areas																	
Habitat Condition Monitoring of Work and Enhancement Areas																	
Satellite imagery analysis of vegetation																	
Breeding Bird Surveys																	
Habitat use by tortoises and terrapins																	
eDNA analysis of ponds																	
Biodiversity Offset Implementation Monitoring																	
User/stakeholder interviews																	
Offshore																	
Support to Knowledgebase to support Conservation Management in the Black Sea																	
Support Oceanic Club to publish and promote Project survey data to: o support capacity building for Black Sea conservation agencies; o strengthen and build the evidence base for better marine management planning in Romania; and o contribute to management plans for existing marine protected areas, threatened species and habitats.																	
Marine ACA Monitoring																	
Review of outputs of support to Oceanic Club																	

9. ADAPTIVE MANAGEMENT AND BAP UPDATES

The monitoring set out in Section 7 will monitor the success of the actions set out in the BAP against the KPIs. Where KPIs are not met within the target timescales, adaptive management measures will be implemented.

The BAP will be a 'living document' that will evolve and be updated as actions are developed and implemented, and as the process of adaptive management guides delivery of net biodiversity gain. Regular reviews will be undertaken annually for the first 5 years of BAP implementation, with frequency of further reviews to be determined at the end of this period.

In addition, where changes to the Project occur that change the predicted impacts to biodiversity in relation to IFC PS6 and EBRD PR6, the BAP will be updated to capture and address these new impacts.

10. BAP BUDGET

The outline budgets for implementing the BAP are set out in Table 10.1 and Table 10.2. The budgets presented below just include additional measures and monitoring not included in the regulatory biodiversity monitoring. The budgets and timings for the Direct Awareness Raising Among Tourists and Marine Litter Removal offset actions onshore and the Support to Oceanic Club to Publish Findings and subsequent monitoring of outputs will be included in later updates of the BAP once details of these measures are finalised.

Table 10.1 Onshore BAP Budget Outline

Task	Description	Budget (€)	Proposed Timing/ Frequency	Total For Task
Habitat Re-instatement				
Preparation work	Develop habitat re-instatement plan (soil sampling, groundwater study, topographic study). Remove ruderals, prepare ground, gather/purchase seeds.	50,000	Year 1 or 2	50,000
Replant areas	Re-instatement of habitats within RoW and other impacted areas. Contingency budget for follow up and management works of habitat	65,000	Year 1 or 2	65,000
Ongoing Management of re-instated areas	re-instatement areas to ensure target habitat develops.	10,000	Ongoing Years 2-5	20,000
Habitat Enhancement				
Design and Permitting of Habitat	Developing habitat enhancement design plan and securing permits and authorisation from Danube Delta Authority and Department of Protected Areas.	50-70,000	One off, Year 1	50-70,000
Enhancement Works and Interpretation Boards	Construction of habitat enhancement works within BSOG land parcels, and installation of signs	120-150,000	One off, Year 2	120-150,000

Task	Description	Budget (€)	Proposed Timing/ Frequency	Total For Task
Habitat Enhancement Management and Follow Up	Contingency budget for follow up and management works of habitat enhancement areas to ensure target habitat and species develop.	10,000	Years 1, 2 and 5	30,000
Biodiversity Monitoring				
Habitat Condition Monitoring of Work and Enhancement Areas	Field surveys of habitat condition to determine if RoW is recovering, and if habitat enhancement areas are delivering biodiversity gains	12,000	Years 1, 2, 5, 10 and 15	60,000
Satellite imagery analysis of vegetation	Analysis of satellite imagery to identify habitat condition trends in wider area.	10,000	Years 1,2, 5, 10 and 15	20,000
Breeding Bird Surveys	Field surveys to determine if target bird species are using newly created habitat	14,000	Years 1, 2, 5, 10 and 15	70,000
Habitat use by tortoises and terrapins	Field surveys to determine if target tortoise and terrapin species are using newly created habitat	14,000	Years 1, 2, 5, 10 and 15	70,000
eDNA analysis of ponds	eDNA analysis of water samples from ponds to determine if wetlands are being used by target amphibian and bird species	5,000	Years 1 and 5	10,000
Biodiversity Offsets				
Direct Awareness Raising Among Tourists	Continue direct awareness raising about the importance of Vadu beach to change attitudes and behaviour, through leaflets, or 'soft patrols' of the beach to engage with tourists.	TBC	TBC	TBC
Marine Litter Removal	Continue to support marine litter removal to improve marine and coastal habitats, and raise awareness of importance of Vadu beach.	TBC	TBC	TBC
Support Sustainable Development Plan for Vadu Area	Continue to support development, and implementation of sustainable development plan for Vadu area	70,000	Years 1, 2, 5, 10 and 15	70,000
Biodiversity Offset Implementation Monitoring				
User/stakeholder interviews	User/stakeholder interviews / surveys to monitor change in behaviour, attitudes, valuation and use of the Vadu Beach area.	20,000	Years 1, 2, 5, 10 and 15	
Onshore Total				655,000 - 705,000

Table 10.2 Offshore BAP Budget Outline

Task	Description	Budget	Proposed Timing/Frequency	Total For Task
Support to Knowledgebase to support Conservation Management in the Black Sea				
Support to Oceanic Club to Publish Findings	Support Oceanic Club to report and publish information on distribution and ecology of critical habitats and species within the Romanian Black Sea to aid conservation management.	TBC	Years 1 and 2	TBC
Marine ACA Monitoring				
Review of outputs of support to Oceanic Club		TBC	Years 1-4	TBC
Offshore Total				TBC

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