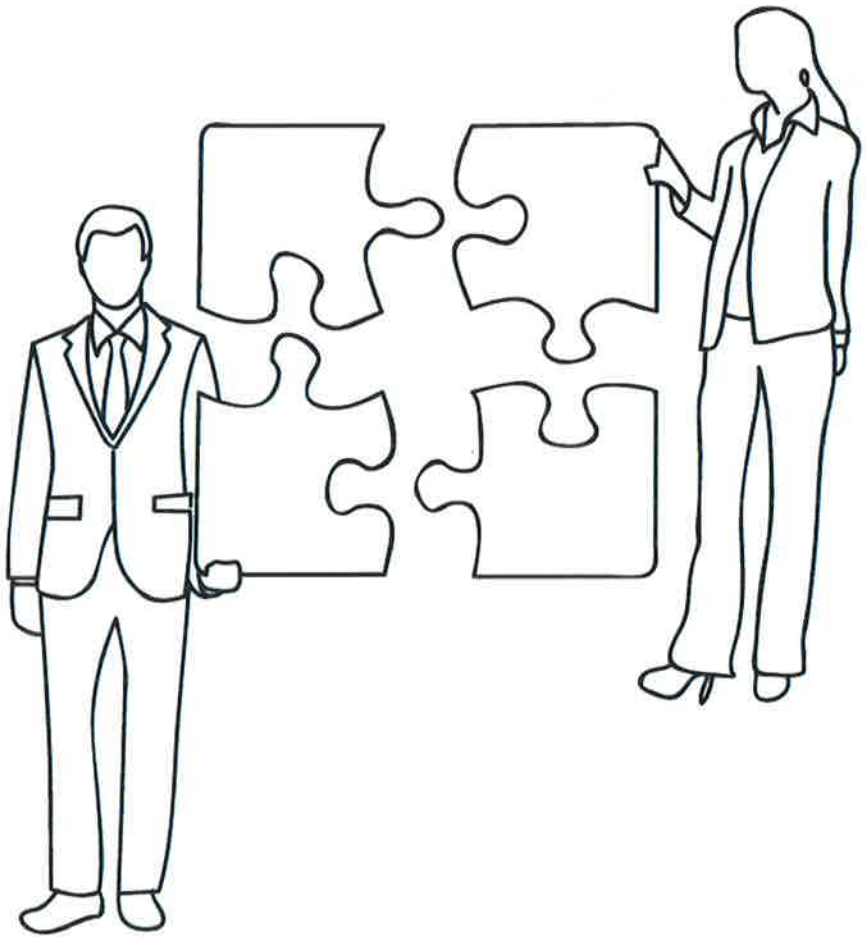
Plan

plan ms hse 019 Eni Ghana - "Biodiversity Management Plan"



TITLE:
BIODIVERSITY MANAGEMENT PLAN
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REVISION SHEET

Rev.	Date	N. pages	Change Description	Prep.	Ver.	Appr.
00	02-09-2016	80	Final issue	J. Sanchez / F. Climent	C.Ortuño	D Strippoli
01	31–08-2017	91	Final Issue including Production	F. Climent	C.Ortuño	D. Strippoli

Note:

Revision 01 (Rev.01) of this document has incorporated the production phase of the OCTP project as well as general edits. Specific edits include update of several figures to incorporate project design/footprint changes, general text (excluding Section 5 and 10) and the commitments table.

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1. Purpose

Eni Ghana has developed this Biodiversity Management Plan (BMP) as part of its Environmental, Social and Health Management Plan (ESHMP).

This Plan aims to ensure the management and control of activities that may pose biodiversity related risks to nearshore and onshore biodiversity and ecological matrix, associated with all project phases. This Plan sets out potential impacts and consequences and describes how they will be mitigated. eni Ghana will use commercially reasonable efforts to require contractors, or other intermediaries procuring labour, to apply comparable standards.

The specific objectives of the BMP are to:

- Manage and minimize the predicted impacts on biodiversity through the implementation of the mitigation hierarchy including mitigation measures that are identified in the Ghana OCTP Block Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05);
- Define monitoring activities necessary with improve the understanding of predicted impacts and to monitor the success of proposed mitigation measures; and
- Identify new impacts or deviation from expected impacts (if any) and define new mitigation measures whereas deemed necessary.

Biodiversity related impacts can be mitigated by the implementation of standard best practices in terms of environmental controls and management practices which follow the mitigation hierarchy. These measures are detailed in this BMP.

A number of responsible parties for implementation and monitoring of activities are presented in Section 11 (Roles and Responsibilities). Among these, the EPC contractor selected by eni is a key player. The EPC contractor will be responsible for implementing the commitments included in the BMP during construction and adapt these, if needed, to fulfill the requirements and objectives set in the BMP. The overall responsibility for the management and monitoring of commitments related to biodiversity, through all project phases, remains with eni Ghana (i.e. responsible party for compliance with ESHIA commitments and establishment of means for monitoring/supervision).

The BMP is intended to be a 'live' document and therefore it shall be periodically updated by eni Ghana. This is especially relevant during the construction and commissioning phases where the BMP shall be updated taking into account the potential findings provided by monitoring activities implemented on the ground as well as potential changes in the project

design or management procedures. A mechanism to disseminate updates to relevant units within eni and to contractors will be established.

The BMP should be read in conjunction with several other Company plans:

- plan ms hse 005– Waste Management Plan
- plan ms hse 011 eni Ghana - "Pollution Prevention and Control Management Plan";
- plan ms hse 013 eni Ghana - "Marine Traffic Management Plan";
- plan ms hse 011 eni Ghana - "Offshore Hazardous Materials Management Plan";
- plan ms hse 014 eni Ghana - "Marine Mammals and Sea Turtles Protection Policy and Plan";
- plan ms hse 016 eni Ghana - "Traffic Management Plan";
- plan ms hse 017 eni Ghana - "Water Management Plan";
- prog ms hse 007 eni ghana "Fisheries Management, Participatory Monitoring Programme and Compensation Framework Strategy";
- *Appendix A* to the plan ms hse 014 eni Ghana - Marine Mammal and Sea Turtle Monitoring Programme for the OCTP Project;
- plan ms hse 018 eni Ghana – "Environmental Monitoring Program".

The provisions established in this BMP are supplemented by requirements established in the above-mentioned plans. The complete set of plans allows eni to cover all aspects that are relevant for the minimization of impacts on biodiversity in all project areas (both on-shore and offshore) (see *Figure 1.1* for details on the organization of all relevant plans).

The most updated versions of the above plans shall apply.

Communications undertaken with the community within the AoI and relevant for this plan will be managed through the Stakeholder Engagement Plan and its associated Action Plans.

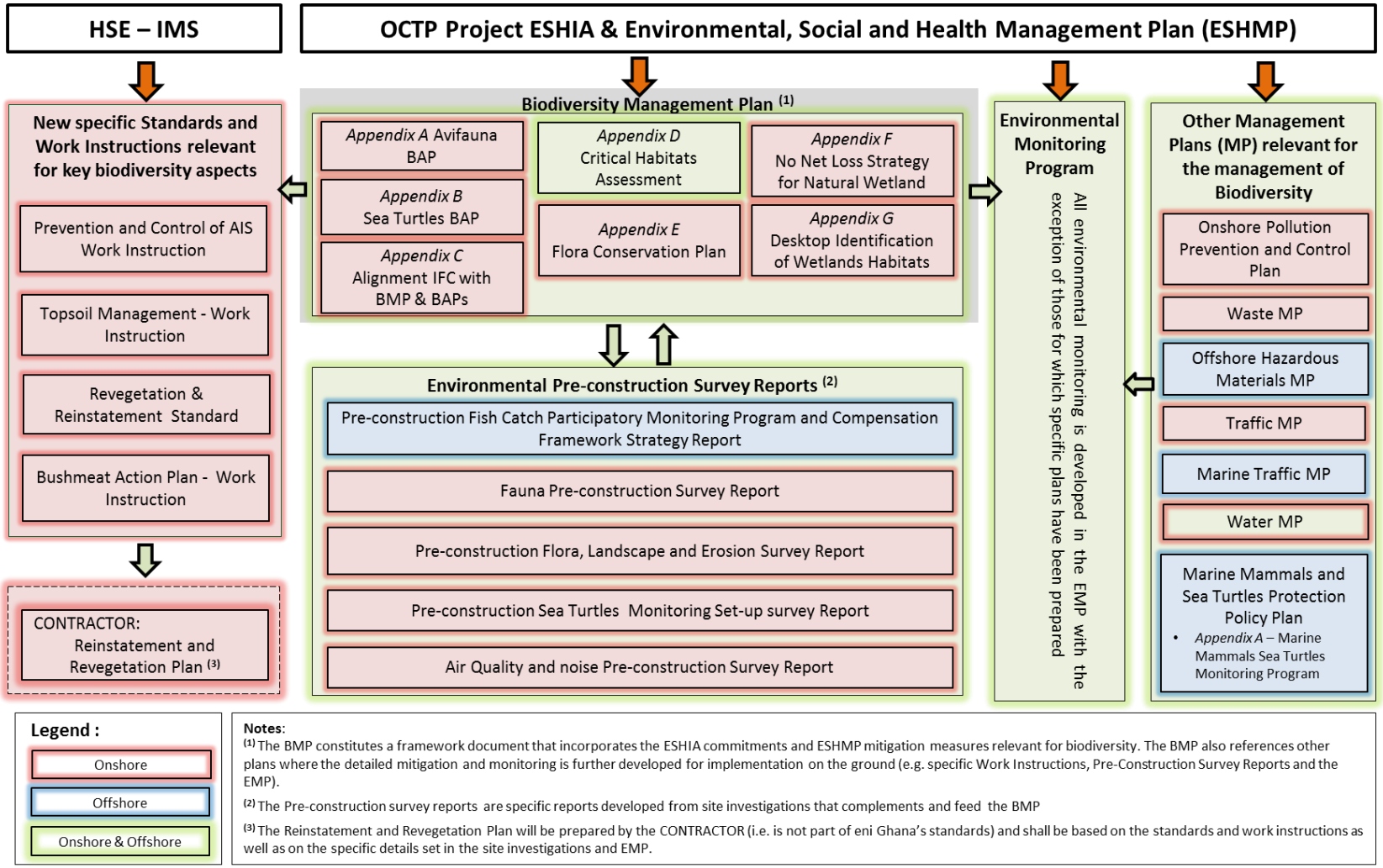
As part of this BMP, two work instructions and two plans have been outlined (see Section 9) and have been already fully developed as standalone documents by eni (prior to the commencement of construction activities).

- Prevention and Control of Alien Invasive Species Work Instruction (opi ms hse 025 eni Ghana);
- Reinstatement and Revegetation Plan Standard (std ms hse 004 eni Ghana); and
- Topsoil Management Work Instruction (opi ms hse 026 eni Ghana); and
- Bushmeat Action Plan Work Instruction (pln ms hse 015 eni Ghana).

In addition, more requirements are included several of the Appendices to this BMP and specifically the following:

- *Appendix A*: Avian BAP (pln ms hse 019 eni Ghana);
- *Appendix B*: Sea Turtles BAP (pln ms hse 019 eni Ghana);
- *Appendix C*: Alignment Table of the BMP and associated BAPs with the requirements specified in IFC PS6;
- *Appendix D*: Critical Habitats Assessment (pln ms hse 019 eni Ghana);
- *Appendix E*: Flora Conservation Plan (pln ms hse 019 eni Ghana);
- *Appendix F*: No Net Loss Strategy for Natural Wetlands (pln ms hse 019 eni Ghana).
- *Appendix G*: Desktop Identification of Wetlands Habitats (pln ms hse 019 eni Ghana).

Figure 1.1 Biodiversity Management Plan and related plans/procedures within eni Ghana's Management System



2. Applicability

This Plan describes the requirements for eni Ghana with regard to nearshore and onshore biodiversity and ecological related aspects, applicable to all phases of the Offshore Cape Three Points (OCTP) Project.

Health	Safety	Environment
		X

3. References

3.1 Internal References

- Ghana OCTP Block Phase 1 Environmental, Social and Health Impact Assessment, ESL, June 2015. Doc. 000415_DV_CD.HSE.0208.000_00, Rev 05;
- Ghana OCTP Block Phase 2 Environmental, Social and Health Impact Assessment, ERM, Doc. 000415_DV_EX.HSE.0304.000_01, Rev 06;
- Plan ms hse 009 eni Ghana - "Environmental, Social and Health Management Plan",;
- Terms of Reference for Bird Surveys for the OCTP Project, ERM. prog sg hse 003 eni Ghana; and
- Terms of Reference for Turtle Surveys for the OCTP Project, ERM. prog sg hse 004 eni Ghana.

3.2 External References

- SWOT Scientific Advisory Board (2011). The State of the World's Sea Turtles (SWOT): Minimum Data Standards for Nesting Beach Monitoring, version 1.0;
- Varela-Acevedo, Elda, Karen L. Eckert, Scott A. Eckert, Gillian Cambers and Julia A. Horrocks (2009). Sea Turtle Nesting Beach Characterization Manual, p.46-97. In: Examining the Effects of Changing Coastline Processes on Hawksbill Sea Turtle (Eretmochelys imbricata) Nesting Habitat, Master's Project, Nicholas School of the Environment and Earth Sciences, Duke University. Beaufort, N. Carolina USA. 97 pp;
- Joint Nature Conservation Committee (2004). Common Standards Monitoring Guidance for Birds, Version August 2004. JNCC;
- BirdLife International (2015) Important Bird and Biodiversity Area factsheet: Amansuri wetland. Downloaded from http://www.birdlife.org;
- CSBI (2015) Good Practice for the Collection of Biodiversity Baseline Data;
- CSBI (2015) A cross-sector Guide for implementing the Mitigation Hierarchy;
- WB/IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources and Guidance Note 6. International Finance Corporation/World Bank Group, January 1, 2012;

- IPIECA (2005).A Guide to Developing Biodiversity Action Plans for the Oil and Gas Sector;
- IPIECA-IOGP (2011) Ecosystem Services Guidance: Biodiversity and ecosystem services guide and checklists; and
- IPIECA-IOGP (2010) Alien invasive species and the oil and gas industry.

4. Acronyms

AoI	Area of Interest
BAP	Biodiversity Action Plan
BMP	Biodiversity Management Plan
CSBI	Cross-Sector Biodiversity Initiative
EIS	Environmental Impact Study
EPP	Erosion Prevention Procedure
ERM	Environmental Resources Management
ESHIA	Environmental, Social and Health Impact Assessment
ESHMP	Environmental, Social and Health Management Plan
FFMP	Fauna and Flora Monitoring Plan
HSE	Health, Safety and Environment
IBA	Important Bird Area
IFC	International Finance Corporation
IPIECA	International Petroleum Industry Environmental Conservation Association
ISS	Impact Screening Study
IUCN	International Union for Conservation of Nature
OCTP	Offshore Cape Three Points
ORF	Offshore receiving facility
RRP	Reinstatement and Revegetation Plan
SMCA	Spatial Multicriteria Analysis
SWOT	State of the World's Sea Turtles

5. Requirements

Various laws, policies, systems, standards and international good practice codes are applicable to the implementation of this Plan. Such requirements are outlined in Section 7 of the Framework ESHMP. Further detail is provided in Chapter 3 of the Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 06).

5.1 Legal

Ghana laws and regulations of particular relevance for managing and implementing this Plan include, but are not limited to the following.

Legislation	**Applicability to Project**
Environmental Protection Agency Act, 1994 (Act 490)	Key legislation governing general environmental protection in Ghana. Establishes the Environmental Protection Agency (EPA) and a National Environment Fund and gives provisions for administration and operations and the Environmental Assessments Regulations.
Wild Animals Preservation Act, Act 235 1964	Addresses the collection of specimens for scientific purposes and prohibits anyone from exporting any trophy from Ghana. It also identifies the (wholly or partially) protected faunal species.
Wildlife Conservation Regulations 1971 (LI 685)	Regulates trophy hunting, exporting, and penalties. It also provides other provisions for the conservation and protection of faunal species in Ghana.
Wetland Management (RAMSAR sites) Regulation, 1999	Provides for the establishment of Ramsar sites within Ghana.
Wild Reserves Regulations 1971 (LI 740)	Allows for the designation and proclamation of protected areas, in various categories. It prohibits certain activities (e.g. hunting, removal of faunal or floral species) allowed within the various reserves without a permit. The regulations forbid the pollution of water resources and littering within a protected area.
Forestry Commission Act, 1999 (Act 571)	Establishes a Forestry Commission that is responsible for protection, development, management and regulation of forests and wildlife.

In addition, Ghana has developed a set of strategies, policies and plans of relevance for this BMP, the most relevant being the National Biodiversity Strategy that was developed in 2002 for the sustainable use of its biological resources, including forest reserves, national parks and other wildlife reserves; and the Forest and Wildlife Conservation Policy aimed at conservation and sustainable development of the nation's forest and wildlife resources for maintenance of environmental quality and perpetual flow of optimum benefits to all segments of society. Additional information is provided in Section 3.3.1 of the Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 06).

5.2 International Good Practice Standards

The most important and relevant to this case is IFC Performance Standard 6, Biodiversity Conservation and Sustainable Management of Living Natural Resources.

Paragraph 20 of IFC Performance Standard 6 (PS6) in particular refers to specific criteria for biodiversity mitigation strategy of Legally Protected and International Recognized Areas. As the project is located in an Important Bird Area (IBA), the project mitigation strategy for the biodiversity values defined in this Plan meets the relevant requirements of the PS6 and criteria stated in paragraph 20 of the PS6.

Appendix C presents a gap analysis demonstrating alignment of the BMP and associated Biodiversity Action Plans (BAPs) with the requirements specified in IFC PS6.

The PS6 also provides the definition and the requirements for the identification of natural (Paragraphs 13 and 14 of PS6), modified habitats (Paragraphs 11 and 12 of PS6), and critical habitats, defined as a subset of modified and natural habitats with high biodiversity value (the requirements are specified in Paragraphs 16 and 17 of PS6.

Appendix D presents the critical habitat assessment conducted for the OCPT Project in accordance with PS6 and the Draft IUCN Key Biodiversity Area Standard version 1.0 (1).

In addition to the criteria set for Legally Protected and International Recognized Areas and Natural and Modified Habitats, the criteria defined by PS6 for the Ecosystem Services (Paragraph 24 and 25) have been applied to the Project.

(1) IUCN Key Biodiversity Area Standard (version 1.0) available at: http://www.kbaconsultation.org/

6. Surveys

A number of post-EIS surveys have been performed to further document the baseline information in the project Area of Interest (AoI), three of which were specifically focused on biodiversity aspects. A summary of these surveys is presented below:

- Biophysical Survey of Onshore Receiving Facility (ORF) area and the Extraction Area: In July 2015 a terrestrial flora and fauna assessment and observations of land cover/habitat and ecosystem services were performed as part of the biophysical study. The purpose of this assessment was to confirm and improve the knowledge on the ecological conditions along the onshore Area of Influence of the Project in terms of habitats and species; the study area for the Biophysical Survey is shown in *Figure 6.1*;
- Birds and sea turtles pre-construction surveys have been performed in November 2015. The results of these surveys have been used to inform and develop the specific actions considered necessary for effective protection of these priority faunal groups. These specific actions and a summary of the results found are presented in the Sea turtles and Birds BAPs, that can be found as appendixes of this plan:
  - Birds Survey: The main objective of the bird survey was to better identify the bird species present or likely to occur in the Project AoI and identifying habitats within the AoI that are important for the conservation of birds in general and for target species in particular (i.e. species considered as critically endangered, endangered or vulnerable under the IUCN Red List of Threatened Species or target species for the IBA). The survey covered the AoI of the project for birds (i.e. 5 km radius around the proposed location of the ORF); the study area for the Birds Survey is shown in *Figure 6.2*
  - Sea Turtle Survey: The main objective of the survey was to improve the understanding of the current usage of the beaches along the AoI of the Project as nesting sites for sea turtles. The survey covered the beaches that extend 2.5 km from each side of the pipeline landfall location; the study area for the Sea Turtles Survey is shown in *Figure 6.3*
- In the context of the Livelihood Restoration Plan, a survey of the local population took place in order to identify the most important specific ecosystem services and which habitats species are involved in those services;

- Pre-construction field surveys performed in March 2016 within the Concession Area, to collect in-depth information about: sea turtles survey, terrestrial fauna survey, and flora, landscape and erosion survey.
- Additionally, a wetland mapping study was conducted in July 2016 in order to clarify the nature of the wetland habitats present within the concession. These where assessed as natural habitats (see *Appendix G* - Desktop Identification of Wetlands Habitats).

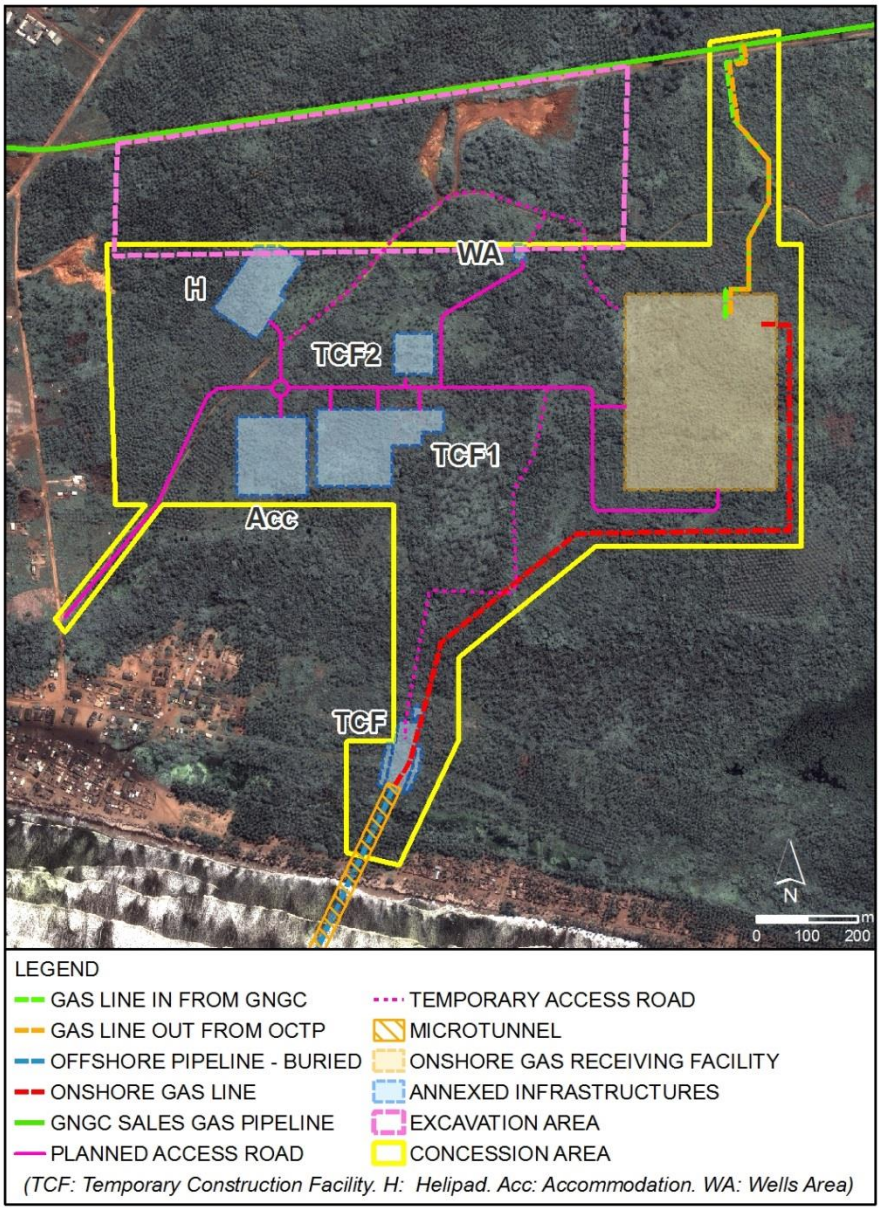
The results of these surveys served as the basis for establishing long-term monitoring activities and mitigation actions on the targeted faunal groups and their habitats. These monitoring activities and mitigation actions are detailed in their respective BAPs in *Appendix A* and *Appendix B*.

In addition to the post-EIS and pre-construction surveys detailed above, this BMP, in order to achieve the required objectives of efficient protection and conservation of biodiversity, requires the carrying out of pre-clearance surveys.

The pre-construction surveys were carried out along the former project footprint in parallel to the construction activities (including temporary occupied areas and any working site that would require vegetation clearance). The objective of these surveys was to identify in detail the presence of any protected/endangered plant species along the areas to be cleared as well as to acquire deeper knowledge on the small mammals, reptile and amphibian species potentially using those areas directly affected by project activities. Further information on the objectives and requirements of these surveys is detailed in Section 10.1.

Later on, due to technical reasons and the findings from the surveys, the project footprint was modified (see *Figure 6.1* and *Figure 6.3*). The most relevant changes involved the modification of the landfall/nearshore section and permanent footprint of the ORF, defined and agreed between August 2016 and March 2017. Based on the new design the first 200 m onshore and first 700-800 m along the nearshore section of the pipeline will be built using a trenchless technique ("Direct Pipe Method" -(DP)-), which will allow a relevant reduction on environmental impacts. The redesign of the onshore footprint has allowed a reduction of the permanent footprint on areas defined as swamp.

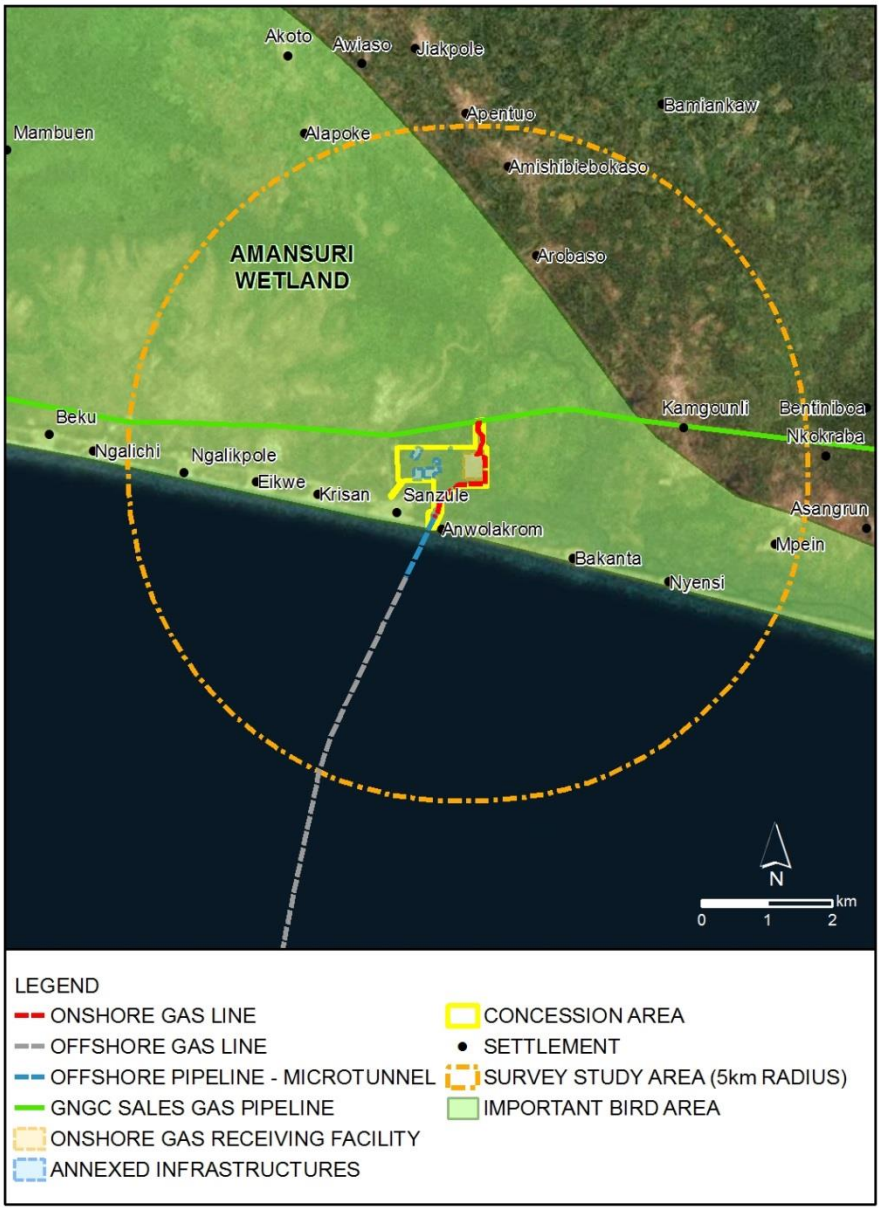
Figure 6.1 Study Area of the Biophysical Survey.



Note: the Survey Study Area includes the Concession Area and the Excavation Area[2].
Source: ERM, 2017

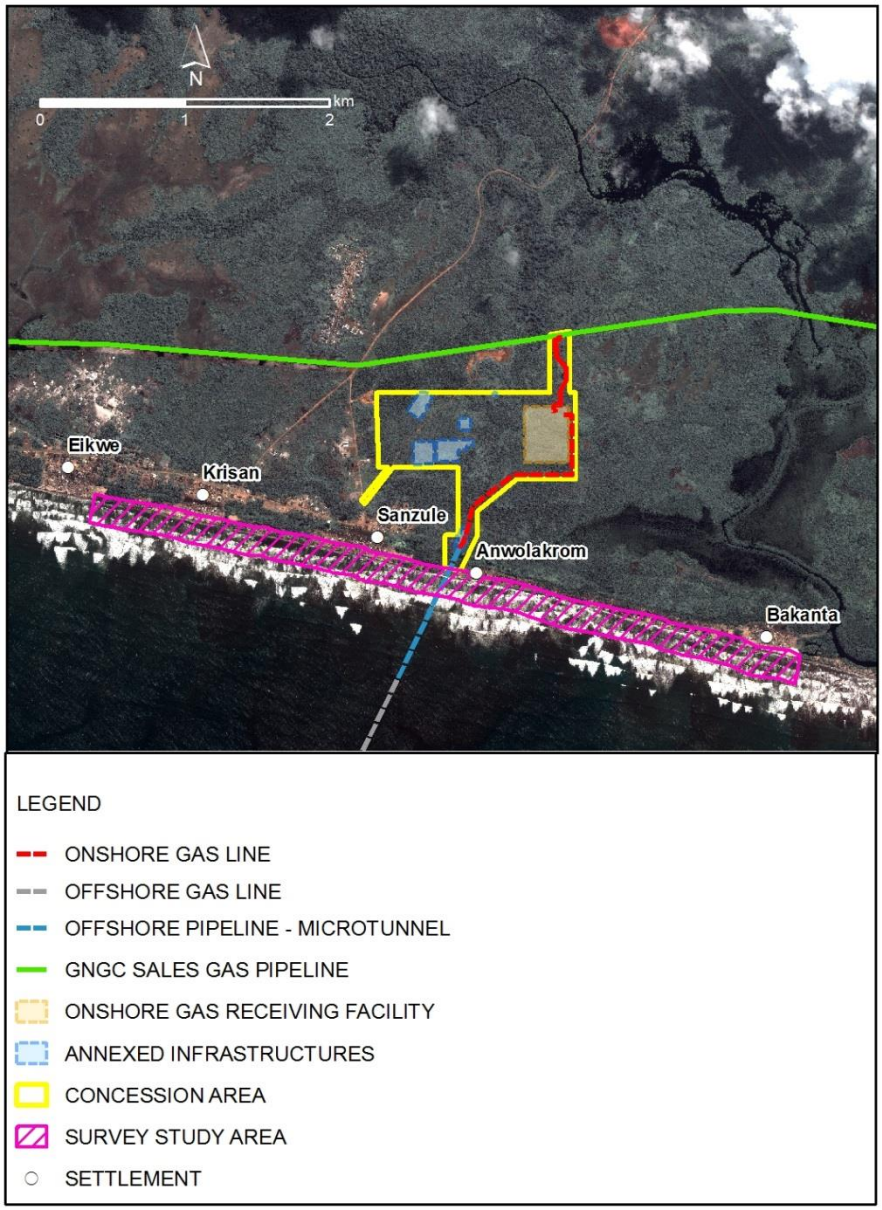
[2] The Excavation Area is located just North of the Concession Area and was considered with the objective to obtain filling material for the project construction. Works undertaken within this area, however, were limited to the existing burrow pit and immediate surroundings (i.e. a large portion of the excavation Area was discarded as a potential source of filling material).

Figure 6.2 Study Area of the Birds Survey



Source: ERM, 2017

Figure 6.3 Study Area of the Sea Turtles Survey

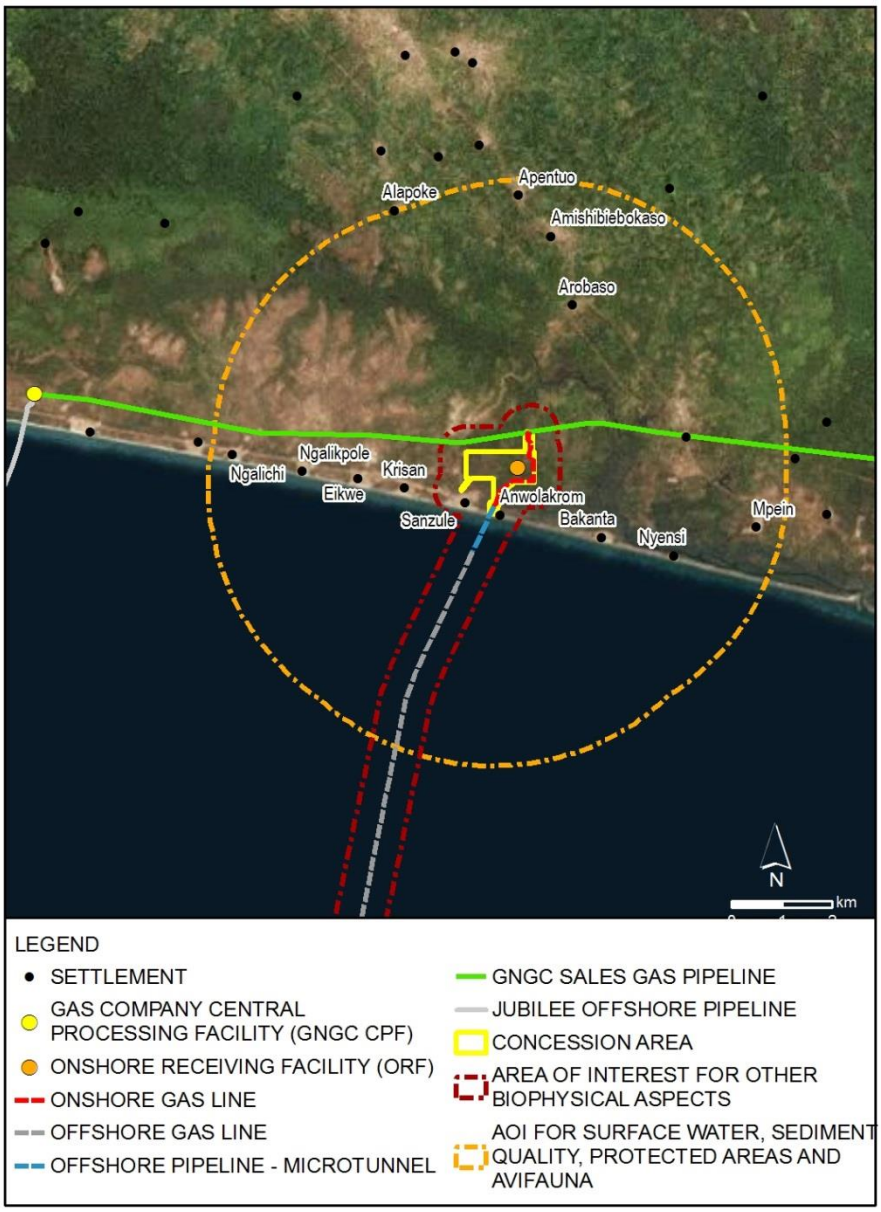


Source: ERM, 2017

7. Biological features of interest in the concession area

The Project Area of Influence (AoI) for biodiversity aspects comprises an area covering a 5 km radius from the onshore pipeline and the ORF (refer to *Figure 7.1*).

Figure 7.1 Environmental Area of Influence



Source: ERM, 2017

7.1 Flora species and habitats in the Area of Influence

The habitat within the AoI is a mix of natural and modified habitat, with a mix of uses and with several transition sites (e.g. abandoned agricultural areas). Modified habitats[3] consist of a large proportion of the area covered by degraded coconut palm plantations, degraded vegetation and various forms of transition between these and evergreen forests and swamps. There is also a great number of pioneer trees (i.e. *Funtumia africana, Albizia adianthifolia, Macaranga hurifolia*) and shrubs (i.e. *Chromolaena odorata, Acridocarpus smeathmannii* and *Carpolobia lutea*).

The coastal areas are dominated by regenerating vegetation comprising palm trees and thorny shrubs. Within the concession there is also natural habitat[4] that is classified as Swamp and Mangrove Forest. Swamp areas are located mainly along the north-south axis near the center of the Concession as well as to the East of the concession. *Figure 7.2* and *Figure 7.3* below present the distribution of land cover and habitats within the extended AoI.

Based on literature data, five flora species listed as globally Vulnerable by the IUCN Red List of Threatened Species are present in the concession area and its near surroundings:

- The trees Albizia (*Albizia ferruginea*) and African linden (*Hallea stipulosa*), which are species used for timber and which can frequently be associated with disturbed sites;
- The shrub (*Coffea macrochlamys);*
- The trees Azobe (*Lophira alata*), considered a pioneer species, and Avodire (*Turraeanthus africanus)* which are exploited as timber.

In addition, a Blue Star species[5] has been encountered in the survey: the tree Waterpear (*Syzygium guineense)*.

[3] Modified habitats are areas that may contain a large proportion of plant and/or animal species of non-native origin, and/or where human activity has substantially modified an area's primary ecological functions and species composition (IFC PS6 Para 11)

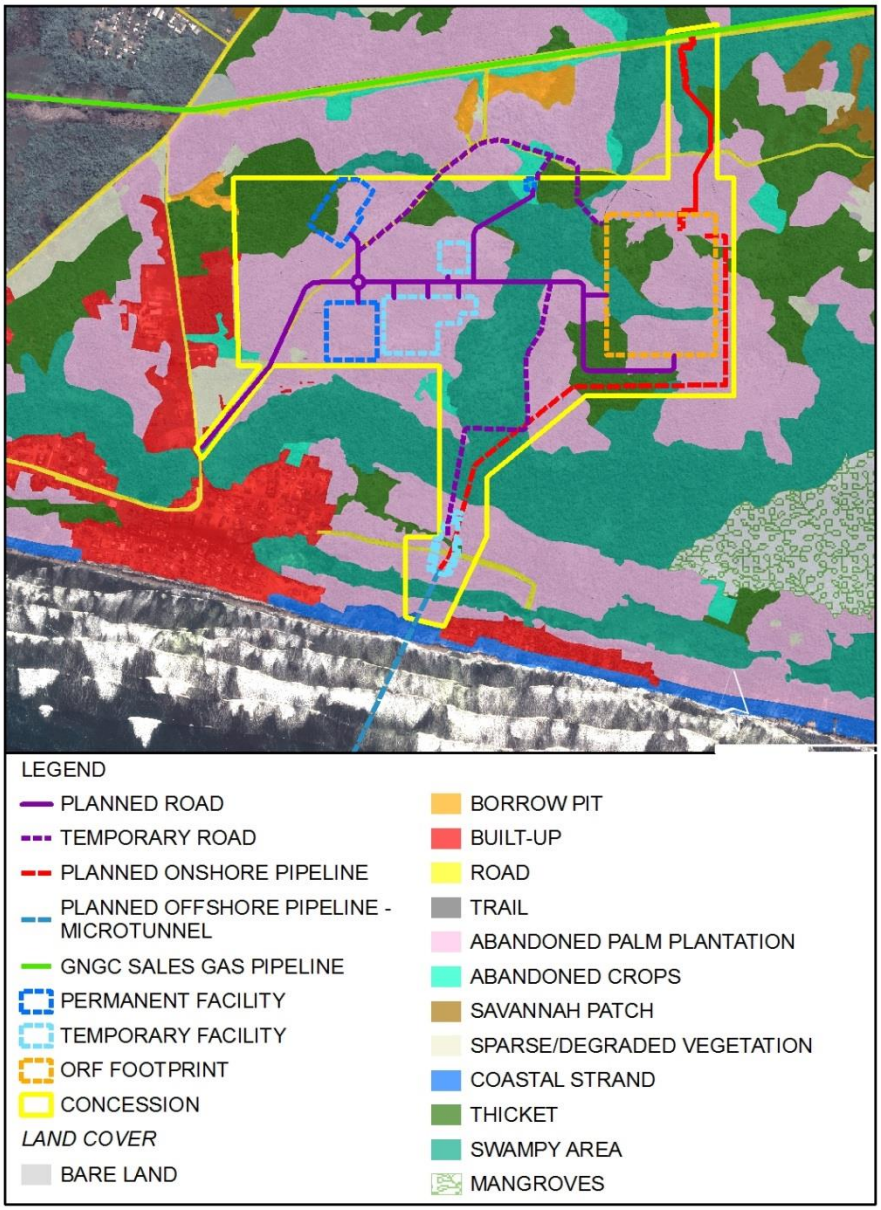
[4] Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition (IFC PS6 Para 13)

5 Star rating is a system to indicate when species may be widespread internationally but relatively rare and therefore sensitive within Ghana. In the star categories of conservation; Black, Gold and Blue stars are of concern due to their rarity at one scale or another with Scarlet, Red and Pink stars being of concern due to threats from exploitation. Green stars have no particular conservation status.

It has to be noted that, during the flora pre-construction survey performed in March 2016, only three out of five species were encountered within the concession area (i.e. *Albizia ferruginea*, *Coffea macrochlamys* and *Hallea stipulosa*).

The main natural habitat found within the concession is of swamp forest. Further studies focused on habitat mapping within the concession indicate that the type of wetland found within the concession is a natural habitat. Compared with the rest of the concession these areas have had limited transformation from human activities although there are signs of collection of raffia and other goods (e.g., officinal herbs, firewood, other construction material)and many fish ponds can be found along pipeline route located north of the ORF

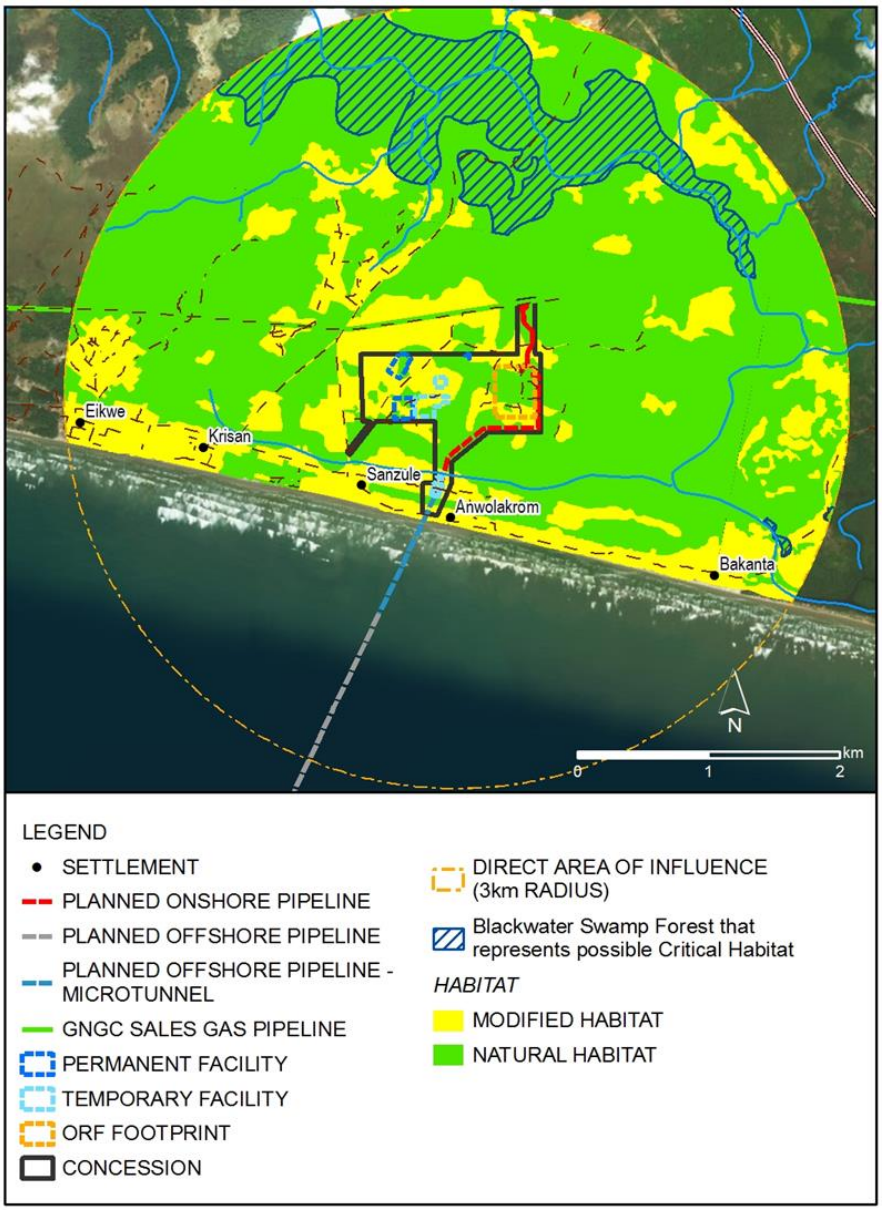
Figure 7.2 Land Cover Map of the Project Area



As shown in *Figure 7.3*, to the northwest of the concession area (approximately 1 km from the concession area boundary) there exists a wetland identified as a Blackwater Swamp Forest which is highly intact. Mangrove areas found to the South-East of the concession commonly occur along the coastal areas of the Western Region at similar locations close to river mouths and provide a habitat for various organisms including maintaining nearshore

fisheries as well as being an important area for fish and shellfish production and are highly sensitive to development.

Figure 7.3 Habitat Sensitivity within the Area of Influence



Source: ERM, 2017

Additional information of flora species in the area is included in Section 6.5.1 of the Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05).

7.2 Fauna species in the Area of Influence

Ghana has large and viable populations of wildlife and a natural environment with most of the wildlife sanctuaries located in the Western Region (where the project is located) due to the suitable microclimate and diverse habitats provided by the evergreen forest found in most parts of the Region. However, according to the surveys performed, the ORF project site is generally poor in fauna diversity and abundance despite the nearby presence of the Amansuri Lake to the northwest of the site and classified as an Important Bird Area (IBA) that extends over the Project site.

Among the fauna recorded in the project area, currently providing foraging and breeding habitat for wildlife species, duiker (*Cephalophus maxwelli*), Giant Gambian Rat (*Cricetomys gambianus),* grass cutters (*Thryonomys swinderianus*), and porcupine (*Atherurus africanus*) were encountered during field surveys, the latter being identified as the dominant fauna species in the area. Mammal species of international conservation interest that may be encountered in the project area are the White-thighed Colobus and Johnstons Genet. Reptiles were also encountered such as the Nile monitor (*Varanus niloticus ornatus*), protected by Wildlife Conservation Regulations of Ghana.

Table 7.1 presents fauna species identified in the project AoI assessed as sensitive according to their conservation status following the IUCN Red List of Threatened Species (vulnerable, near threatened, endangered, and critically endangered species have been considered) and/or according to the Wildlife Conservation Regulations of Ghana.

The fauna in the area faces numerous threats emanating mainly from anthropogenic sources, due to infrastructural development and bushmeat hunting/trade. Indeed, the hunting of wild animals for sale and consumption has increased drastically in the area and constitutes one of the main threats for local terrestrial wildlife. In particular, communities consider sea turtles as an important resource for food (meat and eggs) and hunting of these species remains a considerable threat.

Table 7.1 Fauna species recorded in the project area and conservation status

Common name	Scientific name	IUCN Status	Wildlife Conservation Regulations of Ghana
Mammals			
Rope Squirrel	*Funisciurus pyrropus*	LC	Schedule III
Giant Gambian Rat	*Cricetomys gambianus*	LC	Schedule III
Cane Rat / Grasscutter	*Thryonomys swinderianus*	LC	Schedule III
Giant Forest Squirrel	*Protoxerus stageri*	LC	Schedule III
African Bush-Tailed Porcupine	*Atherurus africanus*	LC	Schedule II
Maxwell's Duiker	*Cephalophus maxwelli*	LC	Schedule II
Black Duiker	*Cephalophus niger*	LC	Schedule II
Bushbuck	*Tragelaphus scriptus*	LC	Schedule II
Pygmy Mouse	*Mus musculoides*	LC	
Soft-furred Mouse	*Praomys tullbergi*	LC	
Multimammate Mouse	*Mastomys erythroleucus*	LC	
Giant Pouched Rat	*Cricetomys gambianus*	LC	Schedule II
Egyptian Mongoose	*Herpestes ichneumon*	LC	Schedule II
Johnston's Genet	*Genetta johnstoni*	VU	
Striped Ground Squirrel	*Euxerus erythropus*	LC	Schedule II
Brush- tailed Porcupine	*Atherurus africanus*	LC	Schedule II
Ground Squirrel	*Otospermophilus beecheyi*	LC	
Beecroft's Flying Squirrel	*Anomalurus beecrofti*	LC	Schedule I
Red-headed Forest Squirrel	*Epixerus ebii*	LC	Schedule I
White-thighed Colobus	*Colobus vellerosus*	VU	
Red River Hog	*Potamochoerus porcus*	LC	Schedule II
Fruit Bat	Unidentified	Unknown	Unknown
Reptiles/Amphibians			
Leatherback turtle	*Dermochelys coriacea*	VU	Schedule I
Olive Ridley turtle	*Lepidochelys olivacea*	VU	Schedule I
Green turtle	*Chelonia mydas*	EN	Schedule I
Hawksbill turtle	*Eretmochelys imbricata*	CR	Schedule I
Loggerhead turtle	*Caretta caretta*	VU	Schedule I
Black snake (Juvenile)	Unidentified	Unknown	Unknown
Nile monitor	*Varanus niloticus*		Schedule I
Dwarf Crocodile	*Osteolaemus tetraspis*	VU	Schedule I
Nile Crocodile	*Crocodylus niloticus*	LC	Schedule I
Home's Hinged Tortoise	*Kinixys homeana*	VU	Schedule II
Common Frog	*Dicroglossus occipitalis*	LC	
Birds			

Common name	Scientific name	IUCN Status	Wildlife Conservation Regulations of Ghana
Black Kite	*Milvus migrans parasites*	LC	Schedule I
Black Breasted Kingfisher	*Halcyon malimbica*	LC	
Broad Billed Roller	*Eurystomus glaucurus*	LC	
Buff Throated Sunbird	*Chalcomitra adelberti*		
Chestnut Breasted Mannikin	*Lonchura castaneothorax*	LC	Schedule II
Coloured Sunbird	*Cyanomitra veroxii*	NA	
Common Bulbul	*Pycnonotus barbatus*	LC	
Green Crombec	*Sylvietta virens*	LC	
Green Hylia	*Hylia prasina*	LC	
Green Pigeon	*Treron calvus*	LC	Schedule II
Grey-Headed Bristlebill	*Bleda canicapillus*	LC	
Little Bee-Eater	*Merops orientalis*	LC	
Little Greenbul	*Eurillas virens*		
Naked Faced Barbel	*Gymnobucco calvus*	LC	
Narrow Tailed Starling	*Poeoptera lugubris*	LC	
Nigrofinch	*Nigrita canicapilla*	NA	
Olive Sunbird	*Cyanomitra olivacea*	NA	
Orange Weaver	*Ploceus aurantius*	LC	Schedule II
Piping Hornbill	*Bycanistes fistulator*	LC	
Red Bellied Paradise	*Terpsiphone rufiventer*	LC	
Red Rumped Tinkerbird	*Pogoniulus atroflavus*	LC	
Red-Eye Dove	*Streptopelia semitorquata*	LC	Schedule II
Red-Vented Malimbe	*Malimbus scutatus*	LC	
Reichenbach's Sunbird	*Anabathmis reichenbachii*	NA	
Simple leaflove	*Chlorocichla simplex*	NA	
Splendied Sterling	*Lamprotornis splendidus*	LC	
Swamp Palm Bulbul	*Thescelocichla leucopleura*	LC	
Tiny Sunbird	*Cinnyris minullus*	NA	
Twany Prinia	*Prinia subflava*	LC	
Western Bearded Greenbul	*Criniger barbatus*	LC	
Western Nicator	*Nicator chloris*	LC	
Woodland Kingfisher	*Halcyon senegalensis*	LC	
Yellow Throated Tinkerbird	*Pogoniulus subsulphureus*	LC	
Yellow-Whiskered Greenbul	*Andropadus latirostris*	LC	
Pied Crow	*Corvus albus*	LC	
African Pied Hornbill	*Tockus fasciatus*	LC	

Common name	Scientific name	IUCN Status	Wildlife Conservation Regulations of Ghana
Hooded Vulture	*Necrosyrtes monachus*	CR	
Shining Blue kingfisher	*Alcedo quadribrachys*	LC	
Red-Billed Dwarf Hornbill	*Tockus camurus*	LC	
Fire-Bellied Woodpecker	*Dendropicos pyrrhogaster*	LC	
Black Headed Oriole	*Oriolus brachyrhynchus*	LC	
Vieillot's Black Weaver	*Ploceus nigerrimus*	LC	Schedule II
Village Weaver	*Ploceus cucullatus*	LC	Schedule II
Yellow-Mantled Weaver	*Ploceus tricolor*	LC	Schedule II
Senegal Coucal	*Centropus grillii*	LC	Schedule I
Whimbrel	*Numenius phaeopus*	LC	
Western Reef Heron	*Egretta gularis*	LC	
Cattle egret	*Bubulcus ibis*	LC	Schedule I
Sanderling	*Calidris alba*	LC	
Royal Tern	*Thalasseus maximus*	LC	Schedule II

Notes: Legend for conservation status
- National Conservation status:

° Schedule I- Animals Wholly Protected; species are completely protected (CP); the hunting, capture or destruction of species under this schedule is prohibited at all times.
° Schedule II- Animals Partly Protected; species are partially protected (PP); the hunting, capture and destruction of any young animal, or adult accompanied by young, is absolutely prohibited at all times.
Schedule III - Animals protected in close season; The hunting, capturing or destroying of any species listed in this schedule is absolutely prohibited between 1st August and 1st December in any year.

- IUCN Conservation Status
° VU: Vulnerable
° NT: Near Threatened
° EN: Endangered
° CE: Critically endangered
° LC: Least Concern
° NA: Not assessed

The table has been updated to inAugust 2016 as the status of certain species has been reviewed by the IUCN since the development of the Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05).

As reflected by the designation of the area as an IBA, bird species constitute one of the most relevant faunal groups in the area, being specially relevant the presence of the Hooded Vulture (*Necrosyrtes monachus*), a species considered as critically endangered as well as the trigger species of the IBA, the Sanderling (*Calidris alba*) and Royal tern

(*Thalasseus maximus*). Additional information on bird species can be found in the specific Bird Biodiversity Action Plan in the *Appendix A* of the present BMP.

Similarly, considering that the beaches in the AoI of the Project are commonly used by sea turtles as a nesting area, the five species known to inhabit the coasts offshore the Western Region of Ghana are the target of a specific Sea Turtles Biodiversity Action Plan included as *Appendix B* of the present plan. The five species are loggerhead (*Caretta caretta*), green turtle (*Chelonia mydas*), olive ridley (*Lepidochelys olivacea*), leatherback (*Dermochelys coriacea*), and hawksbill (*Eretmochelys imbricate*), all of them are considered to be Critically Endangered, Endangered or Vulnerable by the IUCN.

A Critical Habitats Assessment has been performed and is presented in *Appendix D* of this Plan. Additional information of fauna species in the area is included in Section 6.5.3 of the Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05).

More in-depth information about the fauna species present in the concession area were collected during the pre-construction survey performed in March 2016. The graphics below show the findings of the pre-construction survey in terms of presence of mammals and birds species.

Figure 7.4 Activity count for mammal species

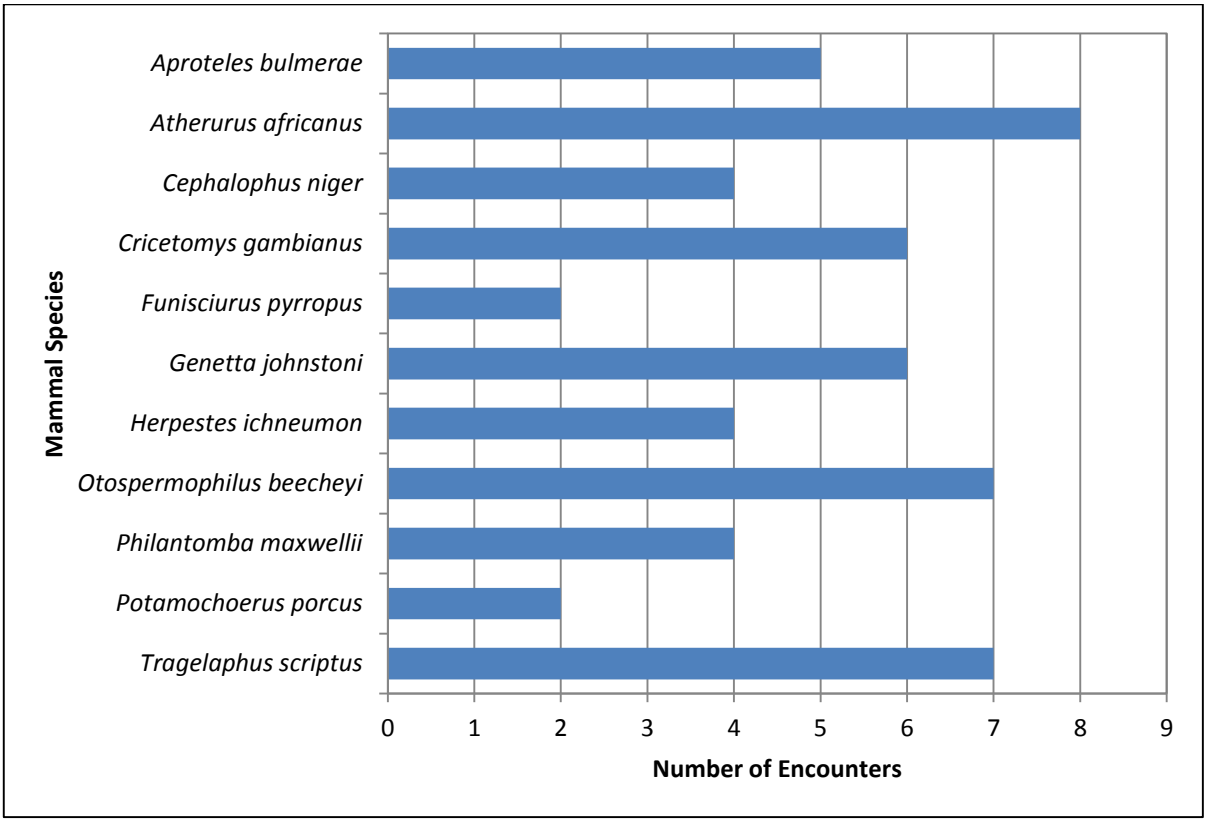
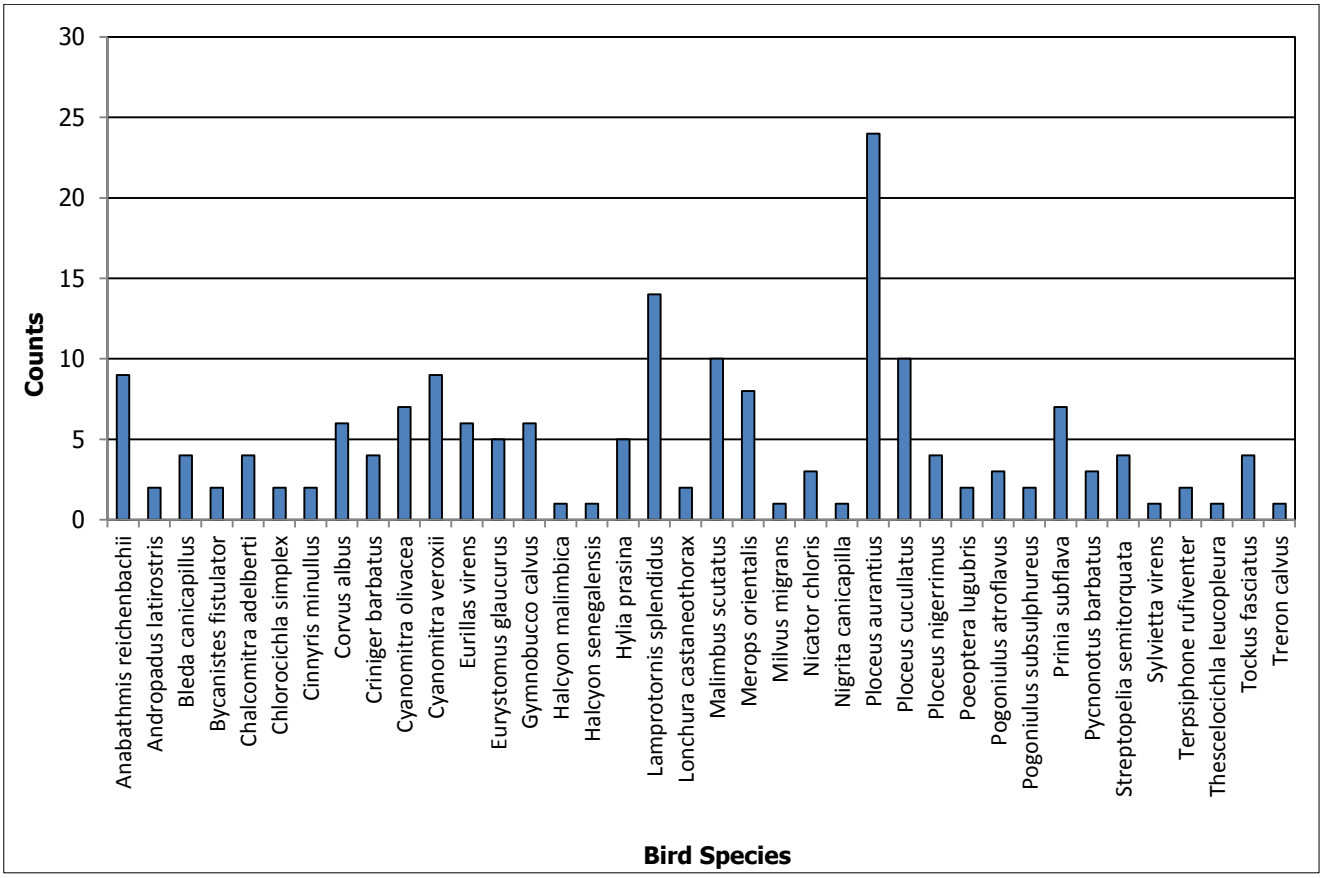


Figure 7.5 Graph showing the counts for bird species observed



7.3 Legally Protected and Important Areas

The three most significant protected areas in the general area of the Project are:

The Amansuri wetland

The proposed project location on its onshore component lies within the boundaries of one of the 40 IBAs that Ghana hosts, the Amansuri wetland. Key bird species that trigger the designation of this area as an IBA are the sanderling (*Calidris alba*) and the royal tern (*Thalasseus maximus*).

This wetland system includes the freshwater Amansuri Lake (located northwest of the site, within the Project AoI) as the main element of interest within the site, the floodplains of the Amansuri River up to the coast and the beach (where the project is located), the coastal Amansuri River lagoon and estuary, and the sandy Esiama beach, between the Amansuri and Ankobra Rivers. The Amansuri wetland is the only known stand of intact peat swamp-forest in Ghana.

Additional information of the legally protected areas are provided in Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05)

The Ankasa Conservation Area

Located 25 km west of the project area, it is a rainforest considered to have the highest biodiversity in Ghana with approximately 800 flora species, including several species that are considered endemic (Allotey, 2007). It represents the only wet evergreen protected area in a natural and almost pristine state.

Ankasa hosts at least nine primate species including chimpanzees, Diana monkey, Mangabey and the Geoffrey's pied colobus, the white-naped mangabey and three unconfirmed species which may include western chimpanzee, the Roloway Diana monkey and the western black-and-white colobus. Viable populations of large mammals such as the forest elephant, bongo and yellow backed duiker can also be observed within the boundaries of this reserve, together with the giant forest hog, giant pangolin, water chevrotain and leopards. It has also a diverse avifauna population and up to 600 butterfly species.

The Cape Three Points Forest Reserve

The Cape Three Points Reserve is located approximately 42 km to the east of the onshore Project area. This reserve was designated to protect the last remnant of primary coastal forest, in which in the past extended along major segments of the coastline of the Gulf of Guinea (CRC-URI, 2010). It is known to provide habitat for over 170 species of birds (Dowsett-Lemaire, 2005; Ntiamoa-Baidu et al, 2001).

7.4 Ecosystem Services

As described in Section 6.7 of Phase 2 EIS document (Doc.000415_DV_EX.HSE.0304.000_01, Rev 05), the habitats which occur in the Project area and which provide ecosystem services (based on the IPIECA 2011 methodology) are:

- Forest Habitats: represented by the primary rainy forests (wet evergreen forest) and the secondary forest formed by coconut/palm trees (including those in plantations) and thickets.
  This habitat provides:
  - provisioning services: food and timber;
  - regulating services: carbon sequestration, climate and nutrient regulation services, erosion and flood control among others;
  - cultural services: heritage value for future generations.

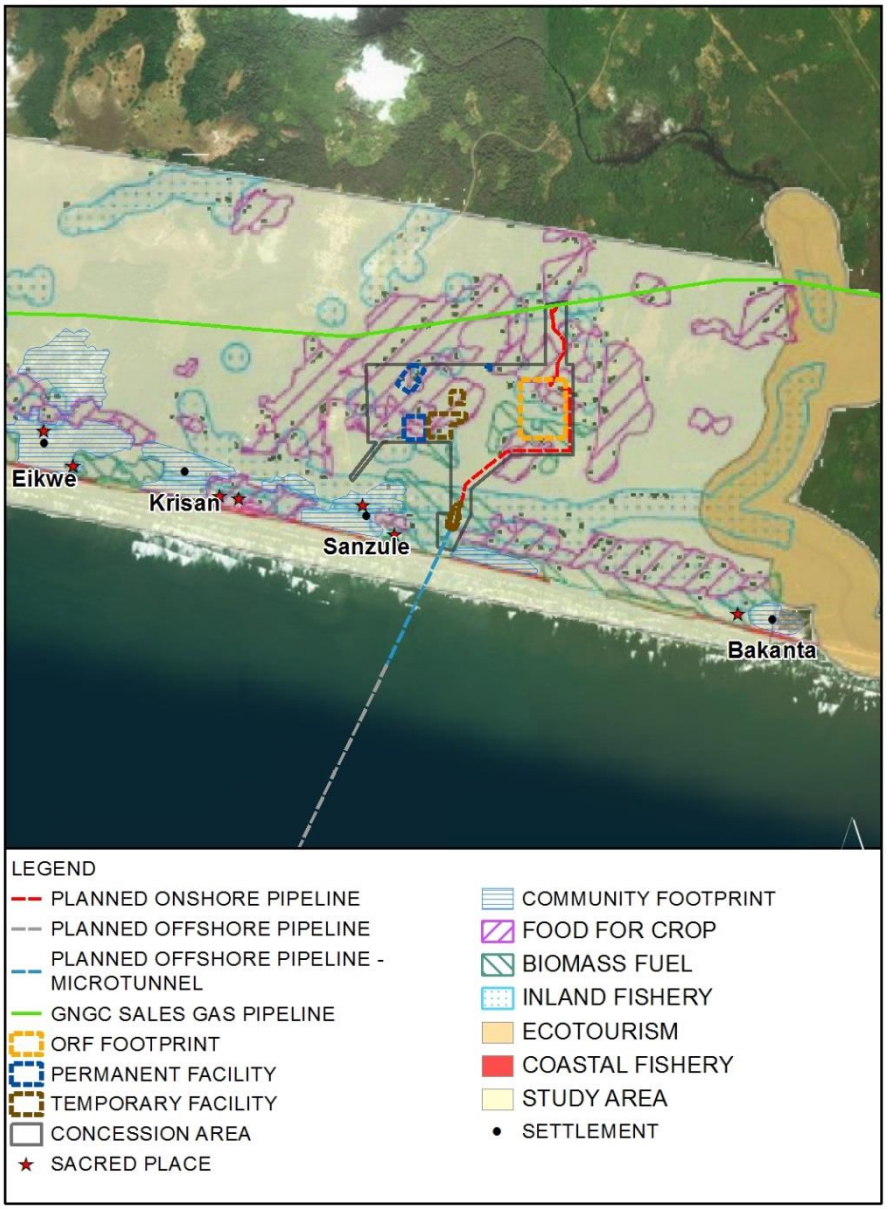
- Wetlands: represented by brackish and freshwater lagoons, as well as wetlands in the low lying coastal areas.
  This habitat provides:
  - provisioning services: water, food, fuel and materials;
  - regulating services: groundwater recharge, water storage, flood control and water;
  - cultural services: populations of endemic or migratory bird species and protected species.
- Deep Water: represented by the offshore marine areas where project activities will take place.
  This habitat provides:
  - provisioning services: commercial fishing;
  - regulating services: waste assimilation services, carbon sequestration and biological control;
  - cultural services: migration routes for fauna species.
- Near shore/transition zone (including mangroves): represented by beaches, rocky tidal zones and the mouths of Amansuri River. Further East of the Project area there is also a dead coral reef belt and mangroves along the Amansuri River.
  This habitat provides:
  - provisioning services: food, shelter and nurseries for prawns and pelagic fish as well as timber and non-timber products, ornamental and pharmaceutical products, in addition to construction materials (i.e. sand, shingle, rocks and coral rubble) ;
  - regulating services: erosion prevention, flood reduction function, filter of pollution, absorption of runoff and trap sediments;
  - cultural services: recreation activities and habitat for species as well as hunting and fishing.

As identified in the IPIECA Ecosystem Services guide (2011), oil and gas activities may have a dependence or impact on ecosystem services. Oil and Gas *provisioning* service dependencies include use of water, aggregates and wood for consumption by staff, and for the construction and production of facilities, while, oil and gas *regulating* service impacts are typically more indirect, and include a range of physical functions provided by vegetation and habitats such as erosion control, water filtration and flood control. Furthermore, *cultural* services can be important for remotely operating workforces that can

benefit in terms of enjoyment, health and motivation, from activities such as ecotourism and simply from appreciating the surrounding landscapes.

Figure 7.6 shows the ecosystem services identified in and around the Project area by habitat type.

Figure 7.6 Ecosystem services in and around the Project area



Source: ERM, 2015

Additional information on ecosystem services in the Project area is provided in Section 6.7 of Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05).

During the preparation of the Livelihood Restoration Plan (LRP) (Doc. Sust-PLAN-001.00, Rev 05), it was identified that the land use within the concession area consists of a mix of plantations (coconut and/or oil palm), evergreen forest, and secondary forest, with areas of mixed crops. During the Livelihood Restoration Engagement undertaken, the people from Sanzule and other key stakeholders were engaged with the objective to inform on the project, understand and support stakeholder issues and concerns. Through the LRP development, it was identified that the evergreen forest running through and to the south of the concession area (marked as natural habitat in*Figure 7.2*), provides natural resources in the form of raffia and specific medicinal plants, and in some cases maintaining fish ponds serve as a source of income and protein (especially in the vicinity of the pipeline located north of the ORF).

Additional information on the livelihood activities based on land within the concession area of the local community in the Project area is provided in Section 5.7.1 of Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 06).

8. Alternative Analysis for facilities location

Prior to the development of the ESHIA, an analysis of sensitivities and criticalities was carried out for the alternatives selection of the location of the different facilities. This analysis resulted in an Impact Screening Study (ISS) where the different environmental, social, and health sensitivities where mapped in order to identify the most suitable area for project facilities (ORF and accommodation locations). This analysis followed the Spatial Multicriteria Analysis (SMCA) methodology for decision making.

This methodology was applied along a study area which was located between the Amansuri estuary (on the East) and the Atuabo community (on the West). The results were a series of suitability maps for each component that were then weighted based on the existence of alternatives, the resilience of the area and the reliability of the data used. The data used to perform such analysis included satellite images, maps, scientific literature, site surveys and interviews. For additional information on the process performed please refer to the HSE Decision support for CPF and Accommodation Location report (*Doc. 000397_DV_CS.HSE.0121.000_00*). The environmental consideration for this analysis included the assessment of habitats, fauna, and ecosystem services, whose process is summarized in the following paragraphs.

Analysis of the habitats

To characterize the sensitivities and criticalities of the different habitats in the area considered, a map of habitats was generated based on photointerpretation of aerial images supported by field surveys, to detect types of land cover and the degree of existing anthropogenic disturbance. This allowed obtaining a series of homogeneous vegetation classes that were subsequently unified under fewer habitat typologies. To each habitat identified a degree of potential presence of fauna species was assigned, thus providing useful indication over the suitability of the different classes to the project development. The habitats were also assigned a correspondence with IFC PS6 habitat classification (modified, natural and critical habitats).

Finally, based on the attributes assigned to each habitat, was assigned a suitability value for Project installation as shown in

Figure 8.1.

The results were incorporated in a habitat suitability map where preferred areas where assigned the highest value and those to be avoided the minimum value.

Figure 8.1 Habitat categories and suitability

Habitat categories	Suitability
Built	Sites to be preferred for the facilities installation.
Bare	Sites considered interesting for the facilities installation.
Plantation	Habitat that could be considered for the facilities installation, preferably those most deprived and non-productive.
Grassland	To the installation of the facilities, in these habitats could be considered only the degraded areas, and the niches where are not detected any nesting or protected wildlife species of interest.
Thicket	In these habitats could be considered only areas where there's antrophic degradation, and which there is no evidence of the presence of interesting or protected animal species.
Wet forest	These areas are to be avoided.
Swamp and mangrove forest	Habitat of great natural interest, to be avoided for the facilities installation.

Analysis of the fauna and biodiversity

The assessment of location suitability with regards to fauna performed was based on the different types of habitats by assigning a list of animal species potentially present in the area. This approach assumed that habitats with high naturalness and complexity (i.e. mangrove and wet forests) will be able to support a greater number of animal species, especially during the most delicate phases of their life cycle, as the nesting and rearing of the offspring. Similarly the sandy coastline was considered as important due the known presence of nesting sites for sea turtles.

As a result a fauna suitability map was prepared where wet forests, mangrove forests, a buffer around them and the beach area (with the exception of the sections occupied by fishermen and boat storage) were mapped and classified as fauna important sites, and therefore identified as areas to be discarded in the selection of the facilities location.

Analysis of the Ecosystem Services

The final environmental component used in the site selection process was the analysis of existing ecosystem services, though limited to provisioning and cultural services as an indirect assessment of impacts to local communities.

For that purpose a series of ecosystem services (food from crops, biomass for fuel, coastal and inland fisheries, ecotourism and ethical and spiritual values) were identified, located based on satellite and aerial images, and mapped along the study area. Then an attribute value was assigned to each ecosystem service as per the WRI ecosystem services valuation tool, which is based on the replace-ability of the service, the dependence of the community on that service and their perception about it. A survey including meetings and interviews with key informants in 2012 was performed to assign these values to the ecosystem services. The resulting attribute values for each ecosystem service were

combined with the mapping performed to develop a ecosystem services suitability map for the location of facilities.

Results

In addition to the analysis of habitats, fauna and ecosystem services, similar analysis were carried out on the flooding areas, synergies with communities, safety and health, each component resulting in a suitability map.

The different maps were combined into final suitability maps for the location of accommodation and ORF sites based on the weights and decision trees assigned by the panel of experts as presented in *Figure 8.2*.

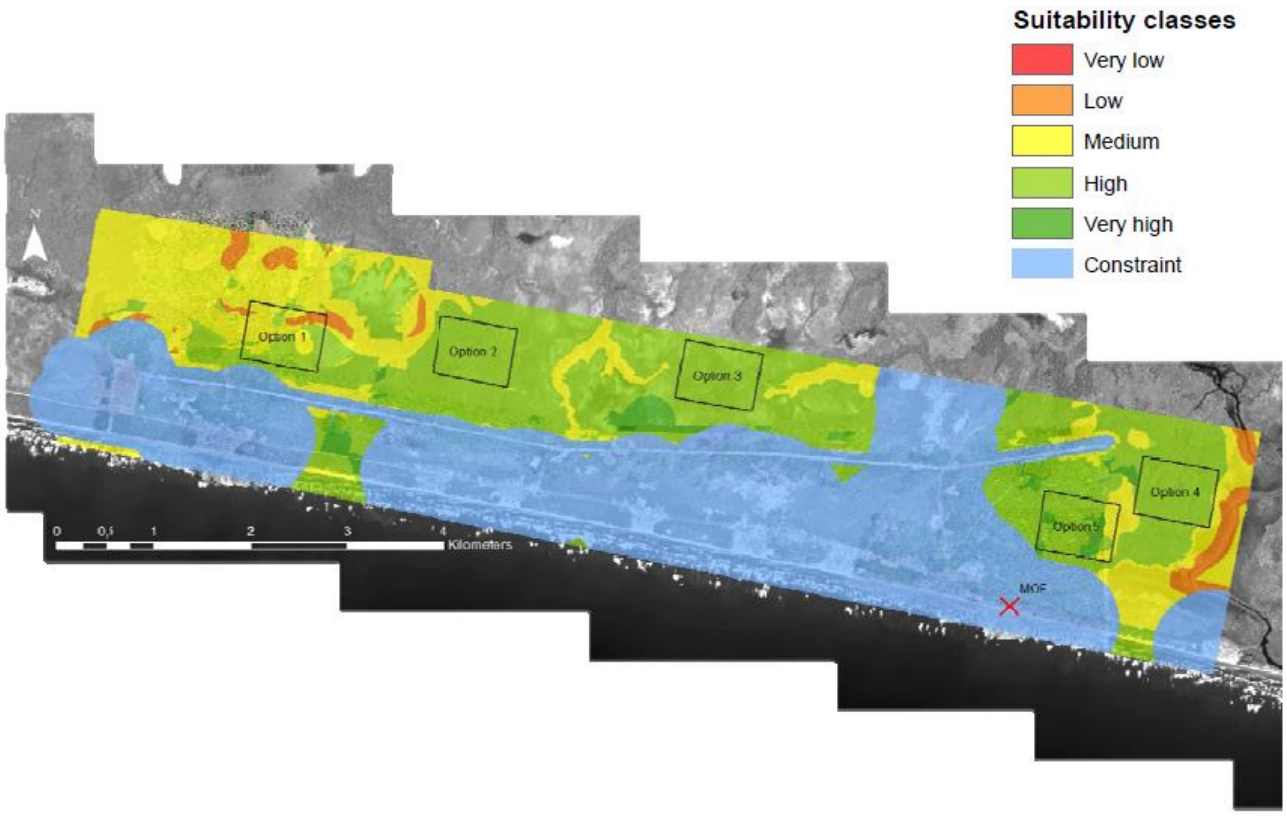
Figure 8.2 Weighting of location selection attributes

Results	Macro-Objective	Objective	Weight
Result suitability map	Environment (0,30)	Habitat	0,67
		Fauna	0,09
		Flooding	0,24
	Social (0,40)	Ecosystem Services	0,70
		Synergies	0,30
	H-S (0,30)	Safety	0,67
		Health	0,33

The results showed five ideal locations for the ORF, each with an assigned value of suitability based on the sensitivities identified in each location. To validate these results, an additional analysis of the stability of the results was performed by applying variations to the weights assigned initially to environmental, social or H&S components. The results of these changes showed that the initial approach was precautionary and validated the scenario used.

The final map with the options to be considered is presented in *Figure 8.3*. Options 3 and 4 for ORF location presented the highest suitability values.

Figure 8.3 Most suitable alternative locations identified



As an outcome, Option 4 was selected taking into account 2 components, ESH sensitivities and technical feasibility. The selected solution is the best to minimize the impacts taking into account technical, environmental, safety and social aspects.

Technical feasibility included e.g. land topography, shore approach conditions (depending on bathymetry and subsea topography, waves, etc), hydrology, existing infrastructures, distance from the FPSO etc.; selection of site 4 is the result of the overall analysis.

It must be noted that:

1. Option 4 is much larger than the final project area, which was selected to minimize the listed sensitivities (e.g. avoided the need for resettlement of 971 household)
2. Many issues related to difficult technical aspects and their implementation, even if not explicitly stated, are reflected onto damages to ecosystem's physical component and consequently damages to biological components (e.g. damage of coastal integrity, need for blasting in hard grounds, need for

a longer sea-line related to distance from offshore facilities), with related social consequences.

9. Management Plan

9.1 Management and Monitoring

Management and monitoring measures are defined on the basis of the EIS outcomes, additional baselines assessments, combined with applicable legal requirements and other relevant industry good practices.

eni Ghana and its contractors are required to implement and comply with the management and monitoring requirements described in *Table 9.1* as appropriate to their scope of work in order to avoid, minimize, control, restore and offset impacts and risks with regard to biodiversity and ecological aspects. The impacts/threats on the biophysical environment identified in the Phase 1 and Phase 2 EIS documents (Doc. 000415_DV_CD.HSE.0208.000_00 - Rev 05 and Doc. 000415_DV_EX.HSE.0304.000_01 - Rev 06 respectively) have been summarized in *Table 8.6.1* in the ESHMP (Plan ms hse 009 eni Ghana).

Prior to the project's design, alternatives were evaluated to maximize and ensure environmental social sustainability of the Project. The alternatives evaluated were: no project alternative, location alternatives, layout design and/or technology alternatives. The locations alternatives of onshore facilities were deeply evaluated prior to selecting the proposed project location on the basis of environmental, social, technical and logistic data (see Section 8)

In addition, the project design and footprint were refined in August 2017 with the following changes:

- Rotation of the ORF area (90º clockwise),
- Change in the landfall construction technology to a trenchless method, and
- Pipeline route refinement north of the ORF area.

The above changes allowed for a reduction on the permanent footprint on the natural habitats (i.e. swamp habitat), reduction of impacts on the landfall and nearshore area as well as a reduction on the potential interference with fish ponds located along/near the pipeline route.

The mitigation measures described in *Table 9.1* are integrated into the overall ESHMP (Plan ms hse 009 eni Ghana - Rev 00).

In addition to the commitments included in *Table 9.1*, commitments established in the management plans listed in Section 1 (see *Figure 1.1*) and especially in the Marine Mammals and Turtles Protection Policy and Plan, Traffic Management Plan, Pollution Prevention and Control Plan and Water Management Plan are also applicable to mitigate

both direct and indirect impacts to the biodiversity. The detailed requirements in terms monitoring biodiversity are included in Plan ms hse 018 eni Ghana – "Environmental Monitoring Program" and the appendixes associated to this BMP (e.g. *Appendix A:* Avian BAP, *Appendix B:* Sea Turtles BAP, *Appendix E:* Flora Conservation Plan, *Appendix F:* No Net Loss Strategy for Wetlands Habitats).

It must be noted that **the principles and measures set in the commitments, some of them originally specific for the pipeline, are also applicable to the complete footprint area, concession and AoI,** for the relevant works and areas. In addition to the commitments detailed in the EIS, a series of clarifications and specifications to the mitigation measures have been included in the table in order to ensure full compliance with IFC-PS6 requirements and an effective protection of biodiversity. These have been presented in italics and IFC-PS6 has been identified in the source column. Further details on the implementation of commitments derived from the *Table 9.1* are also presented in Chapter 10.

Table 9.1 Management and Monitoring during construction phase

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Loss of Natural Vegetation and Loss of Habitat/Habitat Fragmentation	Collection and/ or selling of plant specimens by employees of the Company is forbidden.	Contractor	Avoidance	ESHIA Phase 2 Annex G Section G.4.7.3	Training and awareness Training records auditing.	Concession area with special focus on Project footprint as this is where clearance will take place.	During construction	eni Ghana HSE Field Supervisor Recruitment and training officer.	Register of training/ communication. Register of non-compliances.
Loss of Natural Vegetation and Loss of Habitat/Habitat Fragmentation	*Undertake alternatives analysis to avoid impact where possible, alternative engineering and manufacturing processes and construction practices, the selection of optimal routing of the pipeline* *Determining if biodiversity attributes associated with the modified habitat might be considered "significant biodiversity values and constitute critical habitat"*	Company	Avoidance	*IFC-PS6*	Assessment of the alternatives analysis. Assessment of the classification of the habitat. Refer to the results of the flora, landscape and erosion pre-construction survey along the Project footprint	Project footprint and temporary occupied areas.	Prior to construction	eni Ghana HSE Field Supervisor. Environmental specialists	Record of assessment and compliance of IFC-PS6 criteria.
Loss of Natural Vegetation and Loss of Habitat/Habitat Fragmentation	The removed vegetation and biomass will be set aside as to not disturb the preliminary site preparation activities and. The cleared material should be stored to ensure it does not pose any risk to the workers or local population.	Contractor	Avoidance/Minimisation	ESHIA Phase 2 Annex G Section G.4.7.3	Assessment of removal activities and storage of vegetation. Verification of communication.	Project footprint and temporary occupied areas.	During construction	eni Ghana HSE Field Supervisor. Communica-tions and External Relations Manager.	Supervision of removal activities. Records of communication with the traditional leaders.

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	Where possible cleared wood or vegetal material will be made available to the community for use through traditional leaders.								
Loss of Natural Vegetation and Loss of Habitat/Habitat Fragmentation	If a population of priority important species is directly affected by works in the Project, the plants will be transplanted to a new area at the end of the growing season. If this is not possible (e.g. the transplant is technically impractical), a conservation plan on the species will be required to grow an equivalent number of plants, by methods such as reproduction ex situ (i.e. out of the natural habitat) for subsequent transplanting in situ (within the natural habitat). *Refer to the Flora Conservation Plan (pln ms hse 019 eni Ghana, Appendix E to the BMP) for details on species lists, locations and proposed actions*.	Contractor	Repair or remedy	ESHIA Phase 2 Annex G Section G.4.7.3	Audit/Pre-construction survey and mapping of plant species before clearance. Refer to the Flora, Landscape and Erosion Pre-construction Survey report for the result of such survey and mapping. Monitor transplanting activities and development of the plants in its new location. Refer to the Flora Conservation Plan (pln ms hse 019 eni Ghana, Appendix E to the BMP) for detailed locations, species and propose actions.	Project footprint and temporary occupied areas.	Prior to clearance of areas (identification of relevant vegetation, as endemic or vulnerable and endangered species). During construction until the transplanted plants are stabilized in its new area.	eni Ghana HSE Field Supervisor	Records of the vegetation identification (pre-construction survey), transplantation (or ex-situ growth/ Report conservation plan).
Loss of Natural Vegetation and	To avoid the loss of vegetation especially for species of	Eni Ghana (pre-construction	Monitoring / Avoidance and	ESHIA Phase 2	Monitoring of the areas where endemic or	Concession area, with	Planning phase, during	eni Ghana HSE Field	Records of the pre-construction

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Loss of Habitat/Habitat Fragmentation	importance such as endemic species (*Albizia ferruginea, Hallea stipulosa* and *Coffea macrochlamys*), amonitoring plan will be prepared for work along the pipeline route and all other planned work sites. The floral pre-construction surveys will be planned during the flowering season. *Perform pre-clearance specific flora surveys.* *Mark the extent of vegetation to be cleared on all technical drawings and mark in the field.* *Clearing of vegetation will only take place at the marked to areas.* *Refer to the Flora Conservation Plan (pln ms hse 019 eni Ghana, Appendix E to the BMP) for details on species lists, locations and proposed actions.*	survey) Contractor (follow instructions during vegetation clearance)	Mitigation	Annex G Section G.4.7.3 *IFC-PS6*	protected flora species have been recorded in the preconstruction survey and audit of construction activities. Site inspections to verify that clearing is done in line with drawings and demarcation set in the Flora Conservation Plan (pln ms hse 019 eni Ghana, Appendix E to the BMP). Where feasible avoidance of sites will be adopted.	special focus on the Project Footprint	construction.	Supervisor	survey. Audit records
Impacts on Flora due to Degradation of Abiotic Components in Ecosystems	*Topsoil Management will be performed in alignment with the principles set in the Topsoil Management Work Instruction (opi ms hse 026 eni ghana).* Topsoil will be removed from all	Contractor	Reduction on/off site Avoidance Repair or remedy Reduction on/off	ESHIA Phase 2 Annex G Sections G.4.7.3, G.4.6.3	Assessment of the state of stockpiles verifying they are properly formed and maintained (confirm no erosion on stokpiles). Assessment of re-	Concession area	Weekly	eni Ghana HSE Field Supervisor	Records of the assessment

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Degradation of Surface Water Quality due to Increased Sediment Load (Resulting from Increased Erosion and Dust) Potential disturbance and degradation of soil during the construction, including loss of productivity (erosion, soil compaction, soil removal modification of morphology, collapse and sinkhole formation).	project footprint areas (either permanent or temporary occupations). Topsoil will be temporarily stored on one side of the working strip, in designated topsoil stockpile areas along the edge of the project footprint and away from watercourses. The topsoil stockpile should be formed as is suitable for the soil specific types in the area of excavation and be protected to reduce the possibility of physical damage and compaction. It will be stored in such a way that it is not mixed with other trenched materials or driven over by vehicles. Fertile top soil must be re-deposited on top of the non-fertile soil to ensure adequate crop or vegetation growth. Rehabilitation should be implemented as soon as feasible and avoid stockpiling topsoil for long periods. Soil stockpiles must be sampled, ameliorated (if necessary). Once stockpiles have been established they will not be moved around to other areas		site.	and Section G.4.4.3, G.4.9.3 IFC PS 6	deposition of fertile topsoil. Monitoring of erosion along and in the vicinity of the Project Footprint as per the sites marked during the Flora, Landscape and Erosion Pre-construction survey. Implementation of detailed principles set in the corresponding Work Instruction *(Topsoil Management - opi ms hse 026 eni ghana).*				

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	but directly used for rehabilitation to avoid creating more compacted areas. The removed topsoil will be finally placed back on the working corridor/area. The original contours of the land will be restored as closely as possible. *Rehabilitated areas should be free draining and should be monitored as per the Reinstatement and Revegetation Standard (std ms hse 004 eni Ghan).* *Install, maintain and monitor erosion and sediment control devices (e.g. beams, silt fences, jute matting) so that ground is stable and vegetation cover is maintained..*								
Landscape changes and visual impacts due to installation of the pipeline, construction of ORF and associated infrastructure. Potential	Topsoil will be used after stripping to fill seed trays that will be used in the nursery to grow and re-establish indigenous vegetation in a proposed nursery at the concession. At the end of construction, a shallow tillage of the soil will be realized through mechanical agitation with the aim of	Contractor	Reduction on/off site Repair or remedy Repair or remedy	ESHIA Phase 2 Annex G Sections G.4.4.3 and G.4.7.3, G.4.9.3 and G.4.6.3.	Audit on the realization of the revegetation with special attention to species used. Monitoring of evolution of the revegetation (including verification that soils are stabilized and plants develop effectively and no alien species appear).	Project footprint and temporary occupation areas	Monthly audits. Monitoring frequency of revegetation will depend on the plants used. Daily inspection on absence of erosion on revegetated areas are	eni Ghana HSE Field Supervisor	Audit records Records of the monitoring for revegetation evolution and alien species absence.

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
disturbance and degradation of soil during the construction, including loss of productivity (erosion, soil compaction, soil removal modification of morphology, collapse and sinkhole formation). Impacts on Flora due to Degradation of Abiotic Components in Ecosystems. Removal of Ephemeral and Permanent Surfacewater Bodies.	aerating the top layer of soil compacted by machinery. Revegetation (i.e. the sowing of native herbaceous species on top soils and/or the planting of native shrubs/trees) will be undertaken as soon as possible after clearance and construction as per the indications set in the Reinstatement and Revegetation Standard (std ms hse 004 eni Ghana). *Potential changes in the distribution of permanent & temporary surficial waters will be minimized as per the principles and actions set in the Water Management Plan (plan ms hse 017 eni Ghana)*				Review the existence and implementation of measures/actions as set in the Reinstatement and Revegetation Standard (std ms hse 004 eni Ghana) as well as in the Flora Conservation Plan (pln ms hse 019 eni Ghana) Monitoring of wetland/marshland distribution in the vicinity of the project footprint. Implementation of actions set in the Water Management Plan (plan ms hse 017 eni Ghana).		recommended in the initial period. Weekly visual audits on the distribution / changes on surficial waters.		
Introduction of Alien Species	The selection of the plants to be used for the revegetation works will be done in aligment with the Revegetation and Reinstatement Standard (std ms hse 004 eni Ghana).	Contractor	Avoidance and Monitoring	ESHIA Phase 2 Annex G Section G.4.7.3	With regards to the invasive species, monitoring of AIS will be carried out as per the detailed procedures presented in the	Concession area	Monthly for revegetation activities. Prior to construction activities for	eni Ghana HSE Field Supervisor	Audit and monitoring records

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	Invasive species will in no case be considered for revegetation. Earthmoving equipment shall be cleaned before arrival on-site to ensure that no invasive species is accidentally introduced. *Clearing/Washing facilities will consider the containment of the cleared soil or water to avoid spreading of seeds or vegetal material.* Depending on monitoring results an Alien Species Eradication plan aimed at removing new populations and preventing them from spreading throughout the AoI should be implemented.				Prevention and Control of AIS Work Instruction (opi ms hse 025 eni ghana). Including but not limited to the (1) assessment of revegetated areas to detect any alien species that may have been planted, (2) the assessment of earthmoving equipment.		earthmoving equipment cleaning. On planning phase, quarterly during construction and yearly after construction.		
Potential disturbance and degradation of soil during the construction, including loss of productivity (erosion, soil compaction, soil removal modification of morphology, collapse and	Before starting any construction work, topographic and photographic records will be made of the existing condition of the pipeline route and access roads. These records will be used as the standards against which the quality of site restoration will be evaluated. *Verify that project activities, especially clearance and construction do not lead to*	Contractor	Monitoring	ESHIA Phase 2 Annex G Section G.4.6.3	Site inspections to verify the effectiveness of erosion control measures and evolution of those sites surveyed prior to on-site clearance works (i.e. audit on the existence of topographic and photographic records). Confirm the existence and implementation of the Environmental	Project footprint and temporary occupation areas.	Planning phase (Prior to clearance/ occupation).	eni Ghana HSE Field Supervisor	Audit records

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
sinkhole formation).	*increased soil erosion*.				Monitoring Program (plan ms hse 018 eni Ghana)				
Potential disturbance and degradation of soil during the construction, including loss of productivity (erosion, soil compaction, soil removal modification of morphology, collapse and sinkhole formation).	Following the pipeline backfilling operation, prior to the completion of restoration works, a preliminary phase involving general tidying up of the line will be carried out to level the area affected by the works, restoring pre-existing slopes and the original morphology of the ground and well as of pre-existing flow lines.	Contractor	Reduction on/off site	ESHIA Phase 2 Annex G Section G.4.6.3	Assessment of the pipeline RoW to verify correct levelling using the topographic records obtained in the planning phase (refer to the Flora, Landscape and Erosion Pre-Construction Survey Report for details on the topographic and photographic records).	Onshore pipeline route	During construction, when the backfilling of the trench takes place.	eni Ghana HSE Field Supervisor	Assessment records
Habitat Reduction/ Fragmentation and Isolation Removal of soils (landtake) during earthworks and land clearance.	The project will undertake the clearing of vegetation during construction in phases. In this way, the change will be gradual which will give fauna the chance to identify new suitable areas and migrate. Land clearance must be kept to a minimum and must only be cleared for areas that will be developed.	Contractor	Reduction on/off site Avoidance	ESHIA Phase 2 Annex G Sections G.4.6.3 and G.4.8.3	Audit of the clearance works schedule and plan and its subsequent application, focusing on the phased clearance approach to the extent possible.	Project footprint and temporary occupation areas.	Planning phase and during construction.	eni Ghana HSE Field Supervisor	Supervision of land clearance
Disturbance and/or	A pre-construction survey will be undertaken to identify	Eni Ghana (pre-construction	Reduction	ESHIA Phase 2	Audit	Construction areas	Planning phase. Once after	eni Ghana HSE Field	Records of the pre-construction

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Displacement of Fauna due to Pollution.	sensitive avian species that may be present during times outside of those surveyed previously (April and November) and particularly during the boreal winter. *Cooking, hazardous materials storage, garbage, and waste water areas should be properly stored and fenced if needed with the objective keeping wildlife out* *The Management plans will define the specific procedures to prevent and minimize contamination (e.g. Waste Management Plan (pln ms hse 005); Water Management Plan(plan ms hse 017 eni Ghana); Emergency Response Plan (pln ms hse 002).*	survey) Contractor (other)	Management	Annex G Section G.4.8.3 *IFC PS6*			construction..	Supervisor	survey.
Increased Mortality of Wildlife	The hunting for bush meat will be strictly prohibited. Design and implementation of embedded bush meat action plans to prevent all activities of staff and contractors related to the trade in animal protein and *live specimens.* *Monitor pipeline trench and other construction excavated*	Contractor	Reduction on/off site Monitoring	ESHIA Phase 2 Annex G Section G.4.8.3 *IFC PS 6*	Training and awareness raising records on the need to minimize disturbances to fauna (no feeding, no hunting, careful driving to avoid collision…). Verify the existence of a specific Bushmeat Action	Excavated areas	Pre – construction Daily for excavated areas.	Recruitment and training officer. eni Ghana HSE Field Supervisor	Training records Register of non-compliances. Daily inspection records.

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	areas) to check potential accidental entrapment of animals. Apply and enforce no off road driving policy site speed limits, Signpost high risk areas – i.e. in natural habitat or waterways and avoid driving on the beach. *eni will seek active collaboration with relevant authorities and/or Birdlife international with regards to the Amansuri Wetlands IBA, with special attention to its trigger species, Thalasseus maximus and Calidris alba, both present in the area during the boreal winter months (mainly in the beach and more coastal margin of the IBA).*	Eni external relations manager	Management	ESHIA Phase 2 Annex G Section G.4.8.3	Plan (pln ms hse 015 eni Ghana) and monitor its implementation based on its contents. Audits along the project footprint to document any potential fauna causalities (e.g. along access roads or in the vicinity of camps) Assessment to verify actions have been conducted towards enhancing collaboration with authorities and NGOs in conservation programs.	N/A	During the operation of the project as part of eni's ESR	Communications and External Relations Manager eni Ghana HSE Manager	Records of the consultation/communications
Potential disturbance of Marine Fauna including Seabirds, Cetaceans and	Due to the Direct Pipe (DP) Construction Method on the shore and nearshore potential interferences with these areas will be minimal. Due to the DP, no direct works are foreseen on	Contractor	Avoidance Monitoring / Repair and remedy	ESHIA Phase 1 Annex G Sections G.7.2.4 and	Audit of work schedule to verify the works in the beach and nearshore areas avoid the referred months. Pre-work inspection	Pipeline Landfall area	Planning phase and during construction	eni Ghana HSE Field Supervisor	Audit and inspection records

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Turtles due to Physical presence	the shore and beach area. Nevertheless, mitigation and monitoring on the beach and nearshore area will be applicable as set in the turtle and bird BAPs. These may include as a reference Pre-work inspection of the area to determine whether there are turtles nesting. Should sea turtle nesting activity be confirmed in the work area the Project will consult with a sea turtle specialist to determine the appropriate course of action. Action may include relocation of the turtle nest to a safe area in accordance with IUCN marine turtle guidelines			G.8.1.1 and ESHIA Phase 2 Annex G Section G.5.6.3	(Refer to BAP on sea turtles for further details).				
Potential disturbance of Marine Fauna including Seabirds, Cetaceans and Turtles due to Physical presence	Control and reduce overall light intensity to the extent practicable, without adversely affecting maritime or operational safety, at the LTE site (e.g. use directional lighting to direct light away from sensitive habitats such as nesting beaches). The existing thicket provides a natural shield for any artificial illumination at the LTE location to have any impact on the turtle nesting on the beach.	Contractor	Reduction	ESHIA Phase 2 Annex G Section G.5.6.3	Assessment to verify correct implementation of lights not affecting the landfall area from any construction area.	Concession area	Daily	eni Ghana HSE Field Supervisor	Verification of correct implementation

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	However, monitoring of control measure will be in place to ensure that all lights will remain down ward so to avoid any chance of illumination directed towards the sea. Personnel working on site will be made aware of the presence of threatened and migratory species in the AoI and the impacts that artificial lighting could generate on these species. Detailed, mitigation and monitoring on the beach and nearshore area will be applicable as set in the turtle and bird BAPs (including light, noise and vibration as well).								
Modification, fragmentation and loss of habitats and agricultural land and the associated ecosystem services. Reduction in access to ecosystem	• Provisioning services: mitigation measures applicable will be mostly related to those identified for Terrestrial/Aquatic Flora and Fauna and Habitats. • Regulating services: Mitigation measures identified are those related to terrestrial flora, such as flora monitoring and re-vegetation. • Cultural services: mitigation measures for fauna consider	Contractor Contractor	Reduction on/off site; Management	Section G.8 (Phase 2)	Assessment to verify correct implementation of mitigation measures related to Flora and Fauna, to Reinstatement and Re-vegetation (both in this Biodiversity Management Plan), water resources (in Water Management Plan) and fish resources (in Fisheries Management Pan).	Concession area	During construction activities	eni HSE Team eni Local Content and Sustainability Team Environmental and Social Specialist	Verification of correct implementation

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
services. Disturbance to fauna and flora from air emissions, noise and light and depletion of natural resources (e.g. water, wood) for construction activities resulting in a reduction or loss of associated ecosystem services. Potential pollution of soils and water with the associated loss on ecosystem services provided.	the restoration of vegetative cover and limits to project emissions which may limit disturbance, and at the same time have an effect on the surrounding landscape. • A pre-construction survey (prior to construction; e.g. pre-clearance) to consult with the affected communities, with special focus on Sanzule community, will be carried out in order to confirm the ecosystem services listed here, that the local population considers as priority. This will allow particular attention to be paid to them during the construction (and production) phases of the project and avoid/minimize /mitigate any impacts on these. (This corresponds to the Livelihood Restoration Programme). Eni Ghana will ensure that the construction does not affect the ecosystem of the marshy area, minimising the loss of natural resources to 2% of natural resources in Sanzule.	Contractor ERM		Section 6. (Livelihood Restoration Plan)	Audit of the survey (Livelihood Restoration Programme). Assessment of the ecosystem services conditions to verify eni's	DAoI of the Project	Prior to construction activities Continuous during construction activities		Audit and inspection records Verification of condition of the ecosystems within the

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	eni Ghana will allow access to natural resources within the concession area, outside the fenced areas. It is therefore considered that there will be no impact to the ability of Sanzule and Anwolakrom's ability to collect firewood, raffia or medicinal plants.				commitment towards preserving the ecosystem Consultation to local communities to verify the absence of problems on their access to natural resources within the concession area.	Concession area	Bi-monthly during construction activities		concession area. Verification of access of community to natural resources through Grievance Mechanism

Table 9.2 Management and Monitoring during production phase

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Terrestrial Flora; Loss of Natural Vegetation and Loss of Habitat/Habitat Fragmentation	Collection and/ or selling of plant specimens by employees of the Company (or any subcontractor & service provider) is forbidden. Vehicles will use only demarcated areas and not drive off the roads which can have significant impacts on the natural habitats and vegetation. Plans and procedures relevant for the implementation of the above principles/mitigation include: Reinstatement and Revegetation Plan Standard (std ms hse 004 eni Ghana); Topsoil Management Work Instruction (opi ms hse 026 eni ghana); and Flora Conservation Plan (pln ms hse 019 eni Ghana).	Eni	Avoidance	ESHIA Phase 2 Annex G Section G.4.7.4	Training and awareness Training records auditing.	Concession area with special focus on Project footprint and the specific net of paths designated for access	Yearly trainings and quarterly audits	eni Ghana HSE team	Register of training/ communication. Register of non-compliances.
Terrestrial flora; Loss of Natural Vegetation and Loss of Habitat/Habitat Fragmentation	Follow-up of the reinstatement and revegetation from construction & commissioning phase. A survey with a regular frequency must be performed in order to verify the status and the implementation of the vegetation recovery process in the AoI. In addition, the above will include any revegetation or restoration plan	Eni	Monitoring	ESHIA Phase 2 Annex G Section G.4.7.4	Monitoring of reinstated/revegetated areas to verify the implementation of works and success/deviations from the RRP objectives. Similarly, where needed, actions will be defined to correct	Any areas defined as part of the project footprint or part of the NNL / Offsetting areas for flora/fauna.	Quarterly	eni HSE Team	Verification of correct implementation (RRP goals vs Revegetation Status)

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	as defined in the No Net Loss Policy for natural habitats as well as the monitoring & control of alien & pioneer species. Plans and procedures relevant for the implementation of the above principles and mitigation include: Reinstatement and Revegetation Plan Standard (std ms hse 004 eni Ghana); Prevention and Control of Alien Invasive Species Work Instruction (opi ms hse 025 eni ghana); No Net Loss Strategy for Natural Wetlands (pln ms hse 019 eni Ghana); and Topsoil Management Work Instruction (opi ms hse 026 eni ghana).				potential deviations.				
Disturbance and/or Displacement of Fauna and/or impacts on flora/habitats due to degradation/pollution of Abiotic Components in Ecosystems (i.e. degradation of Surface Water	Vehicles will be restricted to specific areas when driving outside the ORF and only use demarcated areas and not drive off the roads. Lighting will be aimed directly at the areas where it is required, minimising light pollution outside of the ORF and other working areas. Machinery and vehicles will be in good working order and regularly maintained to prevent unnecessary noise. *Power generation unit will include abatement technologies as per the best available techniques to*	Eni	Reduction on/off site Avoidance Repair or remedy	ESHIA Phase 2 Annex G Sections G.4.8.4, IFC PS 6	Awareness Training, monitoring and records auditing.	Concession area and accesses	Monthly/Quarterly/Yearly depending on the specific issue	eni HSE Team	Register of training/ communication. Register of non-compliances. Records of the assessment.

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Quality, disturbance/ degradation of soil, air emissions, inadequate project lightning and noise).	*minimize NOx emissions.* Waste will be managed in accordance with Ghana laws and regulations and in line with best practice principles. Waste will be collected, stored and transported in appropriate and approved bins and containers. Hazardous materials will be managed in accordance with Ghana laws and regulations and in line with best practice principles. Spills of hazardous materials will be cleaned up in accordance with Ghana laws and regulations. In addition, the mitigation measures/commitments established for Surface Water, Air Quality and Soils will be implemented. Plans and procedures relevant for the implementation of the above principles and mitigation include: *pln ms hse 007 – Waste Management Plan; plan ms hse 011 eni Ghana - "Pollution Prevention and Control Management Plan";plan ms hse 013 eni Ghana - "Marine Traffic Management Plan"; plan ms hse 011 eni Ghana - "Offshore Hazardous Materials Management Plan"; plan ms hse 016 eni Ghana - "Traffic*								

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	Management Plan"; plan ms hse 017 eni Ghana - "Water Management Plan";and plan ms hse 018 eni Ghana – "Environmental Monitoring Program".								
Increased Mortality of terrestrial Wildlife	Maintenance of the areas planted with native species during the construction phase will be undertaken on a regular basis. The direct or indirect promotion of bushmeat activities will be avoided (i.e. definition and implementation of a bushmeat action plan to prevent all activities of staff and contractors related to the trade, hunting and consumption of animal protein and live specimens). Roads must be clearly marked with speed limits and all staff and contractors must obey these regulations. Monitoring programs on target wildlife species (i.e. birds and sea turtles) will be implemented during production phase. Additional conservation actions in collaboration with Ankasa National Park or other relevant stakeholders with regards to the Amansuri Wetlands IBA linked to the No Net Loss Strategy). Plans and procedures relevant for	Eni	Reduction on/off site Monitoring and Avoidance Repair or remedy	Section G.4.7.4 Section G.4.8.4.	Awareness Training, monitoring and records auditing.	Project footprint and designated accesses.	Quarterly monitoring Yearly trainings and quarterly audits	eni HSE Team	Register of training/ communication. Register of non-compliances.

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	the implementation of the above principles and mitigation include: plan ms hse 014 eni Ghana - "Marine Mammals and Sea Turtles Protection Policy and Plan"; plan ms hse 016 eni Ghana - "Traffic Management Plan"; Bushmeat Action Plan Work Instruction (pln ms hse 015 eni Ghana); Avian BAP (pln ms hse 019 eni Ghana,; Sea Turtles BAP (pln ms hse 019 eni Ghana); Flora Conservation Plan (pln ms hse 019 eni Ghana, Appendix E); and No Net Loss Strategy for Natural Wetlands (pln ms hse 019 eni Ghana).								
Potential disturbance and degradation of soil during the production phase including loss of productivity (erosion, soil compaction, soil removal modification of morphology, collapse and sinkhole formation).	No machinery or vehicle will be allowed to leave the working strip or access roadways. Any rehabilitated areas must be regularly maintained and monitored in order to maintain a high basal cover and limit soil erosion due to both water (runoff) and wind (dust) erosion. An erosion monitoring programme will be implemented biannually to determine seasonal variations and thereafter, annually to include observations of evidence of erosion, degradation, condition of access roads, cleared areas, perimeter drains and settlement ponds, verify	Eni	Avoidance Repair or remedy Management Monitoring	Section G.4.6.4	Refer to the above impacts and management (already covered in previous measures)	Concession area with special focus on Project footprint and the specific net of paths designated for access	Refer to the above management and timings (already covered in previous measures)	eni Ghana HSE team	Refer to the above performance indicators (already covered in previous measures)

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
	the compliance with standards.								
Landscape changes and visual impacts due to installation of the pipeline, and ORF and associated infrastructure.	Landscape and visual impacts will be continuously monitored/managed through the implementation of a number of plans already defined by Eni. Overall the measures set in these plans will allow to verify that landscape has been restored as per the objectives of the reinstatement of the site (including but not limited to the topography and establishment of the vegetation). Plans and procedures relevant for the implementation of the above principles and mitigation include: plan ms hse 016 eni Ghana - "Traffic Management Plan"; plan ms hse 018 eni Ghana – "Environmental Monitoring Program". Prevention and Control of Alien Invasive Species Work Instruction (opi ms hse 025 eni ghana); Reinstatement and Revegetation Plan Standard (std ms hse 004 eni Ghana); Topsoil Management Work Instruction (opi ms hse 026 eni ghana); Appendix E: Flora Conservation Plan (pln ms hse 019 eni Ghana) and No Net Loss Strategy for Natural Wetlands (pln ms hse 019 eni Ghana).								

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
Ecosystem services; Modification, fragmentation and loss of habitats and agricultural land and the associated services. Reduction in access to ecosystem services. Disturbance to fauna and flora from air emissions, noise and light and depletion of natural resources (eg water, wood) for operation activities resulting in a reduction or loss of associated ecosystem services. Potential pollution of soils and water with the	Priority ecosystem services will be identified in consultation with the affected communities during the livelihood restoration baseline data collection. Results will be reflected in the LRP. The mitigation measures required to minimise impacts on ecosystem services are in line with each of the impacts identified for the Physical, Biological and Social environmental components identified in the Project baseline. Mitigation measures included for the operation phase on its different components will also apply for the ecosystem services. Mitigation measures set forth during the construction phases will be implemented also during operation, see below: Provisioning services: mitigation measures applicable will be mostly related to those identified for Terrestrial/Aquatic Flora and Fauna and Habitats. Regulating services: Mitigation measures identified are those related to terrestrial flora, such as flora monitoring and re-vegetation. Cultural services: mitigation measures for fauna consider the	Eni	Reduction on/off site; Management	Section G.8.1.8 (Phase 2)	Awareness Training, monitoring and records auditing.	Any areas defined as part of the project and specially the project footprint	Refer to the above management and timings (already covered in previous measures)	eni HSE Team	Verification of condition of the ecosystems within the concession area based on the verification of correct implementation of measures relevant for biotic and abiotic components Verification of access of community to natural resources through Grievance Mechanism

	IMPACT MANAGEMENT					IMPACT MONITORING			
Potential ESH Impact	**ESH Commitment**	**Responsible Party**	**Type**	**Source**	**Compliance Monitoring**	**Monitoring Area**	**Timing/ Frequency**	**Responsible Party**	**Key Performance Indicator**
associated loss on ecosystem services provided.	restoration of vegetative cover and limits to project emissions which may limit disturbance, and at the same time have an effect on the surrounding landscape. Plans and procedures relevant for the implementation of the above principles and mitigation include but are not limited to the following: plan ms hse 018 eni Ghana – "Environmental Monitoring Program". Prevention and Control of Alien Invasive Species Work Instruction (opi ms hse 025 eni ghana); Reinstatement and Revegetation Plan Standard (std ms hse 004 eni Ghana); Topsoil Management Work Instruction (opi ms hse 026 eni Ghana); Appendix E: Flora Conservation Plan (pln ms hse 019 eni Ghana), No Net Loss Strategy for Natural Wetlands (pln ms hse 019 eni Ghana), Water Management Plan (pln ms hse 017 eni Ghana); Fisheries Management, Participatory Monitoring Programme and Compensation Framework Strategy (prog ms hse 007 eni Ghana); Waste Management Plan (plan ms hse 005); Pollution Prevention and Control Management Plan (plan ms hse 011 eni Ghana).								

10. BMP's Complementary Plans and Procedures

The commitments presented in Section9, *Table 9.1* will be implemented on site through a number of specific operational procedures and plans. These specific complementary plans are presented in *Figure 1.1*. This figure also shows the relation between each of these plans and the BMP. The sections below provide a short description on some of the key plans, standards and work instructions that have been developed by eni Ghana, several of which incorporate the information gathered during the pre-construction field surveys.

10.1 Fauna and Flora Management and Monitoring

As presented in Section 1, a number of specific documents have been prepared to cover the wide range of topics required. These, together with the details included in the Environmental Monitoring Program (ms hse 018 eni Ghana r00) set the actions and procedures of application to flora and fauna. The key objectives for this set of plans can be summarized as follows:

1. Updating the baseline conditions described in ESHIA through the pre-construction surveys including, where appropriate, the preparation of detailed biodiversity cartography for the footprint areas and Concession area.

2. Defining the monitoring requirements for the fauna and flora as part of the Environmental Monitoring Program (ms hse 018 eni Ghana r00) and, where appropriate, providing the relations between the EMP and topic specific plans (e.g. Sea Turtles BAP, Bushmeat Action Plan…).

3. The refinement of mitigation measures and monitoring presented in the ESHIA and ESHMP into more detailed actions for implementation on the ground. For instance (1) the identification of specific procedures for key species such as sea turtles, birds and marine mammals, (2) the definition of procedures to minimize impacts on general flora and fauna during clearance, (3) setting the principles for the reinstatement and revegetation of the areas, (4) establishing the procedures to avoid increased bushmeat activities and (5) evaluating opportunities for raising environmental awareness within the region and potentially contributing to local initiatives for biodiversity conservation.

Pre-construction baseline status review:

The pre-construction baseline survey has been performed prior to commencement of clearance activities on-site. This survey has allowed detailing the baseline conditions on the footprint and concession areas as well as to precise the mitigation measures. This pre-clearance baseline survey will also serve as the basis for the evaluation of the

implementation of the mitigation measures and for the future restoration works (see Section 10.3).

The pre-construction survey was carried after the detailed review of the previous investigations and existing cartography (i.e. information and cartography gathered during the scoping and ESHIA Report) and involved also the engagement with local communities and Authorities.

The information gathered in this survey has been consolidated in a number of 'Environmental Pre-construction Survey Reports' among which the following have interest for the fauna and flora management:

- Pre-construction Fish Catch Survey Report;
- Fauna Pre-construction Survey Report;
- Pre-construction Flora, Landscape and Erosion Survey report; and
- Air Quality and Noise Pre-construction Survey Report

These reports and the field findings have been feed into this BMP and several of the HSE standards and Work Instructions (see *Figure 1.1*). These, together with the Flora Conservation Plan (see *Appendix E*) are the basis on which the Reinstatement and Revegetation Plan (see Section 10.3) will be defined.

10.2 Prevention and Control of Alien Invasive Species

A specific work instruction has been prepared, as part of the eni Ghana HSE-Integrated Management System (Prevention and Control of AIS Work Instruction; opi ms hse 025 eni ghana r00). The document defines the procedures and mitigation measures that shall be implemented with the objective of (1) avoiding the introduction of invasive species, (2) avoiding the spreading of species that may be already present in the area and (3) controlling/removing invasive species where appropriate.

This work instruction is aligned with the objectives set in the commitments register (see *Table 9.1*) and will apply to the entire footprint of the project and the pre-construction and construction phases.

10.3 Reinstatement and Revegetation Plan - Work Instruction

A Reinstatement and Revegetation Plan will be prepared by the contractor in charge of the construction works. The RRP incorporate the principles and data provided in the following documents:

- Reinstatement and Revegetation - Standard (std ms hse 004 eni Ghana)
- Topsoil Management – Work Instruction (opi ms hse 026 eni ghana)
- Prevention and Control of AIS – Work Instruction (opi ms hse 025 eni ghana)
- Flora Conservation Plan (*Appendix E* of this BMP)
- Pre-construction Flora, Landscape and Erosion Survey report (from the Environmental Pre-construction Survey reports)

The most updated version of the above plans and procedures shall apply.

The RRP will apply to the complete footprint area and will define the specific reinstatement and revegetation works required as well as the type of reinstatement, the timings, the materials and procedures of application. The RRP must ensure that impacted natural habitats (and associated ecosystems) will be restored to suitable and agreed conditions as similar to pre-construction as deemed appropriate, ensuring that the objective of No Net Loss (NNL) is met. Because of its nature the implementation of the RRP shall be extended several years after finalization of the construction works and will serve as the basis on which the specialized revegetation subcontractors' performance will be evaluated (compliance/non-Compliance).

The contents of the RRP will include the following items:

A. Baseline conditions and set up of site specific objectives

This phase will include the detailed definition of pre-clearance situation in all footprint areas (i.e. combination of EIS baseline, Post-EIS surveys and specific site visits as needed).

In addition, this phase will define the short and long term reinstatement and revegetation objectives: (1) Short term objectives would typically consider clean up procedures, terrain morphology restoration, stabilization of soils and erosion control and establishment of fast growing ground cover (e.g. grasses and forbs). (2) Long term objectives will seek the establishment of more complex vegetation communities that would restore pre-construction conditions and enhance habitats (fauna and flora).

B. Erosion Prevention Procedure (EPP)

This procedure will be a guidance manual that will help the Company and its contractors to minimize erosion of soils and transportation of sediments off the working areas, thus

minimizing potential disturbance of marshland or other sensitive areas and helping the success of the RRP activities.

The EPP will be designed to accommodate varying field conditions while maintaining rigid minimum standards for the protection of environmentally sensitive areas.

The EPP will be designed to provide specifications for the installation and implementation of soil erosion and sediment control measures while using the most appropriate measures based on site-specific conditions. The Plan will provide general information on the construction process and specific measures that will be employed during the activities on-site to minimize impacts to the environment.

The goal of the EPP will be to preserve the integrity of environmentally sensitive areas, avoid erosion derived from the construction activities and to maintain existing water quality in the wetlands and rivers. This procedure will be implemented in coordination with the Environmental Monitoring Plan and the Pollution Prevention and Control Plan.

Key objectives of this EPP can be summarized as follows objectives:

1. Minimize the extent and duration of disturbance;
2. Protect exposed soil by diverting runoff to stabilized areas;
3. Properly address the sediments management;
4. Install temporary and permanent erosion control measures; and
5. Establish an effective inspection and maintenance program.

C. Clean up procedures

These will be established though the review of several plans (e.g. Annex G - Waste Management Plan, Annex H - Pollution Prevention and Control Plan). Some of the principles incorporated will include:

- sites will be cleaned-up as working fronts are progressing;
- cleaning of the sites will include the demobilization of machinery, personnel, wastes and raw materials;
- audits will be performed and registers (including photos) will be taken on the cleaned sites.

D. Reinstatement

Reinstatement will apply to all "footprint areas" and will commence as soon as the specific site has been cleaned-up (i.e. different areas will be reinstated at different moments).

Priority will be given to those sites that are considered as of high sensitivity or value (e.g. high erosion areas, vulnerable vegetation or ecosystem services…). Basic reinstatement procedures will apply to all areas and are directly related with the correct management and storage of the topsoil and subsoil (see Topsoil Management Procedures).

E. Revegetation

Revegetation constitutes a key element of the RRP because is one of the crucial factors for achieving the short and long term objectives. Short term objectives involve reducing risks of erosion and loss of valuable soils and achievement of these objectives will significantly increase the success of the long term objectives. Long term restoration of landscape and ecological systems is largely based on allowing natural vegetation to be re-established in the footprint areas.

The revegetation plan shall include the following contents:

a. Revegetation units definition and mapping;
b. Reference Vegetation Site Selection;
c. Desired Future Conditions (DFC) definition;
d. Revegetation strategies definition, implementation and monitoring.

The success of transplantation will be measured as a specific KPI for the revegetation plan.

10.4 Topsoil Management Work Instruction

A specific work instruction has been prepared, as part of the eni Ghana HSE-Integrated Management System (Topsoil Management – Work Instruction; opi ms hse 026 eni ghana r00). The document defines the procedures for the correct management of topsoil, which is a key element for the success of all revegetation works and thus for the long term success in the restoration of habitats and biodiversity. The document is aligned with the general mitigation measures and monitoring presented in the *Table 9.1*.

Aligned with these general commitments, topsoil will be reused for the restoration of all temporary footprint areas. The overall objective of the procedures will be to minimize the stripping of topsoil and maximize its reuse for the revegetation works.

In practical terms the implementation of mitigation measures and commitments will consider the following steps:

1. Identification (or definition) of the soil stripping 'procedures':

- The areas where the soil must be stripped will be clearly marked and monitored.
- Prior to stripping the soil the depth of the top soil will be evaluated to ensure top soil is not mixed with subsoil.

2. Storage of topsoil 'procedure':

- The areas for top soil storage will be defined prior to clearance. The detailed topsoil will be stored and managed in alignment with the specific principles set in Table 9.1 (e.g. stockpile height, protection from water, wind…).
- Silt fences or the local equivalent will be used to form topsoil stockpiles especially in close proximity to areas prone to flooding or waterbodies
- Monitoring of storage areas.

3. Topsoil evaluation and reinstatement:

- Before using the topsoil for the revegetation activities the following specific actions will be performed (in alignment with the RRP):
  - Definition of potential soil enhancement needs (soil quality evaluation and improvement needs).

Reinstatement of soil on the footprint areas will be performed as per the requirements of the RRP.

11. Roles and Responsibilities

Responsible parties for implementation and monitoring of activities indicated in this plan are indicated in *Table 9.1* and in the documents referenced therein.

eni Ghana shall ensure sufficient resources are allocated on an ongoing basis to achieve effective implementation of Company's responsibilities in this Plan. This includes the presence of external experts on ecology, flora and fauna to realize the pre-clearance surveys and monitor biodiversity during the construction phase.

Contractors shall ensure sufficient resources are allocated on an ongoing basis to achieve effective implementation of this Plan.

The Contractor's Plans shall describe the resources allocated to the execution of each task and requirement contained therein, and shall describe how roles and responsibilities are communicated to relevant personnel.

The Contractor, eni Ghana HSE Field Supervisor and Environmental Specialists will be responsible for implementing the requirements of this BMP. Their responsibilities are described in the *Table 11.1*. The overall responsibility for and monitoring of biodiversity management remains the responsibility of eni Ghana.

Table 11.1 Roles and Responsibilities

Name/Title	Responsibilities / Duties
EPC Contractor	• Ensure planning, implementation and monitoring of BMP and its complementary Plans and Procedures during pre-construction, construction and commissioning phases. • Prepare guidance manuals (e.g. Erosion Prevention Procedure) during pre-construction, construction and commissioning phases. • Prepare monitoring reports during pre-construction, construction and commissioning phases. *Note that monitoring of conservation activities on the identified key species relies on eni and not the EPC contractor (e.g. BAPs on Avifauna and Sea Turtles).
eni Ghana HSE Manager/Field Supervisor	• During all phases of the project, oversee Contractor programs for monitoring and audits as specified in this BMP; generate the appropriate reports; and oversee any corrective actions. • Coordinate biodiversity-related activities in response to routine or emerging issues during all phases of the project. • Collect Contractor monitoring reports in a timely manner during all phases of the project. • Call in specialists to consult on special problems or to conduct third-party audits as needed during all phases of the project.

Name/Title	Responsibilities / Duties
	• Implement trainings programs with respect to species and habitats of relevance during all phases of the project. • Implementation of conservation related activities included in the BAPs.
Environmental Specialists	• Support eni Ghana HSE personnel to oversee Contractor's activities review monitoring compliance and reports, and conduct site visits (primarily during construction phase but applicable to all phases). • Conduct independent monitoring and auditing to ensure compliance (primarily during construction phase but applicable to all phases). • Communicate through verbal and written reports to the HSE team regarding compliance issues and areas of concern (primarily during construction phase but applicable to all phases).

12. Training Awareness and Competency

Project shall ensure that personnel responsible for the execution of tasks and requirements in the BMP are competent on the basis of education, training and experience. The Contractor Plan shall describe the training and awareness requirements necessary for its effective implementation.

Section 13 of the Framework ESHMP provides details on the training, awareness and competency procedures for the project. Minimum environmental, social and health training requirements per role within the Project are presented in section 13.3 of the Framework ESHMP. Additional training requirements for this specific management plan are presented in *Table 12.1* below.

Project training activity associated with the implementation of the BMP shall be appropriately documented by means of a training needs assessment, training matrix/plan and records of training undertaken.

Table 12.1 Specific training requirements

Position (from all companies involved)	Training Topic	Frequency
All employees	Overview of BMP requirements with special attention to the ban of collection and/ or selling of plant specimens and of hunting for bush meat.	Once and refreshers as needed
eni Ghana HSE Manager/ Field Supervisor	Identification of species and habitats of relevance, Audit, sampling and monitoring requirements and role specific responsibilities.	Once and refreshers as needed

Position (from all companies involved)	Training Topic	Frequency
Environmental Specialists (External Experts on Fauna, flora and Habitats)	BMP and BAP's requirements and Planned Project activities and monitoring requirements.	Once

13. Performance Indicators

Performance indicators are used to measure and track performance against the effectiveness of mitigation and control measures described in this Plan. General performance indicators may also be relevant, such as training and awareness numbers.

Performance indicators must be measurable against a specified target. Only those which are specifically and clearly measurable have been included in *Table 13.1* below. The performance indicators outlined in *Table 9.1* apply to this Plan. Details regarding how they will be measured, target/benchmark and frequency of control are described in *Table 13.1*. KPIs referred to the effectiveness of other measures indicated in *Table 9.1* shall be determined at a later stage relevant to each of the complementary management plans of this BMP.

Contractors such as EPC may, subject to agreement with Company, modify or add to these indicators to enhance the Contractor's plan, based on lessons from the performance indicators.

Table 13.1 Performance Indicators

Performance Indicator	Measurement	Target/Benchmark	Frequency of Monitoring
Register of training/communication.	Record the trainings and communications provided to the employees.	All employees receive training on activities forbidden (i.e. collection and/ or selling of plant specimens).	Continuous
Area of vegetation planned for clearing against actually cleared.	Surface effectively cleared during construction activities and surface planned to be cleared. Record actions taken in case of non-compliance.	Absence of deviation from planned clearance.	Monthly during construction phase
Records of monitoring for revegetation evolution and alien species absence.	Measure surface successfully revegetated (plants kept alive and soil stabilized) and compare it with total temporary occupied areas cleared.	100% of surface temporarily occupied and cleared successfully revegetated.	Bi-annually
Register of non-compliance	Prohibition of bush meat hunting. Prohibition of collection of sea turtles eggs	Absence of non-compliance	Continuous

14. Reporting

Throughout the project, communications, reporting and incident notification will be undertaken by eni Ghana in accordance with requirements set in the OCTP ESHMP *Section 11*. eni Ghana will prepare periodic reports (quarterly and annual) on environmental performance and submit it to World Bank Group (WBG). Upon request and format definition, copies will be made available to Ghana EPA.

In addition, during construction and commissioning phases the Contractor will prepare monthly reports related to the implementation and operation of the BMP. These will be sent to eni Ghana HSE manager for review. In particular the monthly report shall include the following information:

- Results of the Pre-clearance surveys prescribed in Section 7 and Section 10.4;
- Results of assessments and audits, including photographic records of the area, taken before construction activities, non-conformities and appropriate registers as detailed in *Table 9.1*;
- Actions taken to address non-conformities and other biodiversity issues arisen during the reporting period;
- Performance indicators as applicable to the reporting period.

During production phase eni Ghana will be responsible for reporting/documenting the implementation and results of the BMP.

15. Appendices

Appendix A. Birds Biodiversity Action Plan
Appendix B. Sea Turtles Biodiversity Action Plan
Appendix C. Alignment Table of the BMP and associated BAPs with the requirements specified in IFC PS6
Appendix D. Critical Habitat Assessment
Appendix E. Flora Conservation Plan
Appendix F. No Net Loss for Natural Wetlands
Appendix G. Desktop Identification of Wetlands Habitats

Appendix A: Birds Biodiversity Action Plan

Appendix B: Sea Turtles Biodiversity Action Plan

Appendix C: Gap analysis demonstrating alignment of the BMP and associated BAPs with the relevant requirements of IFC PS6

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
General		
6.	The risks and impacts identification process as set out in Performance Standard 1 should consider direct and indirect project-related impacts on biodiversity and ecosystem services and identify any significant residual impacts. This process will consider relevant threats to biodiversity and ecosystem services, especially focusing on habitat loss, degradation and fragmentation, invasive alien species, overexploitation, hydrological changes, nutrient loading, and pollution. It will also take into account the differing values attached to biodiversity and ecosystem services by Affected Communities and, where appropriate, other stakeholders. Where paragraphs 13–19 are applicable, the client should consider project-related impacts across the potentially affected landscape or seascape.	Impact assessment completed for ESIA. Outlined in Table 8.6.1 of the ESHMP (plan ms hse 009 eni Ghana - "Framework Environmental, Social and Health Management Plan - Construction and Development Drilling Phase"). Table 8.6.1 of the ESHMP is referenced in the BMP Impacts have then been extracted and presented in Table 8.1 of the BMP, showing related mitigation/monitoring actions, responsible parties, KPIs, etc.
7.	As a matter of priority, the client should seek to avoid impacts on biodiversity and ecosystem services. When avoidance of impacts is not possible, measures to minimize impacts and restore biodiversity and ecosystem services should be implemented. Given the complexity in predicting project impacts on biodiversity and ecosystem services over the long term, the client should adopt a practice of adaptive management in which the implementation of mitigation and management measures are responsive to changing conditions and the results of monitoring throughout the project's lifecycle.	BMP outlines avoidance, minimization and restoration measures in Section 9 and 10. The Avian and Sea Turtles BAPs define measures to avoid and/or minimize the Project impacts in the AoI (Section 5). Monitoring programs are detailed in Section 6 of the BAPs. The BMP document is described as a 'live' document and will be adapted in the future as required.
8.	Where paragraphs 13–15 are applicable, the client will retain competent professionals to assist in conducting the risks and impacts identification process. Where paragraphs 16–19 are applicable, the client should retain external experts with appropriate regional experience to assist in the development of a mitigation hierarchy that complies with this Performance Standard and to verify the implementation of those measures.	Eni Ghana has engaged the services of ERM, ESL and FFI

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
9.	Habitat is defined as a terrestrial, freshwater, or marine geographical unit or airway that supports assemblages of living organisms and their interactions with the non-living environment. For the purposes of implementation of this Performance Standard, habitats are divided into modified, natural, and critical. Critical habitats are a subset of modified or natural habitats.	In the BMP: *Figure 7.1* provides details of Land Cover within the concession area. *Figure 7.3* provides details of Habitat Sensitivity within the concession area. *Appendix D* is a Critical Habitat Assessment where maps and figures are included.
10.	For the protection and conservation of biodiversity, the mitigation hierarchy includes biodiversity offsets, which may be considered only after appropriate avoidance, minimization, and restoration measures have been applied. A biodiversity offset should be designed and implemented to achieve measurable conservation outcomes that can reasonably be expected to result in no net loss and preferably a net gain of biodiversity; however, a net gain is required in critical habitats. The design of a biodiversity offset must adhere to the "like-for-like or better" principle and must be carried out in alignment with best available information and current practices. When a client is considering the development of an offset as part of the mitigation strategy, external experts with knowledge in offset design and implementation must be involved.	BAPs have defined biodiversity Offset / Additional conservation options through collaborations outlined in the BMP (e.g. Birdlife International and Ghana Wildlife Society) Offset / Additional conservation actions for sea turtles include establishing beach surveillance through collaboration with a local NGO, effectively communicating that the harvest of eggs and turtles is an illegal activity to the community, engage and contribute to existing community-based turtle conservation programmes and support the establishment of a biodiversity committee between the relevant development projects in the district
12.	This Performance Standard applies to those areas of modified habitat that include significant biodiversity value, as determined by the risks and impacts identification process required in Performance Standard 1. The client should minimize impacts on such biodiversity and implement mitigation measures as appropriate.	Mitigation measures outlined in Section 9 as determined by the ESHIA. The Avian BAP identifies actions for hooded vultures to ensure NNL (Section 5)
Natural Habitat		

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
13.	Natural habitats are areas composed of viable assemblages of plant and/or animal species of largely native origin, and/or where human activity has not essentially modified an area's primary ecological functions and species composition.	In the BMP: *Figure 7.2* provides details of Land Cover within the concession area. *Figure 7.3* provides details of Habitat Sensitivity within the concession area. *Appendix F*: No Net Loss Strategy for Natural Wetlands of the BMP indicates the surface of natural habitat land take expected for the Concession Area.
14.	The client will not significantly convert or degrade natural habitats, unless all of the following are demonstrated: • No other viable alternatives within the region exist for development of the project on modified habitat; • Consultation has established the views of stakeholders, including Affected Communities, with respect to the extent of conversion and degradation; and • Any conversion or degradation is mitigated according to the mitigation hierarchy.	Alternative analysis completed for the ESHIA. Summary of the Alternatives included in Section 8 of the BMP regarding: analysis of habitats, analysis of fauna and biodiversity, analysis of ecosystem services including stakeholder consultation undertaken. Public consultation completed during the ESHIA Mitigation measures documented in Section 9 of the BMP
15.	In areas of natural habitat, mitigation measures will be designed to achieve no net loss of biodiversity where feasible. Appropriate actions include: • Avoiding impacts on biodiversity through the identification and protection of set-asides; • Implementing measures to minimize habitat fragmentation, such as biological corridors; • Restoring habitats during operations and/or after operations; and • Implementing biodiversity offsets.	Mitigation measures outlined in Section 9 of the BMP as determined by the ESHIA and *Appendix F*: No Net Loss Strategy for Natural Wetlands Additional mitigation measures and key indicators included in the BMP's complementary plans and procedures in Section 10 including: Fauna and Flora Monitoring Plan, Invasive Species Prevention and Control Procedure, Reinstatement and Revegetation Plan and Topsoil Management Procedure. Biodiversity offset options have been identified in the Avian BAP (Section 5).
Critical Habitat		

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
16.	Critical habitats are areas with high biodiversity value, including (i) habitat of significant importance to Critically Endangered and/or Endangered species; (ii) habitat of significant importance to endemic and/or restricted-range species; (iii) habitat supporting globally significant concentrations of migratory species and/or congregatory species; (iv) highly threatened and/or unique ecosystems; and/or (v) areas associated with key evolutionary processes.	Critical habitat assessment (CHA) developed in conjunction with supplementary field surveys. Included as *Appendix D* to the BMP
17.	In areas of critical habitat, the client will not implement any project activities unless all of the following are demonstrated: • No other viable alternatives within the region exist for development of the project on modified or natural habitats that are not critical; • The project does not lead to measurable adverse impacts on those biodiversity values for which the critical habitat was designated, and on the ecological processes supporting those biodiversity values; • The project does not lead to a net reduction in the global and/or national/regional population of any Critically Endangered or Endangered species over a reasonable period of time; and • A robust, appropriately designed, and long-term biodiversity monitoring and evaluation program is integrated into the client's management program.	Critical habitat assessment (CHA) developed and included as *Appendix D* to the BMP. The location of critical habitats has been identified. Alternative analysis completed for the ESHIA. Summary of the Alternatives included in Section 8 of the BMP regarding: analysis of habitats, analysis of fauna and biodiversity, analysis of ecosystem services including stakeholder consultation undertaken. Impacts on those biodiversity values for which the critical habitat was designated are not assessed as measurable adverse, after implementation of the mitigation hierarchy, as documented in the ESHIA Section 9 of the BMP, including no net reduction of national/regional population of any CE or EN species over a reasonable period of time; As part of this BMP, a Fauna and Flora Monitoring Plan (plan ms hse 018 eni Ghana) has been developed as part of the Environmental Monitoring Program. The BAP further detail the long term monitoring details for the species and habitats of concern.
18.	In such cases where a client is able to meet the requirements defined in paragraph 17, the project's mitigation strategy will be described in a Biodiversity Action Plan and will be designed to achieve net gains of those biodiversity values for which the critical habitat was designated.	Mitigation measures outlined in Section 9 of the BMP as determined by the ESHIA and according the mitigation strategy Sea turtles and avian BAPs have been completed for species may either likely or potentially trigger critical habitat that can be potentially affected by the project (avian species and sea turtles respectively). BAPs apply the mitigation hierarchy, and consider how to achieve net gains.

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
19.	In instances where biodiversity offsets are proposed as part of the mitigation strategy, the client must demonstrate through an assessment that the project's significant residual impacts on biodiversity will be adequately mitigated to meet the requirements of paragraph 17.	The need for a biodiversity offset has been identified as necessary for the project in the Avian BAP. Preliminary biodiversity offset options have been identified through collaborations outlined in the BMP (Birdlife International).
20.	In circumstances where a proposed project is located within a legally protected area or an internationally recognized area, the client will meet the requirements of paragraphs 13 through 19 of this Performance Standard, as applicable. In addition, the client will: • Demonstrate that the proposed development in such areas is legally permitted; • Act in a manner consistent with any government recognized management plans for such areas; • Consult protected area sponsors and managers, Affected Communities, Indigenous Peoples and other stakeholders on the proposed project, as appropriate; and • Implement additional programs, as appropriate, to promote and enhance the conservation aims and effective management of the area.	Legally protected area or internationally recognized areas are outlined in the ESHIA (Section 6.5.4) and Section 7.3 of the BMP and a map is provided. The ESHIA has been approved by The Ghanaian Government. Extensive consultation has taken place with all local stakeholders with relevance in the area, as detailed in the ESHIA. With respect to other stakeholder and additional programs the BMP outlines the following actions: 'eni will made all reasonable efforts to engage constructively and maintain healthy relationships with local stakeholders, governmental and non-government organisations (NGOs) and all affected or interested members of the public in proximity to the project. Engagement with stakeholders and commitment with locally relevant organizations have been considered in the BAPs. Relevant stakeholders in biodiversity conservation are defined in the Sea Turtles BAP (Section 3) and Avian BAP (Section 3) (e.g., eni collaboration with relevant authorities or organizations with regards to the Amansuri Wetlands IBA; eni Ghana will collaborate with relevant organizations (e.g. GWS) to undertake beach patrol and monitoring activities, establish beach surveillance, effectively communicating that the harvest of eggs and turtles is an illegal activity to the community, engage and contribute to existing community-based turtle conservation programmes and support the establishment of a biodiversity committee between the relevant development projects in the district).
Invasive Alien Species		

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
21.	Intentional or accidental introduction of alien, or non-native, species of flora and fauna into areas where they are not normally found can be a significant threat to biodiversity, since some alien species can become invasive, spreading rapidly and out-competing native species.	Presence and threat of Invasive Alien Species acknowledged in the BMP. Some mitigation measures outlined in the Section 9 of the BMP. Additional actions included in the BMP complementary plan: Invasive Species Prevention and Control Procedure, in Section 10.2 of the BMP. A specific Work Instruction has been prepared (Prevention and Control of AIS – Work Instruction_opi ms hse 025 eni ghana).
22.	The client will not intentionally introduce any new alien species (not currently established in the country or region of the project) unless this is carried out in accordance with the existing regulatory framework for such introduction. Notwithstanding the above, the client will not deliberately introduce any alien species with a high risk of invasive behavior regardless of whether such introductions are permitted under the existing regulatory framework. All introductions of alien species will be subject to a risk assessment (as part of the client's environmental and social risks and impacts identification process) to determine the potential for invasive behavior. The client will implement measures to avoid the potential for accidental or unintended introductions including the transportation of substrates and vectors (such as soil, ballast, and plant materials) that may harbor alien species.	Detailed information provided in Invasive Species Prevention and Control Procedure, in Section 10.2 of the BMP. A specific Work Instruction has been prepared (Prevention and Control of AIS – Work Instruction_opi ms hse 025 eni ghana).
23.	Where alien species are already established in the country or region of the proposed project, the client will exercise diligence in not spreading them into areas in which they have not already been established. As practicable, the client should take measures to eradicate such species from the natural habitats over which they have management control.	Detailed information provided in Invasive Species Prevention and Control Procedure, in Section 10.2 of the BMP. A specific Work Instruction has been prepared (Prevention and Control of AIS – Work Instruction_opi ms hse 025 eni ghana).
24.	Where a project is likely to adversely impact ecosystem services, as determined by the risks and impacts identification process, the client will conduct a systematic review to identify priority ecosystem services. Priority ecosystem services are two-fold: (i) those services on which project operations are most likely to have an impact and, therefore, which result in adverse impacts to Affected Communities; and/or (ii) those services on which the project is directly dependent for its operations (e.g., water). When Affected Communities are likely to be impacted, they should participate in the determination of priority ecosystem services in accordance with the stakeholder engagement process as defined in Performance Standard 1.	Ecosystem services are considered in the ESIA (Section 6.7) and in the Livelihood Restoration Plan. Summary included in Section 7.4 of the BMP. The Livelihood Restoration Plan involved the involvement of local communities. Summary included in Section 7.4 of the BMP.

Paragraph Ref No:	Requirements of IFC PS 6	Alignment with IFC PS6 in the Biodiversity Management Plan
25.	With respect to impacts on priority ecosystem services of relevance to Affected Communities and where the client has direct management control or significant influence over such ecosystem services, adverse impacts should be avoided. If these impacts are unavoidable, the client will minimize them and implement mitigation measures that aim to maintain the value and functionality of priority services. With respect to impacts on priority ecosystem services on which the project depends, clients should minimize impacts on ecosystem services and implement measures that increase resource efficiency of their operations, as described in Performance Standard 3. Additional provisions for ecosystem services are included in Performance Standards 4, 5, 7, and 8.	Ecosystem services are considered in the ESIA (Section 6.7) and in the Livelihood Restoration Plan. Summary included in Section 7.4 of the BMP and mitigation measure included in *Table 8.1* of the BMP.
26-30	Clients who are engaged in the primary production of living natural resources, including natural and plantation forestry, agriculture, animal husbandry, aquaculture, and fisheries, will be subject to the requirements of paragraphs 26 through 30, in addition to the rest of this Performance Standard. Where feasible, the client will locate land-based agribusiness and forestry projects on unforested land or land already converted. Clients who are engaged in such industries will manage living natural resources in a sustainable manner, through the application of industry-specific good management practices and available technologies. Where such primary production practices are codified in globally, regionally, or nationally recognized standards, the client will implement sustainable management practices to one or more relevant and credible standards as demonstrated by independent verification or certification.	The project does not involve primary production of living natural resources

Appendix D: Critical Habitats Assessment

Appendix E: Flora Conservation Plan

Appendix F: No Net Loss for Natural Wetlands

Appendix G: Desktop Identification of Wetlands Habitats