plan ms hse 014 eni Ghana r00 – Marine Mammals & Sea Turtles Protection Policy Plan

Marine Mammal and Sea Turtle Monitoring Programme for the OCTP Project

Appendix A

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

1 Purpose

Eni Ghana has developed this Marine Mammal and Sea Turtle Monitoring Programme as part of its Environmental, Social and Health Management Plan (ESHMP).

This document outlines the proposed programme for monitoring offshore Marine Mammal and Sea Turtle activity during the lifetime of the Offshore Cape Three Points (OCTP) Project.

The Marine Mammal and Sea Turtle Monitoring Programme should be read in conjunction with the Sea Turtle BAP, prepared as part of the plan ms hse 019 eni Ghana - Biodiversity Management Plan.

Specifically, the objectives of the Marine Mammal and Sea Turtle Monitoring Programme are as follows:

- increase the level of understanding of the species that occupy the Project Area of Influence (AoI), the frequency of their occurrences and their behaviours; and
- record any changes over time, check the validity of the mitigation measures and inform any necessary changes.

2 Applicability

This Monitoring Programme describes the requirements for eni Ghana with regard to offshore marine mammal and sea turtle monitoring, applicable during the construction and development drilling phase of the Offshore Cape Three Points (OCTP) Project.

Health	Safety	Environment	Social / Sustainability
		X	

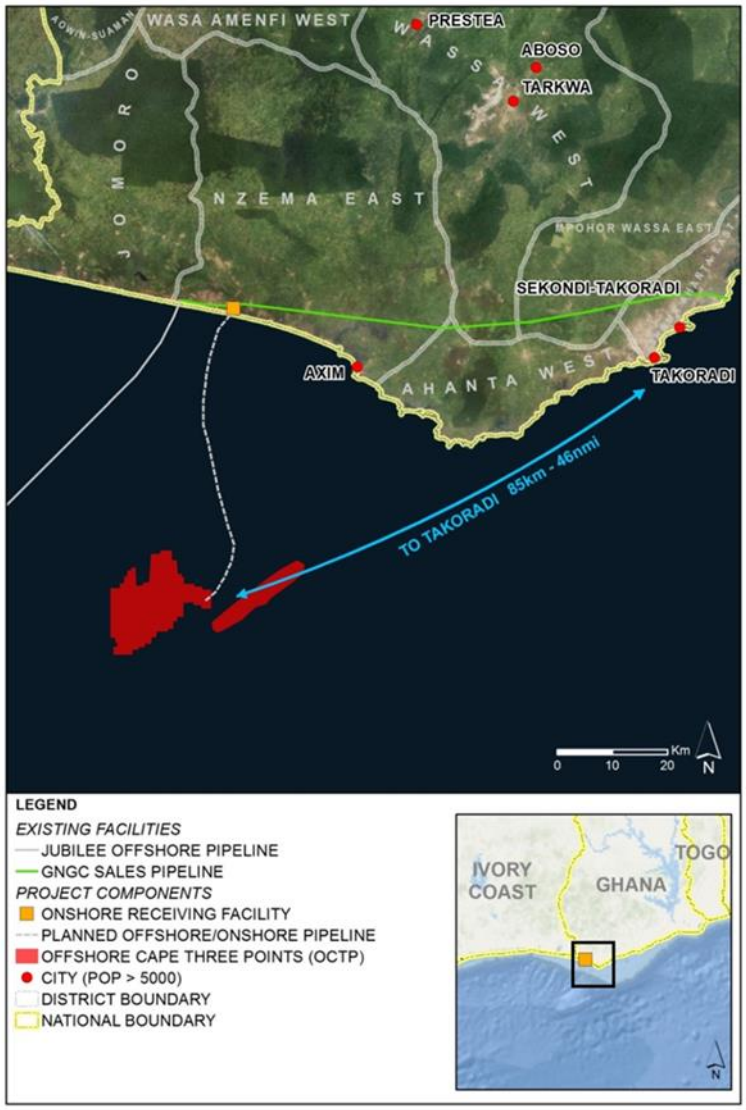
3 Scope of Work

The Phase 2 ESHIA identified a requirement for mitigation measures to minimize the impact on marine mammals and sea turtles from the OCTP Project, including the use of trained observers in a planned monitoring programme. The recommendations for this monitoring programme during the construction and development drilling phase are set out below. Specific measures to prevent harm to marine mammals and sea turtles during construction and development drilling are set out in the separate Marine Mammal and Sea Turtle Protection Policy and Plan (Annex N) which should be read in conjunction with this document.

4 Study Area

The study area (fully offshore) comprises the OCTP Block, the gas export pipeline route and the main traffic route to and from Takoradi, as illustrated in *Figure 4.1*. The OCTP Block is located approximately 60 km south of the town of Sanzule and 85 km southwest of Takoradi, which will be used as the main logistical supply base for Project operations from which most vessel and helicopter traffic to and from the OCTP Block will originate. Water depths in the OCTP Block vary between 520 m and 1014 m. See the Sea Turtle Biodiversity Action Plan for definition of the onshore monitoring of the beaches.

Figure 4.1 Offshore Study Area



Source: ERM, 2015

5 Methodology

5.1 Observation Protocol

Dedicated effort-based marine mammal and sea turtle watches are proposed from main construction activity points/routes, to allow the degree of observation effort to be taken into account. This will be supplemented by the continuous recording of incidental sightings within the Study Area from any observation point. These approaches are described in *Sections 5.2 to 5.5*.

The recording of all sightings will be based on standard Marine Mammal Observer (MMO) procedures (developed from http://jncc.defra.gov.uk/page-4514; http://www.mmo-association.org/images/MMOA_Position_Statements.pdf; http://www.seawatchfoundation.org.uk/recording-and-submitting-sightings/).
The observer will scan the visible area with the naked eye, using binoculars to get a better view of any area where possible marine mammal or turtle activity is spotted. This may include any disturbance to the water surface, blows, breaches or heightened bird activity, which may indicate feeding marine mammals.

When a sighting is made the time and vessel GPS position, speed, direction and activity will be recorded and the range and bearing to the sighting taken, using a stick or callipers as a simple rangefinder where possible. Photographic identification keys will be used to aid the observers when recording their observations. Distinguishing features will be noted and photographs taken where possible in order to allow later confirmation of the identification by an experienced marine biologist.

Observers will be provided with a sighting record form (*Attachment A*) to complete each time a sighting is made. This form is in line with accepted international procedures (based on both the JNCC and Sea search forms) but has been tailored to the OCTCP project.

This form will be used for both dedicated watches and incidental sightings. Parameters to be recorded are:

- date and time;
- vessel name, type and position;
- direction of vessel movement, speed and activity;
- approximate bearing and distance of the sighting from the vessel;
- species, if apparent, including distinguishing features on which identification is based and photograph references;
- number of individuals and direction of travel;
- presence of juveniles;

- behaviour e.g. foraging, resting, bow riding, fin slapping; and
- environmental conditions, including Beaufort sea state, wind direction and speed, current direction and speed, cloud cover, visibility and whether rain or squalls have occurred in the previous 24 hours.

Environmental conditions during dedicated watches will be recorded on an Effort and Environmental Conditions Record Form (*Attachment B*), regardless of whether sightings are made. Environmental data will be recorded at least every half hour during the dedicated watches from the fixed observation posts, and more frequently if conditions change. GPS readings and environmental data will be recorded every 15 minutes for dedicated observation sessions from vessels in transit. In this way, the track of the vessel can reliably be mapped.

5.2 Dedicated Watches during Transit Activities

As supply vessel movements between the OCTP Block and Takoradi port will be ongoing throughout the construction and development drilling phase, it is proposed that dedicated watches are performed along this route on a twice monthly basis for both supply runs to the MODU (the Maersk Voyager) and supply runs to the FPSO. This frequency allows regular observations to be made at a realistic frequency, acknowledging that dedicated watches can only be performed only during suitable environmental conditions as described in section 5.1.

Watches should occur for the duration of the transit time from vessel to port and back again. For this reason it is recommended that two observers are present on the supply vessel as, in line with the MMO Association's Position Statement, no single observer should work for more than 2 hours at a stretch. Observations should be recorded from a forward-facing position, e.g. the bridge or toward the bow of the vessel, to allow ongoing coverage of the area not already disturbed by the passing of the vessel itself.

Frequency of dedicated watches will be adjusted based on number of sightings, with the caveat that some months it may not be possible for more frequent watches if sea state / weather (i.e. visibility conditions) do not allow.

5.3 Dedicated Observations during Construction Activity in the OCTP Block

Supply Vessel at MODU

Within the OCTP Block, dedicated watches for Marine Mammals and Sea Turtles during the construction phase should be conducted once the transiting supply vessel for the MODU (as referred to in Section 5.2) is at the MODU during offloading/backloading. Where possible, watches will occur twice monthly for each well drilled when observers are on the supply vessel, and should aim to cover both the pre-drilling period and during drilling itself.

Each watch should use the same single observer who conducted the watch during transit and should last for at least one two hour session. When possible, this should be increased to two watch sessions of two hours duration, one occurring in the morning and the other in the afternoon. Supply runs which include observers should be timetabled for suitable environmental conditions and to ensure they coincide with offloading/backloading operations which occur during daylight hours.

Dedicated Observations during Gas Export Pipeline Installation

An observer should be present on each of the two survey vessels used during the pre-construction survey of the gas export pipeline route. The observers should be stationed at a forward-facing position, *e.g.* the bridge or toward the bow of the vessel. Watches should be split into morning and afternoon sessions where steaming time allows, each watch lasting two hours. This effort will be repeated during the installation of the pipeline itself, conducted on a twice monthly basis from one of the attendant anchor handling vessels for each pipe laying vessel.

5.4 Incidental Observations

In addition to the data from dedicated watches, incidental sightings will be regularly reported throughout the construction and development drilling phase of the Project. 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 *etc.*), during any environmental conditions. In common with the dedicated watches, incidental sightings will be recorded using the sighting record form attached as *Attachment A*.

5.5 Engagement with any NGOs working in the area

Prior to commencing the monitoring programme, and throughout its implementation, it is planned that engagement is undertaken with any NGOs who may be undertaking conservation projects for marine mammals or sea turtles in the Project AoI, including 'Wild Seas' who are reported to be conducting a sea turtle conservation project in the area. The objective of this engagement will be to discuss the monitoring programme and how it might complement their efforts, and ongoing consultation to allow the sharing of data.

6 Schedule and Duration

It is planned that dedicated observations are conducted twice monthly from each of the observation points outlined above and should continue for the first two years of the construction and development drilling phase, with review after that period. Dedicated observations should only occur during suitable conditions (Beaufort sea states of <4 and visibility >1.5 km). In high sea states detection becomes very unlikely, thus limiting the value and comparability of the data collected. Where possible, each dedicated observation

session will consist of two watches, each two hours in duration, one in the morning and another in the afternoon to allow for temporal variation in behaviour.

The programme should be implemented as soon as possible, since drilling activity has already commenced. This includes the engagement of MMOs, training of all eni staff involved in offshore activities and on-going consultation with Wild Seas.

eni 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.

Observations are planned to start before the beginning of offshore construction activities (setting of lines and subsea systems) after Q1 of 2017. A timetable for observations should be set out and adhered to as for as possible; however if weather conditions are not suitable on the allocated day, the survey will be postponed until the next suitable day. Similarly, if both and morning and afternoon observations are not possible during the same day due to a change in conditions, the afternoon watch may be postponed to the next suitable day. If a morning or afternoon watch must be curtailed due to conditions being unsuitable, the actual time spent observing will be recorded.

Incidental observations from all vessel types and helicopters will be recorded continuously throughout the construction phase.

A watch effort summary is provided in *Table 6.1*.

Table 6.1 Watch Effort Summary

Construction Activity	Observation point	Number of observers	Watch length	Frequency
Dedicated Watches				
Transit operations to and from Takoradi Port	Transiting supply vessel to MODU. Transiting supply vessel to FPSO.	x2 experienced observers per vessel.	Duration of each of the inbound and outbound legs.	Twice monthly (during suitable environmental conditions) for MODU supply vessel runs, plus twice monthly (during suitable conditions) for FPSO supply vessel runs.

Construction Activity	Observation point	Number of observers	Watch length	Frequency
Well drilling and completion	Supply vessel from port, whilst at MODU during offloading/ backloading operations	x1 experienced observer.	At least 2 h whilst at MODU. If time allows should extend to cover 4 h, 2 h in the morning and 2 h in the afternoon.	Twice monthly, when timing of offloading/backloading coincides with daylight hours and suitable environmental conditions.
FPSO mooring and pre-commissioning/ commissioning	Supply vessel from port, whilst at FPSO during offloading/ backloading operations.	x1 experienced observer.	At least 2 h whilst at FPSO. If time allows should extend to cover 4 h, 2 h in the morning and 2 h in the afternoon.	Twice monthly, when timing of offloading/backloading coincides with daylight hours and suitable environmental conditions.
Gas Export Pipeline Installation	x2 pre-construction survey vessels Attendant anchor handlers for each pipe laying vessel.	x2 experienced observers, one on each vessel.	4 h, 2 h in the morning and 2 h in the afternoon.	Once during pre-construction survey, then twice monthly during installation (during suitable environmental conditions).
Incidental observations				
All activities	Any	N/a – incidental sightings by any member of staff.	N/a	Continuous, during any environmental conditions.

7 Personnel Requirements

Dedicated observations will be conducted only by trained and experienced personnel. Incidental observations may be recorded by any member of staff, however training will be provided to Fisheries Liaison Officers and other staff considered most likely to make a sighting (*e.g.* vessel and helicopter crews). This training would include marine mammal and sea turtle identification and behaviour recognition, to enhance the quality of incidental sighting records.

Information on all reported sightings will be reviewed by an experienced marine biologist for quality control purposes, and results amended as necessary.

All Roles and Responsibilities and Training Awareness and Competencies in relation to the protection of Marine Mammals and Sea Turtles are detailed in *Sections 10* and *11* of the Marine Mammal and Sea Turtle Protection Policy and Plan (Annex N).

8 Reporting

All sightings will be recorded on a sighting record form (attached as *Attachment A*). For dedicated watches, effort and environmental conditions will also be recorded on a form (attached as *Attachment B*). Sightings data will be collated and entered into a sightings database as soon as possible following the observations and on at least a monthly basis, and field sheets kept for later referral if necessary. This will reduce the risk of data being lost and will ensure that any errors or anomalies are picked up at an early stage. Collation will be undertaken by the eni EHS team, who will be responsible for reporting summary data to management on a quarterly basis.

Detailed reports in English will be prepared on an annual basis by a qualified, experienced marine biologist specializing in the taxonomy of marine megafauna, using the collated data for that year. Sightings will be reported graphically to show the proportion of different species groups represented in the total sightings across the year. The proportion of sightings reported from each area (OCTP Block, gas pipeline route and main logistical supply route) will be shown using ArcGIS.

Sightings across the year will be reported to species level where identification is 'definite', 'probable' or 'possible'. In addition, pooled results will be reported as 'baleen whales', 'toothed whales', 'turtles' and 'other' (*e.g.* shark, ray), due to their differing sensitivities. Incidental observations will be presented separately from the dedicated watch data, as they are not quantifiable against a fixed level of observation effort. They will, however, be presented as monthly frequencies against total combined steaming/flying time that month, to see if broad trends follow the pattern observed during the dedicated watches.

During report preparation data will also be collated from any reported incidents involving marine mammals or sea turtles during the construction phase (see Marine Mammal and Sea Turtle Protection Policy and Plan). This will include recording of mortalities (*e.g.* through collision), sightings made when ROVs are operational and occasions when an individual is spotted tangled in fishing net. A data request will also be made to the EPA for any data that they have gathered throughout the reporting year, *e.g.* shore standings of marine mammals or beach turtle counts.

The annual report will include a concluding summary of the findings for that year and discuss any apparent patterns observed, *e.g.* spatially and seasonally and relating to prevailing environmental conditions and operations. Results will inform updates to mitigation as appropriate. After the initial year any apparent inter-annual variation will also be discussed.

The annual report will be made available to WBG and the Ghanaian EPA and in line with the reporting format outlined in *Section 13* of the Marine Mammal and Sea Turtle Protection Policy and Plan (Annex N), eni Ghana will, upon request, prepare a monthly report on environmental performance and submit it to the Ghanaian EPA and will share it with WBG which will include the key findings of the Marine Mammal and Sea Turtle Monitoring Programme for that month.

Any accidental events involving wildlife arising as a result of Project construction activities will be immediately notified by the Contractor to eni Ghana after its discovery, in accordance with requirements set in the ESHMP Section 11.3.1..

9 Appendices

Appendix A. Sighting Record Form

Appendix B. Effort and Environmental Conditions Form

ENI GHANA MARINE MAMMAL AND SEA TURTLE SIGHTING RECORD

<table>
<tr><td colspan="4">Observer name: Date:
Sighting Number (Include a code of the vessel and the number of the sighting starting at 1 for first sighting. Subsequent sightings from same vessel will increase the numbering during the whole duration of the survey)</td></tr>
<tr><td>Vessel Type:</td><td>Vessel Name:</td><td>Vessel position:
Latitude:

Longitude:</td><td>Direction of vessel movement (compass):</td></tr>
<tr><td>Means of initial detection:

□ Detected by observer keeping a continuous watch
□ Spotted incidentally by observer or someone else</td><td>Approximate distance of first sighting from vessel:

Bearing to first sighting from vessel (from true north):</td><td>Time at start of encounter (UTC, 24hr clock):

Time at end of encounter (UTC, 24hr clock):</td><td>Vessel activity at time of sighting:

□ Transit (state speed): _____
□ Standby next to MODU
□ Standby next to pipe layer
□ Offloading
□ Docking
□ Other (please state): _____</td></tr>
<tr><td>Sighting type (tick relevant box)

□ During dedicated watch
□ Incidental sighting</td><td colspan="2">Group: Certainty:

□ Whale □ Definite
□ Dolphin □ Probable
□ Turtle □ Possible
□ Manatee
□ Other (eg shark, ray)
If other please specify group and behaviour:
_____</td><td>Species:

_____

□ Definite
□ Probable
□ Possible</td></tr>
<tr><td>Total Number:

Number of Adults:

Number of Juveniles:</td><td colspan="3">Description:
(include features such as overall size, shape, colour and patterning, position off dorsal fin and height, direction and shape of blow)</td></tr>
<tr><td>Photographs taken?
□ Yes
□ No

If yes, give photograph references:
_____</td><td>Marine Mammal Behaviour:

□ Surfacing
□ Porpoising
□ Breaching
□ Spy hopping
□ Logging
□ Fluking
□ Tail slapping
□ Wave riding
□ Other (please specify):
_____</td><td>Turtle Behaviour:

□ Basking
□ Swimming
□ Mating
□ Surface breaths
□ Diving
□ Other (please specify):
_____</td><td>Direction of travel relative to vessel:

□ Toward vessel
□ Away from vessel
□ Parallel in same direction as vessel
□ Parallel in opposite direction to vessel
□ Crossing in front of vessel
□ Variable
□ Milling
□ Other (please specify):
_____</td></tr>
<tr><td>Direction of animal travel (compass):</td><td>Construction activity (if any) at vessel location at time of sighting:

□ Drilling
□ Pipelaying
□ Other (please specify)
_____</td><td>Closest distance of animal in relation to noisiest activity (eg boat engine, drilling) during sighting:</td><td>Water depth at vessel position:

Current direction and speed (if known):</td></tr>
<tr><td>Beaufort sea state:

Swell height:</td><td>Wind direction and speed:</td><td>Visibility:</td><td>Cloud cover:</td></tr>
<tr><td colspan="2">Weather conditions during sighting:</td><td colspan="2">Weather conditions in previous 24h:</td></tr>
</table>

ENI GHANA MARINE MAMMAL AND TURTLE MONITORING EFFORT AND CONDITIONS RECORD

Observer Name: Date:		Vessel Name Vessel Type:		Time at start of watch session: Time at end of watch session: Total watch duration:		Observer Location: Height above sea level:		Field of View: □ 180◦ □ □ 360◦ □ Other (please state): _____	
Time (UTC, 24hr clock)	Latitude	Longitude	Vessel heading (compass)	Speed (knots)	Beaufort Sea State	Swell Height	Visibility	Boat Activity	No. Sightings (including sighting reference number(s), if any)

Guidance Notes:

- Records should be made at the beginning of the watching session and every 15 minutes thereafter (or every half hour if observation point is stationary); though additional lines should be completed if environmental conditions change significantly.
- Latitude/longitude need only be recorded once for stationary observation points.
- Watch sessions should occur only in Beaufort sea states of <4 (0 = mirror calm; 1 = slight ripples, no foam crests; 2 = small wavelets, glassy crests, but no whitecaps; 3 = large wavelets, crests begin to break, few whitecaps; 4 = longer waves, many whitecaps; 5 = moderate waves of longer form, some spray; 6 = large waves, whitecaps everywhere, frequent spray; 7 = sea heaps up, white foam blows in streaks; 8 = long, high waves edges breaking, foam blows in streaks; 9 = high waves, sea begins to roll, dense foam streaks)
- Swell height should be recorded as: Light (0-1 m); Moderate (1-2 m); Heavy (>2 m).
- Visibility should be recorded as 1-5 km; 6-10 km; >10 km. Watches should not occur when visibility is <1.5 km.
- Sighting reference column: If a sighting is made within a watch interval, enter the sighting number(s) as referenced on the separate Sighting Proforma.