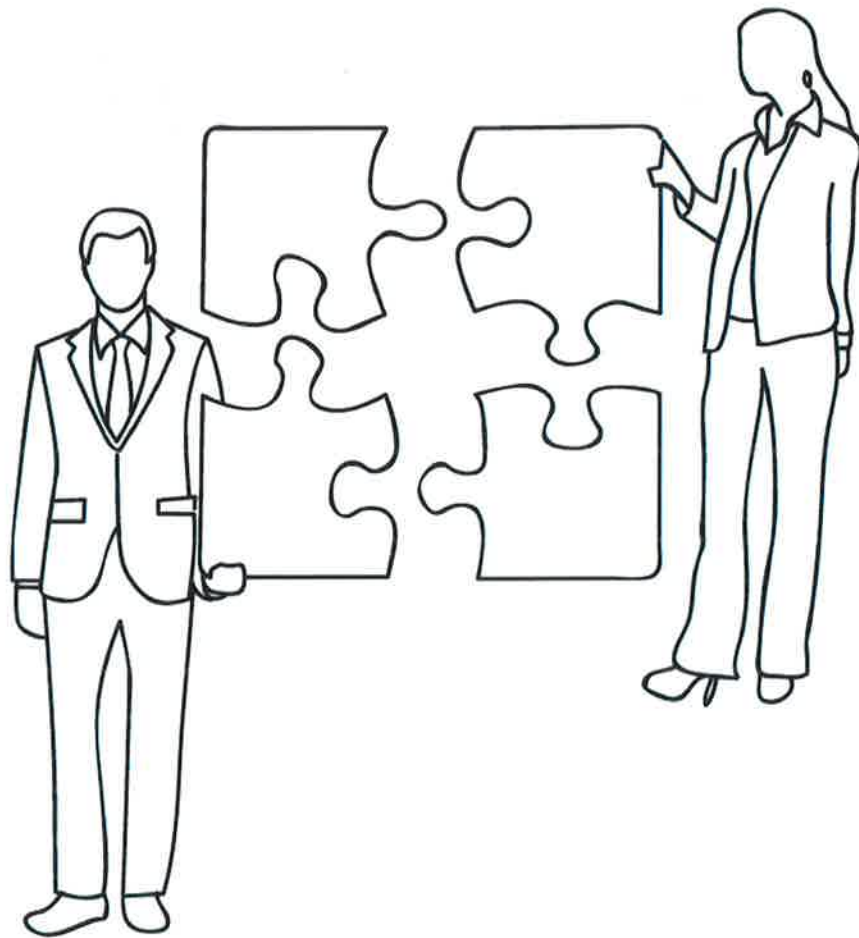


Plan

plan ms hse 014 Eni Ghana - "Marine Mammals and Sea Turtles Protection Policy and Plan"



TITLE:

MARINE MAMMALS AND SEA TURTLES PROTECTION POLICY AND PLAN

NOTE:

Applicable to: Construction & Development Drilling Phase and Production phase

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1. Purpose

Eni Ghana has developed this Marine Mammal and Sea Turtle Protection Policy and Plan (MMSTPPP) 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 a risk to marine mammals and sea turtles. This Plan sets out potential impacts and consequences specifically relating to marine mammals and sea turtles and describes measures to mitigate them during Project activities. Eni Ghana will use commercially reasonable efforts to require contractors, or other intermediaries procuring labour, to apply these measures.

The specific objectives of the Marine Mammal and Sea Turtle Protection Policy and Plan are to:

- Support the development a comprehensive policy and supporting procedures on the protection of marine mammals and sea turtles; and
- promote effective implementation of the commitments made during the ESHIA as well other necessary commitments relating to the protection of marine mammals and sea turtles.

Eni Ghana remains the ultimate responsible party for compliance with ESHIA commitments, and will establish means for monitoring/supervision of contractor's performance.

The Marine Mammal and Sea Turtle Protection Policy and Plan should be read in conjunction with other Company documents:

- Appendix A - Marine Mammal and Sea Turtle Monitoring Programme, as part of this Marine Mammal and Sea Turtle Protection Policy and Plan.
- Sea Turtle Biodiversity Action Plan (BAP), prepared as part of the Biodiversity Management Plan (BMP).

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. Eni Ghana will ensure that the stakeholder engagement activities undertaken with affected fishermen communicate messages related to marine mammals and sea turtle protection.



This MMSTPPP is a live document and will be updated according to any needs arising as the Project progresses, including as a result of the pre-construction beach survey for sea turtles and the planned ecological and environmental monitoring.

2. Applicability

This Plan describes the requirements for Eni Ghana with regard to the protection of offshore and nearshore marine mammals and sea turtles related aspects, applicable during the construction and development drilling phase as well as the production phase of the Offshore Cape Three Points (OCTP) Project.

Health	Safety	Environment	Social / Sustainability
		X	



3. References

3.1 Internal References

- Eni HQ Sustainability Policy;
- Eni Ghana Sustainability Guideline;
- Ghana OCTP Block Phase 1 Environmental, Social and Health Impact Assessment, ESL, June 2015. Doc. 000415_DV_CD.HSE.0208.000_00, Rev 04;
- Ghana OCTP Block Phase 2 Environmental, Social and Health Impact Assessment, ERM, Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05;
- plan ms hse 009 Eni Ghana r00 Environmental Monitoring Plan, Annex S to Ghana OCTP Block ESHMP;
- plan ms hse 013 Eni Ghana r00 Marine Traffic Management Plan, Annex L to Ghana OCTP Block ESHMP;
- plan ms hse 019 Eni Ghana r00 Biodiversity Management Plan (BMP), Annex V to Ghana OCTP Block ESHMP;
- plan ms hse 019 Eni Ghana r00 – Appendix B Sea Turtle Biodiversity Action Plan (BAP), appendix to the Biodiversity Management Plan (BMP);
- prog sg hse 004 Eni Ghana r00 Terms of Reference for Sea Turtle Surveys for the OCTP Project, Rev 00;
- ESL Consulting (2014). "Appendix E - Sea Turtle Survey Report" in: Offshore Cape Three Points Field Development - Dry Season Environmental Baseline Report. April 2014.

3.2 External References

- The IUCN Red List of Threatened Species. <www.iucnredlist.org>.
- Tullow Ghana Ltd, September 2014. Tweneboa, Enyenra, Ntomme (TEN) Project, Ghana. Final Environmental Impact Statement Volume 2;
- WBG 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;



- Marine Mammal Observer Association Position Statements, 2012. www.mmo-association.org;
- Joint Nature Conservation Committee Deckforms
jncc.defra.gov.uk/docs/Deckforms_rev04.doc; and
- Seawatch Foundation SWF RF2 Vessel-Based Effort Form
<http://www.seawatchfoundation.org.uk/recording-and-submitting-sightings/>.



4. Acronyms

AoI	Area of Influence
BAP	Biodiversity Action Plan
BMP	Biodiversity Management Plan
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
ESHIA	Environmental, Social and Health Impact Assessment
ESHMP	Environment, Social and Health Management Plan
FPSO	Floating Production Storage and Offtake Vessel
GWS	Ghana Wildlife Society
HSE IMS	Health, Safety and Environment Integrated Management System
IFI	International Finance Institutions
IUCN	International Union for the Conservation of Nature
MMO	Marine Mammal Observer
MMSTPPP	Marine Mammal and Sea Turtle Protection Policy and Plan
MODU	Mobile Offshore Drilling Unit
NAG	Non-Associated Gas
NGO	Non-Governmental Organisation
OCTP	Offshore Cape Three Points
ORF	Onshore Receiving Facilities
OSCP	Oil Spill Contingency Plan
ROV	Remotely Operated Vehicle



ToR	Terms of Reference
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5. Legal Requirement

Various laws, policies, systems, standards and international good practice codes are applicable to the implementation of this Plan. Such requirements are outlined in Section 6 of the ESHMP. Further detail is provided in Chapter 3 of the Phase 2 ESHIA (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05).

Ghanaian laws and regulations of particular relevance for managing and implementing this Plan include, but are not limited to:

- Wild Animals Preservation Act, Act 235 1964;
- Wildlife Conservation Regulations 1971 (LI 685).

Eni Ghana policies, guidelines and programmes that are relevant to managing and implementing this Plan have been listed in Section 3.1, Internal References.



6. Surveys

Three sea turtle survey of beach habitat have been undertaken:

- A sea turtle survey of beach habitat within the Project AoI was undertaken in April 2014 to inform the Phase 2 ESHIA, and its results were taken into consideration in the impact assessment and definition of mitigation measures.
- An additional pre-construction sea turtle survey of beach habitat within the Project AoI was undertaken in November 2015 which has been used to further inform this Plan.
- A beach light assessment survey and a training session to the NGO GWS Sea turtles monitoring task force were performed by FFI and ESL. The NGOs GWS, WildSeas, and Friends of the Nations, were interviewed by FFI.

Details on the aim and conclusions of the 2015 field survey are presented in *Section 8.2 Sea Turtle Baseline*.



7. Marine Mammal and Sea Turtle Protection Policy

Eni Ghana is committed to achieving the highest practicable standard of environmental protection, as documented in the Eni Policies (in particular the Sustainability Policy) and the Eni Ghana Health, Safety and Environment (HSE) and Sustainability Guidelines. This commitment includes mitigating any adverse environmental effects of the Project on marine mammals and sea turtles.



8. Marine Mammal and Sea Turtle Protection Plan

8.1 Marine Mammal Baseline

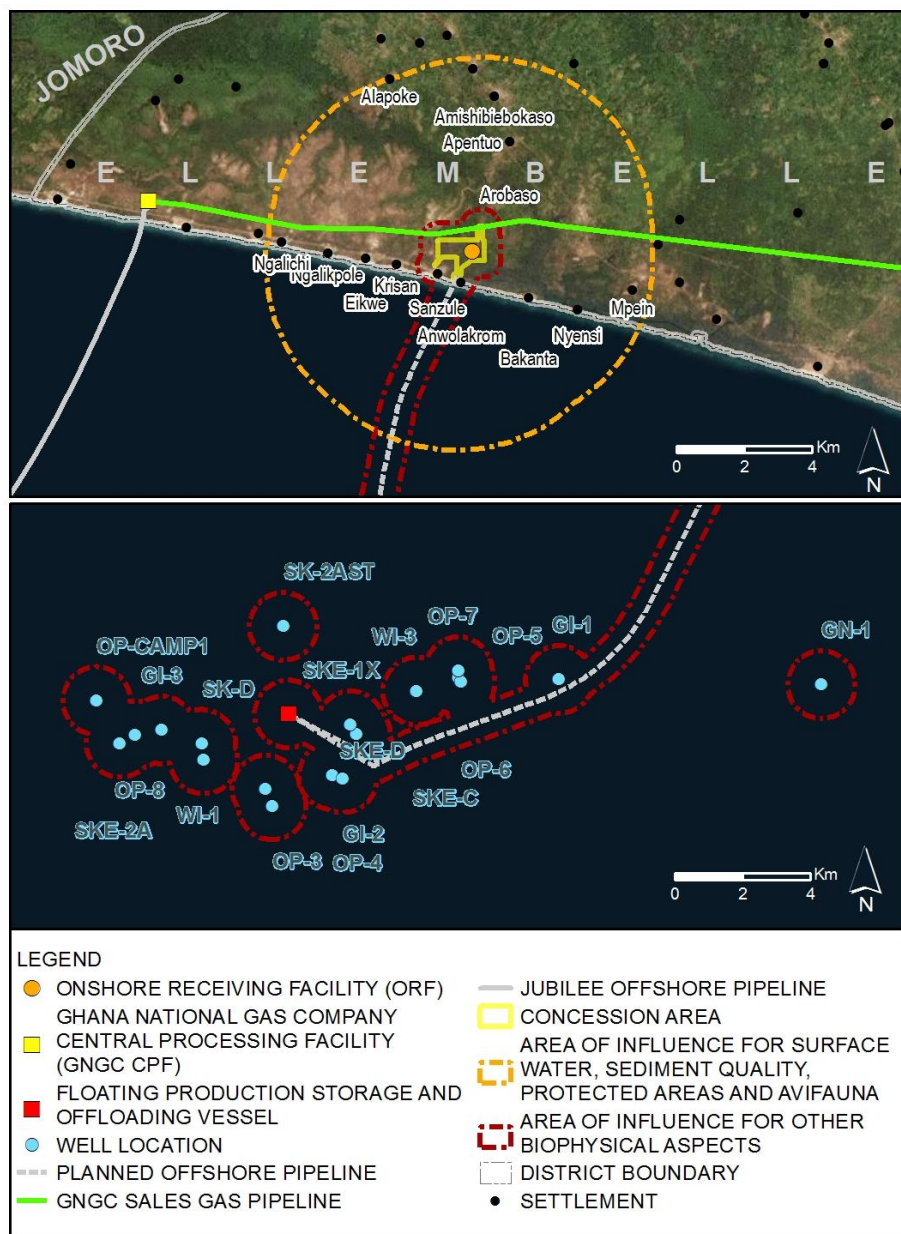
The Ghanaian offshore area is considered to be favourable habitat for marine mammals, especially due to the seasonal upwelling which increases productivity and ensures food availability. The major upwelling occurs throughout the long cold season (June to October) and the minor upwelling lasts for about 3 weeks, generally coinciding with the short cold season (January to February), although it has been known to occur anytime between December and March.

Although their ranges are known to include the Gulf of Guinea and Ghanaian waters, there is a paucity of knowledge on the distribution, population levels and ecology of cetaceans in the region. It is known, however, that the humpback whale (*Megaptera novaeangliae*) migrates to the Ghanaian continental shelf for breeding, remaining in the region mainly from August to December.

According to the data gathered from direct observations at sea, fishermen by-catches and beach strandings, at least 20 *cetacean* species belonging to five families could be present in Ghanaian waters and thus the Project AoI (*Figure 8.1*), as permanent residents or temporary visitors. These species are detailed in *Table 8.1*. *Figure 8.2* provides an illustration of the preferred vessel transit route.

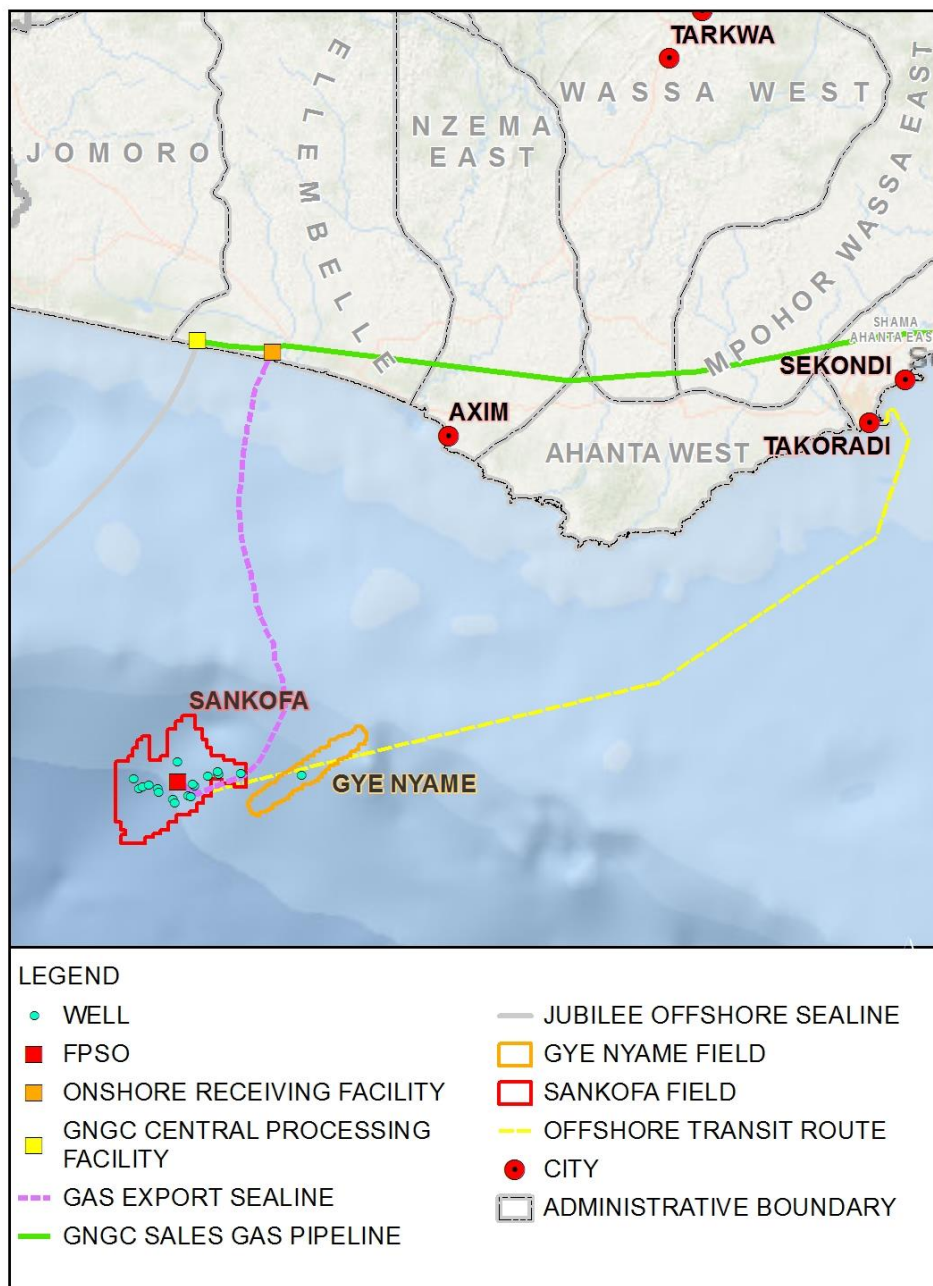


Figure 8.1 Environmental Area of Influence (AoI)



Source: ERM, 2017

Figure 8.2 Offshore Transit Route



Source: ERM, 2017

Table 8.1 Whales and Dolphins known from Ghana

Scientific name	Common name	Red List Category	Seasonality	Main Habitat
<i>Balaenoptera borealis</i>	Sei whale	Endangered	Not known	Offshore
<i>Delphinus capensis</i>	Long-beaked common dolphin	Data Deficient	All year	Coastal (continental shelf)
<i>Delphinus delphis</i>	Short-beaked Common Dolphin	Least Concern	Not known	Coastal and offshore
<i>Feresa attenuata</i>	Pygmy killer whale	Data Deficient	All year	Offshore (slope and deep water areas)
<i>Globicephala macrorhynchus</i>	Short-finned pilot whale	Data Deficient	All year	Offshore
<i>Grampus griseus</i>	Risso's dolphin	Least Concern	All year	Coastal and offshore
<i>Kogia sima</i>	Dwarf sperm whale	Data Deficient	All year	Offshore
<i>Lagenodelphis hosei</i>	Fraser's dolphin	Least Concern	All year	Offshore
<i>Megaptera novaeangliae</i>	Humpback Whale	Least Concern	August-December	Coastal
<i>Orcinus orca</i>	Killer whale	Data Deficient	All year	Coastal and offshore
<i>Peponocephala electra</i>	Melon-headed whale	Least Concern	All year	Offshore
<i>Physeter macrocephalus</i>	Sperm whale	Vulnerable	All year	Offshore
<i>Pseudorca crassidens</i>	False killer whale	Data Deficient	All year	Coastal and offshore
<i>Stenella attenuata</i>	Pantropical spotted dolphin	Least Concern	All year	Offshore
<i>Stenella clymene</i>	Clymene dolphin	Data Deficient	All year	Offshore
<i>Stenella frontalis</i>	Atlantic spotted dolphin	Data Deficient		Coastal and offshore
<i>Stenella longirostris</i>	Spinner dolphin	Data Deficient	All year	Offshore

Scientific name	Common name	Red List Category	Seasonality	Main Habitat
<i>Steno bredanensis</i>	Rough-toothed dolphin	Least Concern	All year	Offshore
<i>Tursiops truncatus</i>	Common bottlenose dolphin	Least Concern	All year	Coastal and offshore
<i>Ziphius cavirostris</i>	Cuvier's beaked whale	Least Concern	All year	Offshore

Source: IUCN, 2014 and Tullow, 2014

Based on their ecology and habitat requirements it is possible that other species, in particular baleen whales, could be present in the AoI, both in deeper waters in the vicinity of the wells and in shallower coastal areas close to pipeline route.

8.2 Sea Turtle Baseline

Five species of sea turtle are known to occur along the coast of Ghana and the adjacent offshore areas, as outlined in *Table 8.2*. Of these species, three are listed as Endangered/Critically Endangered according to the IUCN assessment.

Table 8.2 Turtles known from Ghana

Scientific name	Common name	Red List Category
<i>Caretta caretta</i>	Loggerhead turtle	Endangered
<i>Chelonia mydas</i>	Green turtle	Endangered
<i>Dermochelys coriacea</i>	Leatherback turtle	Vulnerable
<i>Eretmochelys imbricata</i>	Hawksbill turtle	Critically Endangered
<i>Lepidochelys olivacea</i>	Olive ridley	Vulnerable

Source: IUCN, 2014



The Gulf of Guinea serves as an important migration route, feeding ground, and nesting site for sea turtles. Nesting can happen at any time of year however, a peak in activity occurs between the months of October and January. Of the five species which may be expected in the Project AoI, three (leatherback turtle, olive ridley and green turtle) are known to regularly nest in the beaches along the Western Region of Ghana. The beaches within the Project AoI are suitable nesting habitat as they are gently sloping and face no threat from erosion. The absence of dense grasses at the back of the beach is also considered positive for turtle nesting as it facilitates egg chamber construction.

Nesting activity by green turtles in the Project AoI has been observed to occur from June to August, whilst the olive ridley has been reported to nest all year round, with a peak between October and December. The leatherback turtles nest primarily in November and December. Offshore sightings of sea turtles are known throughout the year, though most are reported between October and December.

Sea Turtle Field Survey

As mentioned in *Section 6 - Surveys*, sea turtle surveys of beach habitat were undertaken in 2014 and in 2015. The main objective 2015 survey was to improve understanding of the current usage of the beaches along the AoI of the Project as nesting sites for sea turtles as well as the likely presence and habitat suitability for turtles. The survey also established the socio-ecological context within which turtles exist and the strategies necessary to enhance turtle conservation and future protection on the beaches within the Project AoI. The survey covered the beaches that extend 2.5 km from each side of the pipeline landfall location (See Figure 8.1).

Following is a summary of the conclusions of the field survey:

- Observations made during the field survey show that the beaches within the Project AoI are utilized by sea turtles as nesting habitat. During the survey period and within the project AoI, nesting of Olive Ridley (IUCN status: Vulnerable) was observed and four activities (3 nests and 1 non-nesting emergence) were encountered. No nesting was observed in the pipeline landfall location.
- Sea turtles are reported to nest primarily from October to February with peak nesting occurring in October. Community members are reported to encounter sea turtles during their day to day activities. However, their knowledge about sea turtle species and their ecological roles is generally poor.



- Sea turtle nesting numbers are reported to have decreased drastically in the past 10 years. This is aligned with the low evidence of nesting density recorded during the survey, despite being peak nesting season. Major threats to sea turtle in the area identified include harvesting of nesting females, collection of eggs, beach sand mining, erosion, nest inundation, and artificial beach front lighting. There are currently a few organisations, including Ghana Wildlife Society and Wild Seas (Project "Bahari Karuna") supporting sea turtle conservation through education and beach patrols.
- The available evidence suggests that the Project AoI should be treated as an important nesting site. The Project should therefore put the necessary measures in place to mitigate any potential threat to the sea turtles and their nesting habitat.

Further details on the field survey results are available in the *attachment Sea Turtles Pre-construction Survey Report for the OCTP Project of Appendix B of the Sea Turtles Biodiversity Action Plan of the Biodiversity Management Plan (plan ms hse 019 Eni Ghana)*.

8.3 Potential Impacts

Construction and Development Drilling

As identified in the Phase 2 ESHIA, aspects of the construction and development drilling activity which may affect marine mammals and sea turtles offshore include increased vessel activity, noise emissions, physical presence, light emissions and reduced water quality. Resulting potential impacts include behavioural changes (such as avoidance behaviour), direct injury and mortality and a reduction in reproduction success. These are presented in *Table 9.1* together with the management and monitoring measures considered to address them.

Onshore, the key potential effects will be from the construction of the pipeline landfall, which may result in additional impacts such as physical disturbance and mortality of eggs in nests, and disorientation of adult turtles and hatchlings due to Project lighting.

However, it shall be noted that the change in the Landfall construction method from open trench to the direct pipeline (using an horizontal direct drilling starting from the tie-in point located about 200m onshore and exiting about 800m offshore) will prevent any loss of nesting habitat and will minimise the disturbance and mortality of eggs in nests. The



landfall work site will be shaded by the untouched high vegetation (raffia and coconut trees) extending for 200m from the worksite to the shore, preventing potential light disturbance.

An increase in poaching of turtles and their eggs is also possible due to the influx of workers to the coast in the Project AoI, also leading to mortality and reduced reproduction success.

Production Phase

Regarding the Production phase, as identified in the Phase 2 ESHIA, aspects which may affect marine mammals and sea turtles offshore include increased vessel activity, noise emissions, physical presence, light emissions and reduced water quality. Resulting potential impacts include behavioural changes (such as avoidance behaviour), direct injury and mortality and a reduction in reproduction success. Compared to the construction and development drilling phase, the potential impacts due to the production phase are considerably lower due to the minor activity involved. These are presented in Table 9.2 together with the management and monitoring measures considered to address them.

Onshore, no potential impacts are foreseen during the production phase, since the shoreline area at landfall will remain untouched and no loss of nesting habitat will occur. Moreover, the only permanent onshore Project facilities will be at about 1km from the shore with no chance for lighting disturbance to sea turtles.

An increase in poaching of turtles and their eggs is not foreseen during the production phase given the very small number of workers expected during production (estimated in 40 employees at onshore facilities).



9. Protection Plan

The objective of this plan is to describe the practical measures that Eni Ghana will implement to minimize the impact on marine mammals and sea turtles during construction and development drilling activity as well as during the production phase.

9.1 Management and Monitoring

- Management and monitoring measures are defined on the basis of the ESHIA outcomes, combined with applicable legal requirements and other relevant industry good practice.
- Eni Ghana and its contractors are required to implement and comply with the management and monitoring requirements described in the *Table 9.1* and *Table 9.2* as appropriate to their scope of work in order to avoid, minimize and control impacts and risks with regard to marine mammals and sea turtles.
- Within *Table 9.1* and *Table 9.2*, the column entitled 'ESH Commitment' reports the commitment by the Project in terms of management, monitoring or avoidance measures. The 'Compliance Monitoring' column specifies how the commitment should be implemented and that should be checked to assess compliance with the requirements of this plan.
- In addition to the mitigation measures presented in *Table 9.1* and *Table 9.2*, which are specifically designed to avoid or mitigate impacts on sea turtles and marine mammals, all mitigation measures focused on proper waste management, avoidance of water pollution, minimization of the risk of unplanned events and the Oil Spill Contingency Plan (OSCP) as well as the results of consultations and information exchange with Ghana Wildlife society (GWS) or other applicable NGOs will also contribute to avoiding or limiting potential impacts on sea turtles and marine mammals.

GWS has an ongoing Marine Turtles Conservation Programme, which includes research and conservation, addressing the sources of mortality threatening the sea turtles of Ghana. They are also currently working with the Ellembelle District Assembly (among others) to enhance local capacity to monitor (and act upon) environmental threats of the emerging oil and gas industry.



The Wild Seas NGO runs a turtle conservation programme ('Bahari Karuna') in the area which aims at conserving the sea turtles and sharks through community work and involvement.

Further information on the programmes implemented by the two NGOs is included in the attachment *Sea Turtles Pre-construction Survey Report for the OCTP Project of Appendix B. Sea Turtle Biodiversity Action plan* of the of the *Biodiversity Management Plan (plan ms hse 019 eni Ghana r01)*.

GWS has been contracted by Eni Ghana in order to perform the ongoing sea turtles monitoring program developed by Flora and Fauna International (FFI). For further details, see *Appendix B. Sea Turtle Biodiversity Action plan* of the *Biodiversity Management Plan (plan ms hse 019 eni Ghana r01)*.



Table 9.1 Management and Monitoring during Construction and Development Drilling Phase

Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Disturbance to marine mammals and sea turtles at sea due to physical presence of the Project	A Marine Mammal and Sea Turtle Monitoring Programme will be implemented throughout the construction and development drilling phase, to include both dedicated watches by an experienced observer and incidental sightings by any personnel (all vessels to be provided with datasheets to complete as part of daily reporting, should a sighting be made). Monitoring results will be reviewed by an experienced marine biologist <i>with good knowledge of turtle and mammal taxonomy</i>.	Contractor	Monitoring	ESHIA Phase 2 Annex G Section G.12.5.1	Audit to verify the existence of the Marine Mammal and Sea Turtle Monitoring Programme. Assessment of the effective implementation of the Marine Mammal and Sea Turtle Monitoring Programme throughout construction and development drilling including monthly audit of datasheets.	Continuous recording of incidental sightings throughout construction and development drilling by trained offshore Eni/contractors personnel. Dedicated watches twice monthly from supply vessels with review after the second year. Audit of field sheets. Annual review of results by marine specialist.	Eni Ghana HSEQ Manager and Field Supervisors Marine Specialist Certified Marine Mammal Observers	Existence of suitable Marine Mammal and Sea Turtle Monitoring Programme Monitoring results
Disturbance of marine mammals and sea turtles due to vessel	Use of designated navigation channels by all Project vessels, where applicable (see Annex L <i>Marine Traffic Management Plan</i> for further details).	Contractor	Avoidance Monitoring	ESHIA Phase 1 Annex G Sections G.7.2.3	Audit of vessel tracking records to check compliance with designated navigation channels.	Measures in place throughout construction and development	Eni Ghana HSEQ Manager and Field Supervisors Eni Ghana	Number of reported incidents Number of



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
movements.	Vessel movements within 100 m of marine mammals will be strictly forbidden unless absolutely necessary for personnel safety. This will be implemented through constant vigilance and avoidance by vessel skippers when an animal is sighted and includes active avoidance if a cetacean surfaces in front of a vessel in transit (though no avoidance measures are necessary for bow/wake riding individuals). Project vessels to avoid sailing through areas with large aggregations of seabirds where possible, as this indicates the presence of fish, therefore feeding marine mammals may also be present in these areas. Vessels will not be allowed to intentionally approach marine mammals and sea turtles and, where practicable, will alter course or reduce speed to further limit the potential for disturbance. Vessel crews will report all incidents involving marine			G.7.2.4 and G.8.1.1 ESHIA Phase 2 Annex G Sections G.5.3.3 and G.5.6.3	Field audit of vessel speeds. Audit of incident records. Audit of marine mammal and sea turtle sighting results for behavioural effects.	drilling activity. Monthly auditing of sighting records and incident records. Quarterly auditing of vessel tracking and speed.	Logistics Manager Vessel skippers	behavioural effects recorded



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
	mammals and sea turtles and all sightings of dead or injured marine mammals and turtles, regardless of whether caused by the vessel itself.							
Disturbance of marine mammals and sea turtles due to underwater noise from vessels	Where possible, when vessels are patrolling, idle or backloading/offloading they will be powered down to safe operational levels.	Contractor	Reduction on/off site	ESHIA Phase 1 Annex G Sections G.7.2.5 and G.8.1.1	Field audit	Measures in place throughout construction and development drilling activity. Quarterly audit	Eni Ghana HSEQ Manager and Field Supervisors Eni Ghana Logistics Manager Vessel skipper	Field audit results
Disturbance of marine mammals and sea turtles due to underwater noise from equipment	All underwater noise generating work equipment (engines, propellers, dynamic positioning system) will be maintained in optimal condition as stated in the operating manuals. Preferential use of equipment with low noise ratings.	Contractor	Reduction on/off site	ESHIA Phase 1 Annex G Sections 7.2.4 and 8.1.1	Audit of all noise generating equipment to ensure correct type is being used with adequate noise protection. Auditing of maintenance records.	Project Planning / Design and construction and drilling activities.	Operations Manager	Equipment of correct type. Maintenance records.



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Mortality and injury to marine mammals and sea turtles due to marine discharges or due to ingestion of or entanglement in discarded marine debris	Compliance with Project Waste Management Plan requirements. The marine specialist will develop an incident/accident reporting and investigation procedure for sighting of dead, injured or oiled mammals and sea turtles. All sightings of dead, injured or oiled marine mammals and sea turtles in the Project AoI will be recorded and reported using the predefined procedure, (including a brief description and location of the event and the species and number of individuals affected) without attempting to touch or move the animal.	Contractor	Avoidance Management Monitoring	ESHIA Phase 1 Annex G Sections G.7.2.2 and G.8.1.1 ESHIA Phase 2 Annex G Section G.5.1.3	Compliance monitoring in accordance with Project Waste Management Plan. Audit of reported incidents.	Monitoring and audit in accordance with Waste Management Plan. Monthly audit of reported incidents.	Eni Ghana HSEQ Manager and Field Supervisors Certified Marine Mammal Observers	Compliance monitoring audit results Number of reported incidents



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Disturbance to and mortality of sea turtles during landfall construction.	Implementation of a BAP which will include detailed mitigation to address possible impacts on sea turtles, including active protection and monitoring during landfall construction (See Annex V – Biodiversity Management Plan and the associated BAP). The beach monitoring programme proposed within the BAP will be based on State of the Worlds Sea Turtles (SWOT) Minimum Data Standards for Sea Turtle Nesting Beach Monitoring and if possible will be designed to integrate with any existing monitoring programmes being undertaken by GWS.	Contractor	Management	ESHIA Phase 2 Annex G Section G.4.8.3	Audit to verify the existence and adequacy the Sea Turtle BAP and the proposed monitoring programme prior to construction and its implementation during construction and development drilling. Assessment of the effective implementation of the Sea Turtle BAP.	BAP development in Project Planning stage Implementation of actions, including monitoring measures, during landfall construction.	Eni Ghana HSEQ Manager and Field Supervisors Environmental Specialist	Existence of comprehensive Sea Turtle BAP including an appropriate beach monitoring programme. Monitoring results
Disturbance to and mortality of sea turtles during landfall construction (HDD)	Priority months for beach construction are March, April, May and June. All efforts will be put to ensure that the nesting periods are avoided for olive ridley and leatherback turtles between October and January inclusive. Where possible also avoid construction between June and	Contractor	Avoidance / Minimization	ESHIA Phase 2 Annex G Section G.5.6.3	Audit of construction design programme	Project Planning	Eni Ghana HSEQ Manager and Field Supervisors	Compliance of construction programme with seasonal restrictions.



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
	August which may be the peak season for green turtles. This will be confirmed in the first year of monitoring. Construction and pipeline installation is not expected to occur within 200 m of the beach. However where any future project activities are required in beach habitat, activities should be prioritized to occur outside of peak nesting season during the day, when less likely to encounter or disturb sea turtles. Update, where possible, construction schedule depending on the results of the sea turtle monitoring programme and to avoid the peak nesting period. Horizontal direct drilling has been selected as technical construction method for landfall construction, to minimize impacts on sea turtles.							
Disturbance of turtle nests during landfall	The sea turtle BAP Annex B to the Biodiversity Management Plan) will include a monitoring	Contractor	Mitigation	ESHIA Phase 2 Annex G	Audit of the Sea Turtle BAP to verify that it includes measures for a pre-work	BAP development in Project Planning	Eni Ghana HSEQ Manager and	Existence of measures within Sea



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
construction	plan in order to ensure that the works foreseen for the realization of the microtunnel through the horizontal direct drilling will not pose any impact to sea turtles potentially present in the area (See the Sea Turtles BAP for more details on the monitoring program)	Company	Monitoring	Section G.5.6.3	beach inspection and procedure to follow should nesting activity be discovered. Assessment of the effective relocation and monitoring of turtle nests within the works area.	stage. Implementation of actions immediately prior to and during landfall construction.	Field Supervisors Environmental Specialist	Turtle BAP. Results of pre-work survey. Results of relocation and monitoring assessments.



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Disorientation of turtle adults and hatchlings due to landfall construction lighting	The turtle BAP will include measures to minimize the effects of lighting on turtles including avoidance of night time construction activity to the extent possible. Use of directional lighting during installation of the pipeline landfall and on the ORF to minimize the spill of light onto the beach. Lightning at the ORF will be downward and limited to the minimum required for safety and security. The only lighting used during night time landfall construction will be 'turtle friendly' (e.g. Amber LED).	Contractor	Avoidance Reduction on/off site	ESHIA Phase 2 Annex G Section G.5.6.3	Audit of the Sea Turtle BAP to verify that it includes measures minimization of light disturbance. Audit of construction design programme. Assessment following lighting installation to ensure it complies with the required standards.	BAP development in Project Planning stage. Implementation of actions prior to and during landfall construction. Weekly inspection of lighting system during landfall construction.	Eni Ghana HSEQ Manager and Field Supervisors	Existence of measures within Sea Turtle BAP. Results of pre-work assessment and monthly inspections during landfall construction.



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Table 9.2 Management and Monitoring during Production Phase

Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Disturbance to marine mammals and sea turtles at sea due to physical presence of the Project	Incidental sightings will be regularly reported throughout the production phase. These may be reported by any member of staff, from any observation point (including the MODU, FPSO, standby vessels, supply vessels, anchor handling vessels, helicopters and supply vessels etc.), during any environmental conditions. Incidental sightings will be recorded using the sighting record form provided in Appendix A. Training will be provided to all personnel working nearshore and offshore regarding the identification of key marine mammal and sea turtle species expected in the area, and how to recognize their behaviour, the procedure to follow when an injured or dead marine mammal or turtle is found and should aim to ensure that at last one trained personnel	Contractor / Eni Ghana	Monitoring Training	ESHIA Phase 2 Annex G Section G.12.5.1	Incidental sighting form present onboard of all vessels	Continuous recording of incidental sightings throughout the production by trained offshore Eni/contractors personnel.	Eni Ghana HSEQ Manager and Field Supervisors	Number of filled sightings forms



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
	member is present on each vessel at all times.							
Disturbance of marine mammals and sea turtles due to vessel movements.	Use of designated navigation channels by all Project vessels, where applicable (see <i>Marine Traffic Management Plan</i> for further details). Vessel movements within 100 m of marine mammals will be strictly forbidden unless absolutely necessary for personnel safety. This will be implemented through constant vigilance and avoidance by vessel skippers when an animal is sighted and includes active avoidance if a cetacean surfaces in front of a vessel in	Contractor	Avoidance Monitoring Training	ESHIA Phase 1 Annex G Sections G.7.2.3 G.7.2.4 and G.8.1.1 ESHIA Phase 2 Annex G Sections G.5.3.3 and	Audit of vessel tracking records to check compliance with designated navigation channels. Field audit of vessel speeds. Audit of incident records. Audit of marine mammal and sea turtle sighting results for behavioural effects.	Measures in place throughout construction and development drilling activity. Monthly auditing of sighting records and incident records. Quarterly auditing of vessel tracking and speed.	Eni Ghana HSEQ Manager and Field Supervisors Eni Ghana Logistics Manager Vessel skippers	Number of reported incidents Number of behavioural effects recorded



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
	transit (though no avoidance measures are necessary for bow/wake riding individuals). Training will be provided to all personnel working nearshore and offshore regarding the identification of key marine mammal and sea turtle species expected in the area, and how to recognize their behaviour, the procedure to follow when an injured or dead marine mammal or turtle is found and should aim to ensure that at least one trained personnel member is present on each vessel at all times. Project vessels to avoid sailing through areas with large aggregations of seabirds where possible, as this indicates the presence of fish, therefore feeding marine mammals may also be present in these areas. Vessels will not be allowed to intentionally approach marine mammals and sea turtles and, where practicable, will alter course or reduce speed to further limit the potential for			G.5.6.3				



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
	disturbance. Training will be provided to all personnel regarding the procedure to follow in case of sighting of marine mammals/sea turtles Vessel crews will report all incidents involving marine mammals and sea turtles and all sightings of dead or injured marine mammals and turtles, regardless of whether caused by the vessel itself. Certified Marine Mammal Observers will be present on any vessel at any one time.							
Disturbance of marine mammals and sea turtles due to underwater noise from vessels	Where possible, when vessels are patrolling, idle or back loading/offloading they will be powered down to safe operational levels.	Contractor	Reduction on/off site	ESHIA Phase 1 Annex G Sections G.7.2.5 and G.8.1.1	Field audit	Measures in place throughout construction and development drilling activity. Quarterly audit	Eni Ghana HSEQ Manager and Field Supervisors Eni Ghana Logistics Manager Vessel skipper	Field audit results



Potential ESH Impact	IMPACT MANAGEMENT				IMPACT MONITORING			
	ESH Commitment	Responsible Party	Type	Source	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Disturbance of marine mammals and sea turtles due to underwater noise from equipment	All underwater noise generating work equipment (engines, propellers, dynamic positioning system) will be maintained in optimal condition as stated in the operating manuals. Equipment with low noise ratings will be selected.	Contractor	Reduction on/off site	ESHIA Phase 1 Annex G Sections 7.2.4 and 8.1.1	Audit of all noise generating equipment to ensure correct type is being used with adequate noise protection. Auditing of maintenance records.	Project Planning / Design and construction and drilling activities.	Operations Manager	Equipment of correct type. Maintenance records.
Mortality and injury to marine mammals and sea turtles due to marine discharges or due to ingestion of or entanglement in discarded marine debris	Compliance with Project Waste Management Plan requirements. All sightings of dead, injured or oiled marine mammals and sea turtles in the Project AoI will be recorded and reported using the predefined procedure, (including a brief description and location of the event and the species and number of individuals affected) without attempting to touch or move the animal.	Contractor	Avoidance Management Monitoring	ESHIA Phase 1 Annex G Sections G.7.2.2 and G.8.1.1 ESHIA Phase 2 Annex G Section G.5.1.3	Compliance monitoring in accordance with Project Waste Management Plan. Audit of reported incidents.	Monitoring and audit in accordance with Waste Management Plan.	Eni Ghana HSEQ Manager and Field Supervisors Certified Marine Mammal Observers	Compliance monitoring audit results Number of reported incidents



10. Roles and Responsibilities

Eni Ghana will develop a consolidated implementation schedule for all the commitments of the management plans, thus taking advantage of the suitable and beneficial synergies between all the Environmental and Social Management and Monitoring Plans developed for the OCPT Project.

Eni Ghana Responsible parties for implementation and monitoring of activities indicated in this plan are listed in *Table 10.1* 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.

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.

No more than two Certified Marine Mammal Observers will be needed on any vessel at any one time.

Table 10.1 provides further details on the responsibilities and duties of both Eni Ghana and contractors.



Table 10.1 Roles and Responsibilities across all Project Phases

Name/Title	Responsibilities	Duties
<i>Contractor</i>	Provide overall direction for project construction and for the production phase. Ultimately responsible that the work is conducted in accordance with all of the marine mammal and sea turtle protection policies.	▪ Control and supervise the correct implementation of the measures and commitments included within this plan and assigned under the responsibility of the contractor. ▪ Identify the contractor personnel responsible for carrying out and managing each of the commitments. ▪ Provide adequate training to the personnel in line with the requirements and responsibilities assigned to each position. ▪ Provide support to the audit, monitoring and assessment processes performed by Eni Ghana or third parties. ▪ Provide early notification of any incident or near miss related to sea turtles or marine mammal (sighting of stranded or injured individuals, collisions, etc.) to Eni Ghana HSE Team as well as the subsequent formal report of the incident. ▪ Provide certified Marine Mammals Observer on board of vessels.



Name/Title	Responsibilities	Duties
<i>Eni Ghana HSEQ Manager</i>	Provide overall HSE management and guidance on the implementation of this MMSTPPP. Coordinate overall verification, assessment, monitoring and auditing related to the MMSTPPP. Ensure that Contractors are complying with: ▪ The MMSTPPP, the ESHMP and the Contractor's HSE plan; ▪ Project requirements, specifications, and commitments for Marine Mammal and Sea Turtle Protection matters.	▪ Oversee Contractor programs for marine mammals and sea turtles monitoring and audits as specified in this MMSTPPP and its associated Monitoring Programme; generate the appropriate reports; and oversee any corrective actions; ▪ Coordinate Marine mammals and sea turtles protection related activities in response to routine or emerging issues; ▪ Collect Contractor monitoring and assessment reports in a timely manner; ▪ Communicate with Contractors regarding compliance issues (including permitting); ▪ Communicate with government authorities (i.e EPA) as required on marine mammals and sea turtles issues; ▪ Call in specialists to consult on specific problems or to conduct third-party audits as needed; ▪ Ensure the effective implementation and use of the trainings programs with respect to marine mammals and sea turtles protection issues.
<i>Eni Ghana Logistics Manager and Team</i>	▪ To participate in the definition and preparation of the technical documents for all logistic services tenders; to cooperate with the concerned department/s to the tender evaluation and final recommendation for the contracts award.	▪ Ensure, with the collaboration of HSE team, the technical requests in the tender documents for contractors are aligned with the requirements set within this MMSTPPP.



Name/Title	Responsibilities	Duties
<i>Eni Contracts and Procurement Manager and Team</i>	- To manage the company procurement process and coordinate the purchase and contract awarding process, by receiving the request of material/services, - arranging the tendering process, preparing the purchase order/contract to be awarded and relevant amendments.	Ensure, with the collaboration of HSE team, that the technical requests in the tender documents prepared for contractors or to acquire any supply are aligned with the requirements set within this MMSTPPP.
<i>Eni Operation manager</i>	Coordinate and implement overall verification, assessment, monitoring and auditing related to the MMSTPPP.	- Conduct independent monitoring and auditing to ensure compliance. - Communicate through verbal and written reports to the HSE team regarding compliance issues and areas of concern.
<i>Environmental Specialist (GWS)</i>	Coordinate along with the HSE Field Supervisor overall verification, assessment, monitoring and auditing related to the MMSTPPP.	- Support Eni Ghana HSE personnel to oversee Contractor's activities review monitoring compliance and reports, and conduct site visits. - Conduct independent monitoring and auditing to ensure compliance. - Communicate through verbal and written reports to the HSE team regarding compliance issues and areas of concern.



Name/Title	Responsibilities	Duties
<i>Eni Ghana HSEQ Field Supervisors</i>	- Coordinate environmental activities related to Marine Mammals and sea turtles protection and monitoring; - Communicate the results of verification, assessment, monitoring and auditing inspections to appropriate offices via transmittal of copies of original reports, summaries of reports, or periodic formal and informal reports as appropriate. - Communicate with HSE team (HSE coordinator and HSE Manager) regarding emerging issues and areas of concern. - Communicate (informally) with the Contractors regarding compliance issues.	- Work with Contractor HSE personnel: oversee activities performed, review monitoring compliance and reports, and conduct visits. - Plan and Conduct the independent verification, assessment, monitoring and auditing to ensure compliance with MMSTPPP requirements and communicate the results to both Eni Ghana HSE manager and contractor HSE personnel; - Oversee project requirements, specifications, and commitments for matters related to Marine Mammals and sea turtles protection and monitoring. - Communicate through verbal and written reports to the HSE Manager regarding compliance issues and areas of concern - Advise the Contractor field personnel concerning issues related to Marine Mammals and sea turtles protection and monitoring, including implementation of commitments, their verification, assessment, monitoring and auditing - Revise, in collaboration with Procurement and Contracts teams, the tendering and contracting documents for/with contractors to ensure all technical requirements set within this MMSTPPP are included and properly reflected in the documents.



Name/Title	Responsibilities	Duties
<i>Certified Marine Mammal Observers*</i>	Conduct the marine mammals and sea turtles monitoring.	- Conduct the monitoring according to the specifications set in the Appendix A (Monitoring Programme) to the present MMSTPPP. - Fill in the MMO Field sheets and prepare the MMO reports when required - Give early warning when any observed marine mammal or sea turtle may be in danger due to project activities - Take pictures of sightings and contact specialists when required to confirm or precise animal identification. - Provide advice to Eni Ghana HSE team on any additional marine mammal or sea turtle protection actions/measures when considered necessary. - Provide basic training on the identification of key marine mammal and sea turtle species expected in the area, and how to recognize their behaviour to interested personnel working offshore and at least one representative per daylight shifts of each vessel and offshore facility.

* Experienced marine biologist with a certificate of having passed a MMO course recognized by the JNCC or the MMO Association and also having and with good knowledge of West African sea turtle and marine mammal species identification (Note: MMOs will be provided by GWS).



11. Training Awareness and Competency

The Project shall ensure that personnel responsible for the execution of tasks and requirements in the Marine Mammal and Sea Turtle Policy and Plan 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 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 ESHMP. Additional training requirements for this specific management plan are presented in *Table 11.1* below.

Project training activity associated with the implementation of the Marine Mammal and Sea Turtle Protection Plan shall be appropriately documented by means of a training needs assessment, training matrix/plan and records of training undertaken.

Table 11.1 Specific Training Requirements

Position (from all companies involved)	Training Topic	Frequency
HSE Manager	MMSTPPP requirements and role-specific responsibilities.	Once
Environmental Consultant (experienced marine mammal and sea turtle observers)	MMSTPPP requirements and role-specific responsibilities.	Once
Environmental Consultant (expert marine taxonomist specialising in the identification of marine megafauna)	MMSTPPP requirements and role-specific responsibilities.	Once
Vessel Skippers	MMSTPPP requirements and role-specific responsibilities.	Once
All Project Personnel	Awareness of the Project policy regarding the prohibition of the capture and trade of bush meat, including the taking of sea turtle eggs.	During induction of all personnel
Project Personnel involved in nearshore	Training should be offered to all personnel working nearshore and offshore regarding	Offer should be made on a quarterly basis during

Position (from all companies involved)	Training Topic	Frequency
and offshore construction and drilling activities and production	the identification of key marine mammal and sea turtle species expected in the area, and how to recognize their behaviour. This training should be given by an experienced marine mammals and sea turtle observer who has proven experience in marine mammal observation along the west coast of Africa. Training should include the procedure to follow when an injured or dead marine mammal or turtle is found and should aim to ensure that at least one trained personnel member is present on each vessel/helicopter at all times.	construction, and during induction for all operations employees
Personnel involved in construction beach landfall for gas export pipeline	A toolbox talk should be given to all staff prior to the construction of the beach landfall regarding the identification of sea turtles species and nests and procedure to follow in the event of an encounter.	Once prior to landfall construction and repeated for any new staff coming to site.

11.1 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. The performance indicators outlined in *Table 9.1* and *Table 9.2* apply to this Plan. Details regarding how they will be measured, target/benchmark and frequency of control are described in *Table 11.2*.

However Contractors 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 11.2 Performance Indicators

Performance Indicator	Measurement	Target / Benchmark	Frequency of Monitoring
Confirmation that design commitments are met.	Audit of construction designs and field implementation.	Consistent with commitment.	Once prior to the start of construction activities. Periodic field audits during construction.
Confirmation that marine mammals and sea turtles in the offshore area appear undisturbed by construction and drilling activities.	Audit of Marine Mammal and Sea Turtle Monitoring Programme results.	0% disturbance	Monthly when results added onto database. Annually following production of reports.
Number of incidents involving marine mammals and sea turtles.	Audit of incident reports.	0% project-related incidents	Quarterly
Confirmation that marine mammals and sea turtles in the offshore area appear undisturbed by production activities.	Audit of Marine Mammal and Sea Turtle Monitoring Programme results.	0% disturbance	Annually based on incidental sighting records.

12. Reporting

Throughout the project, Eni Ghana will keep regulatory authorities informed of the project performance with respect to HSE matters by way of written status reports and face-to-face meetings. Eni Ghana, upon request and format definition, will prepare a monthly report on environmental performance in accordance with requirements set in the ESHMP Section 11 and submit it to the Ghanaian EPA. Copies will be made available to World Bank Group (WBG).

In addition, the Contractor will prepare periodic reports related to the implementation and operation of the Marine Mammal Protection Policy and Plan. These will be sent to Eni Ghana HSE manager for review.

The content of the monthly report associated with marine mammals and sea turtles will at least include:

- Number and location of sightings of marine mammals and sea turtles during the reporting period.
- Incidents involving marine mammals and sea turtles (e.g. vessel collision) during the reporting period.
- Incident detail.
- Records of dead or injured marine mammals.
- Details of any additional management and mitigation measures implemented as a result of the ongoing monitoring.
- Detail of the audits undertaken during the reporting period.
- Details of stakeholder engagement activities undertaken during the reporting period.

The following measures will also be included in the reporting when relevant.

- Results of pre-work beach survey for turtles performed as per Annex B Sea Turtles BAP of the Biodiversity Management Plan.
- Details of any additional management and mitigation measures implemented as a result of the pre-work survey.
- Number of turtle nests relocated.
- Hatch success of the relocated nests.



Eni Ghana will also release corporate annual reports on environmental and social performance which will be available to the public via Eni's website. The content will be determined with consideration of national requirements and lender requirements.



13. Appendices

Appendix A Marine Mammal and Sea Turtle Monitoring Programme for the OCTP Project

