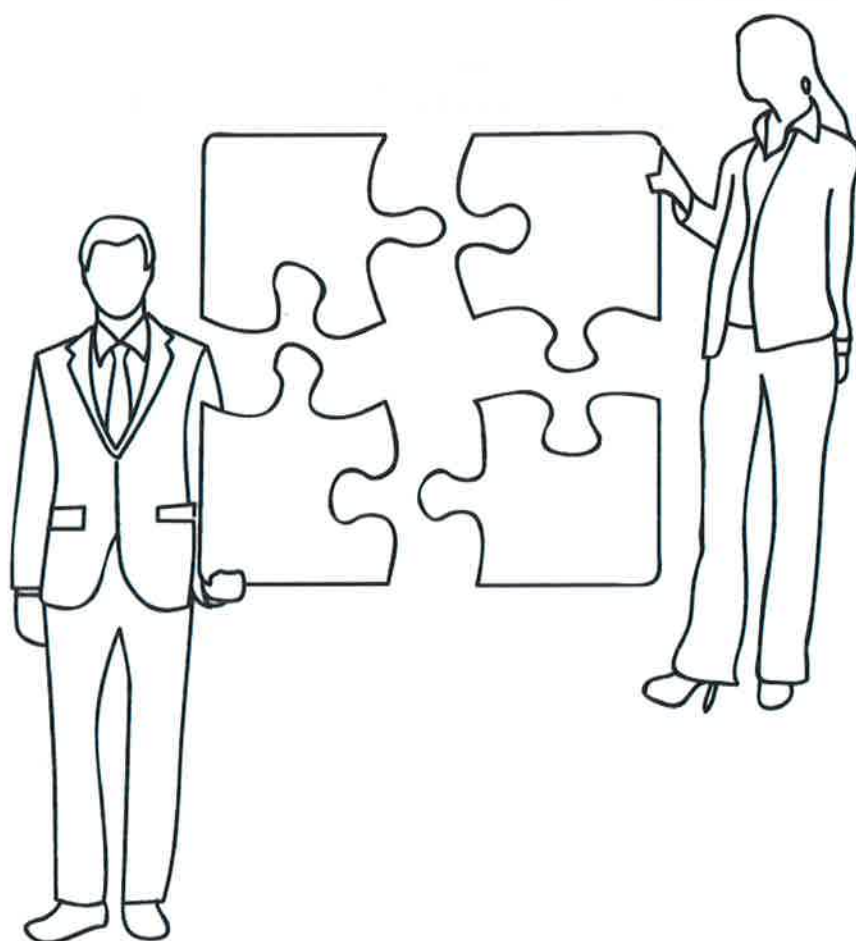


Plan

plan ms hse 013 eni Ghana - "Marine Traffic Management Plan"



TITLE:

MARINE TRAFFIC MANAGEMENT PLAN

NOTE:

Applicable to: Construction & Development Drilling Phase and Production Phase

DATE OF ISSUE:

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REVISION SHEET

Rev.	Date	N. pages	Change Description	Prep.	Ver.	Appr.
00	19-10-2016	34	Final Issue	M Cobb	C Ortuño	D Strippoli
01	31/08/2017	40	Final Issue including Production	M Rusmini	C Ortuño	D Strippoli



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1. Purpose

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

This plan aims to ensure the management and control of all Project-related vessel movements within the offshore Area of Influence which may pose a risk to the safe passage of local fishing boats and commercial vessels along the coast.

The specific objectives of the Marine Traffic Management Plan are as follows.

- Define vessel speed restrictions and exclusion areas.
- Provide for 24-hour monitoring of vessel movements.
- Provide the basis for a marine safety awareness campaign, targeting fishing communities, to reduce the risks of marine traffic accidents for all types of fishing vessels.
- Consultation with local fishing communities on the MTMP and fishermen will be provided with up-to-date information on marine logistics.
- Marine safety awareness campaign, targeting fishing communities, to reduce the risks of marine traffic accidents for all types of fishing vessels.
- Procedure for a constructive outreach to the Navy through consultation, as well as training on human rights (in line with the Security Management Plan).
- Community engagement and grievance mechanism to ensure that any concerns on Project Marine Traffic can be raised and managed promptly using a transparent process.
- Minimise marine accidents through high levels of vessel maintenance, operator awareness, training and awareness raising amongst vulnerable water users.
- Marine contractors will submit suitable HSE plans which will include a marine safety risk assessment. This includes qualifications of marine vessel captains and crew, training conducted and compliance auditing.

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 Traffic Management Plan should be read in conjunction with other Company plans, detailed here below.



- plan ms hse 009 Eni Ghana - "Environmental, Social and Health Management Plan – Construction Phase, Development Drilling Phase and Production Phase";
- Stakeholder Engagement Plan (with Grievance Mechanism), Annex F to the Environmental, Social and Health Management Plan - Construction and Development Drilling Phase;
- plan ms hse 014 Eni Ghana - "Marine Mammals and Sea Turtles protection Policy and Plan";
- prog ms hse 007 Eni Ghana "Fisheries Management, Participatory Monitoring Programme and Compensation Framework Strategy";
- Security Management Plan, Annex X to the Environmental, Social and Health Management Plan - Construction and Development Drilling Phase and Production Phase;
- Eni Upstream & Technical Services Technical Specification & Acceptability Criteria for Platform Supply Vessel (PSV).

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.



2. Applicability

This Plan describes the requirements for Eni Ghana with regard to Marine Traffic applicable during the construction and development drilling phase as well as the production phase of the Offshore Cape Three Points (OCTP) Project. The construction and development drilling phase of the Project will require the use of a drilling rig, pipeline laying barges, support vessels, patrol vessels and tugs. The production phase will require the presence of the FPSO unit, support vessels and patrol vessels. In case of maintenance of production wells, drilling rig vessel will be also be present.

Health	Safety	Environment
	X	X



3. References

3.1 Internal References

- Eni Upstream & Technical Services Technical Specification & Acceptability Criteria for PSV (LOGIS/SELT-ST-2179-0-2014, Rev 0).
- 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.
- Hydrocol Energy – Layered Security Zones, Nov 2015.

3.2 External References

- World Bank Group Environmental, Health, and Safety Guidelines Offshore Oil and Gas Development, 2015.
- WBG Performance Standard 4 ¹: Community Health, Safety and Security and Guidance Note 4. International Finance Corporation/World Bank Group, January 1, 2012.
- WBG Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts and Guidance Note 1. International Finance Corporation/World Bank Group, January 1, 2012.

¹ IFC, WB and MIGA PSs

4. Acronyms

ATBA	Area To Be Avoided.
COLREG	Convention on the International Regulations for the Prevention of Collisions at Sea (COLREG), 1972.
CPA	Closest Point of Approach
EIA	Environmental Impact Assessment.
EIS	Environmental Impact Statement.
ESHMP	Environment, Social and Health Management Plan.
FLO	Fisheries Liaison Officer
FPSO	Floating Production Storage and Offtake Vessel.
GMA	Ghana Maritime Authority.
GPHA	Ghana Ports and Harbour Authority.
HSE IMS	Health, Safety and Environment Integrated Management System.
IMO	International Maritime Organization.
MTMP	Marine Traffic Management Plan
SOLAS	International Convention of the Safety of Life at Sea, 1974.
PSV	Platform Supply Vessel
UNCLOS	The United Nations Convention on the Law of the Sea, 1982.
UKHO	United Kingdom Hydrographic Office
VTMIS	Vessel Traffic Management Information System.
WP	Waypoint

5. Requirement

5.1 Legal

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 ESHMP. Further detail is provided in Chapter 3 of the EIS document.

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

Legislation	Applicability to Project
Ghana Maritime Zones Delimitation Law 1986.	Implements UNCLOS 1982.
Ghana Maritime Authority Act 2002; and Amendment Act 2011.	Established the Ghana Maritime Authority (GMA) as responsible for the regulation and coordination of activities in the maritime industry and for the implementation of the provisions of enactments on shipping.
Ghana Shipping Act 2003; and Amendment Act 2011.	Regulates trade in Ghanaian waters. The amendment was intended to inject local content into the oil and gas development by encouraging Ghanaians to participate in the shipping activities relating to offshore business.
Ghana Shipping (Protection of Offshore Operations and Assets) Regulation. LI 2010. 25th January 2012.	Stipulates conditions for offshore installation exclusion zones including the protection of such zones and entry conditions; the establishment of exclusion zones and protection mechanisms; and pipeline protection areas and cable protection areas.
Convention on the International Regulations for the Prevention of Collisions at Sea (COLREG) 1972.	Determined navigation rules to be followed by ships and other vessels at sea to prevent collisions; allowed for the creation of Traffic Separation Schemes and Areas to Be Avoided (ATBA).
United Nations Convention on the Law of the Sea (UNCLOS) 1982.	Article 60 provides the power to establish exclusion zones around offshore installations, extending to a distance not exceeding 500 m from each point of the outer edge of the installation. Ghana is a party to UNCLOS which is implemented in Ghana by the Maritime Zones Delimitation Law.



5.2 International Good Practice Standards

World Bank Group
Environmental, Health, and
Safety Guidelines Offshore Oil
and Gas Development, 2015.

Requirements for navigational aids (including radar and lights on facility structures and, where appropriate, on support vessels); 500 m facility exclusion zone; Requirement for facility to monitor and communicate with vessels approaching it.

Notification of all permanent offshore facilities, exclusion zones and routine shipping routes to be used by project-related vessels to GMA. Permanent facility locations should be marked on nautical charts. Notification of GMA of schedule and location of activities that will significantly increase vessel movements, such as during facility installation.

Establishment of a subsea pipeline corridor exclusion zone (typically 1,000 m wide) to define anchoring exclusion zones and provide protection for fishing gear.



6. Management Plan

Eni is committed to maintaining the safety and security of its people, its assets and its operations within its own EHS standards and to Ghanaian law and international requirements such as the World Bank Group EHS Guidelines. Eni will work closely with stakeholders such as the Ghana Maritime Authority (GMA), Ghana Ports and Harbour Authority (GPHA), Ghana Navy, and fisheries groups in the implementation of this plan.

6.1 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 (such as those as detailed Section 1.2.6 of the World Bank Group's EHS guidelines Offshore Oil and Gas Development, 2015).

Eni Ghana and its contractors are required to implement and comply with the management and monitoring requirements described in the following sections as appropriate to their scope of work in order to avoid, minimize and control impacts and risks with regard to marine traffic impacts.

6.2 Offshore Infrastructure Restrictions and Advisory Vessel Routes

Offshore Infrastructure Restrictions

Eni Ghana worked with the GMA to define and map safety exclusion zones and an Area To Be Avoided (ATBA) associated with Eni offshore installations. Once defined and approved by GMA, United Kingdom Hydrographic Office (UKHO) and International Maritime Organization (IMO), the exclusion zones and ATBA is registered by the GMA and has to be marked on nautical charts, thus becoming legally enforceable once facilities are installed. Details of the co-ordinates of the proposed restricted areas are included in Appendix A of this plan.

Construction and Development Drilling

During construction activities, the following exclusion zones will be defined as regulatory, once facilities and wells are being installed (see *Figure 6.2*):

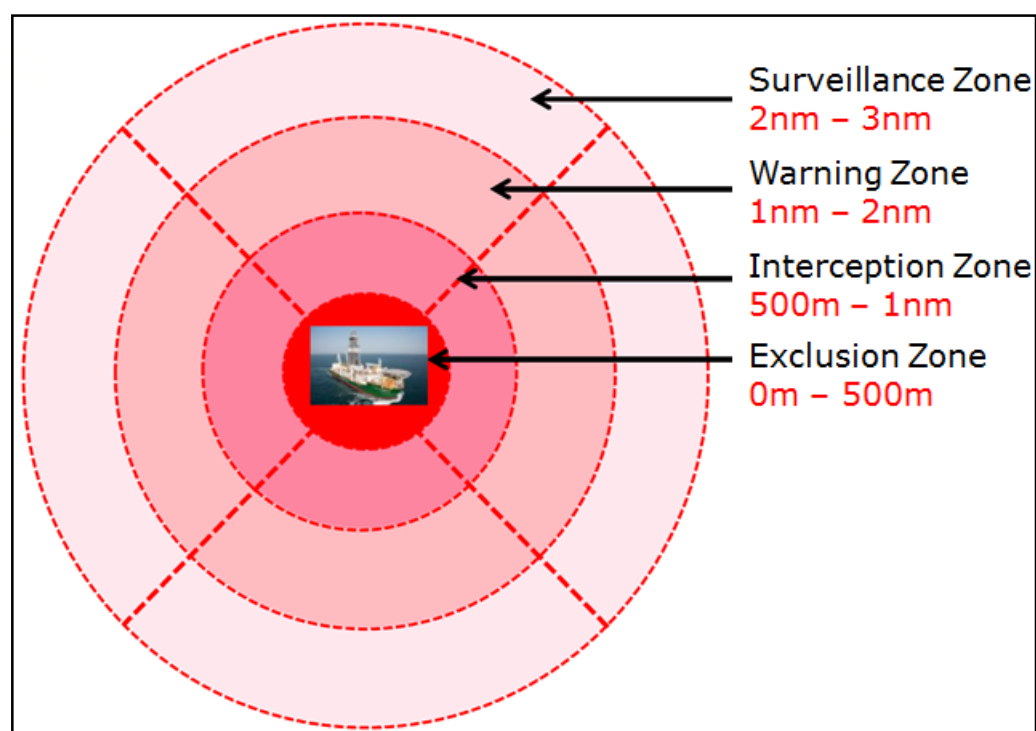
- A Drill Ship Exclusion Zone extends from the drill ship to a distance of 500 meters.
- A Pipeline Exclusion Zone will extend along the subsea pipeline corridor (500 m to each side of the pipeline) to define anchoring exclusion zones and provide protection for fishing gear.



In addition to the exclusion zones defined above for drill ship and pipeline during construction activities, Eni Ghana will establish the following advisory 'layered security zone' principle, centred on the drill ship and pipe-lay vessels. See *Figure 6.1* to visualize the principle, and *Figure 6.2* to show its application to the project.

- The Advisory Surveillance Zone is an area extending from the edge of the Warning Zone at 2 NM out to a distance of 3NM from the drill ship.
- The Advisory Warning Zone extends from the edge of the Interception Zone at 1 NM out to a distance of 2 NM from the drill ship.
- The Advisory Interception Zone extends from the edge of the drill ship Exclusion Zone out to a distance of 1 NM from the drill ship.

Figure 6.1 Advisory "Layered Security Zone" Principle



Source: Hydrocol Energy, Nov 2015

Production

During production phase, the following exclusion zones are being defined as regulatory, once facilities are installed (see Figure 6.3):



- A FPSO Exclusion Zone extending from the FPSO (Latitude: 04° 28' 09.678" – Longitude: 002° 33' 12.140") to a distance of 500 meters. In this safety area, only authorised vessels can enter, and upon approval by the FPSO Captain. The establishment of this exclusion zone was agreed with the Ghanaian Maritime Authority and was published on the *Ghana Gazette* 62/2017.
- An Area To Be Avoided (ATBA) has been established around the FPSO for 4nm and officially approved by GMA and UKHO.

The objective of the ATBA is to further enhance safety of navigation, and ensure security of both the offshore installations and vessel traffic management in the vicinity of the OCTP Project offshore facilities. The ATBA will alert mariners to the presence of the FPSO "JAK" as well as of underwater well heads and production system, to ensure that mariners (including fishermen and vessels transiting the area) can avoid interference with production operations at the OCTP Project location.

The extension of 4nm of the ATBA has been established upon agreement between Eni Ghana and GMA. The area covers the majority of the offshore installations of the OCTP Project as shown in Figure 6.3.

In addition, Eni Ghana will establish the aforementioned advisory 'layered security zone' principle, centred on the FPSO ship. See *Figure 6.1* to visualize the principle, and *Figure 6.3* to present its application to the project.

Advisory Vessel Transit Route

The OCTP Field is in international waters and third-party vessels have the right of free passage in the Field, which includes the advisory zones mentioned above but do not have the right to free passage in the 500 m Drill Ship, FPSO and Pipeline Exclusion Zones during construction activities. *Section 6.3* of this plan discusses the proposed marine traffic management measures within these zones.

An advisory project vessel transit route from OCTP to the Port of Takoradi (taking into account existing shipping lanes and other oil and gas operators offshore activities provided by the GMA) has been defined by Eni Ghana. See *Table 6.1* for coordinates of this route, and *Figure 6.2* for its illustration.



Table 6.1 Waypoints of Preferred Project Vessel Transit route to OCTP Field

WP	Position or Latitude / Longitude		Co	Remarks
01	04°53.17'N	001°44.35'W		Inside Takoradi Harbour
02	04°53.11'N	001°44.13'W	105	Inside Takoradi Harbour
03	04°53.21'N	001°44.08'W	027	Inside Takoradi Harbour
04	04°53.90'N	001°44.00'W	007	Outside Breakwater
05	04°53.90'N	001°43.60'W	090	
06	04°52.00'N	001°42.60'W	152	
07	04°45.00'N	001°45.00'W	199	
08	04°35.00'N	002°00.00'W	236	Anchor point
09	04°27.50'N	002°31.00'W	256	

Source: Eni Ghana, 2015

Summary

Figure 6.2 and *Figure 6.3* illustrate the offshore infrastructure restrictions (exclusion zones and advisory security zones) and the advisory or preferred vessel transit route during construction and production phase respectively.



Figure 6.2 Offshore Infrastructure Restrictions and Advisory Vessel Transit Route during Construction and Development Drilling Phase

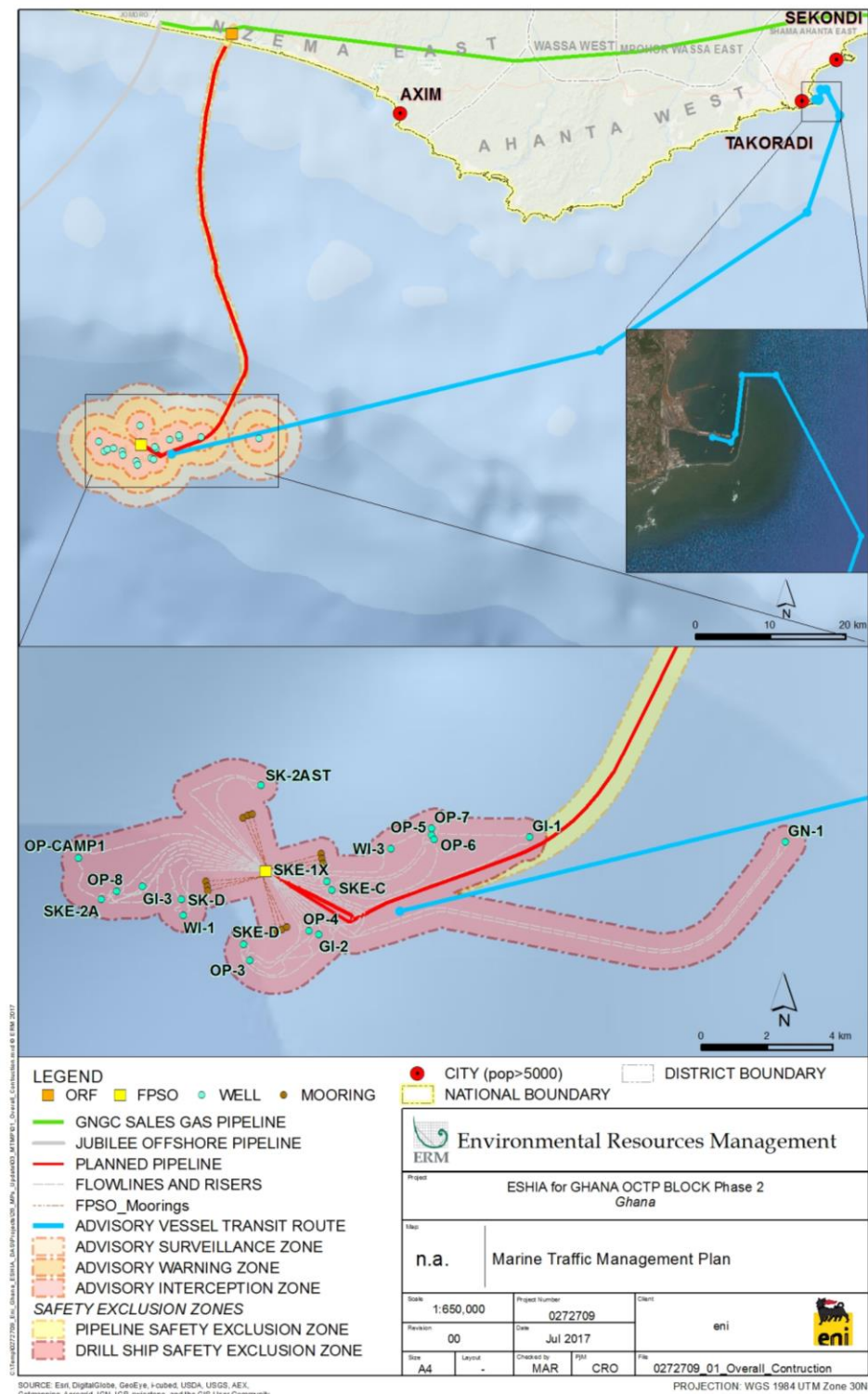
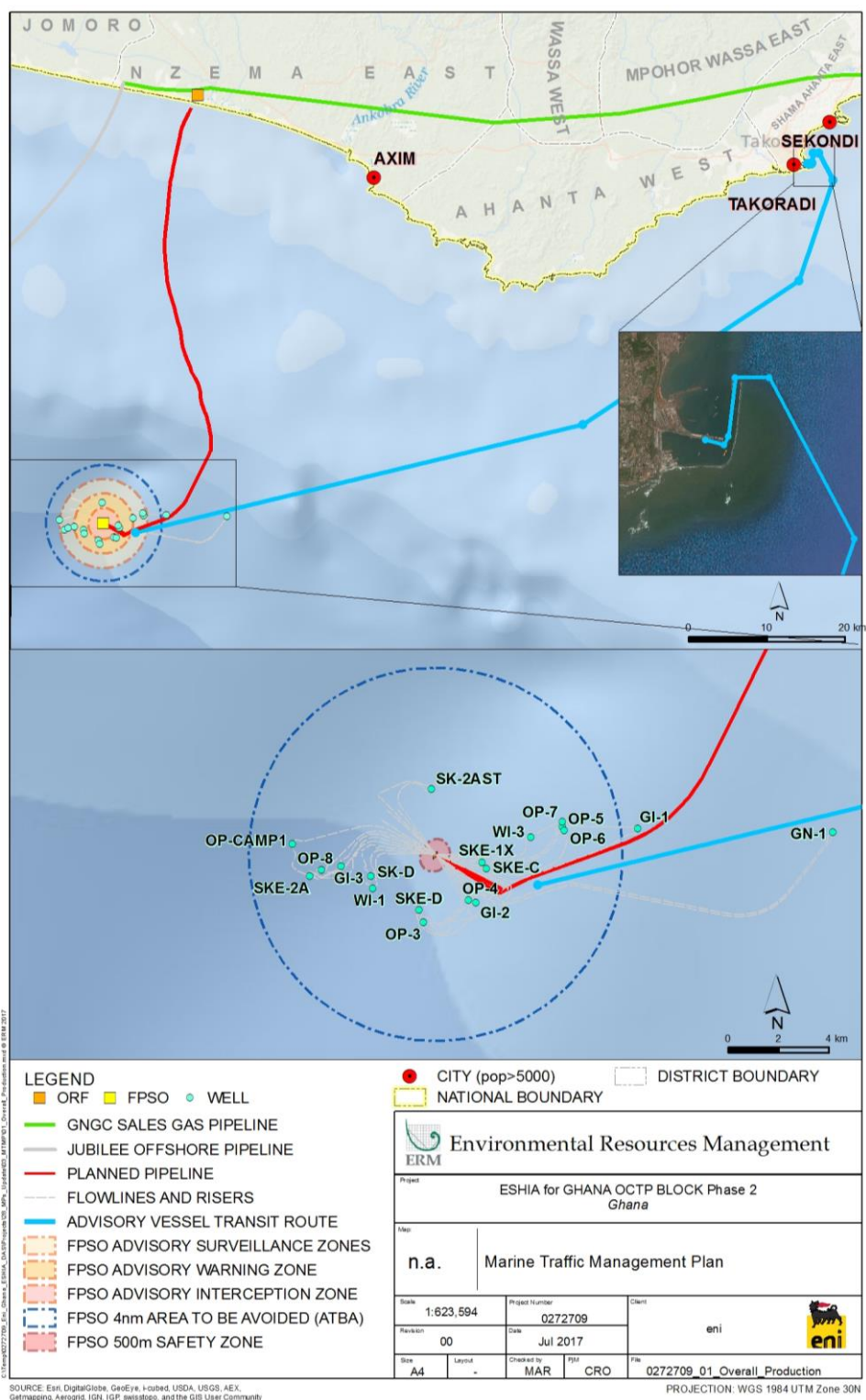


Figure 6.3 Offshore Infrastructure Restrictions and Advisory Vessel Transit Route during Production phase



In addition, Eni have requested their vessels support fleet to prioritize the "economic speed" (varies from vessel to vessel) as much as possible.

6.3 Marine Traffic Monitoring and Control

Marine traffic monitoring and patrol arrangements to be implemented during the construction phase of the OCTP include:

- Community engagement activities to inform them about construction activities and security/safety principles. These included distribution of Radar reflectors amongst local offshore fishermen.
- Engagement of 6 FLO who speak all most common Ghanaian dialects. They are fully trained in approaching the canoes/vessels.
- The use of contracted patrol vessels *SVS Cochrane* and *Armada Tugas*, equipped with lights for night surveys. Patrolling is performed 24h per day, 7 days per week.
- A hook-up to the GMA VTMS (Vessel Traffic Management Information System) for access to real-time data on the presence of vessels in the vicinity of the exclusion zones.
- A memorandum of understanding (MoU) covering the involvement of Ghanaian Navy patrols (ongoing activity at the moment of issuing the document).
- A record of intrusions count on a daily basis at two point of times to be included in daily reports.

Vessels entering the OCTP Field for the purposes of carrying out Eni operations within the field must seek permission from the security patrol vessel Master by VHF. Vessels departing the OCTP Field must notify the security patrol vessel Master by VHF. See Section 7 for Roles and Responsibilities identified for this plan.

The following actions will be taken by the contracted patrol vessels with regard to non-project-related vessels entering the different levels of offshore restricted zones. The focus will be on detecting, identifying, classifying and engaging a threat as far away as possible from any of the non-project-related vessels in the area of operations to minimize potential disruption to the operation and the risk of injury to an individual or damage to a project-related vessel. Procedures for prevention of entry and removal of vessels from the Safety Exclusion Zones will be based on persuasion and implement the Voluntary Principles on Security and Human Rights. More detail on these procedures are available in Annex X – Security Management Plan.



- *Advisory Surveillance Zone:* Once a target enters the Surveillance Zone the following actions are to be carried out.
 - Acquire target visually and on radar if possible. Supply vessels and patrol vessels are equipped with lights for night surveys (searchlights are installed on board of patrol vessels). Local offshore fishermen have been equipped with Radar reflectors (very few are in use, as most fishermen have sold them).
 - Acquire AIS (Automatic Identification System) information – if available.
 - Ascertain – position, course, speed, CPA (closest point of approach) to drill ship and FPSO, name of vessel (if possible), call sign (If applicable).
 - Vessels in the surveillance are to be monitored and multiple vessel in this zone should also be tagged, Target vessel 1, Target vessel 2, Target vessel 3 etc. Vessels in this zone are not deemed to be a threat but they will be monitored and observed to ensure this remains the case.
- *Advisory Warning Zone:* Target vessels that enter the warning zone are to be classified in two categories:
 - *Compliant Target:* Communications have been established and a warning issued to the vessel not to encroach within 1nm of the drill ship and FPSO (Interception Zone). If an identified and compliant vessel enters the Warning Zone, that vessel is to be monitored until it leaves the zone. Particular attention will be paid to the vessels behaviour, ensuring that the target vessel makes no sudden or erratic movement toward the drill ship or to encroach into the Interception zone.
 - *Incompliant Target:* If communications have not been established and an unidentified target vessel enters the Warning Zone then this vessel is to be treated as a potential threat. Patrol vessels should move toward the target vessel in a non-aggressive way (from port or starboard but not head on) and warn the vessel not to encroach any closer toward the drill ship than 1nm or they will be escorted away from the area. Canoes will be warned verbally through speakers, while vessels will be warned using VHF radio.
- *Advisory Interception Zone:* Any vessel considered a potential threat (incompliant target) which enters this zone will have entered an area where they are deemed to be a threat to the operation and should be dealt with by way of the nearest patrol vessel intercepting the target vessel and preventing them from encroaching any further toward the drill ship or the



exclusion zone. The patrol vessel is to escort the target vessel outside of the interception zone, i.e. to a distance of 1nm away from the drill ship into the warning zone. Target vessels once escorted away are to be kept under observation.

- *Safety Zone (legally enforceable)*: Any vessel wishing to enter this zone must seek and receive permission from the drill ships/FPSO Bridge prior to doing so. Patrol vessels will move toward the target vessel in a non-aggressive way (from port or starboard but not head on) and warn the vessel verbally not to encroach any closer or they will be escorted away from the area.

Canoes active around the facilities occur mainly during the day; night-time activities are reduced since fishing canoes tend to exit the area surrounding the rig/FPSO, not visible to them. None of canoes is expected to enter the exclusion zone during night-time, however patrol vessels are equipped with lights and canoes have been equipped with radar reflectors. Moreover, a record of intrusions number at two points of time (e.g. 9AM and 9PM) will be kept and included in daily reports.

The GMA operate a VTMISS for the purposes of establishing a 24 hour electronic surveillance and monitoring of Ghana's coastline including the Exclusive Economic Zone (EEZ) to ensure the protection of maritime resources, including offshore installations and gas pipelines. Eni will have access to this system providing real-time data on the movement of vessels around the safety zones that can be used to inform/alert patrol vessels on the presence of other vessels not part of the project.

The same safety procedures that are in place for Eni personnel rescue will be available for fishermen in case of need. This includes salvage tugs and rescue boats, as described in the HSE Plan.

6.4 Public/Stakeholder Marine Safety Engagement

An extensive marine safety awareness campaign, targeting potentially affected fishing communities, to reduce the risks of marine traffic accidents for all types of fishing vessels has been implemented prior to construction. As detailed in ESHMP Document, Annex W – Fisheries Management Plan and Participatory Monitoring Programme, Eni Ghana shall organize sensitization programs for Fishermen affected by project activities twice each year in order to educate them about the operations offshore. See the Fisheries Management Plan for further details.

A community engagement and grievance mechanism (see ESHMP Document, Annex F – Stakeholder Engagement Plan (with Grievance Mechanism) for additional details) will be



implemented to ensure that any concerns on Project marine traffic can be raised and managed promptly using a transparent process.



Table 6.2 Management and Monitoring – Construction and Development Drilling

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	A Marine Traffic Management Plan (<i>this document</i>) will be developed for the Project to ensure appropriate protocol is followed during offshore vessel movements. This Plan will consider vessel movements associated with other oil and gas projects in the area, and artisanal, local and commercial shipping traffic in the local offshore environment.	Management	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3	Contractor	Audit to verify existence and implementation of the MTMP during construction and development drilling. Assessment of implementation and effectiveness of the MTMP.	Audit: Annual Assessment: Quarterly	Eni Logistics Manager Local content and sustainability manager Eni HSEQ manager	Audit record of availability of MTMP Record of assessments

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Project vessels involved in dredging and other construction-related activities must comply with international safety standards with regards to offshore navigation equipment (such as radar) and suitable aids to minimize interference with other vessels and to maintain high visibility.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3 ESHIA Phase 2 Annex G Section G.7.5.3	Contractor	Assessment of implementation - Pre-mobilization vessel acceptance check.	Pre-mobilization: once per project vessel	Logistics Manager	Assessment records
Increase in marine traffic and disruption of offshore navigation	A vessel transit route will be agreed with the Ghana Maritime Authority and communicated to fishermen and other marine users through the CLO/FLO. Project vessels will keep within the agreed routes.	Management	ESHIA Phase 2 Annex G Sections G.7.2.3 FIA Section 6.5.3	Contractor	Record of transit route within MTMP. Record of communications of vessel transit to to fishermen and other marine users Assessment of Vessel Tracking records	Audit: Annual Assessment: Quarterly	Eni Logistics Manager Local content and sustainability Operations Manager	Audit record of availability of MTMP Assessment records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	The Security Zones will be monitored with the assistance of the relevant agencies of the Government of Ghana (i.e. Ghanaian Navy), for the safety of the facility and other users of the area (e.g. fishermen) when close to Project infrastructure or vessels.	Monitoring	ESHIA Phase 2 Annex G Section G.7.2.3 FIA Section 6.5.3	Contractor The assistance from the Ghanaian Navy has been included in the MoU, which is under approval.	Audit to verify existence and implementation of the marine traffic monitoring provisions within the MTMP. Assessment of implementation and effectiveness of the marine traffic monitoring effectiveness Unauthorized vessel incursions into Exclusion Zones (500m).	Audit: Annual Assessment: Quarterly. Continuous monitoring	Eni Logistics Manager Eni Operations Manager Eni Security Patrol Vessel Master	Audit records Assessment records Number of unauthorized Exclusion Zones (500m) incursions
Increase in marine traffic and disruption of offshore navigation	Inform local fishermen from the coastal communities of the Western region of the offshore activities, locations, vessel movements routes and timing.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.3, G.7.3.4 and G.8.1.2	Contractor	Audit of communication records.	Audit: Annual	Local Content and Sustainability Manager	Audit records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Inform other users of the sea about the timing and location of offshore activities through the issuing of Notices to Mariners.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3	Contractor	Audit to verify existence and implementation of the marine traffic monitoring provisions within the MTMP. Assessment of implementation and effectiveness of the marine traffic monitoring effectiveness	Audit: Annual Assessment: Quarterly.	Local Content and Sustainability Manager	Audit records Assessment records
Increase in marine traffic and disruption of offshore navigation	Safety Exclusion areas and ATBA (including the gas export pipeline) will be marked on nautical charts as cautionary advice to all sea-users.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.3, G.7.3.4 and G.8.1.2	Contractor	Audit to verify the inclusion of s Safety Exclusion Zone and security zones on nautical charts.	Audit: Once (<i>re-assessment not required once implementation is confirmed</i>).	Eni Logistics Manager / Operations Manager / Development Manager	Audit records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation <i>(Note: Measure also applies to management of Risk of Attack on Project Vessels)</i>	Intercept and redirect any vessels potentially entering designated exclusion zones. The Ghanaian Navy will be alerted and provide support	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3 ESHIA Phase 2 Annex G Section G.7.8.2 (Risk of Attack)	Contractor The assistance from the Ghanaian Navy has been included in the MoU, which is under approval.	Assessment of implementation and effectiveness of the marine traffic monitoring effectiveness	Assessment: Quarterly.	Eni Logistics Manager	Number of unauthorized Exclusion Zone (500m) incursions
Increase in marine traffic and disruption of offshore navigation	Ensure potential conflicts between project-related vessels and other users of the sea are addressed in emergency response planning.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3	Contractor	Audit to ensure these requirements have been addressed in emergency response planning.	Audit: Once <i>(re-assessment not required once implementation is confirmed)</i> .	Local Content and Sustainability Manager	Audit records Records of Grievance Mechanism

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Minimise marine accidents though high levels of vessel maintenance, pilots awareness, training and awareness raising amongst vulnerable water users.	Avoidance	ESHIA Phase 2 Annex G Section G.12.4.19	Contractor	Audit to ensure frequent maintenance of vessels		Eni Logistics Manager / Local Content and Sustainability Manager	Audit records
Increase in marine traffic and disruption of offshore navigation	Marine contractors will submit suitable HSE plans including a marine safety risk assessment. This will include qualifications of marine vessel captains and crew, training conducted and compliance auditing provisions.	Management	ESHIA Phase 2 Annex G Section G.12.4.19	Contractor	Existence of suitable EPC Contractor HSE Plans	Audit: Annual	Eni HSEQ Manager	Audit records

Table 6.3 Management and Monitoring – Production Phase

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Project vessels involved in production-related activities must comply with international safety standards with regards to offshore navigation equipment (such as radar) and suitable aids to minimize interference with other vessels and to maintain high visibility.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3 ESHIA Phase 2 Annex G Section G.7.5.3	Contractor	Assessment of implementation - Pre-mobilization vessel acceptance check.	Pre-mobilization: once per project vessel	Logistics Manager	Assessment records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	A vessel transit route will be agreed with the Ghana Maritime Authority and communicated to fishermen and other marine users through the CLO/FLO. Project vessels will keep within the agreed routes.	Management	ESHIA Phase 2 Annex G Sections G.7.2.3 FIA Section 6.5.3	Contractor	Record of transit route within MTMP. Record of communications of vessel transit to fishermen and other marine users Assessment of Vessel Tracking records	Audit: Annual Assessment: Quarterly	Eni Logistics Manager Local content and sustainability Operations Manager	Audit record of availability of MTMP Assessment records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	The FPSO Security Zone and ATBA will be monitored with the assistance of the agencies of the Government of Ghana (e.g. Ghanaian Navy), for the safety of the facility and other users of the area (e.g. fishermen) when close to Project infrastructure or vessels. Establishment of FPSO Exclusion Zone has been published in the Ghana Gazette 63/2017 MoU under approval; ATBA has been approved.	Monitoring	ESHIA Phase 2 Annex G Section G.7.2.3 FIA Section 6.5.3	Contractor	Audit to verify existence and implementation of the marine traffic monitoring provisions within the MTMP. Assessment of implementation and effectiveness of the marine traffic monitoring effectiveness Unauthorized vessel incursions into Exclusion Zones (500m).	Audit: Annual Assessment: Quarterly. Continuous monitoring	Eni Logistics Manager Eni Operations Manager Eni Security Patrol Vessel Master	Audit records Assessment records Number of unauthorized Exclusion Zones (500m) incursions

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Inform local fishermen from the coastal communities of the Western region of the offshore activities, locations, vessel movements routes and timing.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.3, G.7.3.4 and G.8.1.2	Contractor	Audit of communication records.	Audit: Annual	Local Content and Sustainability Manager	Audit records
Increase in marine traffic and disruption of offshore navigation	Inform other users of the sea about the timing and location of offshore activities through the issuing of Notices to Mariners.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3	Contractor	Audit to verify existence and implementation of the marine traffic monitoring provisions within the MTMP. Assessment of implementation and effectiveness of the marine traffic monitoring effectiveness	Audit: Annual Assessment: Quarterly.	Local Content and Sustainability Manager Operations Manager / Development Manager	Audit records Assessment records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Exclusion zones, ATBA and export sealine route will be marked on nautical charts as cautionary advice to all sea-users.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.3, G.7.3.4 and G.8.1.2	Contractor	Audit to verify the inclusion of s Exclusion Zone and security zones on nautical charts.	Audit: Once <i>(re-assessment not required once implementation is confirmed)</i> .	Eni Logistics Manager / Operations Manager	Audit records
Increase in marine traffic and disruption of offshore navigation <i>(Note: Measure also applies to management of Risk of Attack on Project Vessels)</i>	Intercept and redirect any vessels potentially entering designated exclusion zones.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3 ESHIA Phase 2 Annex G Section G.7.8.2 (Risk of Attack)	Contractor The assistance from the Ghanaian Navy has been included in the MoU, which is under approval	Assessment of implementation and effectiveness of the marine traffic monitoring effectiveness	Assessment: Quarterly.	Eni Logistics Manager/ Security Manager	Number of unauthorized Exclusion Zone (500m Exclusion Zone) incursions

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Ensure potential conflicts between project-related vessels and other users of the sea are addressed in emergency response planning.	Avoidance	ESHIA Phase 1 Annex G Sections G.7.3.1 and G.8.1.2 FIA Section 6.5.3	Contractor	Audit to ensure these requirements have been addressed in emergency response planning.	Audit: Once (<i>re-assessment not required once implementation is confirmed</i>).	Local Content and Sustainability Manager/ HSE and Operation Manager	Audit records Records of Grievance Mechanism
Increase in marine traffic and disruption of offshore navigation	Minimise marine accidents through high levels of vessel maintenance, driver awareness, training and awareness raising amongst vulnerable water users.	Avoidance	ESHIA Phase 2 Annex G Section G.12.4.19	Contractor	Audit to ensure frequent maintenance of vessels		Eni Logistics Manager / Local Content and Sustainability Manager	Audit records

Impact Management					Impact Monitoring			
Potential ESH Impact	ESH Commitment	Type	Source	Responsible Party	Compliance Monitoring	Timing/ Frequency	Responsible Party	Key Performance Indicator
Increase in marine traffic and disruption of offshore navigation	Marine contractors will submit suitable HSE plans including a marine safety risk assessment. This will include qualifications of marine vessel captains and crew, training conducted and compliance auditing provisions.	Management	ESHIA Phase 2 Annex G Section G.12.4.19	Contractor	Existence of suitable MarineContractor HSE Plans	Audit: Annual	Eni HSEQ Manager	Audit records

7. Roles and Responsibilities

Responsible parties for implementation and monitoring of activities indicated in this plan are indicated in *Table 6.2* and *Figure 6.3*, 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.

7.1 Training Awareness and Competency

Eni shall ensure that personnel responsible for the execution of tasks and requirements in the Marine Traffic Management 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 14 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 14.3 of the ESHMP. Additional training requirements for this specific management plan are presented in *Table 7.1* below.

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

Table 7.1 Specific Training Requirements

Position (from all companies involved)	Training Topic	Frequency
Logistics Manager	MTMP requirements and role-specific responsibilities.	Once
Regional Marine Advisor (Eni)	MTMP requirements and role-specific responsibilities.	Once
Vessel Master	MTMP requirements and role-specific responsibilities.	Twice



7.2 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 that apply to this plan are outlined in *Table 6.2* and *Table 6.3* for construction and production respectively. Details regarding how they will be measured, target/benchmark and frequency of control are described in *Table 7.2*.

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 7.2 Performance Indicators

Performance Indicator	Measurement	Target/Benchmark	Frequency of Monitoring
Number of unauthorised incursions into Exclusion Zones / ATBA	Event records	0	Continuous
Number of unauthorised incursions into Advisory Security Zones	Event records	0	Continuous
Marine traffic accidents or incidents	Incident Event records	0	Continuous
Records of awareness campaigns	Date of training sessions and number of attendees.	100% of nearshore affected fishermen engaged.	Continuous
Records of Grievance Mechanism	Record of complaints from fishermen	70% of offshore affected fishermen engaged.	Continuous

8. Reporting

Any accident or incident involving project vessels (or within 500m of an Eni installation for non-project related vessels) should be reported by the Vessel Master in accordance with the Eni Ghana Incident and investigation reporting procedure and other supporting HSE IMS documents.

All instances of unauthorized vessels incursions into to the Exclusion Zones (500 m exclusion zones) shall be reported to the competent authorities. Intrusions of vessels in the advisory security layers will be internally reported by the Contractor to Eni Ghana. Fishing boats involved in the both type of intrusions will also be reported accordingly.

Project Contractors must comply with the Incident Notification and Reporting arrangements detailed within Section 11.3 of the ESHMP – Construction and Development Drilling Phase.

Project vessels will maintain a Vessel Daily Report (VDR) providing an overview of the activities in the 24hrs leading up to 23.59, including the following details.

- Vessel name.
- Number of person on board (POB).
- Weather conditions (past 24hrs and forecast).
- Position information, ETA if steaming, distance steamed (passage) over the last 24 hours.
- Activity log.
- Fuel status.
- Safety information (accidents, incidents, drills held etc.).

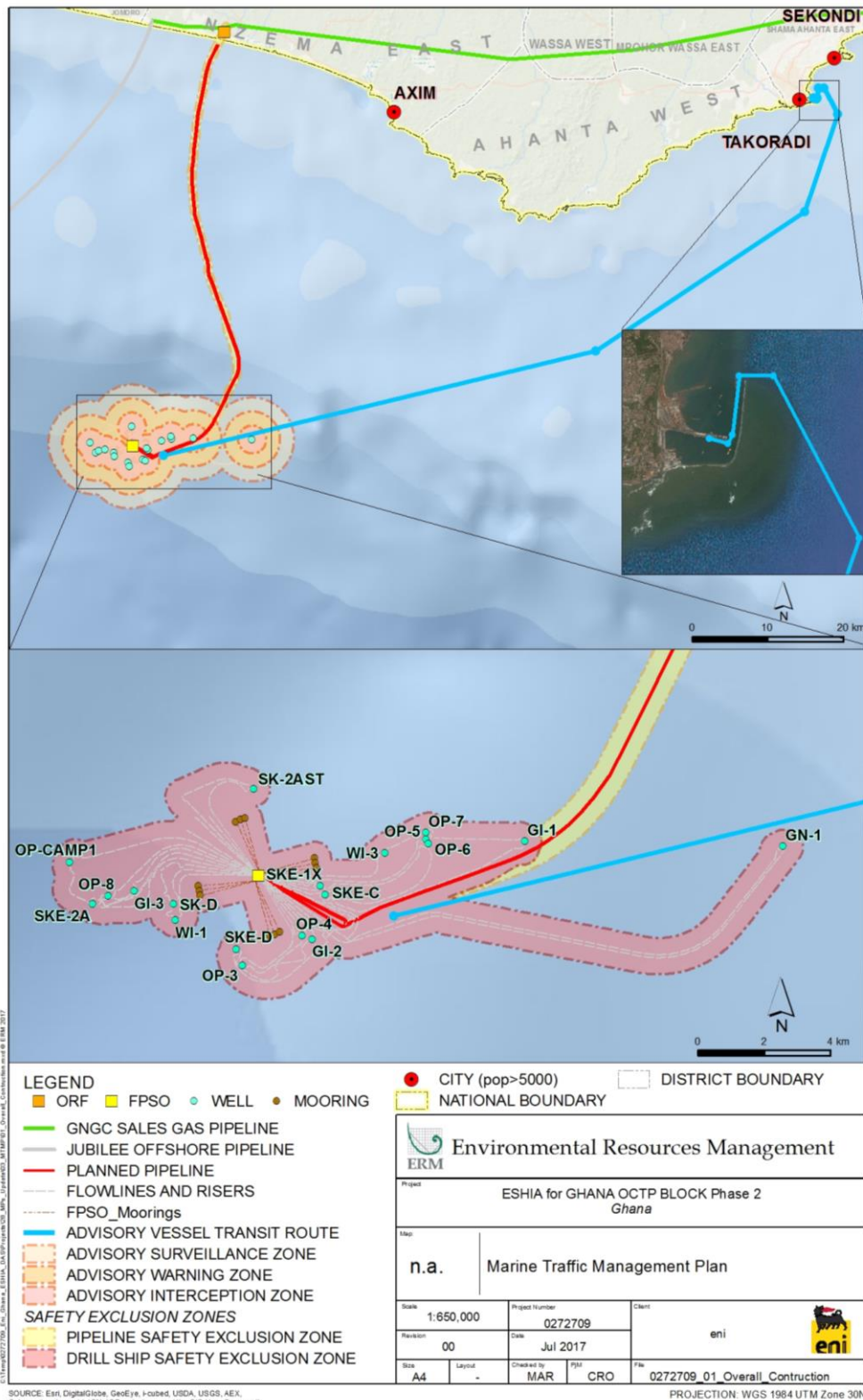


9. Appendices

Appendix A. Proposed OCTP Exclusion Zones



Proposed OCTP Exclusion Zones during Construction



Proposed OCTP Exclusion Zones during Production

TAG	Name	Coordinates UTMWGS84 Zone 30N (m)		FEATURE
		X	Y	
1	Sk-2Ast (IWC)	549396.50	496615.96	Well
2	Sk-D	546987.91	493151.77	Well
3	SkE-C (IWC)	551565.22	493434.78	Well
4	SkE-D	548887.27	491800.26	Well
5	GN-1	565340.77	494894.25	Well
6	OP-1 (SkE-2A)	544565.81	493151.73	Well
7	OP-3	549071.36	491302.19	Well
8	OP-4	550863.24	492197.17	Well
9	OP-5	554589.78	495106.53	Well
10	OP-6	554665.12	494969.33	Well
11	OP-7	554588.52	495305.89	Well
12	OP-8	545023.62	493405.32	Well
13	SkE-1x	551399.79	493700.58	Well
14	OP-CAMP1	543868.15	494420.50	Well
15	WI-1	547049.01	492662.83	Well
16	WI-3	553349.70	494699.82	Well
17	GI-1	557573.36	495045.39	Well
18	GI-2	551162.69	492100.43	Well
19	GI-3	545812.15	493542.86	Well
20	JAK	549548.9	494023.1	FPSO

