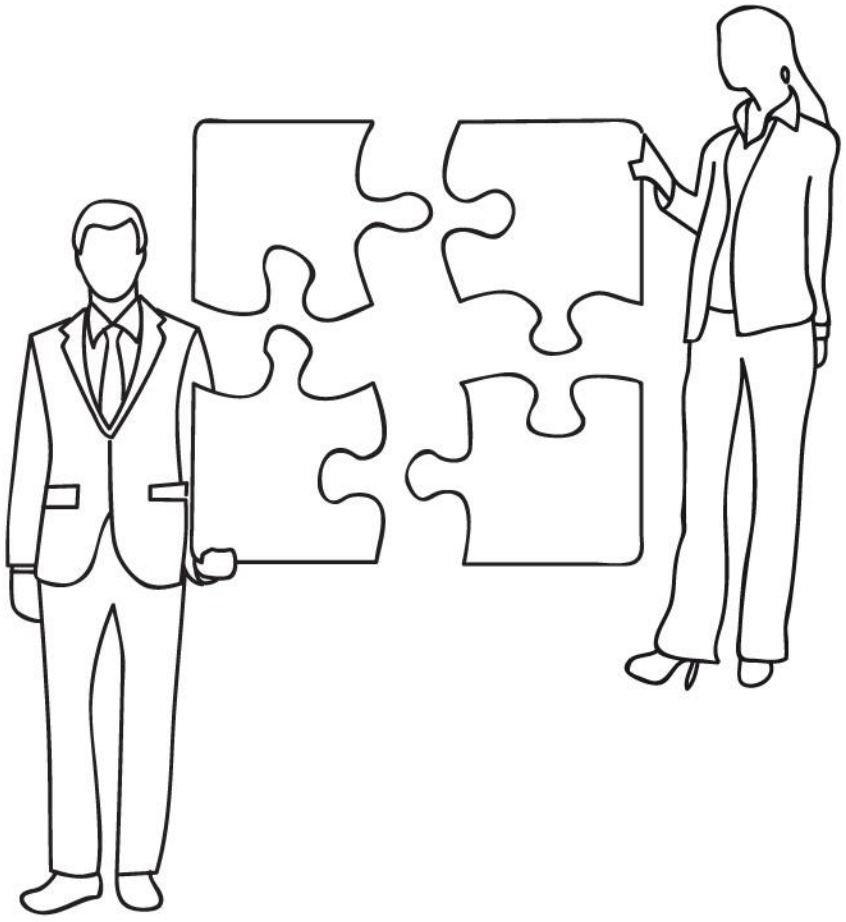
Plan

plan ms hse 009 Eni Ghana - “Environmental, Social and Health Management Plan”



TITLE:
GHANA OCTP BLOCK ENVIRONMENTAL, SOCIAL AND HEALTH MANAGEMENT PLAN
NOTE:
The ESH Management Plan presents the current ESH aspects relevant to the Project, an overview of the ESH risks associated with the construction and development drilling phase and production phase, and an outline of the ESH management and mitigation measures and monitoring requirements.

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Table of Contents

1. Purpose 9
2. Applicability 10
3. References 11
3.1 Internal References 11
3.2 External References 11
4. Acronyms and Key Definitions 13
4.1 Acronyms 13
4.2 Key Definitions 15
5. Introduction 17
5.1 Project Overview 17
5.2 Scope 18
5.3 Objectives 19
5.4 ESHMP Structure 20
5.5 Requirements 23
6. Project Description 28
6.1 Overview 28
6.2 Project Location 29
6.3 Project Schedule and Duration 32
6.4 Project Construction Activities 32
6.4.1 Site preparation 32
6.4.2 Construction phase 33
6.4.3 Well Drilling 33
6.4.4 Offshore Pipeline 34
6.4.5 Onshore Facilities 34
6.4.6 Onshore Pipeline 35
6.5 Emissions, Discharges and Wastes 35

6.5.1 Air emissions 35
6.5.2 Wastewater discharges 36
6.5.3 Noise 37
6.5.4 Waste 38
6.6 Personnel Requirements 39
6.7 Health and Safety 39
6.8 Security 39
6.9 Logistics 40
7. Legal and Other Requirements 43
7.1 Laws and Regulations of Ghana 43
7.2 International Finance Institutions Requirements 46
7.3 Company Policy and Management System 48
7.3.1 HSE Integrated Management System 48
7.3.2 SUMS (Sustainability Management System) 51
8. Environmental, Social and Health Assessment and Aspects 54
8.1 Introduction 54
8.2 Overview of the Bio-Physical and Social Environment 54
8.2.1 Onshore Bio-Physical Environment 54
8.2.2 Offshore Bio-Physical Environment 55
8.2.3 Fisheries 55
8.2.4 Socio-Economic and Health Environment 56
8.3 Statutory Environmental and Social Assessment Process 58
8.3.1 Screening and scoping 58
8.3.2 Baseline data collection 58
8.3.3 Stakeholder engagement 59
8.3.4 Impact assessment 59
8.3.5 Management plans 60

8.3.6 Reporting and disclosure 60
8.4 Environmental Impact Statement - Structure and Format 60
8.5 Environmental Impact Statement - Impact/Aspects Significance Assessment 61
8.6 Summary of Impacts 63
8.6.1 Summary of impacts - Construction Phase 77
8.6.2 Summary of Impacts - Production Phase 78
9. Environmental, Social,Health and Safety Management and Mitigation 79
9.1 Environmental, Social and Health Commitments Register 81
9.1.1 Operational Control 82
9.2 Contractor Environmental, Social and Health Management Plans 82
10. Compliance Monitoring 84
10.1 Introduction 84
10.2 Monitoring 84
10.3 Assessment 85
10.4 Audits 86
10.5 Performance indicators 88
11. Communications, Reporting and Notification 89
11.1 Communication 89
11.2 Reporting 90
11.2.1 Contractor Periodic Reporting 92
11.3 Incident notification and reporting 93
11.3.1 Contractor Incident Notification and Reporting 93
11.3.2 Eni Ghana Incident Notification and Reporting 94
11.4 Reporting of Non-Conformities 95
11.5 Management of Change 96
11.6 Document Control 99
12. Incident and Non-Conformity Management 101

12.1 Introduction 101
12.2 Incident Management 101
12.3 Non-Conformity Management 103
13. Organization, Roles and Responsibilities 106
13.1 Introduction 106
13.2 Eni Ghana Organization, Roles and Responsibilities 106
13.3 Contractor Organization, Roles and Responsibilities 113
14. Training, Awareness and Competency 115
14.1 Introduction 115
14.2 Training Needs 116
14.3 Minimum Environmental, Social and Health Training Requirements 116
14.4 Roles and Responsibilities 118
14.5 Training Programs and Delivery 120

Annexes

Annex A – Commitment Register
Annex B – Recruitment, Employment and Training Plan
Annex C – Local Content Development Plan
Annex D – Workers' Management Plan
Annex E – Project Procurement Plan
Annex F – Stakeholder Engagement Plan
Annex G – Waste Management Plan
Annex H – Onshore Pollution Prevention and Control Plan
Annex I – Offshore Hazardous Materials Management Plan
Annex J – Offshore Hydrotest Disposal Plan
Annex K – Influx Management Plan
Annex L – Marine Traffic Management Plan
Annex M – Livelihood Restoration Plan

Annex N – Marine Mammals and Sea Turtles Protection Policy and Plan
Annex O – Cultural Heritage Management & Monitoring Plan
Annex P – Community Health Management Plan
Annex Q – Traffic Management Plan
Annex R – Water Management Plan
Annex S - Environmental Monitoring Plan
Annex T – Oil Spill Contingency Plan
Annex U – Community Investment Plan
Annex V – Biodiversity Management Plan
Annex W – Fisheries Management Plan & Participatory Monitoring Program
Annex X – Onshore / Offshore Security Management Plan
Annex Z – Emergency Response Plan
Annex AA – Medical Emergency Response Plan

1. Purpose

The ESHMP is an operational framework and umbrella management plan of the environmental, social and health requirements to guide Eni Ghana and its contractors and subcontractors during all phases of the Offshore Cape Three Points (OCTP) Project.

2. Applicability

This Environmental, Social and Health Management Plan (ESHMP) describes the requirements for Eni Ghana with regard to onshore and offshore environmental, social, safety and health related aspects, applicable during the construction, development drilling and production of the Offshore Cape Three Points (OCTP) Project.

Health	Safety	Environment	Social / Sustainability
x	X	x	X

3. References

3.1 Internal References

- Ghana OCTP Block Phase 1 Environmental, Social and Health Impact Assessment, ESL, June 2015. Doc. 000415_DV_CD.HSE.0208.000_00, Rev 05.
- Ghana OCTP Block Phase 2 Environmental, Social and Health Impact Assessment, ERM, Doc. 000415_DV_EX.HSE.0304.000_01, Rev 06.
- Eni Ghana Health, Safety and Environment Integrated Management System – HSE IMS.
- Eni Ghana Sustainability Management System – SUMS .
- msg-ssc-Eni spa - MSG "Sustainability stakeholders engagement and community relations"
- msg-ssc-Eni spa - MSG "Health, Security and Safety"
- msg-ssc-Eni spa - MSG "Procurement"
- msg-ssc-Eni spa - MSG "Human Resources"
- opi Imp 001 e&p r01 - Eni's Land Transport Operating Instruction.

3.2 External References

- IFC 2012, WB 2012, and MIGA 2013 (hereby referred to as WBG) Performance Standard 1[1]: Assessment and Management of Environmental and Social Risks and Impacts and Guidance Note 1. International Finance Corporation/World Bank Group, January 1, 2012;
- WBG Performance Standard 2: Labor and Working Conditions and Guidance Note 2. International Finance Corporation/World Bank Group, January 1, 2012;
- WBG Performance Standard 3: Resource Efficiency and Pollution Prevention and Guidance Note 3. International Finance Corporation/World Bank Group, January 1, 2012;

[1] IFC, WB and MIGA PSs

- WBG Performance Standard 4: Community Health, Safety, and Security and Guidance Note 4. International Finance Corporation/World Bank Group, January 1, 2012;
- WBG Performance Standard 5: Land Acquisition and Involuntary Resettlement and Guidance Note 5. International Finance Corporation/World Bank Group, January 1, 2012;
- 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;
- WBG Performance Standard 8: Cultural Heritage and Guidance Note 8. International Finance Corporation/World Bank Group, January 1, 2012;
- WBG General EHS Guidelines (2007)
- WBG EHS Guideline for Onshore O&G Development (2007)
- WBG EHS Guidelines for Offshore O&G Development (2015)
- Voluntary Principles on Security and Human Rights, 2000;
- ISO 14001 – Environmental Management Systems, BSI Group;
- OHSAS 18001 – Occupational Health & Safety, BSI Group;
- ISO 9001 – Quality Management System, BSI Group;
- ISO 26000 – Social Responsibility, BSI Group.
- International Association of Oil and Gas Producers (IOGP) Industry Best Practice guidelines.
- International petroleum Industry Environmental Conservation Association (IPIECA) Industry Best Practice guidelines.

4. Acronyms and Key Definitions

4.1 Acronyms

ALARP	As Low As Reasonably Possible
AoI	Area of influence
ATBA	Area To Be Avoided
BID	Background Information Document
DAoI	Direct Area of influence
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERM	Environmental Resources Management
ESAP	Environmental and Social Action Plan
ESHIA	Environmental, Social and Health Impact Assessment
ESHMP	Environmental Social and Health Management Plan
EPC	Engineering, procurement and construction
FPSO	Floating Production Storage and Offloading unit
GDP	Gross Domestic Product
GNGC	Ghana National Gas Company
GNPC	Ghana National Petroleum Company
HSE	Health Safety and Environment
HSE IMS	Health Safety and Environment Integrated Management System

IBA	Important Bird Area
IFC	International Finance Corporation
IFI	International Finance Institutions
IUCN	International Union for the Conservation of Nature
JV	Joint Venture
LTE	Landfall Terminal End
MD	Managing Director
MEG	Mono Ethylene Glycol
MoC	Management of Change
MSG	Management System Guideline
NADF	Non-Aqueous Drilling Fluid
NAG	Non- Associated Gas
NC	Non-Conformity
NGO	Non-Governmental Organization
OCTP	Offshore Cape Three Points project
ORF	Onshore Receiving Facility
PLET	Pipeline End Termination
PS	Performance Standard
SC	Steering Committee
SEP	Stakeholder Engagement Plan
SSIV	Subsea Safety Isolation Valve

STIs	Sexually Transmitted Infections
SU	Sustainability
SUMS	Sustainability Management System
TCF	Temporary Construction Facilities
UN	United Nations
VUGL	Vitol Upstream Ghana Limited
WB	World Bank

4.2 Key Definitions

Term	Definition
ESAP	Environmental and Social Action Plan established between Eni Ghana and Vitol and developed to comply with WBG and internal requirements associated to the Offshore Cape Three Points (OCTP) Project where 18 environmental and social actions, deadlines and indicators of completion are described.
International Industry Best Practice	There are a number of industry good practice standards and guidelines for offshore oil and gas developments. Considering the oil and gas industry, one's of the most commonly used best practices references are the guidelines and best practices standards provided by the International Association of Oil and Gas Producers (IOGP) and of the International petroleum Industry Environmental Conservation Association (IPIECA), of which Eni is member. In addition, WBG EHS Guidelines and WBG Performance Standards are also used.

Term	Definition
The Company	The Company operating the Project is Eni Ghana Exploration and Production Limited ("Eni Ghana").
The Project	The Offshore Cape Three Points (OCTP) Project involves the development of the Sankofa and Gye Nyame Fields located in the OCTP Block which is located approximately 60 km offshore the Western Region of the Republic of Ghana. The Project includes two phases: Oil development phase and Non Assocaited Gas development phase. It has offshore and onshore components.

5. Introduction

5.1 Project Overview

The Offshore Cape Three Points (OCTP) Project involves the development of the Sankofa and Gye Nyame Fields located in the OCTP Block which is approximately 60 km offshore the Western Region of the Republic of Ghana. The Project has two phases:

- **Phase 1: Oil development phase.** Project components include 14 subsea wells (8 Oil Producers, 3 water injection, 3 gas injection), installation of a Floating Production Storage and Offloading (FPSO) unit together with flowlines system, risers and umbilical.
- **Phase 2: Non Associated Gas (NAG) development phase.** Project components include five subsea gas production wells connected by subsea umbilical, risers, and flowlines to the FPSO installed for the Phase 1 project.

During operations, well fluids will be collected at a dedicated production manifold located on the FPSO where the multiphase fluids will be sent to a slug catcher for initial separation. The gas separated from the other fluids (mainly condensates and water) will then be routed to a dew point control system to achieve the required export specification ensuring no flow assurance problems. The treated gas will then be exported to shore via a new subsea pipeline. Onshore, the gas will be received at an Onshore Receiving Facility (ORF) and then sent to the existing GNGC sales pipeline.

A summary of the Project description is provided in Section 6 and a schematic of the main Project components provided in *Figure 6.1*. The onshore concession area is shown in *Figure 6.2.*

The block is licensed for oil and gas exploration and development by a joint venture (JV) composed of Eni Ghana Exploration and Production Limited ("Eni Ghana"), Vitol Upstream Ghana Limited ("VUGL"), and Ghana National Petroleum Company (GNPC). Eni Ghana is the operator.

5.2 Scope

Eni Ghana ("The Company") commissioned Environmental Resources Management (ERM) to develop this Environmental, Social and Health Management (ESHMP) Plan for the OCTP Development Project, as part of the Eni Ghana Health, Safety and Environment Integrated Management System (HSE IMS) and Eni Ghana Sustainability Management System (SUMS).

The ESHMP is primarily based on the findings of the OCTP Development Project Phase 1 and Phase 2 Environmental Impact Statements (Project EIS) and supporting studies.

This ESHMP provides the information necessary for the implementation of the environmental, health and safety and social protection measures for the Project. It describes the specific actions necessary to meet the ESHIA commitments, the Ghana environmental and social laws, Ghana EPA Permits and the WBG Performance Standards and the Environmental and Social Action Plan (ESAP). It also meets the objectives defined in the HSE IMS and SUMS. The plan includes the means, timeline, checklists, and designation of responsibility for compliance and conformity with these E&S requriements.

This ESHMP is applicable to all phases of the Project, including construction, drilling of planned wells, and production.

The decommissioning phase will be covered through a project-specific Decommissioning and Abandonment Plan (DAP) which will be developed before the end of the operational life of the project.

The plan will be based on national regulations, licence requirements and international standards prevailing at the time. Eni Ghana will adhere to Ghana environmental and marine laws and regulations that are in place at the time of decommissioning including those concerned with environmental protection, pollution prevention, waste disposal and navigational safety at sea. These could include the following:

- Environmental Assessment Regulations (LI 1652, 1999); and
- Oil in Navigable Waters Act (Act No. 235 of 1964).

In addition, the requirements of emerging legislation, including the Petroleum (Exploration and Production) Acts and the Health Safety and Environment Regulations for the oil and gas industry, will be adhered to.

The dismantling and reinstatement plan will be developed in compliance with the IMO recommendations and with the necessary measures for the protection of the marine and terrestrial environment. Where entire removal of offshore facilities is not technically feasible or would involve extreme cost, or an unacceptable risk to personnel or marine environment, then the possibility of a partial removal of the offshore structures may be evaluated and justified, according to the IMO recommendations.

5.3 Objectives

The Project has been designed with the intention to avoid, when and where practical, those situations or incidents that could cause unacceptable, adverse biophysical, socioeconomic, or health impacts. However, for those situations or impacts that cannot be avoided, Eni Ghana is committed to implement appropriate mitigation, management and monitoring measures.

The ESHMP acts as an umbrella plan that covers all management plans established for the OCTP Project activities (see *Table 5.1* for list).

The objectives of this ESHMP are to:

- Present the individual E&S management plans which are to be implemented, timing of implementation, and identification of responsibilities;
- Describe specific measures required to be implemented during project activities related to the management and mitigation commitments made in the OCTP Development Project Phase 1 and Phase 2 EISs (see Commitment Register, Annex A of this Plan);
- Describe specific additional measures required to implement project activities related to good industry practice, EIS approval conditions stipulated by the Ghanaian Government and applicable International Finance Corporation / World Bank Group Performance Standards (WBG PS) and ESAP requirements;

- Outline the roles and responsibilities of the environmental, social and health management organization for the Project;
- Communicate environmental, social and health expectations throughout the Company organization;
- Establish the framework and minimum requirements for contractors' ESHMP documents; and
- Establish the framework for monitoring compliance and set the reporting requirements.

In this context, the ESHMP and related Eni Ghana HSE IMS and SUMS will also be used as the overarching contractual documents to which the contractor and subcontractors shall comply with and implement the environmental, social and health management and mitigation requirements defined in this ESHMP and associated management plans.

The measures described in this ESHMP and associated plans are commitments taken by Eni Ghana and VUGL. Eni Ghana as Operator remains ultimately accountable for the implementation of such commitments. Responsibility for the execution of many of the measures however rests to a large extent with contractors and subcontractors. Company will verify, through a robust oversight and auditing programme, that the measures in this ESHMP are properly executed by contractors and subcontractors.

5.4 ESHMP Structure

The ESHMP main document is structured as follows:

- Chapter 5: Introduction
- Chapter 6: Project Description
- Chapter 7: Legal and Other Requirements
- Chapter 8: Environmental, Social, Health and Safety Assessment and Aspects
- Chapter 9: Environmental, Social, Health and Safety Management and Mitigation
- Chapter 10: Compliance Monitoring
- Chapter 11: Communications, Reporting and Notification
- Chapter 12: Incident and Non-conformities Management

- Chapter 13: Organization, Roles and Responsibilities
- Chapter 14: Training, Awareness and Competency

Supporting this ESHMP are a series of related discipline specific management plans, which are listed in *Table 5.1*.

Table 5.1 Environmental, Social and Health Management Plans for the OCTP Project

Management Plan		Objectives
Annex A	Commitment Register	• To provide the list of project commitments deriving from the ESHIA, Environmental Permit released from the Ghana EPA and the International Finance Corporation / World Bank (WBG).
Annex B	Recruitment Employment and Training Plan	• To maximize benefits of employment and skills enhancement. • To manage expectations and minimize negative impacts.
Annex C	Local Content Development Plan	• To define the project strategy that helps maximize Ghanaian workforce, goods and services on the project.
Annex D	Workers' Management Plan	• To address risks related to worker rights, by summarizing expectations and procedures to maintain fair working, activities and conduct.
Annex E	Project Procurement Plan	• To maximize Project procurement from local suppliers and economic benefit for local businesses.
Annex F	Stakeholder Engagement Plan (with Grievance Mechanism) -	• To establish and maintain positive community relations through effective communication and consultation. • To effectively manage community grievances and comply with the Project Grievance Procedure.
Annex G	Waste Management Plan	• To contain, transport, handle and dispose of solid and liquid wastes arising from project construction activities in such a manner as to avoid impacts to human health and the environment. • To dispose of wastes at facilities approved by Company, for which disposal (with or without prior treatment) is the only practicable option. • To present the Drill cutting management plan.
Annex H	Pollution Prevention and Control Management Plan	• To define procedures and ensure proper handling of materials and wastes. • To specify treatment needs prior to any discharge and emission. • To define actions to control pollution.

Annex I	Offshore Hazardous Material Management Plan	• To define procedures and ensure proper handling of offshore hazardous materials.
Annex J	Offshore hydrotest Disposal Plan	• To define procedures and ensure proper handling and disposal of hydrotest water.
Annex K	Influx Management Plan	• To avoid or minimize potential impacts associated with local and regional population influx to villages within the Area of Influence.
Annex L	Marine Traffic Management Plan	• To manage shipping vessel movements within the offshore Area of Influence and ensure the safe passage of local fishing boats along the coast.
Annex M	Livelihood Restoration Plan	• To address economic displacement (loss of assets, leading to loss of income or means of livelihood) of stakeholders from project land acquisition and mitigate adverse socioeconomic impacts.
Annex N	Marine Mammals and Sea Turtles protection Policy and Plan	• To minimize disturbances to minimise disturbance to marine mammals and sea turtles from the following operations: Drill ship, Support vessels and landfall construction and operation at the beach area
Annex O	Cultural Heritage Management Plan	• To avoid known cultural heritage sites where necessary and practicable. • Where avoidance is not possible, manage cultural heritage sites in consultation with Government and landowners.
Annex P	Community Health Management Plan	• To avoid or minimize risks to and impacts on the health of the local community during construction from both routine and non-routine circumstances.
Annex Q	Traffic Management Plan	• To manage construction traffic generated by the Project, minimize impacts on traffic disruption and road user delay and provide for the on-going safety of terrestrial fauna and road users, including pedestrians.
Annex R	Water Management Plan	• To reduce the impact on water quality from construction activities. • To reduce the impact on existing surface water flow regimes and groundwater aquifers arising from construction activities.
Annex S	Environmental Monitoring Plan	• Marine mammal observation monitoring program and a sea turtle monitoring program. • Offshore: sub-plans for each topic (sea water quality, marine fauna, FPSO air emissions, seabed monitoring, routine effluent and discharge monitoring) for all project phases • Onshore: sub-plans for each topic (noise emissions and ambient noise, ORF air emissions and ambient air quality, water quality/quantity) for project phases
Annex T	Oil Spill Contingency Plan	• To ensure effective, coordinated and rapid actions in the event of a spill in order to minimize environmental and social impact.

Annex U	Community Investment Plan	• To enhance wellbeing of the communities neighboring the Project. • To enhance operational efficiency. • To build strong relationship with local stakeholders.
Annex V	Biodiversity Management Plan	• To summarize all on-site biodiversity-related mitigation measures included in the EIS (including vegetation and alien species, biodiversity and ecosystem services). • Develop BAP for sea turtles and birds.
Annex W	Fisheries Management Plan and Participatory Monitoring Program	• To ensure that undue or reasonably avoidable adverse impacts on fisheries of the Project phases are prevented, that the livelihood of the affected fishermen is restored and that positive benefits of the Project are enhanced.
Annex X	Onshore and Offshore Security Management Plan	• To ensure that the safeguarding of project, related personnel and property is carried out in a legitimate manner that avoids or minimizes risks to the community's safety and security.
Annex Y	HSE Plan and Manual	• To define strategic HSE objectives and HSE performance targets of Eni Ghana exploration and production limited, as well, the key actions, resources, organization and schedules to achieve them.
Annex Z	Emergency Response Plan	• To cover all stages and phases of the emergency response, from initiation until the emergency is over and normalization has started.
Annex AA	Medical Emergency Response Plan	• To describe the response to various medical emergency scenarios. • To describe the procedure for arranging the International medical evacuation of expatriate Company personnel or their dependents. • To contain specific information required to activate early and efficiently the response to an emergency.

5.5 Requirements

Ghana Government Department of Environment and Conservation

Requirements for an ESHMP and guidance on scope and application are given in the Ghana environmental regulations. In particular, they are contained in the Environmental Assessment Regulations of 1999 (Part II, Section 9), where a 'provisional environmental management plan' is a required element of an EIS.

Lender Group

International standards such as those outlined in the WBG Performance Standards provide further guidance on the ESHMP scope and application. In particular, WBG Performance Standard 1 requires that the environmental and social management system be part of the client's overall management system for the project. It should include the organizational structure, responsibilities, policies, procedures and practices, and resources. Performance Standard 1 underscores the importance of on-going management of environmental and social performance to achieve continuous improvement. The WBG requires that a management system be in place at the level where their investment is utilized. In this case, it is at the level of the Project. It requires a plan for implementing the project-specific management programme developed through the environmental and social assessment.

The WBG Performance Standards considered relevant to this Project are:

- Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts;
- Performance Standard 2: Labor and Working Conditions;
- Performance Standard 3: Resource Efficiency and Pollution Prevention;
- Performance Standard 4: Community Health, Safety and Security;
- Performance Standard 5: Land Acquisition and Involuntary Resettlement;
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources; and
- Performance Standard 8: Cultural Heritage.

The WBG EHS Guidelines serves as a technical reference document to support the implementation of the WBG PS particularly those relating to PS3 (Resource Efficiency and Pollution Prevention), WBG PS 6 (Biodiversity Conservation and Sustainable Management of Living Resources), as well as certain aspects of WBG 2 (Labour and Working Conditions) and WBG 4 (Community Health, Safety and Security).

Eni Ghana Operations HSE Integrated Management System and Sustainability Management System

Finally, this ESHMP is intended to be consistent with the elements and in line with Eni Ghana's HSE IMS and Sustainability Management System (SUMS) as well as to comply with applicable Eni spa Management System Guidelines (MSG), procedures which are applied in Eni Ghana for both HSE IMS and SUMS. Appropriate plans (including this ESHMP), procedures and programs will be implemented during the course of the project to ensure that the key elements of the HSE IMS and SUMS are met. These will be based on industry best practice and Eni Ghana's HSE and sustainability policies and standards, such as the Eni Ghana HSE and Sustainability Guidelines.

The main elements of the Eni Ghana HSE-IMS and SUMS are shown in *Figure 5.1*.

The applicable Eni spa Management System Guidelines (MSG) are shown in Table 5.2.

Figure 5.1 Main elements of the Eni Ghana HSE-IMS and SUMS

Source: Eni Ghana, 2013

Table 5.2 Eni spa Management System Guidelines

msg-ssc-Eni spa	MSG "Sustainability stakeholders engagement and community relations"
msg-hse-Eni spa spa	MSG "Health, Safety and Environment"
msg-pr-Eni spa	MSG "Procurement"
msg-hr-Eni spa	MSG "Human Resources"

Intended Users and Audience

This ESHMP is a Company document that aims to communicate to the Company´s Project Team and contractors the Environmental, Health and Safety and Social Management requirements, mitigation measures and commitments pertaining to the OCTP Project.

The Company´s Project Team shall utilize this document during Project execution to achieve effective environmental, health and safety and social management.

Contractors shall utilize this document to ensure their respective ESHMP documents are fully aligned with the Company's E&S requirements and standards, and address the environmental and social management, monitoring and reporting requirements as applicable to each Contract scope of work.

In accordance with the requirements of the Lender Group and in the interest of transparency, this ESHMP will also be made available to the public on the company website in order to provide information to interested parties.

6. Project Description

This Section presents a brief summary of the details concerning the Project Description. Further details can be obtained from Chapter 4 of the Phase 2 EIS document (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 05).

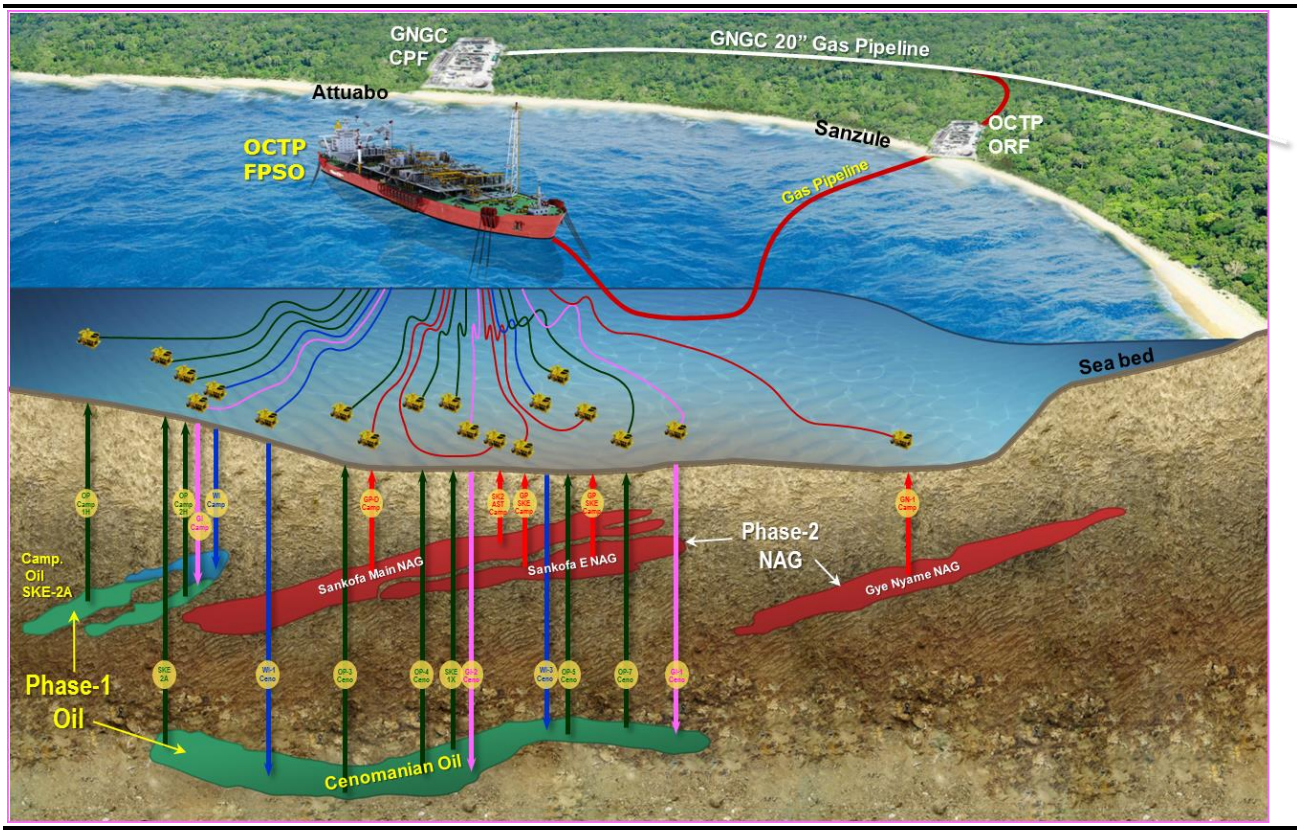
6.1 Overview

Development of the hydrocarbon reserves in the OCTP will be done in two phases in order to optimize the exploitation of the oil and gas discoveries:

- Phase 1: Oil Development Project. This phase consists of 14 subsea wells (8 oil producers, 3 water injectors and 3 associated gas injectors), subsea facilities, and a new conversion, double-hull floating production, storage and offloading (FPSO) unit that would be located about 60 km offshore, south of Sanzule.
- Phase 2: Non Associated Gas (NAG) Development Project. This phase consists of five (5) subsea wells, subsea facilities, minimal gas treating facilities located on the Phase 1 FPSO unit, 63 km subsea gas pipeline, onshore receiving facilities (ORF) and other onshore facilities.

Figure 6.1 presents a schematic of the integrated development scheme. Phase 1 components are shown in green while Phase 2 components appear in red.

Figure 6.1 Schematic of the OCTP Project



Source: Eni, 2015

6.2 Project Location

The OCTP field is located about 60 km south of the village of Sanzule on the Western Ghanaian coast. The fields are located in water depth of approximately 500 m to 1000 m.

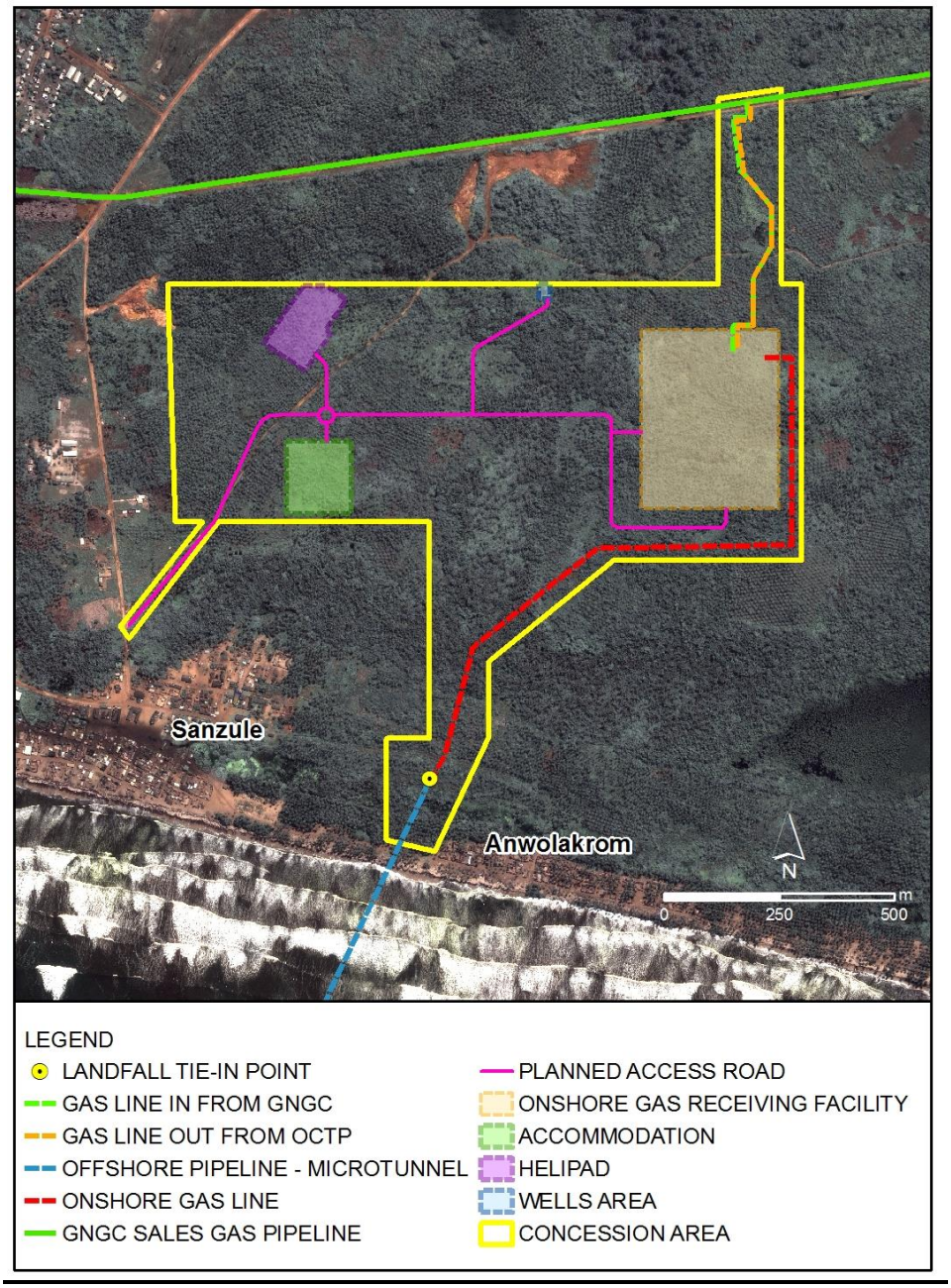
The wells, subsea infrastructure, and FPSO will be located in the OCTP Block. The gas export sealine will run for 64 km from the FPSO to an onshore LTE tie-in point in Sanzule, and then will be connected to the the onshore pipeline from the ORF located 200m onshore from the shoreline. The onshore components will be located in the community of Sanzule, approximately 900 m northeast of the village (*Figure 6.2*).

The FPSO is located above the reservoirs at the following geographic coordinates: Latitude: 4° 28' 9.678''N and Longitue: 2° 33' 12.140''W (*Figure 6.1*).

The onshore concession area is shown in *Figure 6.2*.

The onshore facilities will include permanent facilities such as the ORF (90,000 m^2), the permanent accommodation camp (27,000 m^2), the helipad, roads and pipelines (shown in black).

Figure 6.2 Onshore Receiving Facilities layout



Source: Eni, 2017

6.3 Project Schedule and Duration

The offshore construction activities started in July 2015 with the drilling of wells, and will end approximately in the first quarter of 2019.

Onshore construction will last approximately from the end of 2016 to the second quarter of 2018, with early works starting in the second quarter of 2016.

Oil production started in the second quarter of 2017. Gas production is expected in mid 2018.

The following table presents the project schedule and duration represented in quarters.

Table 6.1 Construction Schedule and Duration

Year	2015				2016				2017				2018				2019			
Quarter	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Offshore facilities construction: Wells drilling and completion (until beginning of 2019)																				
Site Preparation and Onshore facilities construction (three years duration and early works)																				
Oil production facilities installation																				
Gas production facilities installation																				

The production phase started with the first oil in Q2 2017. The overall production period is foreseen to last for 20 years.

6.4 Project Construction Activities

The Project will comprise the following main construction and development drilling activities.

6.4.1 Site preparation

As a first step, the site of the onshore facilities will be prepared. This will involve equipment mobilization, material transport, site clearance and infilling for the ORF, the

onshore pipelines and temporary facilities and construction of internal roads for the ORF, the accommodation camp and temporary facilities.

6.4.2 Construction phase

For the offshore part of the Project, this phase will include:

- Well drilling, re-entry, completion and testing;
- Subsea system installation;
- FPSO mooring and hook up;
- Gas export pipeline laying;
- Pre-commissioning activities (including pipeline hydrotesting and subsea system testing).

The offshore construction phase will require the use of a drilling rig, pipeline laying barges for shallow and deep waters, mooring vessels for FPSO, support and supply vessels and tugs.

For the onshore part of the Project, the activities will include:

- Gas export pipeline installation (underground);
- ORF construction;
- Permanent accommodation camp and helipad construction;
- Temporary facilities construction;
- Pipeline from ORF to GNGC pipeline (underground).

This phase will require use of cranes, excavators, earthmoving equipment, trucks, vehicles, generators, concrete mixers.

6.4.3 Well Drilling

Well drilling will be performed by the drilling rig Maersk Voyager. This rig can operate in water depths of up to 3,300 m. It is an advanced drilling rig designed to minimize emissions and discharges to the environment.

Well drilling requires the use of drilling fluids which are injected in the borehole to serve various purposes: move debris from the bottom of the well and carry it up to the surface,

cool and lubricate the drilling bit, contain the fluids present in the rock formations, consolidate the walls of the borehole and reduce infiltration into the formation. The drilling fluids can be water or oil based depending on the drilling conditions. Both drilling fluids will used in this case: water based drilling mud for the shallow drilling section and non-aqueous drilling fluid system for the deep drilling section. There will be no discharges of exhaust drilling muds in the environment. Appropriately treated drilling cuttings will be discharged to the seabed near the drilling point. Collected liquids will be offloaded periodically to the supply vessel tanks and then carried to land for treatment and disposal.

6.4.4 Offshore Pipeline

A 63 km long rigid pipeline will be laid on the seabed. The main subsea pipeline will be laid down by two lay barges using the S laying mode for shallow water section and J laying mode, for the deepest water. In the nearshore area and at the landfall a trenchless method will be adopted to install a microtunnel using an Horizontal Direct Drilling system from the onshore Landfall Terminal End (LTE) tie-in point with a length of 1 km offshore. The pipeline will be at a maximum depth of 8-10 m below the sea bed or the ground surface from the microtunnel exit point to the LTE tie-in.

6.4.5 Onshore Facilities

Onshore there will be both temporary construction facilities and permanent operations facilities (*Figure 6.2*):

Permanent facilities include:

- ORF;
- permanent worker accommodation camp;
- helipad;
- water wells area, and
- roads and pipelines.

Temporary construction facilities include:

- temporary construction site;
- temporary accommodation camp;

- construction camp;
- LTE contruction site and camp.

The initial step in the onshore construction process will involve clearing vegetation and levelling the site. The site road network will be constructed at this stage to assist in the movement of heavy equipment.

The construction of the ORF is a conventional civil project and does not require unusual heavy equipment or construction techniques. The major machinery needed are bulldozers, heavy excavators, soil removal trucks, large heavy-lift cranes, generators, excavators, and rock breakers.

The temporary accommodation camp will be constructed to house personnel during the three year construction phase estimated at 400 to 600 workers. The permanent accommodation camp will be about 27,000 m^2 and will be located near the ORF. The camp will house about 45 workers involved in the operation of the onshore facilities.

6.4.6 Onshore Pipeline

There will be two sections of gas pipeline onshore:

- One pipeline connecting the offshore section to the ORF (about 1,500 m); and
- Two pipelines (gas in from the GNGC pipeline and gas out to the GNGC pipeline) connecting the ORF to the existing GNGC gas pipeline (about 800 m).

The onshore pipelines will be installed underground. The onshore pipelines will involve clearing a strip about 34 m wide and digging a trench. On one side of the trench, excavated topsoil and other material will be separately stockpiled. On the other side of the trench the pipeline assembly and vehicles movements will occur.

6.5 Emissions, Discharges and Wastes

6.5.1 Air emissions

During the construction phase the airborne emissions will be the exhaust gases from the heavy equipment, vehicles and vessels. The main pollutants produced will be mono-

nitrogen oxide (NO_X), Carbon monoxide (CO), Particulate Matter with a fraction of particulates in air of inferior to 10 µm (PM_{10}) and Sulfur oxide (SO_X). Dust will also be produced during earth moving, excavation and transport activities. In addition, during well production tests, gas from the tested wells will be flared for a limited period (4.5 days).

During operation phase, offshore air emission sources are related to the FPSO operation such as gas turbines for power generation and gas compression. As the project has adopted a "zero flaring" design philosophy, flares will be used only in emergency or plant upset conditions and thus for very limited periods.

For the ORF main air emission sources will be gas turbines, diesel power generation units and gas compression. The vent at the ORF will be used only during commissioning, start-up, shut down and emergency conditions for the pipeline and plant depressurisation.

6.5.2 Wastewater discharges

During the construction phase, the vessels (including pipe laying barges and drilling rig) will adhere to MARPOL regulations and will be equipped with waste water treatment units for the treatment of civil wastewater. In order to operate in the OCTP Project area, vessels will have to receive the following three certificates on a yearly basis (as per their applicability):

- International Oil Pollution Prevention Certificate
- Supplement of the International Oil Pollution Prevention Certificate
- International Sewage Pollution Prevention Certificate

Certificates for vessels (where applicable) are being issued by the American Bureau of Shipping (ABS).

Flowlines and risers will be leak tested after installation and hook up to the FPSO. The fluid used for leak test will be treated filtered seawater. The purpose of hydrostatic testing is to confirm the integrity of the onshore and offshore pipelines. The pipelines will be flooded with seawater (additives will be added) by injection via a temporary pig launcher to allow leak test from the FPSO or from the ORF once the riser and jumper of subsea system have been connected to the gas export Pipeline End Termination (PLET).

Dewatering after leak test will be performed from ORF to Pipeline End Termination (PLET)/ Subsea Safety Isolation Valve (SSIV) in order to allow offshore water discharge.

Only environmentally friendly inhibitors will be used. The types of inhibitor to be used are not known at this stage but will be GOLD CHARM rated at a concentration of 500ppm (e.g., corrosion inhibitor/oxygen scavenger/Biocide mixture type RX5227); their discharge concentrations will be in line with local and international standards (e.g., MARPOL regulations, EPA's Guidelines for Environmental Assessment and Management in the Offshore Oil and Gas Industry). The discharge flowrate will be approximately 0.5 m^3/s. The distance of discharge will not be known before detail engineering of T&I (Test & Inspection). Mono ethylene glycol (MEG) will be used for the line that will be dewatered and volumes will be defined during detail engineering of T&I (Test & Inspection).

For onshore construction activities, waste water is planned to be either be treated by the sewage treatment plant at the ORF or disposed offsitefor any liquid produced during this phase, including LTE Horizontal Direct Drilling fluids and cuttings

During operation, FPSO will generate different streams: some of them, such as cooling water, domestic water, service water, bilge water will be discharged to the sea after treatment on the FPSO, while produced water will be re-injected in injection wells.

The waste water effluents from the ORF operation will be mainly civil water and storm water, as the ORF processes only the gas stream and thus no liquids will be generated and no chemicals will be added into the gas stream. Main industrial sources of wastewater will be accidental contamination with diesel (for emergency power generation) and lube oil (from turbines and compressors) and turbine blade washing. The wastewater effluents will be removed and disposed of in appropriate and licensed treatment plants.

6.5.3 Noise

During the offshore construction phase noise emissions will be produced by the drilling and completion activities, by FPSO installation and mooring activities and by the support vessels.

During onshore construction noise will be generated mainly by the heavy equipment and ORF installation.

During commissioning phase, noise sources are compressors and pumps for the hydrotesting.

During operations offshore noise will be generated mainly by the FPSO processing equipment, while onshore, the ORF will generate continuous noise emission sources with gas turbines, diesel power generators and the compressors. Some discontinuous noise sources will be present in the ORF: operation valves, filters and air coolers.

The ORF design will be developed assuring that all the equipment is in compliance with the applicable limits and, where necessary, noise attenuation packages will be used.

6.5.4 Waste

In the OCTP project, only waste management companies approved by Ghanaian authorities will be used for transportation, recycling and disposal of produced wastes. A Waste Management Plan (Annex G of the ESHMP) is in place at Eni Ghana.

During offshore construction phase wastes are produced from drilling and completion activities (used drilling muds, drilling fluids, cuttings), domestic and other solid waste (oily rags, empty cans, batteries).

Seawater drilling mud will be discarded to the seabed, while Non Aqueous Drilling Fluid (NADF) will be treated on the rig and discharged at water depths equal or greater than 500 m. Discharge will be in compliance with Ghana EPA limits. The project's environmental assessment has provided a full and detailed justification of the proposed disposal option. As part of drill cuttings study, modeling has been undertaken to quantify the transport, dispersion, and bottom deposition of discharge drill cuttings, and demonstrates that impact is not significant. All the other waste produced during the construction activities will be collected on the drilling vessel and brought onshore for appropriate treatment and disposal.

During onshore construction activities, all waste materials will be collected, stored and transported separately in appropriate and approved containers by certified waste management contractors.. New pipeline construction methodology ("Direct Pipe") will ensure that minimum soil is excavated. Excavated soil will be manageged as per the most updated version of the operating instruction, opi ms hse 026 eni ghana "Topsoil Management". Wastewater and solid waste from the work and construction sites will also be generated and disposed off-site according to local and international standards.

During FPSO operations, limited quantities of waste will be produced mainly due to equipment maintenance and operation. Waste will be collected, unloaded and transported onshore to approved facilities to be disposed in line with the Eni Ghana Waste Management Plan (Annex G of the ESHMP), local regulations and best practice.

During ORF operation, small quantities of waste will be produced from the ORF from equipment maintenance and operation. Domestic waste will also be generated. Both waste types will be handled according to the Eni Ghana Waste Management Plan (Annex G of the ESHMP), local regulations and best practice.

6.6 Personnel Requirements

During construction phase a total peak of workforce demand for onshore construction will be approximately 400-600 people, while for offshore activities about 300 workers will be employed for drilling activities, 210 for FPSO mooring and 200 for gas export pipeline laying. During the construction phase, Ghanaians will be involved mainly in ORF construction activities, while offshore activities will involve mainly expatriates.

During operations, permanent employees on the FPSO will be approximately 150-165, while in the ORF about 40 people will be employed.

6.7 Health and Safety

The OCTP Project will be developed and will operate in compliance with safety requirements included in all applicable conventions and codes that cover maritime activities and Ghanaian legislation and regulations that cover onshore operations.

Moreover, it will adhere to the Eni Ghana HSE Integrated Management System (IMS), as well as Eni HSE standards and project HSE documentation. The Eni Ghana HSE IMS is compliant with ISO 14001 and OSHAS 18001 regulations.

Additional details are presented in Eni's Health and Safety Management Plan (Annex Y Eni'spln ms hse 001 eni ghana r06- HSE Plan).

6.8 Security

Construction and Development Drilling Phase

During onshore construction fencing is not foreseen, but access to worksites and areas with heavy machinery movement will be restricted for safety reasons. Onshore security will be assured by a private company with unarmed personnel. As part of the recruitment process and vendor management policies, background checks will be carried out to ensure that security providers as well as any other worker or contractors are not implicated in past abuses.

The principle of proportionality and practices consistent with the UN Code of Conduct for Law Enforcement Officials will be applied. Annex X Onshore and Offshore Security Management Plan will be aligned with the Voluntary Principles on Security and Human

Rights. The Voluntary Principles is a Multi-stakeholder initiative (governments, companies and NGOs) and are based partly on, and consider the UN Code of Conduct for Law Enforcement Officials and the UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials.

Around the FPSO, a safety zone of 500 m has been established for safety and security reasons and a further 4nm Area To Be Avoided (ATBA) to protect the offshore project installations is approved. Eni will provide a dedicated patrol vessel to monitor and patrol offshore safety zones (personnel will be unarmed). Ghana Navy will support Eni's patrol vessel to assure the buffer zones are respected. In that case Eni will seek to ensure personnel act in a manner consistent with its policies and will encourage the authorities to disclose security arrangements for the project. Additional Ghana Navy representatives can be deployed in the Eni's patrol vessel for extra support (in this case, they will be unarmed). In the agreements set forth between Eni Ghana and the public forces, these basic references to the Voluntary Principles on Security and Human Rights will be included.

Production phase

During onshore production phase, fencing is foreseen only aound permanent project facilities: ORF, Accommodations and Wells area; no fencing is foreseen at Eni Concession boundaries as well as along the pipeline RoW. Onshore security will be assured by a private company with unarmed personnel patrolling the project facilities through the dedicated patrol roads. Additional details are presented in the Offshore and Onshore Security Management Plans (Annex X) including a specific patrolling procedure.

6.9 Logistics

Construction and Development Drilling Phase

During drilling activities, both onshore and offshore traffic will be increased. Drilling material will arrive from abroad, be transferred to the Takoradi logistic base and when needed, sent offshore by two Platforms supply Vessels (on average 4 trips/week). The Takoradi logistic base is situated 9 km north-west from Takoradi Port. It is designed to host and manage all the required items during the different phases of the Project.

Personnel will be transported to the drilling rig from onshore using one helicopter, on average 2/4 trips per day.

For the construction of the onshore facilities, there will be considerable transportation of personnel, heavy equipment and materials along the working strip that runs along the right of way of the pipeline. Topsoil will be stock- piled on one side of the pipeline, while vehicles/machine transit will take place on the other side.

- . At the onshore LTE worksite, an overall movement of about 60 trucks is foreseen for the realization of the microtunnel through the Direct Pipe method that replaced the open trench option.
- Helicopters will only be used for emergencies.
- Discontinuous movements are foreseen through the public roads (mainly from Takoradi). An average number of 50 vehicle movements per day for transportation of construction material, construction equipment and construction personnel. Various types of vehicles are foreseen such as: 30 ton trucks, mini buses, water trucks, pick-ups, light vehicles, etc.

The onshore contractors selected by Eni Ghana will be responsible of developing the specific logistics plan for the project. Additional details are available in the Phase 2 EIS, the Traffic and Marine Traffic Management Plans (Annex Q and Annex L, respectively), as well as Eni's Land Transport Operating Instruction.

Production Phase

During offshore production operations, an average of 150-165 workers will stay and operate the FPSO. Maintenance material will be stored at Takoradi logistic base and when needed, sent offshore, by two Platforms supply Vessels together with food, beverage and supply for accommodations provision (on average 4 trips/week).

Personnel will be transported to the FPSO from onshore Takoradi airport using one helicopter, on average 2/4 trips per day.

At onshore facility the presence of about 40 workers is foreseen. 20 workers will be in charge of the production operations, while 20 workers will be in charge of the maintenance of accommodation.

The ORF will be provided with a crane necessary to perform ordinary maintenance to the installations. Therefore the travels from/to Takoradi will be mainly limited to the provision of food and beverage, furniture for accommodation, and waste disposal. An avergage of about 5-10 vehicles movement per day is foreseen from/to Takoradi including light trucks and vehicles. 30-tons trucks movements will be less than once a week.

Helicopter based at the ORF facilities will be used in case of emergency.

7. Legal and Other Requirements

This Section presents the requirements applicable to the Project, which are those prescribed in the laws and regulations of Ghana, International Financial Institutions guidelines and standards and Eni Management System.

7.1 Laws and Regulations of Ghana

Laws and regulations relevant to the Project are listed in *Table 7.1*. Further detail is provided in Chapter 3 of the EIS document.

Table 7.1 List of Relevant National Environmental, Social, and Health Legislation

Applicable Legislative Instrument	Aspect
Environmental Protection Agency Act, 1994 (Act 490)	Environmental Protection
Environmental Assessment in Ghana, a Guide to Environmental Impact Assessment Procedures (EPA, 1996).	Environmental Protection
EPA Environmental Quality Guidelines for Ambient Air	Environmental Protection
EPA Guidelines for Environmental Assessment and Management in the Offshore Oil and Gas Development (EPA, 2010)	Environmental Protection
EPA Sector Specific Effluent Quality Guidelines for Discharges into Natural Water Bodies	Environmental Protection
EPA General Environmental Quality Standards for Industrial or Facility Effluents, Air Quality and Noise Levels	Environmental Protection
Ghana Oil & Gas Operational Guidelines	Environmental Protection
Environmental Assessment Regulations, 1999 (LI 1652) Environmental Assessment (2002 Amendment) Regulations	EIA requirements and process
Wild Animals Preservation Act, Act 235 1964	Biodiversity
Wildlife Conservation Regulations 1971 (LI 685),	Biodiversity
Wild Reserves Regulations 1971 (LI 740)	Biodiversity
Wetland Management (RAMSAR sites) Regulation, 1999	Protected Areas
Water Resources Commission Act (Act 522 of 1996)	Water Resources

Applicable Legislative Instrument	Aspect
Water and Sewerage Corporation Act (Act 310 of 1965).	Water Resources
Beaches Obstructions Act, 1987 (CAP. 240)	Coastal and maritime legislation
Ghana Maritime Authority (Amendment) Act 2011 (Act 825)	Coastal and maritime legislation
Ghana Shipping Act	Coastal and maritime legislation
Ghana Maritime Security Act	Coastal and maritime legislation
The Maritime Zones (Delimitation) Law	Coastal and maritime legislation
Ghana Shipping (Protection of Offshore Operations and Assets) Regulations	Coastal and maritime legislation
Fisheries Act 2002, Act 625	Fisheries and Access to Fishing
Fisheries Regulation, LI 1968	Fisheries and Access to Fishing
Oil in Navigable Waters Act (Act 235 of 1964)	Pollution Control
Marine Pollution Bill (pending approval)	Pollution Control
Marine Pollution Prevention and Control Regulations (pending approval)	Pollution Control
Ghana National Petroleum Corporation Act (Act 64 of 1983)	Petroleum activities
Petroleum (Exploration and Production) Law (Act 84 of 1984)	Petroleum activities
National Petroleum Authority Act (Act 691 of 2005)	Petroleum activities
Petroleum Commission Act	Petroleum activities
Energy Commission Act (Act 541 of 1997)	Energy activities
Ghana Highways Authority (Act 540 of 1997)	Transport activities
Labor Act, 2003, Act 651	Labor and Social responsibilities
The Children's Act (Act 560) of 1998	Labor and Social responsibilities
Commission on Human Rights and Administrative Justice Act (Act No. 456 of 1993)	Labor and Social responsibilities
National Vocational Training Act (Act 351) of 1970	Labor and Social responsibilities
Local Government Act 462	Land management
National Development Planning Commission Act, 1994	Land management
National Development Planning (Systems) Act, 1994	Land management
National Building Regulation, 1996 (LI 1630)	Land management
Town and Country Planning Ordinance, 1945	Land management

Applicable Legislative Instrument	Aspect
Lands Commission Act, 1994 (Act 483)	Land management
Land Planning and Soil Conservation Act 1953 (Act 32)	Land management
Stool Lands Act, 1994 (Act 481)	Land management
State Lands Act. 1962 (Act 125)	Land management
Hospital Fees act, 1971 (Act 387)	Health
Mental Health Decree, 1972 (NRCD 30)	Health
Nurses and Midwives Decree 1972 (NRCD 117)	Health
Medical and Dental Decree 1972 (NRCD 91)	Health
Medical Profession (Professional Conduct and Ethics). Regulations, 1975 (LI 1023)	Health
The Ghana College of Physicians and Surgeons Act (635)	Health
Ghana Health Service and Teaching Hospital Act, 1996	Health
Traditional Medicine Practice Act (Act 575)	Health
Private Hospitals and Maternity Homes (No. 9) Act, 1958 (LN. 295)	Health
Pharmacy Act 1994 (Act 489)	Health
Environmental Protection Agency Act (Act 490);	Health
Infectious Diseases, (Cap 78)	Health
National Health Insurance Act 2003 (Act 650)	Health
National Health Insurance Regulation 2004 (L.I 1809)	Health
Local Content and Local Participation Regulations, 2013 (LI 2204)	Local Content
Local Content and Local Participation Policy Framework, 2011	Local Content
Ghana Constitution	Influx
Citizenship Act – 2000 (ACT 591)	Influx
Immigration Act – 2000 (ACT 573)	Influx
Environmental Assessment Regulations (LI 1652)	Cultural Heritage
The Cultural Policy of Ghana: National Commission on Culture (NCC 2004)	Cultural Heritage
International Covenant on Economic, Social and Cultural Rights (Signed and ratified by Ghana on September 2000)	Cultural Heritage

Applicable Legislative Instrument	Aspect
Criminal and Other offences (Procedure) act - 1960 (Act 30)	Security
Ghana Martinime Security Act – 2004 (Act 675)	Security
Security and Intelligence Agencies Act – 1996 (Act 526)	Security

7.2 International Finance Institutions Requirements

The Project is aligned to comply with the relevant standards and guidelines for environmental and social performance set out and adopted by the World Bank Group (WBG). In particular the Project commits to comply the World Bank Group Performance Standards for Environmental and Social Sustainability (2012), the Performance Standards (PS), and is consistent with the World Bank Group Environmental, Health and Safety (EHS) Guidelines and commits to comply with the ESAP requirements. The WBG PS and Guidelines are summarized in *Table 7.2*. A summary of the ESAP requirements is included in *Table 7.3*.

Table 7.2 WBG PS and Guidelines

PS 1: Assessment and Management of Environmental and Social Risks and Impacts	Performance Standard
PS 2: Labor and Working Conditions	Performance Standard
PS 3: Resource Efficiency and Pollution Prevention	Performance Standard
PS 4: Community Health, Safety, and Security	Performance Standard
PS 5: Land Acquisition and Involuntary Resettlement	Performance Standard
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Performance Standard
PS 8: Cultural Heritage	Performance Standard
EHS General Guidelines	EHS Guideline
EHS Guidelines for Offshore Oil and Gas Development	EHS Guideline
EHS Guidelines for Onshore Oil and Gas Development	EHS Guideline

Table 7.3 ESAP Requirements

Item 1	Development of a construction/development phase Environmental, Social, Health Management Plan (ESHMP) and the relevant management plans and programs in advance of development drilling and construction, followed by a production/operations ESHMP which will be developed before first oil, with gas-related elements integrated as needed before first gas.
Item 2	Eni Ghana will require that contractors adopt measures and bridging documents, where applicable, to ensure with alignment with company policies, procedures and documents from its HSE-IMS and SUMS as well as with the porject's ESHMP.
Item 3	Eni Ghana will implement well integrity and control strategies and develop specific Well Control Emergency Response Plans for each well drilled.
Item 4	Eni Ghana will develop the specific E&S monitoring plans and implement a number of pre-construction surveys.
Item 5	Eni Ghana will report on their best efforts to engage other developers, local institutions and government, and other stakeholders in designing coherent management strategies to mitigate cumulative impacts.
Item 6	Eni Ghana will update and refine the air emission dispersion and noise propagation modeling during production facility final design to inform the identification and development of a package of air emissions reduction measures.
Item 7	Eni Ghana will develop and enforce a policy and relevant procedures to ensure that operations of drillship, support vessels and helicopters minimize disturbance to marine mammals and turtles.
Item 8	Eni Ghana will maintain a quantification program for GHG emissions, according to an internationally recognized emissions estimation methodology, and will establish annual review programs to identify areas of improvement and GHG emission reduction.
Item 9	Eni Ghana will include an environmental lead as part of the oil spill response team and will develop a clear mechanism of escalation of response effort based on coastal and biodiversity sensitivity.
Item 10	Eni Ghana with the support of VUGL will develop and implement a Livelihood Restoration Plan (LRP) for affected people in the community of Sanzule.
Item 11	Eni Ghana with the support of VUGL will develop a Fisheries Management Plan (FMP).
Item 12	Eni Ghana with the support of VUGL will develop a Biodiversity Management Plan (BMP and relevant Biodiverisity Action Plans) and will implement it, in collaboration with recognized species specialists.
Item 13	Eni Ghana will ensure that support helicopters will routinely avoid flying over the sensitive areas of Amansuri wetland and that, if avoidance is not feasible due to weather conditions, a minimum altitude will be specified, according to international good practice, when flying over this area to minimize disturbance to wildlife.

Item 14	Eni Ghana and VUGL, will develop and implement a community investment strategy for the area of influence of the project by identifying areas of potential social investment based on community assets and needs.
Item 15	Eni Ghana and VUGL will hire an independent E&S consultant (IESC) to monitor and report on implementation of this E&S Action Plan and compliance with Performance Standards and E&S commitments.
Item 16	VUGL will assign an E&S assurance manager to the OCTP project to oversee environmental, health, safety and social aspects, ensuring compliance with Performance Standards and project E&S commitments.
Item 17	VUGL will develop and adopt a Human Resource Policy.
Item 18	VUGL will update its security policy to be aligned with the Voluntary Principles on Security and Human Rights.

7.3 Company Policy and Management System

7.3.1 HSE Integrated Management System

Eni Ghana, through its HSE IMS (Integrated Management System), is committed to guarantee the Sustainable Exploration & Production of Oil & Gas in Ghana by applying its best standards, to protect the health and safety of its employees, contractors, visitors, and the general public, while preventing pollution and minimizing any adverse effects on the environment and the host community, in respect with their traditional values and historic heritage. The HSE IMS and the SUMS (see section 7.3.2 below) escribe how Eni Ghana manages HSE and social issues commensurate with the company's potential risk exposure and in line with the Company's Sustainability's engagement and values.

The Eni Ghana HSE IMS is the integrated management system applicable for the project; for additional information on the principles and their practical application in the Eni Ghana HSE-IMS, see Section 4.12 of the Phase 2 EIS (Doc. 000415_DV_EX.HSE.0304.000_01, Rev 06).

The HSE IMS will be frequently reviewed as and when necessary. It is subject to constant internal audits (Technical Audits carried out by Eni headquarters with the aim of identifying any potential gaps and indicating necessary actions to close them). Additionally, as the company is ISO 14001 and OHSAS 18001 certified, it is subject to audits from a third party for compliance to the above mentioned standards. Audits are

carried out annually as a surveillance audit and every three years for re-certification purposes.

The HSE IMS, being a live system, applies to all activities performed by or on behalf of Eni Ghana throughout the project life cycle (from exploration, through development and production including decommissioning). It includes the activities undertaken in Ghana and the contractor's work locations overseas. Contractors, and in particular major contractors, will have their own management systems which shall be aligned with Eni Ghana HSE Guidelines, Protocols, Manuals, Standards, Procedures Work Instructions, Programmes and Plans within the HSE IMS.

The HSE IMS documentation is designed to ensure that the Company's operations and activities are performed in accordance with the requirements defined by the Laws of the Republic of Ghana, standards to which the Company voluntarily subscribes, and the expectations of the Company's JV Partners and Stakeholders. To achieve this objective, Eni Ghana works in collaboration with VUGL, one of the Partner of the JV. As VUGL are required to provide environmental and social assurance to their project lenders, VUGL provide a review and advisory role in the development and implementation of management plans with the aim of fulfilling the project EIS and ESAP commitments.

The HSE IMS is structured in line with IOGP Guidelines for the Development and Application of HSE Management Systems. It also is compliant with ISO 14001 and OSHAS 18001 regulations.

The system concentrates on those activities with the potential to have the greatest impact on people and the environment and provides a process for continual improvement in the Company's HSE performance.

The HSE Integrated Management System includes the following documents (see *Table 7.4*).

Table 7.4 HSE Integrated Management System for Eni Ghana: Document list

Guidelines	Protocols	Manual	Plans	Standards	Procedures
HSE Guidelines Sustainability Guidelines	• Driving Protocol • Drugs and Alcohol Protocol	• HSE IMS Manual	• HSE Plan • H2S Safety Plan • Drilling Oil Spill Contingency Plan – Keta Block • HSE 4-year Plan • Waste Management Plan • Emergency Response Plan • Medical Emergency Response Plan	• Standard on Contract HSE Requirements • Standard on In Vehicle Monitoring System • Standard on Emergency Response Strategy	• HSE Documentation Management • HSE Legal Requirements • HSE Training • Non conformities • Incident and Investigation Reporting Procedure • Identification of Significant Environmental Aspects • Risk Management • HSE Monitoring and Reporting • HSE Communication • Audit • Management Review • HSE Objectives and Plans • Meet and Greet • Contractor HSE Management • Emergency Medevac • Emergency Evacuation – Accra Offices • Management of Change • Emergency Evacuation – Takoradi base

7.3.2 SUMS (Sustainability Management System)

Being sustainable for an oil & gas company means managing risks and mitigating the impacts of its operating activities while creating added value for its stakeholders.

The development of Eni Ghana's model aims to integrate the sustainability principles and objectives in business activities, also in order to promote the economic growth of the Company and the enhancement of its reputation.

Within this scenario and according to the Eni mission, Eni Ghana has developed a Sustainability Management System (SUMS) in order to:

- promote the integration of sustainability in all phases of the Upstream business, from the bid/negotiation phase;
- increase the standardization of the sustainability management and the application of best practices;
- systematize the management of stakeholders;
- effectively mitigate the risks related to possible complaints of stakeholders;
- adopt a structured approach to social projects through early planning, selection and their effective implementation; and
- create a sustainability culture and effective management of other sustainability processes and improve the skills of the people who manage sustainability at central and peripheral level.

In order to provide all stakeholders with an internationally recognized framework and to develop a system consistent with the other management systems already present in Eni, Eni Ghana chooses to be guided in building SUMS and approaching sustainability themes by ISO 26000 guidance.

This international guidance provides directives on the underlying principles of sustainability, recognizing sustainability and engaging stakeholders, the core subjects and issues pertaining to sustainability and on ways to integrate sustainability behaviour into Eni Ghana.

The SUMS includes a number of monitoring and evaluation activities, comprising the following sub-processes:

- monitoring and reporting;
- non conformities, preventive and corrective actions management; and
- auditing.

The monitoring and reporting process helps Eni Ghana to understand its position and performances regarding sustainability themes implementation and to assess the relevance, effectiveness, efficiency, and long-term impact of the initiatives carried out or underway. Monitoring and reporting is also structured in order to control the progress status of sustainability related objectives.

In addition to sustainability performance oversight and monitoring continuous process, Eni Ghana carries out a periodical Management Review to determine the performance against their specific targets, objectives and priorities on sustainability issues, to identify new objectives and to identify possible needs to modify the set programs and the Management System's documents.

In order to exploit the synergies with other management systems and to define an approach already known and implemented by Eni Ghana, the SUMS has been organized following the typical structure proposed by international standards (ISO 14001, ISO 9001, OHSAS 18001). In particular, the SUMS is based, where applicable, on the P-D-C-A (Plan Do Check Act) cycle and follows the general structure of consolidated management systems (e.g. HSE).

The Sustainability Management System comprises the following documents (see *Table 7.5*).

Table 7.5 Sustainability Management System for Eni Ghana: Document list

Guidelines	Protocols	Manual	Plans	Standards	Procedures
MSG Sustainability stakeholders engagement and community relations	N/A	• Sustainability Management System Manual	• Sustainability Plan • Stakeholder Management Plan • Land Management Action Plan • Community Investment Plan • Local Content Plan	N/A	• Stakeholder Engagement • Social Context Analysis • Community Investment Management • Monitoring, Reporting and Auditing Activities • Local Content • Land Acquisition • Grievance Mechanism

8. Environmental, Social and Health Assessment and Aspects

8.1 Introduction

This section summarizes the key environmental and social aspects which require management as part of this ESHMP. It provides:

- An overview of the physical, biophysical and social environments in which the Project is to be developed;
- A summary of the statutory environmental and social assessment and approvals process undertaken for the Project to date;
- A summary of the OCTP Project EIS in terms of the process used to identify, characterize and assess environmental and social impacts and aspects; and
- A summary of the impacts identified as part of the OCTP Project EIS for all project phases.

8.2 Overview of the Bio-Physical and Social Environment

8.2.1 Onshore Bio-Physical Environment

The onshore Project area is a flat area of low altitude (0-10 m) with very few headlands or rocky outcrops, located along the Western Ghanaian Coast. The coast in this area is characterized by low sandy beaches. In the vicinity of the Project area, the coastal low lying areas extend inland for several kilometers. The habitat within the concession area consists largely of modified habitats with a large proportion of the area covered by degraded coconut palm plantations, degraded vegetation and wet evergreen forest with palms. The coastal areas are dominated by regenerating vegetation comprising of palm trees and thorny shrubs. To the east of the concession is a natural habitat that is classified as Swamp and Mangrove Forest. Sensitive habitat occurs along the coastal beaches where turtles nest.

The Ankasa Conservation Area and the Cape Three Points Forest Reserve are the most significant protected areas in the general area of the Project (located 25 and 42 km respectively from the Project area).

The onshore components of the Project area lie within the greater Amansuri wetland area, and close to the estuary of the Amansuri river. This is not an officially designated protected natural area; however it is classified as Important Bird Area (IBA) as it offers a habitat for bird species.

8.2.2 Offshore Bio-Physical Environment

Seawater quality in the offshore environment is good with low or very low levels of pollutants. In terms of sensitive fauna, the offshore environment may host up to 18 different cetacean species. The Gulf of Guinea is also an important migration route, feeding ground, and nesting area for sea turtles with nesting activity highest between October and January.

8.2.3 Fisheries

The key small pelagic fish species found in the Ghanaian waters are sardinella, anchovy and chub mackerel. These species are commercially important and represent approximately 80% of the total catch landed in the country.

The large pelagic fish species include tuna, billfish and sharks. These species are highly migratory and occupy the surface waters of the entire tropical and sub-tropical Atlantic Ocean. There is a long tradition of both artisanal and distant-water fishing fleets.

Fishing, fish processing and fish trade are among the most important sources of livelihood not only in coastal communities of the Western Region but also in communities inland.

The fisheries sector contributes 4-5% to the agricultural Gross Domestic Product (GDP) and offers livelihood/income to about 10% of the population (including those employed in the industry and their dependents).

8.2.4 Socio-Economic and Health Environment

The onshore portion of the development will be located in the Ellemebelle District of the Western Region. The communities in the Direct Area of Influence (see *Figure 8.1*) include communities of Sanzule, Bakanta, Krisan and Eikwe and the village of Anwonakrom (located wthin Sanzule community). Atuabo, which is located outside the Direct Area of Influence is however likely to be affected by project activities as it is a larger and better serviced community in the proximity of the project area.

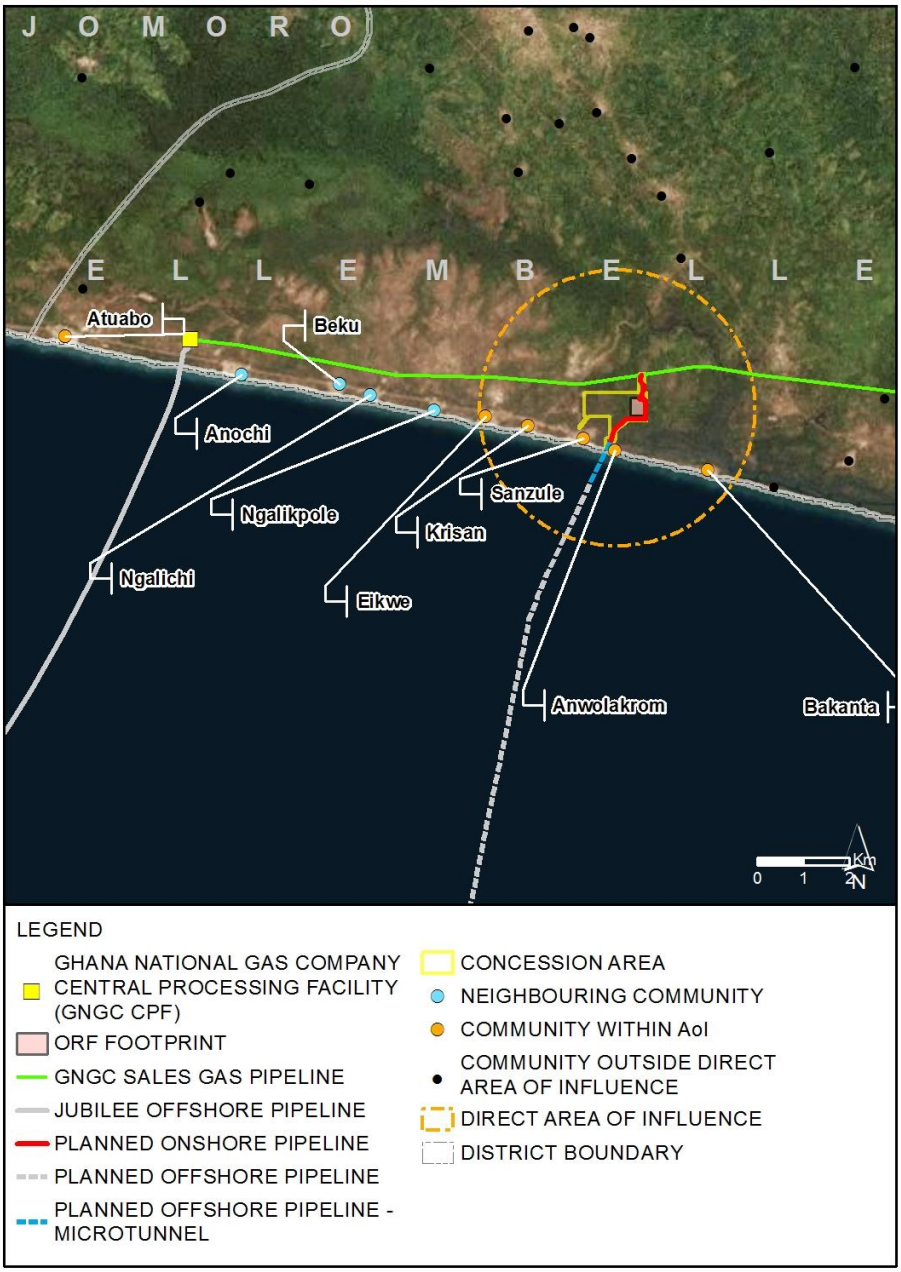
The land leased for the onshore facilities is located in the community of Sanzule and it is made up of cultivated palm groves, croplands or the remains of natural vegetation and water bodies. No settlements are located within the boundary of the leased land. The closest communities to the border isthe village of Anwonakrom (part of the Community of Sanzule) located on the southeastern border and the village of Sanzule located on the southwestern border.

The largest income-generating livelihood activity in the communities is fishing. Fish mongering is also an important livelihood activity. In addition almost every household in the towns participates in small-scale and subsistence agricultural activities.

Tourism in Ghana has become a major socio-economic activity and an important and fast growing sector of the Ghanaian economy. The tourism potential in the Western Region is related to the number and extent of tropical beaches as well as wildlife parks, forests and game reserves, inland lakes, and rivers. Currently none are being exploited for tourism in the Direct Area of Influence.

The most common diseases in the direct area of influence are malaria, respiratory infections, anemia and diarrhea. HIV prevalence rate in the Western Region in 2013 was 2.4%.

Figure 8.1 Communities within and around Direct Area of Influence of Project



Source: ERM, 2017

8.3 Statutory Environmental and Social Assessment Process

The EIA for the development was undertaken in accordance with the Ghana Environmental Assessment Regulations. The Ghana Environmental Assessment Regulations (Legal Instrument 1652 issued in 1999) define the EIA procedure. The EIA also considered the requirements of international financial institution environmental and social standards. The EIA study included baseline definition and impacts evaluation for the Social and Health components in the Project area.

8.3.1 Screening and scoping

The EIA for the Phase 1 of the OCTP Project was registered with Ghana EPA in September 2013. The EIA for the Phase 2 of the OCTP Project was registered with Ghana EPA in December 2014. In both cases, EPA screened the Project and determined that an EIA was necessary.

Two scoping processes were conducted and two Scoping Reports were prepared. Each Scoping Report- provided a description of the Project, scoping consultation process, baseline information and a proposed Terms of Reference for the EIA. The Scoping Report for the Phase 1 of the OCTP Project was approved by EPA in 2014, and for the Phase 2 of the OCTP Project was approved in February 2015.

8.3.2 Baseline data collection

Available data on the existing environmental, social and health conditions was gathered as a basis against which the impacts of the project can be assessed. In addition to a desktop review, primary data was collected during field surveys. Surveys included geophysical and environmental offshore surveys carried out in 2013 for the Phase I EIA and offshore and onshore biophysical surveys undertaken in the wet and dry season and a socio-economic and health field survey undertaken in December 2014, developed for the Phase II ESHIA.

8.3.3 Stakeholder engagement

The stakeholder engagement process comprised the following activities:

- Identification of a preliminary list of stakeholders;
- Background information document (BID) for communicating with stakeholders;
- Meetings with government departments and stakeholder groups; and
- Meetings with local community members.

During scoping of the Phase 1 ESHIA of the OCTP Project (March 2012 and November 2013), 25 meetings were held with national, regional and district authorities, traditional leadership, non-governmental organizations (NGOs) and fishermen. 4 meetings were held with affected communities.

During scoping of the Phase 2 ESHIA of the OCTP Project (December 2014), 30 meetings were held with national, regional and district authorities, traditional leadership, NGOs, international organizations and fishermen. 10 meetings were held with affected community groups.

Stakeholder engagement continued through the ESHIA process with formal and ad hoc communication with Project stakeholders through email and telephone and meetings between Eni Ghana and local community members who engaged with the process.

8.3.4 Impact assessment

Using the baseline information gathered and a detailed description of the Project and planned activities, the impact assessment process followed four steps:

1. Prediction of what will happen as a consequence of project activities;
2. Evaluation of the importance and significance of the impact;
3. Development of mitigation measures to manage significant impacts where practicable; and
4. Evaluation of the significance of the residual impact.

The impact assessment considered both predictable and unpredictable impacts (such as accidents). Those that were assessed as significant were further rated as being of minor, moderate or major significance. For significant impacts, mitigation measures were

developed to reduce the residual impacts to As Low As Reasonably Practicable (ALARP) levels. This approach takes into account the technical and financial feasibility of mitigation measures.

8.3.5 Management plans

The ESHIA process identified a range of mitigation measures, management actions and monitoring to be implemented during the project to eliminate or reduce adverse environmental, social and health impacts and risks and enhance positive impacts. Delivery of these is being done through the present ESHMP and associated annexes.

8.3.6 Reporting and disclosure

The results of the EIA process were drawn together into two EIS reports which were submitted for technical review to Ghana EPA. The EIS reports were disclosed to the affected communities, interested stakeholder, and to the public through public hearings to facilitate public review and comment.

Following the review process of the EIS, the EPA made the approval recommendation and the EIS was finalized, after which the Environmental Permits were issued. Three permits were provided by the Environmental Protection Agency (EPA). The permit for offshore drilling of 13 development wells dated 8th June 2015; the permit for Phase 1 commissioning of infrastructure for the OCTP dated 9th July 2015; and the permit for Phase 2 installation and commissioning of offshore and onshore (gas receiving facility) infrastructure for the OCTP block date 24th July 2015.

8.4 Environmental Impact Statement - Structure and Format

The structure of the EIS Report is as follows;

Chapter 1 Non-Technical Executive Summary
Chapter 2 Introduction and Purpose of the Report
Chapter 3 Legal and Policy Framework
Chapter 4 Project Description
Chapter 5 Stakeholder Engagement
Chapter 6 Environmental Baseline
Chapter 7 Fisheries Baseline

Chapter 8 Socio Economic Baseline
Chapter 9 Health Baseline
Chapter 10 Summary of Assessment of Potential Impacts and Mitigation Measures
Chapter 11 Decommissioning and Abandonment
Chapter 12 Environmental, Social and Health Management Plan
Chapter 13 Summary and Conclusions
Chapter 14 References

The main report is supported by the following annexes:
Annex A Stakeholder Engagement Plan
Annex B Baseline Reports
Annex C Maps and Figures
Annex D Terms of Reference of the EIA
Annex E Issues Trail from Scoping Consultation
Annex F Eni Ghana Management Plans (OSCP, HSE Plan, Waste Management Plan)
Annex G Detailed Assessment of Potential Impacts and Mitigation Measures
Annex H Air Quality Modelling
Annex I Noise Modelling
Annex J Visual Impacts Assessment
Annex K Drilling Cuts Deposition Modelling

8.5 Environmental Impact Statement - Impact/Aspects Significance Assessment

The EIS considers potential positive and negative impacts of the project on:

- environment (inland and sea water, air, soil and groundwater, noise, flora and fauna, etc.);
- socio-economics (communities, land use and land tenure, fishery and other economic activities, cultural heritage, utilities and public infrastructures); and
- health (health infrastructures, transmission of diseases, road traffic, security).

Assessment of Impact has been conducted following Eni Standards; Eni's impact assessment approach is based on the following three steps:

- Impacts prediction: impacts and risks are identified by analyzing disturbance factors and interactions of the project with the natural and social environment.
- Impacts evaluation: according to Eni standards requirements the significance of each impact is to be ranked according to the evaluation criteria of *Table 8.1*.
- Impacts mitigation design: mitigation measures are developed to avoid or reduce negative impacts and enhance positive benefits.

Table 8.1 Impact Ranking and Evaluation Criteria

Ranking	Evaluation criteria				Significance
	Duration	Extent	Importance / Resilience of Receptor/ Resource	No. of elements Involved	
Low 1	Less than 1 year / Temporary	Local scale: the proposed operating site and its immediate environs	Low value/ sensitivity of receptors or resources, able to recover or adapt to the change without interventions	Affecting small no. of individuals, households, individual enterprises and/or small no. of species	(ranging from 4 to 16)
Medium 2	Between 1 and 5 years	Regional scale: as determined by country's administrative boundaries	Moderate value/sensitivity of receptors or resources, able to adapt with some difficulty and which may require interventions	Affecting small number of individuals, communities or administrative and/or higher no. of species and habitats	
High 3	Between 5 and 10 years	National scale: Entire country	High value/ sensitivity of receptors or resources, poorly able to adapt to changes with strong interventions	Affecting great no. of individuals, households and /or medium/large enterprises and/or habitats and ecosystems	
Critical 4	Over 10 years / Irreversible	International scale: trans-boundary	Extreme value/ sensitivity of receptors or resources, resulting in permanent changes	Affecting huge no. of individuals, households and /or large enterprises and/or habitats structure and ecosystems functions	

Ranking	Evaluation criteria				Significance
Score	(1; 2; 3; 4)	(1; 2; 3; 4)	(1; 2; 3; 4)	(1; 2; 3; 4)	

Impacts significance is assessed both before and after mitigations definition and implementation in order to reduce the significance of each residual impact to an acceptable level. For this reason, all proposed mitigation measures listed in the EIS become a commitment for the Project and will be implemented.

8.6 Summary of Impacts

Key environmental, social and health impacts, as predicted in the Phase 2 EIS for the construction, development drilling and production phases of the OCPT project, where activities from Phase 1 were also considered, are summarized below in tabular form.

Each impact/aspect identified in the following Table 8.2 and Table 8.3 has an associated management and/or mitigation measure, discussed in Section 9.

Table 8.2 List of identified impacts related to the construction and development drilling phase

Impacts – Construction and Development Drilling Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event (Y/N)
Onshore Air Quality							
Increased dust emissions and increased atmospheric pollutant concentrations during ORF and pipeline construction	*2*	*1*	*2*	*1*	**6 - Low**		
Increased atmospheric pollutant concentrations during hydrostatic testing	*1*	*1*	*2*	*1*	**5 - Low**		
Onshore Ambient Acoustic Conditions							
Increased noise emissions during ORF and pipeline construction	*2*	*1*	*2*	*1*	**6 - Low**		
Increased noise emissions during hydrostatic testing	*1*	*1*	*2*	*1*	**5 - Low**		
Surface Water Resources							
Removal of ephemeral surface water bodies within the Project site	***4***	*1*	*3*	*1*	**9 - Medium**	**Duration**	**N**
Degradation of surface water quality due to increased sediment load	*2*	*1*	*2*	*1*	**6 - Low**		
Degradation of surface water quality due to improper handling waste	*2*	*1*	*2*	*1*	**6 - Low**		
Degradation of surface water quality due to spillages of the fuels and chemicals	*2*	*2*	***3***	*1*	**8- Medium**	**Sensitivity**	**Y**

Impacts – Construction and Development Drilling Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event (Y/N)
Changes in hydrology and/or the hydrological regime caused by reduced flows and/or changes in flow direction caused by projected related work	***4***	*1*	*2*	*1*	**8- Medium**	**Duration**	**N**
Groundwater Resources							
Reduction in Groundwater Resources due to Water Consumption	*2*	*1*	*2*	*2*	**7 – Medium**		**N**
Surface sealing and infilling leading to lowering of groundwater levels and drawdown	*2*	*1*	*2*	*1*	**6 - Low**		
Degradation of groundwater quality due to seepage from discharge of wastewater and improper waste storage and handling	*2*	*1*	*2*	*1*	**6 - Low**		
Degradation of groundwater quality due to spillages of fuels and chemicals	***4***	*1*	*2*	*1*	**8 - Medium**	**Duration**	**Y**
Geology, Geomorphology and Soil							
Potential contamination of the Soil	*2*	*1*	*2*	*1*	**6 - Low**		
Potential Disturbance and Degradation During Construction	*2*	*1*	*2*	*1*	**6 - Low**		

Impacts – Construction and Development Drilling Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event (Y/N)
Soil Removal/ Land Take	*2*	*1*	*2*	*1*	**8 - Medium**		**N**
Flora							
Loss of natural vegetation	*4*	*1*	*2*	*2*	**9 - Medium**	**Duration**	**N**
Loss of habitat/ habitat fragmentation	*4*	*1*	*2*	*1*	**9 - Medium**	**Duration**	**N**
Impacts on flora due to degradation of abiotic components of ecosystems	*2*	*1*	*2*	*1*	**6 - Low**		
Introduction of alien species	*2*	*1*	*2*	*1*	**6 - Low**		
Fauna							
Habitat Reduction/ Fragmentation and Isolation	***4***	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Disturbance and/or Displacement of Fauna due to Pollution	*2*	*1*	*2*	*1*	**6 - Low**		
Increased Mortality of Wildlife	*2*	*1*	*2*	*1*	**6 - Low**		
Landscape and Visual							
Landscape changes and visual impacts due to installation of the pipeline	*1*	*1*	*2*	*1*	**5 - Low**		
Landscape changes and visual impacts due to construction of ORF and infrastructure	***4***	*1*	*2*	*1*	**8-Medium**	**Duration**	**N**
Visual impacts due to well installations, presence of the FPSO and vessel movement	*1*	*1*	*2*	*1*	**5 - Low**		
Seawater Resources							
Increase in Turbidity	*2*	*1*	*2*	*1*	**6- Low**		

Impacts – Construction and Development Drilling Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event (Y/N)
Release of Contaminants and Nutrients	*2*	*1*	*2*	*1*	**6 - Low**		
Contamination from routine discharges of Vessel Operations and occasional spills	*2*	*1*	*2*	*1*	**6 - Low**		
Drilling waste (mud and cuttings) and cement discharges	*2*	*1*	*2*	*1*	**6 - Low**		
Use and discharge of Treated Seawater Resources	*1*	*1*	*2*	*1*	**5 - Low**		
Physical alterations to the seabed (including smothering of habitat)	*2*	*1*	*3*	*1*	**7 -Medium**	**Sensitivity**	**N**
Sediment contamination due to use of cementing/ drilling chemicals	*2*	*1*	*3*	*1*	**7 -Medium**	**Sensitivity**	**N**
Drill rig and vessels exhausts for production wells drilling	*2*	*1*	*1*	*1*	**5 - Low**		
Vessels exhausts for pipeline installation	*1*	*1*	*1*	*1*	**4 - Low**		
Increased underwater noise emissions	*2*	*1*	*2*	*1*	**6 - Low**		
Increased underwater noise emissions as a result of drilling activities	*2*	*1*	*2*	*1*	**6 – Low**		
Potential disturbance of marine fauna due to increased underwater noise emissions	*2*	*1*	*2*	*1*	**6 - Low**		

Impacts – Construction and Development Drilling Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event (Y/N)
Potential disturbance of marine fauna due to physical presence	*2*	*1*	*2*	*1*	**6 - Low**		
Potential disturbance of marine fauna (benthos and nekton) due to cuttings deposition on seabed, decreased marine water quality and increase of suspended solids	*2*	*1*	*2*	*1*	**6 - Low**		
Potential disturbance to ecosystem due to the introduction of alien species due to the discharge of ballast water	*2*	*1*	*2*	*1*	**6 - Low**		
Marine Fauna							
Impacts due to the Installation of the Pipeline in the Nearshore	*1*	*1*	*1*	*1*	**4 - Low**		
Fisheries							
Impact derived from FPSO, drilling rig and vessel discharges.	*2*	*1*	*1*	*1*	**5-Low**		
Impact derived from discharge of ballast waters	*1*	*1*	*1*	*1*	**4-Low**		
Impact derived from the physical presence and light emissions	*2*	*1*	*1*	*1*	**5-Low**		
Potential impact of underwater noise commercially exploited species	*2*	*1*	*1*	*1*	**5-Low**		
Pipeline underwater noise activities potentially affecting commercially exploited species	*2*	*1*	*2*	*1*	**6-Low**		

Economy and Employment							
Increased Government Revenue	*2*	*3*	*2*	*3*	**10-High Positive**	**Magnitude**	**N**
Employment opportunities and Skills Enhancement	*2*	*2*	*2*	*2*	**8-Medium-Positive**		**N**
Increased Procurement	*2*	***4***	*2*	*2*	**10-High Positive**	**Magnitude**	**N**
Enhanced Tourism Potential	*2*	*1*	*2*	*1*	**6-Low Positive**		
Increased Price Inflation and Economic Vulnerability	*2*	*1*	*3*	*2*	**8-Medium**	**Sensitivity**	**N**
Workforce Demobilization	*2*	*1*	*3*	*2*	**8-Medium**	**Sensitivity**	**N**
Land and Livelihood[3]							
Economic Displacement of Land-Based Livelihoods							
Economic Displacement of Farming in Land Acquisition Area	*4*	*1*	*3*	*2*	**10-High**	**Duration**	**N**
Disruption/Displacement of Fisheries-based livelihoods							
Restricted Access to Offshore Fishing Grounds due to Exclusion Zones	*2*	*1*	*1*	*2*	**6-Low**		
Disruption of Onshore and near-shore Fishing activities	*2*	*1*	*2*	*2*	**7-Medium**		**N**
Damage to Fishing Gear	*2*	*1*	*2*	*2*	**7-Medium**		**Y**
Lighting	*2*	*1*	*1*	*2*	**6-Low**		
Socio-Cultural Change							
Changes to cultural and Social Norms	*2*	*1*	*3*	*1*	**7-Medium**	**Sensitivity**	**N**
Increased anti-social behavior	*2*	*1*	*3*	*1*	**7-Medium**	**Sensitivity**	**Y**
Tension and Conflict between Villages	*2*	*1*	*3*	*1*	**7-Medium**	**Sensitivity**	**Y**

Economy and Employment							
Cultural Heritage Resources	*2*	*1*	*2*	*1*	**6 Low**		
Sense of Place	*2*	*1*	*3*	*1*	**7 Medium**	**Sensitivity**	**N**
Infrastructure and public services							
Social Infrastructure	2	1	3	2	**8-Medium**	**Sensitivity**	**N**
Road Infrastructure	2	2	3	2	**9-Medium**	**Sensitivity**	**N**
Health Infrastructure	2	2	3	2	**9-Medium**	**Sensitivity**	**N**
Marine Traffic and Infrastructure	2	4	1	2	**9-Medium**	**Magnitude**	**N**
Workers management and rights, and workers health and safety							
Worker health and Safety	2	1	2	1	**6-Low**		
Workers' Rights, retrenchment and accommodation	2	1	2	1	**6-Low**		
Forced Labor	2	1	2	1	**6-Low**		
Child Labor	2	1	2	1	**6-Low**		
Community Health, Safety and Security							
Increased prevalence of Sexually Transmitted Infections including HIV/AIDS	2	2	2	2	**8-Medium**		**Y**
Increased prevalence of Communicable diseases	2	2	2	2	**8-Medium**		**Y**
Increased prevalence of malaria	2	1	1	2	**6-Low**		
Traffic accidents from increased traffic and presence of heavy vehicles in local roads	2	2	2	1	**7-Medium**		**Y**
Increased pressure on health care resources	2	1	2	2	**7-Medium**		**N**
Site trespass and injury	2	1	2	1	**6-Low**		
Environmental health	2	1	2	1	**6-Low**		
Public security	2	1	1	1	**5-Low**		

Note 1: Impacts on ecosystem services have been assessed using a different methodology and so results are not shown in this table.See Section 10 of the Ghana OCTP Block Phase 2 ESHIA for an assessment of impacts on ecosystem services.

Note 2: Impacts related to unplanned events and cumulative impacts have not been included in this table. See Section 10 of the Ghana OCTP Block Phase 2 ESHIA for an assessment of impacts related to unplanned events and cumulative impacts.

Note 3: Impacts on Land and Livelihood have been revised through the Livelihood Restoration Plan (SUST-PLN-001) and Fisheries Management Plan (SUST-PLN-010).

Table 8.3 List of identified impacts related to the production phase

Impacts – Production Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event
Onshore Air Quality							
Increased atmospheric pollutant concentrations	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Ambient Acoustic Conditions							
Increased noise emissions	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Freshwater Resources							
Degradation of surface water quality due to improper handling of waste	*2*	*1*	*2*	*1*	**6 - Low**		
Degradation of surface water quality due to spillages of the fuels and chemicals	*2*	*1*	*2*	*1*	**6 - Low**		
Groundwater Resources							
Reduction in groundwater resources due to water consumption	*4*	*1*	*2*	*2*	**9 - Medium**	**Duration**	**N**

Impacts – Production Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event
Degradation of groundwater quality due to seepage from discharge of wastewater and improper waste storage and handling	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**Y**
Degradation of groundwater quality due to spillages of fuels/chemicals (unplanned event)	*4*	*1*	*2*	*2*	**9 - Medium**	**Duration**	**Y**
Geology, Geomorphology and Soil							
Potential contamination of the Soil	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**Y**
Soil compaction and erosion	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**Y**
Flora							
Impacts on flora due to degradation of abiotic components of ecosystems	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Fauna							
Disturbance and/or Displacement of Fauna due to Pollution	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**Y**
Increased Mortality of Wildlife	*4*	*1*	*2*	*2*	**9 - Medium**	**Duration**	**Y**
Landscape and Visual Impacts							
Visual impacts due to presence of the ORF and associated infrastructure	*4*	*1*	*2*	*1*	**8- Medium**	**Duration**	**N**
Visual impacts due to the presence of the FPSO and vessel movement	*1*	*1*	*2*	*1*	**5 - Low**		
Seawater Resources							

Impacts – Production Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event
Potential Contamination due to FPSO operations	*4*	*1*	*2*	*1*	**8 – Medium**	**Duration**	**Y**
Contamination from routine discharge from Vessel Operations	*4*	*1*	*2*	*1*	**8 – Medium**	**Duration**	**N**
Potential Contamination from pipeline anti corrosion anodes	*4*	*1*	*2*	*1*	**8 – Medium**	**Duration**	**N**
Seabed Quality							
Potential seabed contamination	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**Y**
Sediment accumulation and/or scouring/ erosion	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Offshore Air Quality							
Vessels (and FPSO) exhausts for maintenance works	*4*	*1*	*1*	*1*	**7 - Medium**	**Duration**	**N**
Noise and Underwater Noise							
Increased underwater noise emissions due to shipping activities and FPSO operation	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Marine Fauna							
Potential disturbance of marine fauna due to increased underwater noise emissions	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Potential disturbance of marine fauna due to physical presence	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Disturbance of marine fauna (benthos and nekton) due physical disturbance of seabed	*4*	*1*	*2*	*1*	**8 - Medium**	**Duration**	**N**
Disturbance to ecosystem due to introduction of alien species due to the discharge of ballast water	*2*	*1*	*2*	*1*	**6 - Low**		

Impacts – Production Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event
Fisheries							
Impact derived from FPSO, and vessel discharges	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**N**
Impact derived from the physical presence and light emissions	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**N**
Potential impact of underwater noise commercially exploited species	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**N**
Economy and Employment							
Increased Government Revenue	*4*	*3*	*2*	*3*	**13-Critical Positive**	**Duration**	**N**
Employment opportunities and Skills Enhancement	*4*	*2*	*2*	*2*	**10- High Positive**	**Duration**	**N**
Increased Procurement	*4*	*2*	*2*	*2*	**10- High Positive**	**Duration**	**N**
Tourism Development	*4*	*1*	*2*	*1*	**8- Medium Positive**	**Duration**	**N**
Increased Price Inflation and Economic Vulnerability	*2*	*1*	*1*	*1*	**5- Low**		
Land and Livelihood[3]							
Economic Displacement of Land-Based Livelihoods							
Economic Displacement of Farming in Land Acquisition Area	*4*	*1*	*3*	*2*	**10-High**	**Duration**	**N**
Disruption/Displacement of Marine Fishing-based livelihoods							
Restricted Access to Offshore Fishing Grounds due to Exclusion Zones	*4*	*1*	*1*	*2*	**8-Medium**	**Duration**	**N**

Impacts – Production Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event
Disruption of near-shore Fishing activities	*4*	*1*	*2*	*2*	**9-Medium**	**Duration**	**N**
Damage to Fishing Gear	*4*	*1*	*2*	*2*	**9-Medium**	**Duration**	**Y**
Lighting	*4*	*1*	*1*	*2*	**8-Medium**	**Duration**	**N**
Socio-Cultural Change							
Changes to cultural and Social Norms	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**Y**
Increased anti-social behaviour	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**Y**
Tension and Conflict between Villages	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**Y**
Economy and Employment							
Cultural Heritage Resources	*4*	*1*	*1*	*1*	**7 Medium**	**Duration**	**Y**
Sense of Place	*4*	*1*	*2*	*1*	**8 Medium**	**Duration**	**Y**
Infrastructure and public services							
Social Infrastructure	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**N**
Road Infrastructure	*4*	*1*	*2*	*1*	**8-Medium**	**Duration**	**N**
Health Infrastructure	*4*	*1*	*1*	*1*	**7-Medium**	**Duration**	**N**
Marine Traffic and Infrastructure	*4*	*2*	*1*	*1*	**8-Medium**	**Duration**	**N**
Workers management and rights, and workers health and safety							
Worker health and Safety	4	1	1	1	**7-Medium**	**Duration**	**N**
Workers' Rights and accommodation	4	1	1	1	**7-Medium**	**Duration**	**N**
Community Health, Safety and Security							

Impacts – Production Phase	Duration	Extent	Importance / Resilience of Receptor / Resource	No. of Elements Involved	Impact Rank	Impact Main Driver	Accidental Event
Increased prevalence of sexually transmitted infections, HIV/AIDS	4	1	2	1	**8 -Medium**	**Duration**	**Y**
Increased prevalence of Communicable diseases	4	1	1	1	**8-Medium**	**Duration**	**Y**
Increased transmission of Malaria	4	1	1	1	**7-Medium**	**Duration**	**Y**
Traffic accidents from increased traffic and presence of heavy vehicles in local roads	4	1	1	1	**7-Medium**	**Duration**	**Y**
Public security	4	1	1	1	**7-Medium**	**Duration**	**Y**

Note 1: Impacts on ecosystem services have been assessed using a different methodology and so results are not shown in this table. See Section 10 of the Ghana OCTP Block Phase 2 ESHIA for an assessment of impacts on ecosystem services.

Note 2: Impacts related to unplanned events and cumulative impacts have not been included in this table. See Section 10 of the Ghana OCTP Block Phase 2 ESHIA for an assessment of impacts related to unplanned events and cumulative impacts.

Note 3: Impacts on Land and Livelihood have been revised through the Livelihood Restoration Plan (SUST-PLN-001) and Fisheries Management Plan (SUST-PLN-010).

Note 4: impacts that are continous across the production phase of the project are classified (at least) as Medium due to impact duration. This is a reflection of the methodology's conservative approach, where Eni wants to ensure that adequate monitoring and control measures are applied.

8.6.1 Summary of impacts - Construction Phase[2]

The Construction Phase will generate potential *positive impacts* on economy and employment component, as follow:

- **High positive** impacts due to increased government revenue and to increased procurement.

Along the Construction Phase the main potential *negative impacts* (Impact Rank equal or above 9) will include:

- economic displacement of farming in land acquisition area, considered to be of **High** significance. Note: according to the Livelihood Restoration Plan, the concession area will require the permanent land take of 96 hectares, which is 18% of the total land available to Sanzule. The concession area is currently divided into 286 farms belonging to 221 individual farmers, with each farmer using between 1 and 13 plots. A total of 97 households (47%) were classified as partially impacted because they use the land within the concession area, but with varying degrees of dependence. This group tends to be less vulnerable than those in the highly impacted category. Highly impacted households are defined as those that will lose 50% or more of their livelihoods as a result of Project land take. 36 households (17% of total) have been identified as falling into this category. Of these highly impacted households, 25 (12%) are classified additionally as highly vulnerable as they have certain existing characteristics, which make these households less resilient to change.
- impacts on surface water resources, due to removal of ephemeral surface water bodies within the project site, considered to be **Medium**;
- impacts on flora, due to loss of natural vegetation, and fragmentation of habitats are considered to be **Medium** and mainly linked to the loss of wetland areas located within the project footprint areas;
- impacts on infrastructure and public services, particularly on road infrastructure, health infrastructure and marine traffic and infrastructure, considered to be **Medium**.

[2] Note that the project construction design was modified in 2017 to allow reducing the impacts foreseen in the ESIA along the first onshore 200m and the first 700-800 m along the nearshore section of the pipeline. Based on the new project design the pipeline will be built using a trenchless "Direct Pipe Method" (DP) technique, which will allow installation of the pipeline underneath the shoreline thus avoiding significant impacts to the environment and the communities nearby.

8.6.2 Summary of Impacts - Production Phase

The Production Phase will generate potential *positive impacts* on economy and employment component, as follow:

- **Critical positive** impacts due to increased government revenue; and
- **High positive** impacts due to employment opportunities and skills enhancement, and increased procurement.

Along the Production Phase the main potential *negative impacts* (Impact Rank equal or above 9) will include:

- economic displacement of farming in land acquisition area, considered to be of **High** significance (see details in *section 8.6.1*);
- reduction in groundwater resources due to water consumption and degradation of groundwater quality due to spillages of fuels and chemicals, both of them considered to be **Medium**; and
- impacts on wildlife due to increased mortality and nuisances are considered **Medium** and based on increased traffic and potential increased unregulated hunting; and

9. Environmental, Social,Health and Safety Management and Mitigation

This ESHMP provides the environmental, social and health and safety management objective of achieving full compliance with the requirements identified in Section 7 of the present document and is in line with the policy, management and mitigation measures proposed in the OCTP Development Project EIS (see EIS Phase 1 Chapter 8 and EIS Phase 2 Chapter 12 and Integrated Commitment Register in Annex A). It plans for and specifies the actions necessary to meet the requirements and achieve the goals, including the means, time frames, and designation of responsibility for compliance and conformity with the planned arrangements.

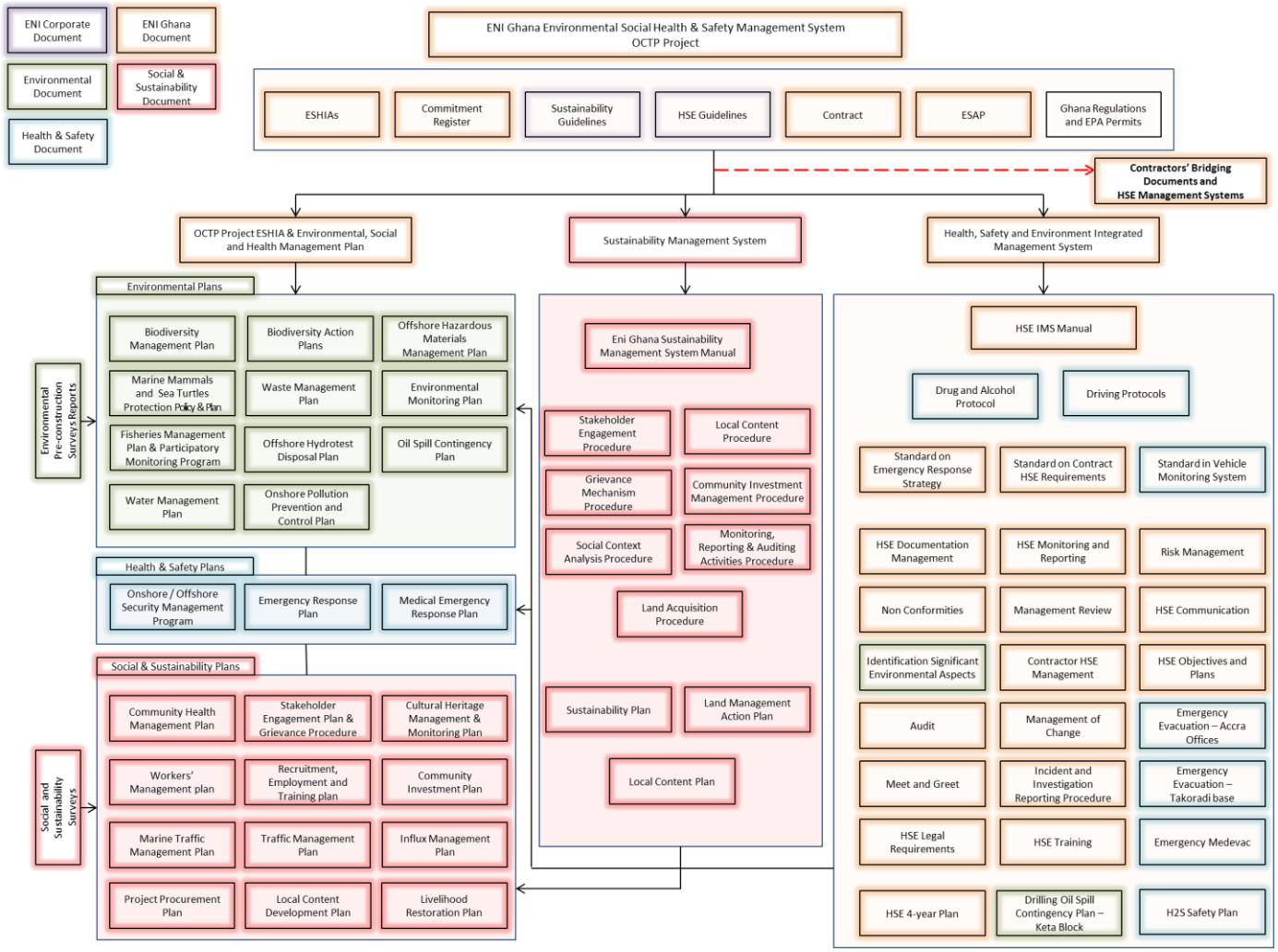
Appropriate measures to eliminate, reduce, or control potential adverse environmental social and health and safety effects resulting from Project activities will be implemented. Such measures may include both preventative and corrective actions to reduce the impact significance of an environmental ,social and health and safety effect.

This ESHMP is made up of a number of planning documents that layout the specifications for compliance with specific environmental, social and health and safety elements and describe the plans for carrying out the necessary activities. These specific management plans have been developed and include, as their main basis, the management and mitigation measures contained in the Phase 1 and Phase 2 EIS.

It must be also noted that since the finalization of the EIS, Eni Ghana has identified certain other management and mitigation measures which are necessary to implement construction good industry practice, EIS approval conditions stipulated by the Ghanaian Government and applicable International Finance Institutions (IFI) requirements. These have also been included in the Integrated Commitment Register in Annex A.

Figure 9.1 presents the structure of the overall ESHMP and its link with the HSE IMS and the Sustainability Management System.

Figure 9.1 Eni Ghana ESMS Diagram



Source: ERM based on Eni Ghana ESMS, 2017

9.1 Environmental, Social and Health Commitments Register

Through the project development and the EIS process, the project has made commitments to manage or improve environmental, health and social performance. These commitments are not recommendations, they are binding commitments on the part of the Project. Each commitment contained in the register has been allocated to a specific Management Plan and is allocated to a responsible party/parties (Company or specific contractor). Eni Ghana remains the ultimate responsible party for compliance with ESHIA commitments, and will establish means for monitoring/supervision of contractor's performance.

All environmental and social management and mitigation commitments made by the Company are identified in the OCTP Development Project Commitments Register. The register is utilized by the Company to track and document the implementation and status of each commitment.

The register will be reviewed every six months during construction and annually during operations, and updated by the Company as necessary to incorporate new commitments which arise as project activities progress, including site specific mitigation and management measures which arise from preconstruction environmental surveys and other alternative and/or additional measures identified as the Project execution progresses and lessons learned from field programs are documented. If necessary, an amendment based on a specific commitment arising prior to the review date will be prepared.

The commitments take a number of forms (avoidance, reduction on/off site, remediation, compensation in kind, management, monitoring and net positive outcomes) with the specific actions intended to address a particular environmental, social or health issue. The commitments relevant to all project phases are detailed in tabular form in Annex A. The commitments are organized by development stage and reference to the EIS, as applicable.

9.1.1 Operational Control

Each potentially significant impact identified in the EIS will have an operational control associated with it that specifies appropriate procedures, work instructions, best management practices, roles, responsibilities, authorities, monitoring, measurement and record keeping for avoiding or reducing impacts.

It is the responsibility of the Department Managers to develop and implement operational control documents (e.g. Operating Manuals & Procedures). These should always be in place for HSE Critical Activities and activities that may affect the Affected Communities and the project' social license to operate. It is also important that Procedures include measures aimed at improving HSE and social performance or managing HSE and social risk, in addition to controlling activities and tasks.

It is the responsibility of contractors to develop and implement operational & activity control documents (i.e. Standards, Procedures & Work Instructions) for all HSE-Critical Activities which they undertake on behalf of the Company. Where relevant, these Procedures must, as a minimum, meet the performance criteria defined in Eni Ghana's HSE Standards, Country Specific Legislation, International Industry Best Practices and International Finance Institution (e.g. WBG Performance Standards).

9.2 Contractor Environmental, Social and Health Management Plans

As a contractual requirement, contractors are obligated to create and implement their own plans as well as to provide sufficient resources to manage the HSE aspects of their work. This includes providing adequate resources to monitor compliance of their subcontractors.

The Eni Ghana HSE Guidelines and Protocols assigns responsibilities to all personnel throughout the Company, and requires contractors to manage HSE in line with the Guidelines and Protocols.

As a result, contractors and subcontractors shall prepare, submit for Eni review and approval, maintain and implement an HSE Management System in accordance with this ESHMP.

The Company will work closely with contractors and subcontractors during development of contractor and subcontractor documents to confirm that these meet good industry practice, are tailored to each contractor's/subcontractor's specific scope of work and provide a commensurate level of detail.

The management system documents developed by the contractors and subcontractors must:

- Establish detailed site specific measures to prevent, reduce, mitigate, and otherwise manage and control environmental, social and health risks and impacts;
- Define how the execution of those measures will be achieved;
- Define how compliance with legal and other obligations will be achieved and verified;
- Establish site specific monitoring activities and define how these will be achieved (including what is going to be measured, sampled or monitored, the precise location and the frequency as well as the specific methodology);
- Define roles and responsibilities for all contractor's personnel from management to workforce;
- Designate personnel responsible for the execution of the measures to prevent, reduce, mitigate, and otherwise manage and control environmental, social and health impacts; and
- Establish the training requirements for all contractor and subcontractor personnel responsible for environmental, health and social performance.

Prior to acceptance of contractor documents, contractors and Eni Ghana will undertake a joint environmental and social risk assessment to identify any gaps between the contractors' execution basis and the provisions made in the OCTP Development Project EIS and the Project ESHMP. Contractor documents will incorporate measures to address any identified gaps and prevent, control and otherwise mitigate any identified risks and impacts. Depending on the complexity of the services to be provided by contractors, the need of developing a "Bridging Document" will be assessed.

10. Compliance Monitoring

10.1 Introduction

Continual examination by Eni Ghana of the performance of the HSE-IMS and SUMS as well as actual performance against HSE and sustainability targets, are necessary to gauge whether progress is being made towards the strategic HSE and sustainability objectives of the Company. Full implementation of the HSE-IMS and SUMS and of this ESHMP entails that people are following them as directed by the Management System and Management Plans at all levels.

Effective implementation involves:

- Setting performance targets and performance indicators;
- Monitoring to measure performance against targets;
- Keeping performance monitoring records;
- Addressing non-compliance & ensuring that corrective action is taken; and
- Preventing incidents through proper supervision of activities and assuring Incidents/Accidents reporting & investigation to avoid recurrence.

10.2 Monitoring

Monitoring will be conducted to ensure compliance with the management and mitigation measures included in the commitments register (Annex A) and in the specific management plans (See *Table 5.1*) as well as to evaluate the effectiveness of operational controls and other measures intended to mitigate potential impacts.

The specific compliance monitoring requirements as well as their related timing/frequency, responsible party and Key Performance Indicators are detailed in each specific management plan. In addition, a stand-alone Environmental Monitoring (Annex S of the ESHMP) been developed, to describe the project's environmental effects to be measured in the field and the frequency of measurement.

This monitoring plan, as well as those to be prepared by contractors, include:

- Identification of the information to be obtained;

- Definition of the required accuracy of the results;
- Specification of the monitoring methods and identify monitoring locations;
- Specification of the frequency of measurement; and
- Definition of roles and responsibilities for monitoring.

Contractors and subcontractors shall implement their own environmental, social and health monitoring programs. These will include compliance and performance monitoring requirements, as well as sampling, collection and analysis of data required in order to monitor the effectiveness of the implemented management and mitigation measures, to assess impacts and demonstrate compliance with applicable legal, Company and requirements. Contractors' monitoring program is subject to Eni approval. The development of bridging documents will be assessed if necessary.

Eni will undertake the monitoring of the management and mitigation activities for which it is responsible as defined in each specific monitoring plan. Eni will also be responsible of checking and reviewing monitoring documentation provided by contractors. Monitoring commitments by Eni and monitoring responsibilities of Eni personnel for the implementation of the management and mitigation actions are presented in the Management Plans developed as part of this ESHMP and listed in *Table 5.1* in *Section 5.4*.

Contractors shall provide to Company a monthly Construction Monitoring Report which will provide details and results of all monitoring undertaken during the reporting period (including subcontractor data).

10.3 Assessment

Eni Ghana will undertake internal assessments of the management and mitigation activities for which it is responsible as defined in this ESHMP and the associated discipline specific Management and Monitoring Plans (see list in *Table 5.1*). Similarly, Eni Ghana will undertake periodic assessments to evaluate the performance of contractors' and subcontractors' environmental, social and health programmes.

Such assessments will be undertaken in accordance with predetermined protocols agreed with the contractor. Contractors shall cooperate fully with Eni Ghana in the execution of assessments. Upon completion of the assessments, the Company will provide the

contractor with a draft assessment report. The assessment report will be discussed between Eni Ghana and the contractor at an assessment review meeting, following which Eni Ghana will provide the contractor with a final assessment report. Contractors shall steward findings of the assessment as described in Section 12.

Contractors shall also undertake internal assessments in order to evaluate the implementation and effectiveness of contractors' and subcontractors' social and health programmes.

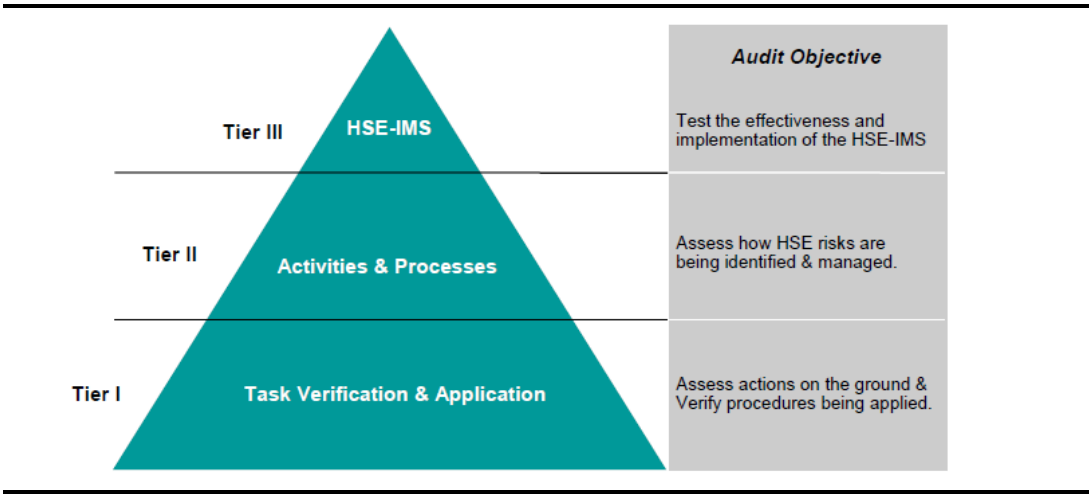
The internal assessments shall be undertaken to a frequency agreed with Eni Ghana. The internal assessments shall be executed in accordance with a predetermined assessment protocol agreed with Eni Ghana. The contractor shall provide Eni Ghana the results of all internal assessments as described in Section 11.

10.4 Audits

Beyond the routine inspection and monitoring activities conducted, audits will be carried out internally by both Eni Ghana and its Partners (including the Government of Ghana) to ensure compliance with this ESHMP and the associated Management and Monitoring Plans (see list in *Table 5.1*), regulatory requirements as well as their own HSE standards and policies. Eni Ghana uses a hierarchical system of HSE audits as shown in *Figure 10.1*.

Eni Ghana performs a number of internal and external HSE and sustainability (including community relations and investment, local stakeholder engagement, local content, land management and labour) audits and inspections annually and publishes an audit schedule in the HSE Audit & Inspection Program. Contractors are also required to carry out audits and publish their program for these audits in their respective Contract HSE Plans.

Figure 10.1 Eni Ghana hierarchical system of HSEand SUMS audits



Source: Eni Ghana, 2013

The audit programmes will include a review of compliance with the requirements of the EIS and of this ESHMP and include, at minimum, the following:

- completeness of HSE and Sustainability documentation, including planning documents and inspection records;
- conformity with monitoring requirements;
- efficacy of activities to address any non-conformity with monitoring requirements; and
- training activities and record keeping.

In this context, Eni Ghana may undertake audits, at its discretion, of the contractor's and subcontractor's activities and work sites, including camps. Such audits will be undertaken in accordance with predetermined protocols agreed with the contractor. Contractors shall cooperate fully with Eni Ghana in the execution of audits. An audit report will be prepared by Eni Ghana upon completion of the audit. This report will be reviewed and discussed with the contractor at an audit meeting that will lead to the preparation of the final audit report.

In addition to the internal audits previously described, WBG supervision and monitoring is anticipated and the involvement of an independent E&S consultant (IESC) for monitoring compliance with the WBG requirements and agreed E&S Action Plan. Eni Ghana, VUGL, contractors and subcontractors shall cooperate fully with the WBG, or their representatives (i.e., IESC), in the execution of supervision and monitoring.

10.5 Performance indicators

Performance indicators and the reporting frequency assigned to each of them are included in the specific Management and Monitoring Plans, appended to this ESHMP.

In case further performance indicators are to be developed and agreed between Eni Ghana and contractor, these shall be incorporated in the contractor's ESHMP.

11. Communications, Reporting and Notification

This section outlines communication, reporting and notification associated with the ESHMP.

11.1 Communication

Eni Ghana will maintain a formal procedure for communications with the regulatory authorities through its Stakeholder Engagement Plan (SEP). The HSEQ Manager is responsible for communication of HSE issues to and from regulatory authorities. This is coordinated with the project's Communications and External Relations Manager and the Local Content and Sustainability Manager. The Managing Director will be kept informed of such communications. Pertinent information arising from such interactions will be communicated to subcontractors through the HSEQ Manager and/or the Local Content and Sustainability Manager per relevant roles and responsibilities.

Whereas it is anticipated that the subcontractor HSE and social staff may interact with representatives from regulatory authorities on an informal, day-to-day basis regarding routine matters, the HSEQ Manager and/or the Local Content and Sustainability Manager shall be the point of contact for formal communications. The HSEQ Manager will be responsible for communicating any pertinent information arising from such discussions to appropriate subcontractor through the technical department in regards to HSE matters, meanwhile the Local Content and Sustainability Manager will be in charge of communications related to sustainability and social issues.

Internal communication is used to ensure that all persons are aware of the:

- HSE and social (i.e. to the Affected Communities) risks and impacts posed by their work activities & the controls to minimize these risks and impacts.
- Emergency response procedures that are in place.
- Lessons learned arising from incident investigations.

Eni Ghana uses several mechanisms to communicate to employees and the Affected Communities, recognizing at all times the possible cultural differences that exist. These include meetings, workshops, forums, presentations, phone, e-mail, and noticeboards. Details on these are presented in the SEP.

The Company holds several regular meetings that relate to the implementation and functioning of the HSE-IMS and SUMS. The highest level forum in the Company dedicated to HSE issues is the HSE Management Review. The aims of the HSE Management Review are to:

- Monitor execution of the HSE Plan.
- Monitor progress towards the HSE objectives and annual performance targets.
- Ensure appropriate resources are available to implement the HSE-IMS.
- Review incident investigations.

The highest forum in the Company dedicated to sustainability issues is the SUMS Management Review. Its aim is to:

- Determine how they are performing against their specific targets, objectives and priorities on sustainability issues;
- Identify new objectives; and
- Identify possible needs to modify the set programs and the Management System's documents.

11.2 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, as required. Eni Ghana, upon request and format definition, will prepare a monthly report on environmental performance and submit it to Ghana EPA. Copies may be made available to other interested authorities upon agreement with Ghana EPA. For social performance activities, Eni Ghana will submit twice a year reports to the six District Assemblies and the Regional Coordinating Council in Takoradi. All these reports will also be shared with the lenders.

In addition Eni Ghana will also share the quarterly and annual report on HSE performance with WBG.

The content of such reports will at least include:

- The results of all preconstruction environmental and social surveys required by the Management plans associated to this ESHMP that have been undertaken in the reporting period;
- Details of any additional management and mitigation measures implemented as a result of pre-construction field surveys or any other reason where applicable;
- Details and results of all monitoring undertaken during the reporting period following the requirements of the Management plans associated to this ESHMP;
- Detail of the audits undertaken during the reporting period;
- Results of the performance indicators applicable during the reporting period detailed in the Management plans associated to this ESHMP;
- Details of stakeholder engagement activities undertaken during the reporting period;
- Summary and latest status of the incidents, Non Conformity and Field Observations having occurred or being detected during the reporting period (including those not closed in previous reports) together with the corrective and remedial actions undertaken or the planned response;
- Summary and records of the management of grievance (workers and community grievances) applicable during the reporting period;
- Summary of all notifications derived of the process described in Section 11;
- Summary and status of Non Conformities and Findings/Observations (see Section 12) and corrective actions undertaken or planned in response;
- Summary of all change management requests and approvals derived of the process described in Section 11.5.
- Summary of public consultation and disclosure activities applicable during the reporting period;
- Summary of workforce statistics, procurement and supply chain statistics including labour and working conditions;
- Details of land acquisition and compensation and details of livelihood restoration and resettlement, if any; and

- Records of resources extracted such as materials from quarries and volume of fresh water.

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. Eni Ghana will also produce an annual report on environmental and social performance to satisfy the requirements for the Lender Group.

11.2.1 Contractor Periodic Reporting

Periodic reports related to the implementation and operation of the environmental, social and health management system and this ESHMP, including the associated specific management plans shall be provided by the contractor.

Two types of reports will be considered: A Weekly Site Inspections Report and a Monthly HSE Report. These reports will be created by the contractor HSEQ Manager and sent to Eni Ghana HSEQ Manager for review.

The Weekly Site Inspections Report will include the compiled results of a daily check of site conditions with respect to environmental, safety, social and health commitments and the implementation of mitigation measures.

The Monthly HSE Report will be focused on reporting a summary of the HSE progress within the given period, and shall include data from the contractor and its subcontractor(s). The structure, content and format will be agreed between Eni Ghana and the contractor prior to commencement of work. The report will include, the following information as a minimum:

- Results of any pre-construction environmental surveys undertaken by the contractor in the reporting period (see specific management plans in the appendices for details of survey requirements);
- Any additional management and mitigation measure applied where applicable;
- Results and details of any monitoring (including social monitoring and environmental monitoring, sampling and analysis) undertaken by the contractor during the reporting period (details of monitoring requirements are indicated in the specific management plans in the appendices);

- Results of the Performance Indicators required by Eni Ghana that are applicable during the reporting period and any other performance indicator considered;
- Summary and status of all incident notifications (see Section 11.3);
- Summary and status of the Non-Conformities and Findings/Observations documented as part of the contractor's, Eni Ghana and third party verification and monitoring (see Section 11.4);
- Assessment and audit reports (see Section 12) and summary and status of all Non-Conformities that had been identified therein;
- Number and detail of Ghanaian official authorities (i.e. EPA) inspections, including the location, date, time and outcome;
- Copies of all environmental, occupational health and safety, social, community health, and labour and working conditions related written communications from official authorities of Ghana;
- Waste volumes, including drill cuttings and oil-on-cuttings (OOC) as applicable, generated as a result of the work activities performed for Eni Ghana and specifications and records of the management applied;
- Liquid effluent volumes generated as a result of the work activities performed for Eni Ghana and specifications of the management applied; and
- Volumes of freshwater resources consumed.

11.3 Incident notification and reporting

Any environmental, safety or health incident arising as a result of construction activities will be appropriately recorded, documented and notified in accordance with Eni HSE IMS.

The incident management process is discussed further in Section 12 A summary of the requirements of the process as it pertains to the notification and reporting of environmental and social incidents is presented below.

11.3.1 Contractor Incident Notification and Reporting

Any environmental, social or health incident arising as a result of Project construction activities will be immediately notified to Eni Ghana after its discovery.

Within a 24hr period from incident discovery, the contractor will submit to Eni Ghana a written report detailing at least the date, time and location of the incident together with a description of the events, including volumes of spills and material involved if any. The incident notification should also include a root cause analysis and the corrective and remedial actions undertaken by the contractor to solve the issue and prevent future incidents of similar nature.

Similarly, the contractors shall notify Ghanaian government agencies in accordance with applicable regulations.

The events that can be considered as an incident include at least any spills or unintended chemical releases to the environment, community incidents and complaints, damage to cultural artefacts, violations of legal requirements and human rights, fines received, worker's safety incidents and near misses, strikes, etc.

Verbal or written communications directed to the contractor from any Ghanaian governmental agency or institution related to violations of regulatory requirements will also be considered an incident and will be therefore immediately notified to Eni Ghana, including copies of such communications.

A summary of the incidents, associated actions and latest status will be included in the monthly report to be submitted by the contractor to Eni.

These requirements apply to subcontractors, their data having to be included in contractor's reporting.

11.3.2 Eni Ghana Incident Notification and Reporting

Eni Ghana will notify applicable Ghanaian Government agencies or institutions of incidents arising as a result of project activities, performed directly by the company or a contractor, according to statutory notification requirements.

Similarly, Eni Ghana will notify the WBG and the lenders of incidents arising as a result of project activities, performed directly by the company or a contractor, according to the terms and conditions agreed upon in the Financing Agreements.

11.4 Reporting of Non-Conformities

The categorization of Non Conformities in Eni Ghana HSE-IMS and SUMS includes three different levels, Major non conformities, Minor non conformities and findings (*Table 11.1*). The same categorization will be applied along all Project requirements so as to enable consistency with Eni notification and reporting procedures.

The contractor's monthly Report shall include a summary and status of all Non Conformities identified during the monitoring and audit process.

In addition, when non-conformities are detected, they shall be reported to Eni Ghana. If it is HSE related, the template included in Annex C of the document HSE-PRO-004.01 - Non conformities[3] shall be used. If the non-conformity is associated with social or sustainability aspects, the Annex D of the document "SUST-PRO-004.00 - Monitoring and Auditing" will be used.

In case a Major non-conformity arises, the Company will be required to notify the WBG within a week of its discovery.

In case of Minor non-conformities and findings, they will be reported as a summary within the monthly reports of environmental, health and safety performance and/or within the biannual report on social performance activities.

[3] It shall be noted that Eni Ghana HSE IMS and SUMS are in constant update and references might change over time. These changes shall be duly communicated to contractors by the Company.

Table 11.1 Categorization of Non Conformities

Classification	Definition
Major Non Conformity	The finding on a specific item shall be classified as a major non-conformity, when the minimum requirements for that item are not met or when numerous deficiencies have been noted for multiple requirements of that item. A Major Non Conformity will include observed damage or a reasonable expectation of damage to a sensitive environment or community or individual.
Minor Non Conformity	The finding on a specific item shall be classified as a minor non-conformity, when the minimum requirements for that item are only partly met, or if minor deficiencies were noted for some requirements. A Minor Non Conformity will include situations which are not consistent with ESHMP requirements, but not believed to involve damage or reasonable expectation of damage to environment or community or individual.
Observation / findings	The "Observation" finding classification shall be assigned to an item when, although the requirements for that item are substantially met, the planning of improvement actions is deemed appropriate in order to consolidate the level of assurance of compliance, also to prevent the potential emergence of critical issues in the future and to ensure continuing compliance with the ESHMP.
Conformity	No finding. The requirements for a given item are met in full, globally complying with the reference Standard/Model and the ESHMP.

11.5 Management of Change

The ESHMP and supporting management plans contained herein will adopt a Management of Change (MoC) process throughout the life cycle of the Project, in accordance with Eni ghana's HSE Management of Change Procedure (HSE-PRO-017.00).

The creation of the plans at the outset is a fluid process with the management objectives and performance indicators tailored to the current design and objectives of the Project. The ESHMP utilises to the extent possible existing project knowledge to fully address the actual environmental and social impacts of the Project at the time and allow flexibility in environmental and social management decisions made on the Project.

Management of change relates to any temporary or permanent alteration (physical/procedural) that deviates from the original design, assets, systems, processes, operations, products, organization and personnel.

Changes covered in the approach include:

- Physical plant hardware and systems (e.g. safety, environmental or business critical);
- Baseline documents upon which these physical systems are designed and constructed e.g. design documents, Emergency Shutdown (ESD) philosophy, relief and blow down documents etc.;
- Critical software e.g. changes to alarm and shutdown, to the setting control software, log or configuration changes;
- Organisation changes e.g. patterns of work, changes to key personnel that have the potential to affect HSE, Sustainability or Plant Integrity (including the transition between current and future arrangements);

Within environmental and social changes, high potential risks include:

- any proposed change in the Project which falls outside the area covered by the ESIA and which will require substantial additional environmental and social assessment and mitigation measures to ensure that it does not irreversibly impact important environmental and/or social resources; and/or
- any potential Project impacts on the environment, neighbouring communities, occupied residences, utilized social infrastructure, or cultural resources that are not detailed in the ESIA or which fall outside 500 meters from the Project footprint and right-of-ways, where:
- one or more of the following conditions are encountered or otherwise might be irreversibly impacted:
    - Significant cultural properties where data recovery will be required;
    - Critical habitat or legally protected and internationally recognized areas;
    - Endangered or critically endangered species; and/or

- Permanent exceedance of Project environmental effluent and emissions standards; and/or

- physical relocation or economic displacement of households not covered by the principles and types of compensation measures addressed in the ESHMP and relevant plans will be required.

To ensure management of change of the ESHMP, the following actions will be implemented:

- Request for change: including details on the type and timing of changes and nature of change. The proposed change will be assessed by the MoC Team that will be formed by the change requestor and technical, operations and HSE and SUMS departments, depending on the complexity and criticality of the change, other figures might be also involved.
- Risk evaluation: being a crucial step in the MoC process. The objective of the risk assessment is to fully assess the potential impact of the change and ensure that no new or additional risks are introduced. All existing inherent risks (including environmental, health, safety and social risks and contextual risk changes) will be identified, analysed and treated.

Potential risks shall be categorized as follows:

- **High potential** means that risk-reducing measures need to be implemented with immediate effect;
- **Medium-high potential** means that risk-reducing measures need to be implemented in the short term;
- **Medium potential** means that risk-reducing measures can be implemented if deemed necessary based on a cost/benefit evaluation;
- **Low potential** means that no further measures are deemed necessary.
- Review and implemenention of measures: including the preparation of a plan for implementing the measures that the Change Owner shall ensure application. The plan should establish specific deadlines and responsibilities for each of the identified measures, including also a communication strategy to make all affected parties aware.

- Approval and Closeout: documenting of the results of the review.

As a result of the change, some internal documentation might need to be updated or simply new ones issued, these shall be listed with the appropriate due and completion dates, responsibilities and verification. Likewise any training needs identified, shall be presented with the type of training, the target staff that will take part of the training and due and completion dates.

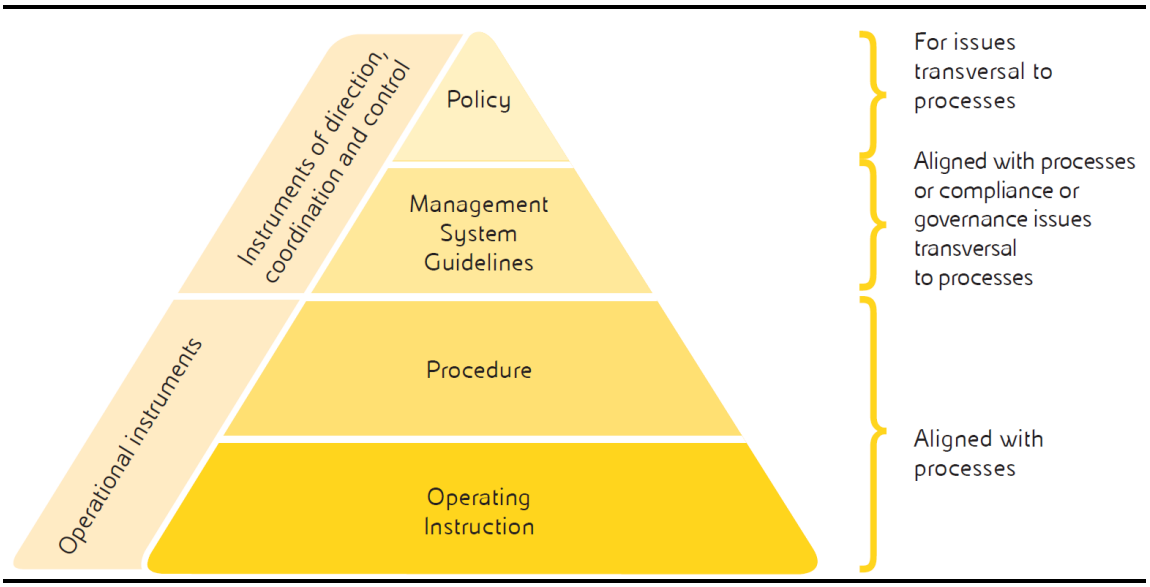
WBG will be notified for major / significant changes proposed by the project classified as having high potential HSE/Sustainability risks. No notification will be for changes with low or medium potential risk. For medium and medium-high potential risk changes, a description will be included in the monthly and annual report, as applicable. A medium-high and high potential risks change will be notified to the WBG of at least 15 days before the relevant change is implemented. For high potential risk and medium and medium-high risk changes, WBG may require the Independent E&S Consultant to review and provide comments and confirm that the change does not affect the significance of the HSE/Sustainability risks.

11.6 Document Control

Eni Ghana will control HSE documentation, including discipline specific management plans; associated procedures; and checklists, forms and reports, through a formal procedure named HSE Documentation Management. This document control procedure describes the processes that the project will employ for official communication of both hardcopy and electronic documents. In addition, it describes the requirement for electronic filing and posting and for assignment of a document tracking and control numbers (including revision codes).

The documents determined by the Company as necessary to ensure the effective planning, operation and control of the processes that relate to the Company's significant HSE, social and sustainability risks are listed in the HSE-IMS and SUMS Document List and are organized in line with the hierarchical structure shown in *Figure 11.1*.

Figure 11.1 HSE IMS and SUMS Documentation Hierarchy



Source: Eni Regulatory System

During operations, the HSE Manager and Local Content and Sustainability Manager will be responsible for maintaining a register of applicable HSE and Sustainability documents and making sure that it is communicated to the appropriate parties. The HSEQ Manager (for HSE related documents) and the Local Content and Sustainability Manager (for Sustainability documents) will be responsible for providing notice to the affected parties of changes or revisions to documents, for issuing revised copies and for checking that the information is communicated within that party's organization appropriately.

Contractors will be required to develop a system for maintaining and controlling their own EHS documentation and describe these systems in their respective HSE plans in line to that of the company's.

12. Incident and Non-Conformity Management

12.1 Introduction

This section summarizes the process of corrective and remedial action required following environmental, social and health incidents and as a result of environmental, social and health non conformities resulting from the monitoring, and audit activities described in Section 10.

Identifying potential impacts, hazards and risks is an important part of the HSE IMS and SUMS approach. Equally important is the identification and reporting of 'near miss' and the investigation of accidents/incidents so that valuable lessons and information can be learnt and used to prevent similar or more serious occurrences in the future.

Non-compliance and incidents may be sudden and temporary or it may persist for long periods. It may result from deficiencies or gaps in the HSE-IMS and SUMS, failures in plant or equipment, or from human error. Non-compliance can be reported directly by those in control of activities, or found through inspections and audits of activities.

12.2 Incident Management

Although every effort is made to ensure that incidents do not occur, the potential for incidents and emergency situations still exists. A system and resources are in place to respond swiftly and effectively to any emergency situation.

An incident can be defined as an event or sequence of events that lead to unwanted or unintended impact on environment, safety, security, health and/or livelihood of people as well as on regulatory compliance.

Incident management makes reference therefore to the actions that are performed after the incident with the aim of solving the consequences of such an incident and ensure regulatory compliance (i.e. notification and reporting) as well as appropriate attention and care are given and provided to the environment and people.

When an incident takes place in a worksite, the site responsible will be addressing the incident. This can be Eni Ghana, or depending on the situation a contractor or a subcontractor, with the proper support and supervision from Eni Ghana.

Project incidents will be managed according to the following principles:

- Reduce further harm to personnel, the environment, and assets;
- Confirm prompt and proper medical care / treatment of injured or ill persons, and perform the appropriate level of follow-up surveillance to ensure injuries and illnesses do not escalate;
- Notify and / or report incident details to internal and external stakeholders as appropriate
- Investigate all incidents, regardless of the severity level, in order to identify causes and implement corrective actions to prevent incident recurrence;
- Stimulate learning opportunities by sharing lessons learned internally and externally as appropriate; and
- Address potential legal sensitivities and involve legal counsel as required.

Eni Ghana has developed plans and procedures to identify the potential for and response to environmental accidents and health and safety emergency situations and for preventing and mitigating potentially adverse environmental and social impacts that may be associated with them.

The Eni Ghana Emergency Response Plan describes the process, actions and responsibilities by which Eni Ghana deals with emergencies.

Other Procedures for managing specific Emergency Response actions are:

- Emergency Medevac Procedure;
- Emergency Evacuation Procedure – Accra/Takoradi Premises; and
- Oil Spill Contingency Plan.

Emergency preparedness and response will be reviewed by Eni Ghana frequently as necessary, making sure to include lessons learnt after any accidents or emergencies to ensure continuous improvement. Emergency drills will be undertaken regularly to confirm the adequacy of response strategies.

Investigations of accidents or incidents will follow formal documented procedures, which include the following key elements that may occur concurrently and not necessarily in the indicated order:

- Detection and communication;
- Secure the area;
- Classification, consistency analysis and definition of the actions to be taken for the immediate treatment;
- Initiate emergency response, if required;
- analysis of the causes (root-cause analysis) and evaluation of the need to proceed with a Corrective/Preventive Action;
- definition of actions, responsibilities and timing to complete the corrective/preventive action;
- development of the identified actions;
- assessment of effectiveness of the actions to solve the cause of finding and closure; and
- Reporting (see Section 11).

In addition, Eni Ghana's Local Grievance Mechanism allows Eni Ghana to receive, evaluate, and address Eni Ghana project-related grievances, written and verbal, from communities and stakeholders that, at site level are affected by Eni Ghana projects.

As indicated above the investigation of incidents should fully establish the root causes. For each root cause identified corrective actions should be proposed, then an improvement plan and the identification of the functions responsible for its implementation and the deadline for implementation should be defined. Every area of the HSE management system or the SUMS affected requests for corrective or preventative or improvement measures, has to be identified.

12.3 Non-Conformity Management

A non-conformity can be defined as a non-fulfilment of a requirement or a non-compliance with reference prescriptions and specifications (e.g. manual, procedures, plans, environmental and safety programs, legal requirements, permits and rules, etc.).

Project non-conformities will be managed and reported according to the following steps:

- Identification of observation or notification. Any potential non-conformity, observation or anomalous situation is bound to be reported through the Observations and Non-

Conformities Report (NCR) Form. The observation will be communicated to the appropriate Department Manager in order to evaluate its criticality in terms of an emergency situation.

- Criticality evaluation of the observation with regard to potential imminent hazardous situations.
- Description of the observation.
- Definition and implementation of the immediate actions.
- Classification and recording of the observation.
- Assignment of a NCR number and selection of a discipline (either HSE or SUMS) and filling in the NCR register.
- Closure of immediate actions taken.

Investigations and non-conformities as indicated above should fully establish the root causes including failures in the HSE-IMS and SUMS, this ESHMP and the associated specific management plans. Investigations enable the planning of corrective actions including measures for:

- Restoring compliance as quickly as possible;
- Preventing any recurrence;
- Evaluating and mitigating any resultant adverse HSE or social impacts;
- Updating the management plans as required;
- Assessing the effectiveness of the above measures.

The process and responsibilities for the reporting and investigation of non-conformities with the requirements of the HSE-IMS and SUMS, and to ensure that corrective actions are planned, implemented and recorded is defined in a formal procedure.

As a result of the investigation of non-conformities, the resulting corrective action must be recorded in a "corrective/improvement action plan" including:

- the actions to be carried out;
- the persons responsible for carrying out the actions;
- the completion times of the actions, taking into account the severity of the observations and any requests done by the team in charge of the incident

investigation or by the audit Team Leader, in case the non-conformity was detected as a result of an audit.

Eni Ghana and the contractors shall develop a tracking system where they will include the details of all the non-conformities detected (all levels, including observations), together with the proposed corrective actions, completion times and responsible parties together with the status of the corrective action implementation.

The developed register shall include non-conformities raised by Eni Ghana, contractors, subcontractors, lenders or governmental agencies. Eni Ghana will maintain the incident and non-conformity registers updated at all times.

Refer to Section 11 for notification and reporting of environmental, social and health Non Conformities.

13. Organization, Roles and Responsibilities

13.1 Introduction

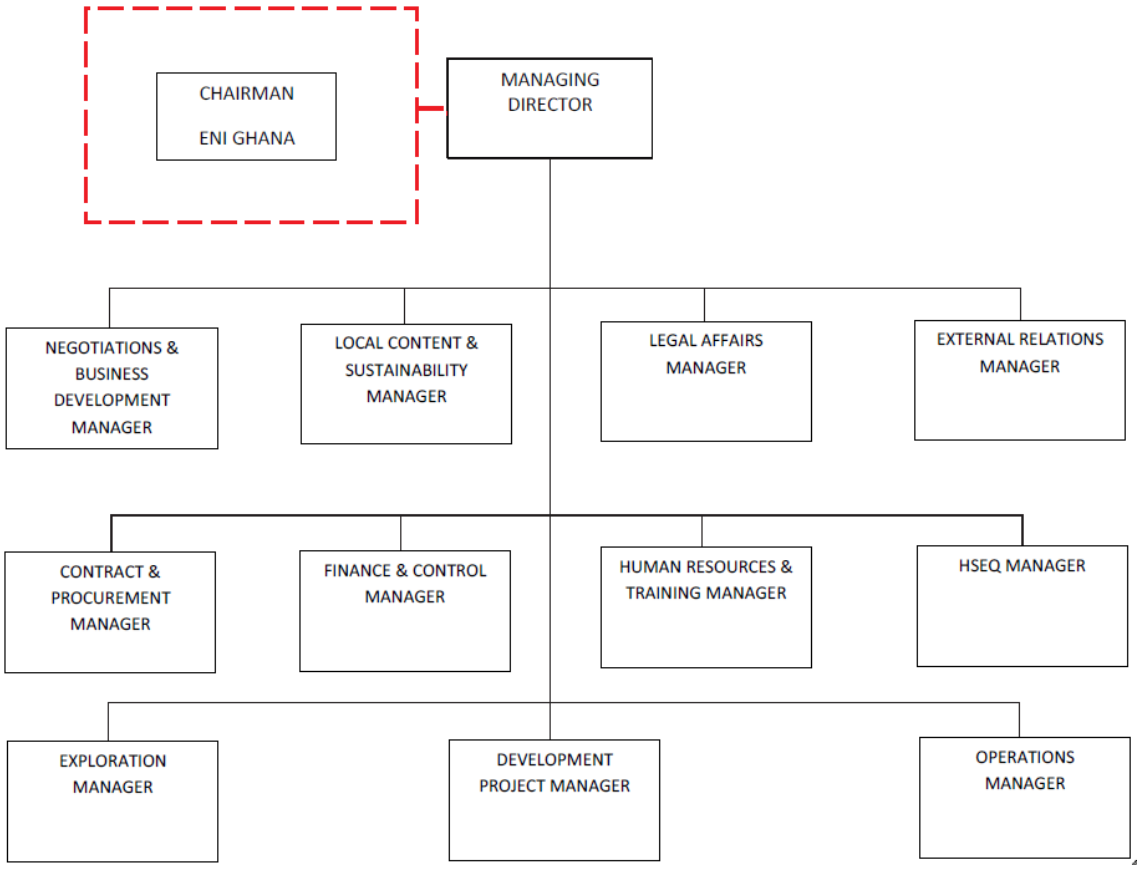
This section provides a summary of the organization, roles and responsibilities associated with the ESHMP, including Eni Ghana and contractor resources.

13.2 Eni Ghana Organization, Roles and Responsibilities

Eni Ghana is committed to provide resources essential to the implementation and control of the ESHMP. Resources include the appropriate human resources and specialized skills.

Eni Ghana is the Project Operator and is ultimately responsible for the management and supervision of all project activities. Eni Ghana has a HSEQ department which has responsibility for HSE and a Local Content and Sustainability department which has the responsibility for managing Community Investment, Community Relations and Social Management, and livelihood restoration, with dedicated staff, competent on the basis of appropriate education, training and experience. A representation of Eni Ghana organizational structure is summarized in *Figure 13.1*.

Figure 13.1 Eni Ghana Macro-Organization



Source: Eni Ghana, 2015

The Eni Ghana HSE Guidelines and Protocols assigns responsibilities to all personnel throughout the Company, and requires contractors to manage HSE in line with the Guidelines and Protocols.

The Managing Director (MD) is responsible for assuring that the HSE-IMS and SUMS are developed and implemented in line with the Joint Venture requirements via the provision of adequate resources.

Managers are responsible for:

- Managing resources in an effective manner to achieve the Company's HSE and Sustainability Guidelines and Protocols & strategic objectives.
- Develop, implement, monitor and maintain functional processes and procedures to ensure best practice within own area of responsibility.

Supervisors are responsible for:

- Through their own actions and behavior, and workplace presence, show visual leadership and commitment to the health and safety of employees, protection of the environment.
- Ensure that safety, health and environmental considerations are taken into account when work tasks that come under their areas of responsibility, are being planned and carried out. This includes ensuring that all significant safety and environmental aspects are adequately managed in accordance with the HSE Risk Register, Standards and Operational Procedures of the Company.
- Follow-up implementation of measures within their areas of responsibility.

All employees are responsible for:

- The quality of their own work, and the safety and impact of their actions. Individuals shall report incidents and are encouraged to propose improvements. An individual, who finds that the work cannot continue without danger to life or health, shall take the required action to stop the work.

The Eni Ghana HSEQ and Local Content & Sustainability departments are headquartered in Accra, where staff overseeing operations will be located. Staff will also be located in Takoradi and Sanzule to facilitate HSE and social performance oversight of site activities as well as to allow direct interface and access for stakeholders in the Western Region. These functions will manage the successful implementation of the ESHMP and the continuation of the stakeholder engagement process.

Supervision of contractor activities will be conducted by the relevant Eni Ghana technical team. This will be accomplished through management controls over strategic project aspects and interaction with contractor staff where project activities take place.

Key positions, roles and responsibilities in Eni Ghana's environmental and HSEQ and Local Content & Sustainability departments are defined in *Table 13.1*.

Table 13.1 Eni Ghana Local Content & Sustainability Department and HSEQ Department Roles and Responsibilities

Name/Title	Responsibilities / Duties
Project Manager	• Ensure planning, implementation and monitoring of development projects assigned to the company, from the evaluation phase throughout the selection, definition and execution phases, up to the hand-over to Operations; to ensure that the exploitation of the opportunity will deliver the best economic result; • Ensure that execution activities are performed in application of the best technologies and in compliance with HSE standards; • Execute and complete the project in accordance with the approved program and budget; to coordinate the assigned integrated multidisciplinary project teams and to manage contractors, ensuring that all services are provided and interfaces managed; to report project progress and costs trends to company management and Eni relevant functions and coordinate any corrective action required; • Ensure the preparation of plans and budgets for the activities of competence; to manage investment proposals and authorization process; • Obtain all the necessary approvals and authorizations by Government Authorities to run the development project operations and for achieving certificate of fitness to allow safe hydrocarbon production, to attend Technical Committee and Operating Committee meetings.
HSEQ Manager	• To develop, implement and maintain the HSE Integrated Management System; monitoring compliance with HSE legislation, certification standards and company policies; • To identify HSE and hazards and assess the HSE risks of all company activities; define HSE risk mitigation measures and develop a suitable and traceable approach to monitor such measures; • To develop, implement and maintain HSE procedures in line with HSE best practices for all the locations under company responsibility (exploration and production assets, buildings and operating bases) and provide advice for the HSE management of these locations; • To implement and maintain an emergency preparedness and response capability with procedures duly tailored to the company's organization and

Name/Title	Responsibilities / Duties
	activities, in compliance with company policies and standards; • To ensure the development of detailed annual and 4-year HSE plans and budgets for the company; plan the resources allocation according to priorities and ensure reporting and follow-up of these plans; • To manage the HSE audit activities plan and ensure the follow up of the audit action plans; identify, in compliance with Eni standards, HSE key performance indexes appropriate for the process and ensure the maintenance and dissemination of accurate HSE statistics, reflecting HSE performances against established goals; • To propose training and information programs on HSE and ensure training and associated competency appraisal are carried out and recorded, in order to ensure all personnel in the organization are competent to perform their duties in a safe, healthy and environmentally sound manner; • To maintain liaison with relevant Government bodies, partners and other oil companies to promote strong health, safety and environment policies and activities to ensure a continued high level of focus on HSE issues; • To liaise with Health and Human Resources competent functions for the matters related to health management system and in particular an occupational health, industrial hygiene; • To oversee the implementation and monitoring of the Environmental components of the ESHMP; • To manage and maintain the ESHMP and updating it as necessary; • To manage and maintain the Project's Commitment Register and ESHMP and to update these documents as necessary.
Human Resources and Training Manager	• Supervise the definition of the human resources plan; to manage the recruitment of the required staff (also through manpower agencies) ensuring that critical and strategic competence is attracted and retained; to promote the development and training of human resources, implementing performance appraisal, potential evaluation, career planning and organizing training activities; • Coordinate human resources administration and management (for local and international staff and expatriates), using dedicated IT systems, in accordance with local legislation and company regulations; to manage labor relations; to propose and implement compensation policies oriented towards internal equity and external competitiveness; • Manage organizational activities related to company organization, regulatory system and delegation of authorities system, supporting

Name/Title	Responsibilities / Duties
	company management in the definition and implementation of such systems; • Manage internal communication process according to business needs; • Ensure the management of the security activities for human resources, material and equipment in all company locations, providing security measures and services (also through external contractors) in compliance with local and company regulations and policies. • Ensure the management of ICT activities in accordance with Eni ICT MSG, strategies and architectures, guaranteeing time and cost effectiveness; • Ensure the conservation and storage of copyrighted Works and ensuring their inventory; • Ensure the management of medical services for employees in accordance with local health policy, also through company clinics and agreements with local hospitals and/or dedicated insurance schemes, in agreement with Eni function; to ensure the development and implementation of the health management system and standards of occupational health, industrial hygiene, medical services, health promotion and community health investment plans and implement related initiatives, within a process of sustainable development managing the relation with relevant key stakeholders, monitoring activities and their effectiveness.
Contracts and Procurement Manager	• Develop, implement and maintain an integrated strategy on procurement activities, in accordance with business requirements and in compliance with Eni policies; • Develop, implement and keep updated the company procurement regulations in compliance with Eni standards and in conformity with the applicable law, PSA e JOA requirements; develop and foster local content in compliance with the requirements by PSA, JOA and/or by law; • 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; guarantee the cost effectiveness and transparency of the process and the achievement of planned savings; • Ensure the planning and reporting of procurement activities for the company as well as the consolidation and timely transfer of relevant data to Eni in compliance with company and Eni guidelines; • Ensure the implementation and the maintenance of a Vendor Qualification

Name/Title	Responsibilities / Duties
	System and to identify and evaluate potential suppliers and update relevant vendors list; • Advise and support the user units on contract administration matters; • Assist NBD for contract associated to sponsorship activities; • Assist the Local Content and Sustainability unit to develop local suppliers once they are under a contract.
Local Content and Sustainability Manager	• Identify government acts, policies or practices that may affect Eni Ghana business operations, profitability, and reputation and advise sEnior management regarding proposed responses and actions; • Provide strategic advice to the Managing Director, working closely with External Relations, visiting sEnior leadership on engagement with external stakeholders to achieve business goals and enhance Eni Ghana license to operate; • Oversee plans to support Managing Director´s capability in all representation areas such as government, community leaders, media, Non-governmental organization and think tanks; • Work closely with the Business Development function to identify business opportunities and negotiate related commercial and associated agreements with the Government, JV Partners, Ghana National Petroleum Corporation and other entities, as may be applicable; • Develop and implement strategies to ensure that the Government of Ghana and GNPC fully execute all agreed milestones under the Offshore Cape Three Points development Heads of Agreement; • Monitor customers readiness downstream (direct and indirect – GNPC and Independent Power Producers) to offtake gas as well as availability of pipeline infrastructure to transport gas to power plants in Ghana and advise sEnior management of proposed actions, particularly where there are delays; • Develop and implement a plan to proactively procure and maintain relevant permits and licenses required by Eni Ghana for conducting business in Ghana; • Working closely with HSE function to identify and mitigate potential social risks and issues that could potentially harm Eni Ghana reputation and project effected communities; • Develop and implement a strategic plan to ensure effective engagement with Chiefs, Community Elders, Local Government Authorities and the Lands Commission concerning the acquisition of land for Eni Ghana

Name/Title	Responsibilities / Duties
	operations and compensation of persons affected by the project. Negotiate with any parties involved to agree the size of land, lease duration, price and compensation to affected persons; • Oversee the implementation and monitoring of the Social components of the ESHMP; • Manage and maintain the ESHMP and updating it as necessary; • Manage and maintain the Project's Commitment Register and ESHMP and updates these documents as necessary. • Ensure adequate implementation of a community investment strategy and benefit sharing/local development initiatives.

13.3 Contractor Organization, Roles and Responsibilities

As a contractual requirement, contractors are required to provide sufficient resources to manage the HSE and social, including workforce aspects of their work to achieve effective implementation of the requirements established in this ESHMP and contractors' ESHMP documents.

The contractor shall ensure that its subcontractors allocate sufficient resources to achieve effective implementation of the requirements established in this ESHMP and the contractors' ESHMP documents, as applicable to each subcontract scope of work. The contractor will therefore provide adequate resources to monitor compliance of their subcontractors.

The contractor's ESHMP shall describe the resources allocated to and responsible for the execution of each task and requirement contained therein.

Contractors shall work closely with Eni Ghana to define the appropriate level of environmental and social staffing and associated organizational structure.

Eni Ghana recognizes that the organizational structure of the contractor will vary as a function of each contract scope of work, execution activity levels, and environmental and social risk, though always ensuring appropriate compliance of this ESHMP.

Key positions within the contractor's and subcontractor's environmental and social organizations are subject to Company review and approval and shall be in line to the company's requirements[4].

Prior to the commencement of work, contractors shall provide to Eni Ghana their proposed HSE organization, including key persons (e.g. employer, HSEQ Manager, health staff and/or health consultancy services, emergency teams); a job definition and expertise description shall be provided for HSE professionals and specially trained emergency personnel.

The aim is for contractors to provide assurance of their capacity to fulfil the environmental, social and health requirements established in the company's HSE and Sustainability MS, from which this ESHMP is an integral part, its associated discipline specific management plans and contractors' ESHMP documents and provide dedicated, competent and appropriately qualified environmental and social resources.

[4] Eni Ghana document "HSE-STD-001- Contract HSE Requirements" sets the minimum requirements applicable to contract environments.

14. Training, Awareness and Competency

14.1 Introduction

For the correct development of the Project, it is important that employees at each relevant function and level are aware of the project's environmental and social/health policy; potential impacts of their activities; and roles and responsibilities in achieving conformity with the policy and procedures.

Training and awareness forms therefore a key element of both HSE/Sustainability/ operational control and the expediting of this ESHMP. Key staff must, therefore, be appropriately trained in key areas of HSE and Sustainability management and operational control with core skills and competencies being validated on an on-going basis.

Eni Ghana, contractors and subcontractors shall therefore provide training on environmental, social and health aspects to all personnel. This training will be appropriate to the scope of work and level of responsibility of each position, always with the focus to ensure that all personnel is aware of their roles in relation with the requirements of this ESHMP.

Contractors shall ensure that all contractor and subcontractor personnel responsible for the execution of the tasks and requirements contained within this ESHMP, its associated discipline specific management plans and contractor ESHMP documents are competent on the basis of education, training and experience.

Eni Ghana will equally ensure that all Eni Ghana personnel are competent on the basis of education, training and experience.

The contractor shall describe the training and awareness requirements within their own ESHMP and the actions necessary for its effective implementation. The training, awareness and competency program of the contractors is subject to Eni Ghana review and approval.

All companies involved in the Project with operational staff in the field, Eni Ghana, contractors and subcontractors shall document the environmental, social and health training activities by means of a training matrix and the appropriate records of the activities undertaken.

14.2 Training Needs

Based on an initial evaluation of the training needs associated with this ESHMP, its related discipline specific management plans and contractor's ESHMP documents, Eni Ghana, contractors and subcontractors shall develop and maintain a training matrix.

This matrix will detail the training requirements assigned for the different job positions, always according to the competency level required depending on the individual environmental, social and health responsibility associated to the referred position.

Specific knowledge or skill gaps that are identified for any person through the application of the competency assessment process can be met through either formal training or structured learning & development in the workplace. Training to close competency deficiencies may be coordinated by the HR Department or by the respective Department (e.g. on-the-job training).

Contractors and subcontractors engaged during the construction and drilling phase of the development will be responsible for the training and awareness of their staff.

14.3 Minimum Environmental, Social and Health Training Requirements

All personnel with no direct roles and responsibilities within the requirements of this ESHMP, or the contractor's ESHMP, shall receive a general ESHMP awareness so as to ensure a basic knowledge of the key environmental, social and health aspects and impacts associated to the Project, together with the control/mitigation measures that are implemented and relevant instructions. This general ESHMP awareness must make all employees aware of:

- The importance of conformity with the HSE and Sustainabiity Guidelines, Protocols, Standards, Procedures & the requirements of the HSE-IMS and SUMS.
- The significant HSE and social hazards & associated risks and potential impacts associated with their work, and the HSE / Social benefits of improved personal performance.
- Their roles & responsibilities in achieving conformity with the requirements of the HSE-IMS and SUMS.
- The potential consequences of departure from specified procedures.

As a minimum it is expected that this will cover the environmental and social setting within which the work is carried out; the potential environmental and social impacts of their work activities; the management and mitigation measures to address these; and the existence of, and importance of complying with, the OCTP Development Project ESHMPs.

Table 14.1 below presents an outline of the minimum environmental, social and health training requirements per role within the Project. Additional training requirements are included in the discipline specific management plans and specifically gathered within the Recruitment, Employment and Training Plan and in the Workers Plan. All these requirements will be included in the training matrix to be developed by Eni Ghana and contractors for their respective staff.

Table 14.1 Minimum training requirements

Position (from all companies involved)	Training Topic	Frequency
All Project Personnel	Environmental and Social Awareness Training, which shall include at least: Project Policy and environmental and social requirements: • General overview of Project environmental and social effects, avoidance and mitigation measures; • Project environmental, social and health incident communication and reporting; • Environmental and social sensitivity training of key issues (biodiversity, cultural heritage, waste management, etc.).	• Once at the beginning. • Refreshers as needed.
Personnel with responsibilities over tasks, and environmental, social and health advisors	• Detailed training on the commitments and mitigations measures of the ESHMP and associated discipline specific management plans; • Field monitoring; • Incident investigation and response; • Environmental, social and health issues required depending on roles and	• Prior to start any of the activities where personnel is responsible. • Ongoing training along the Construction phase. • Refresher frequency as required, based on environmental risks

Position (from all companies involved)	Training Topic	Frequency
	responsibilities of each position. Topics to be covered must at least include: • Waste management • Air emissions reporting • Waste discharges reporting • Turtles and marine mammals protection • Social awareness • Grievance mechanisms • Social interaction principles.	associated with the task.
Site personnel	• Detailed site-specific training to understand the Project expectations, requirements, and commitments.	• Once with refreshers as needed.
Management and supervision personnel	• Project environmental, social and health vision overview; • General monitoring, verification, and incident response processes; • General overview of Project mitigation measures, management plans, and reporting requirements; • Other environmental and social site specific and strategic management issues and requirements.	• Once with refreshers and updates as needed.

14.4 Roles and Responsibilities

The identification of training and awareness requirements and expediting of the identified training/awareness events within Eni Ghana's organization is the responsibility of the Eni Ghana Human Resources & Training Manager.

The HSEQ Manager, in cooperation with the Department Managers, shall coordinate people to attend their designated HSE training and monitor attendance in the HSE Training Matrix. The Local Content and Sustainability Manager shall coordinate the attendance the required Sustainability and Social related training.

Contractors will similarly appoint a responsible within their organization with a similar role of the HSEQ Manager / Local Content and Sustainability Manager in Ghana, who will

coordinate people to attend their designated training as well as being in charge of monitoring training attendance.

Table 14.2 provides a broad overview of roles and responsibilities for environmental and social training processes and procedures among Project personnel.

Table 14.2 Minimum training requirements

Position	Responsibilities
Management	• Responsibility to ensure competent and trained resources are available to execute the project.
Site Supervision	• Ensure individuals have the required knowledge and skills to perform job tasks in an environmentally and socially compliant manner; • Provide time and resources required to complete and maintain training; • Steward the completion of required training.
Project Environmental, Social and health Advisors and Specialist	• Develop environmental and social training with support from training resources.
All Personnel	• Complete training requirements; • Provide feedback on training received.
Training Resources	• Develop environmental training programs with support from Environmental and Social Advisors and Specialists personnel; • Deliver training and evaluate training results.
Contractors and subcontractors	• Ensure their Environmental, Social and Health Management Plan details the training requirements, responsibilities, and timing for Environmental and Social training consistent with Company ESHMP; • Coordinate Environmental and Social training for their workers; • Conduct the required training.

14.5 Training Programs and Delivery

Eni Ghana will develop and implement an environmental and social training program specific to the different phases of the Project.

Environmental and social training may consist of a mixture of on-the-job training, mentoring, self-study, classroom instructions, seminars, workshops, computer based training, and emergency response or similar drills.

Training documents will be used to track competency, training scheduling and re-qualification requirements. Personnel training records will be retained for reference or auditing. Training progress will be reviewed periodically.

Contractors will be responsible for developing and delivering to its workers and subcontractors training for environmental, social and health topics applicable to their scope of work as approved by Eni Ghana.

Contractor shall elaborate a training Matrix detailing the training needs of each member of the organization and will document all training activity, by means of documents that attest the planning, delivery and validation of training. Contractor will also keep training records.