Environmental and Social Impact Assessment (ESIA) for the Proposed IEFCL – Train 3 Project

Environmental and Social Management and Monitoring Plan (ESMMP)

24 May 2023

Project No.: 0661941

The business of sustainability

ERM

Document details	
Document title	Environmental and Social Impact Assessment (ESIA) for the Proposed IEFCL –Train 3 Project
Document subtitle	Environmental and Social Management and Monitoring Plan (ESMMP)
Project No.	0661941
Date	24 May 2023
Version	1.0
Author	Wanjiku Githinji, Boaz Bett, Chris Hazell Marshall, George Chatzigiannidis, Martiens Prinsloo, Helen Seyler, Marianne Strohbach, Stephen Burton, Cameron Turner, Danielle Sanderson, Christopher Franklin, Ben Sussman, David O'Connor, Jessica McIver
Client Name	Indorama Eleme Fertilizer & Chemicals Limited

Document history

				ERM approval to issue		
Version	Revision	Author	Reviewed by	Name	Date	Comments
Final Draft	1.0	Wanjiku Githinji, Boaz Bett, Chris Hazell Marshall, George Chatzigiannidis, Martiens Prinsloo, Helen Seyler, Marianne Strohbach, Stephen Burton, Cameron Turner, Danielle Sanderson, Christopher Franklin, Ben Sussman, David O'Connor, Jessica McIver	D. Rodewald, W. Githinji, B. Bett	D. Rodewald	24.05.2023	Client Approved Draft

Signature Page

24 May 2023

Environmental and Social Impact Assessment (ESIA) for the Proposed IEFCL – Train 3 Project

Environmental and Social Management and Monitoring Plan (ESMMP)

Dieter Rodewald
Partner

Environmental Resources Management Southern Africa (Pty) Ltd.

1st Floor | Great Westerford | 240 Main Road | Rondebosch | 7700 | Cape Town | South Africa

CONTENTS

List of Tables

List of Figures

1. INTRODUCTION

1.1 Terms of Reference

Indorama Eleme Fertilizer & Chemicals Limited (IEFCL) is a major producer of urea fertilizer situated on a site of approximately 51 hectares (ha) within the greater 361 ha Indorama manufacturing complex at Eleme, Rivers State, Nigeria. IEFCL proposes to develop an Ammonia and Urea Train 3 Project. The proposed Train 3 expansion Project will be located within a 250ha of land situated in the Eleme Local Government Area, Rivers State, Nigeria. IEFCL appointed Environmental Resources Management Southern Africa (Pty) Ltd ('ERM') as independent environmental and social practitioner to undertake an Environmental and Social Impact Assessment (ESIA) for the proposed IEFCL Train 3 Project. Environmental & Chemical Services Limited, an FMEnv accredited Nigerian E&S consultant was also appointed by IEFCL to gather baseline data, conduct stakeholder engagements and act as the regulatory interface.

The proposed Train 3 expansion will consist of the development of an additional ammonia and urea train, with a total operating capacity of 2,300 metric tons per day (MTPD) of ammonia and 4,000 MTPD of urea. The total footprint of the Project is 80ha. It must be noted that the Train 3 Project is a copy of the existing (operational) Train 1 and Train 2 lines, which both independently also produce 2,300 and 4000 MTPD of ammonia and urea respectively. It should be noted that an ESIA was commissioned for Train 2 in 2017 and subsequently approved by the FMEnv and the IFC.

As part of the environmental approval process for the proposed IEFCL Train 3 Project, a simple and easy to implement Environmental and Social Management and Monitoring Plan (ESMMP) is needed to address the issues identified in the ESIA. This plan presents the ESMMP for the proposed IEFCL Train 3 Project.

This ESMMP sets out a formal system by which the Project can manage mitigation commitments during the construction and operational phases of the proposed IEFCL Train 3 Project.

1.2 Structure of the ESMMP

The structure of this ESMMP is as follows:

- **Chapter 1 (Introduction)** – presents the terms of reference for the ESMMP, purpose and objectives of the ESMMP, and details of the Project proponent.
- **Chapter 2 (Summary of Project Description)** – presents an overview of the proposed IEFCL Train 3 Project, specifications, and activities.
- **Chapter 3 (Environmental and Social Management System)** – presents a framework for the system necessary for the integrated management of the ESMMP.
- **Chapter 4 (Legal Framework and International Best Practice)** – summarises relevant legal and international good practice requirements related to environmental and social compliance.
- **Chapter 5 (Key Sensitivities)** – summarises key physical, biophysical, and socio-economic sensitivities of the proposed IEFCL Train 3 Project to contextualise the key areas for environmental management interventions.
- **Chapter 6 (Implementation of the ESMMP)** – summarises the institutional arrangements required for governance, implementation, and monitoring of the ESMMP.
- **Chapter 7 (Environmental and Social Management Plan)** – describes the objectives, performance requirements/standards, and mitigation requirements relevant to all construction and operational activities separated by environmental and social receptors (e.g., air, noise, water, biodiversity etc.).

- **Chapter 8 (Additional Environmental Recommendations)** – describes additional environmental recommendations for the Project. Some of these recommendations require partnership between the IEFCL and relevant government departments, such as the FMEnv.
- **Chapter 9 (Environmental and Social Monitoring)** – describes the monitoring requirements for air, soil, water, biodiversity etc. for construction and operation phases.

1.3 Purpose and Objectives of the ESMMP

Note:

This ESMMP has been compiled to address the Environmental and Social impacts that are anticipated to occur because of the proposed IEFCL Train 3 Project, as identified in the ESIA. This ESMMP should not be regarded as complete or final and requires a mechanism to manage change. This mechanism must ensure that changes to the scope of the proposed IEFCL Train 3 Project are subjected to a robust social and environmental assessment process. Any changes to Project scope or new substantive environmental and social findings will be evaluated for their degree of significance, and will be incorporated into the appropriate Project documentation as follows:

- Minor changes will be reflected in updates to the ESMMP; and
- Substantive design changes that might potentially alter the ESIA findings (i.e. those that result in changes to the predicted significance of environmental and social impacts) will be subject to re-assessment, further stakeholder consultation, supplementary reporting and revision of the proposed IEFCL Train 3 Project's ESMMP.

This ESMMP has been prepared to cover the activities associated with the proposed IEFCL Train 3 Project during all phases (pre-construction, construction, and post construction / operation). The ESMMP covers the management measures for implementation by the Contractor and associated subcontractors during construction of the proposed IEFCL Train 3 Project and measures that fall under the responsibility of the IEFCL. Monitoring measures to be undertaken by the Contractor and IEFCL are covered in Section 8.

The purpose of this ESMMP is to outline appropriate management strategies and actions to mitigate negative impacts and enhance beneficial impacts of the proposed IEFCL Train 3 Project through all the phases. The purpose is also to provide a basis for an on-site environmental and social manual for staff, maintenance personnel, contractors, and consultants with responsibilities for the proposed IEFCL Train 3 Project. The ESMMP includes the monitoring requirements to measure the efficacy of the mitigation measures and to enable adaptive management to correct mitigation requirements.

Each management action is designed to be practical, measurable, and auditable. Given the expected lifespan of the proposed IEFCL Train 3 Project, an ESMMP for decommissioning is not warranted, as the proposed IEFCL Train 3 Project is not expected to be decommissioned at any foreseeable time. Moreover, the baseline conditions associated with the Project areas and surrounds are likely to be significantly different to what it is today. When the proposed IEFCL Train 3 Project reaches end of life and should decommissioning be required then this would need to be assessed under a separate ESIA process and a separate ESMMP should be developed in this regard.

The objective of this ESMMP is to provide:

- Environmental and social management procedures and mitigation measures for the control of Project impacts and to monitor compliance with the environmental and social requirements.
- Environmental and social performance indicators, monitoring requirements and review procedures for activities associated with the proposed IEFCL Train 3 Project.

- Government authorities, stakeholders, and the Proponent with assurance that mitigation measures will be addressed, are achievable, and a common basis for measuring compliance with specific mitigation requirements.
- Stakeholders with assurance that identified mitigation measures to address impacts are documented, and that the environmental and social management of the proposed IEFCL Train 3 Project can reduce negative impacts and optimize or enhance positive impacts.

NOTE:

As the proponent, the Indorama Eleme Fertilizer & Chemicals Limited (IEFCL) will have ultimate responsibility for implementing the ESMMP.

1.4 Details of Proponent

The Project proponent is Indorama Eleme Fertilizer & Chemicals Limited, Eleme, Rivers State, Nigeria. It is the proponent's intent to establish the proposed Train 3 Project, and required associated facilities, from concept to construction and subsequent operation in line with the National Guidelines on manufacturing sector and in accordance with international best practice. The contact details for the applicant are as follows:

Contact: Anand Gupta

Indorama Eleme Fertilizer & Chemicals Limited

East-West Express Way

P.M.B 5151

Port Harcourt, Rivers State,

Nigeria

2. SUMMARY OF PROJECT DESCRIPTION

2.1 Project Location and Background

The proposed Train 3 expansion Project is proposed to be located within a 250ha plot adjacent of the IEFCL Plants situated in the Eleme Local Government Area, Rivers State, Nigeria. The Project area borders the existing Indorama Complex on the south and undeveloped land to the north, west, and east. The total footprint of the Project is 80ha. The coordinates of the project site are Latitude $4^0$50'3" to $4^0$50'52" N and Longitude $7^0$6'29" to $7^0$6'55" E.

In April 2016 and April 2021, IEFCL commissioned the Train 1 and Train 2 production lines respectively, which both independently produce 2,300 and 4000 MTPD of ammonia and urea respectively. The proposed IEFCL Train 3 Project will employ the same technology as operational Trains 1 and 2. Trains 1 and 2 have demonstrated a high degree of operational performance and reliability, while setting a benchmark in process safety.

2.2 Project Design

At the end of the design phase, the proposed IEFCL Train 3 Project will be dimensionally correct, such that all the main components of the Project can be fully described. It is during this phase that the outcomes of the ESIA will influence how the proposed Project develops.

Project planning, decision-making and refinement of the Project will continue throughout the design phase, as a result of continued engineering studies, as well as per the findings of the ESIA and associated ESMMP, and through further post-ESIA environmental and social studies.

The equipment design, process flow sheets, layout etc. of the proposed IEFCL Train 3 Project will be identical to Train 2. IEFCL has already engaged Engineering, Procurement and Construction (EPC) Contractors for the Project.

Project design is such that the Project will have an operational lifespan of 30 years, with a planned shutdown for maintenance purposes at every 4 years. Design capacity is such that the plant will operate 330 days/year.

The Project will consist of the following key infrastructure (also refer to Figure 2.1):

- An Ammonia Plant (with a capacity of 2,300 MTPD). The key infrastructure associated with the Ammonia Plant includes:
  - The Compressor Unit
  - Stacks associated with the Reforming and Steam Boiler
- A Urea Plant (with a capacity of 4,000 MTPD). Key infrastructure associated with the Urea Plant includes:
  - The Granulation Unit and associated stack
- Internal Road Network (with a width that varies between 8 to 10 meters)
- Watch Towers (situated along the boundary wall)
- Boundary Wall and Fence
- Truck Parking Facilities
- Workshops and other Administrative Buildings
- A Fire Station
- Urea Product Handling and Bulk Loading Area
- Sub Station and Control Room Building

- Bulk Urea Storage Facilities
- Two Cooling Towers for Ammonia & Urea plant

2.3 Construction Phase

The construction phase cannot commence prior to the approval of the associated ESIA study. It is assumed that construction will continue for a duration of approximately 32 months. Activities during the construction phase will typically involve establishment of the boundary wall and fence, clearance of vegetation and grading of land, civil works and establishment of the infrastructure mentioned in Section 2.2.

It should be noted that no construction activities will be undertaken during the night.

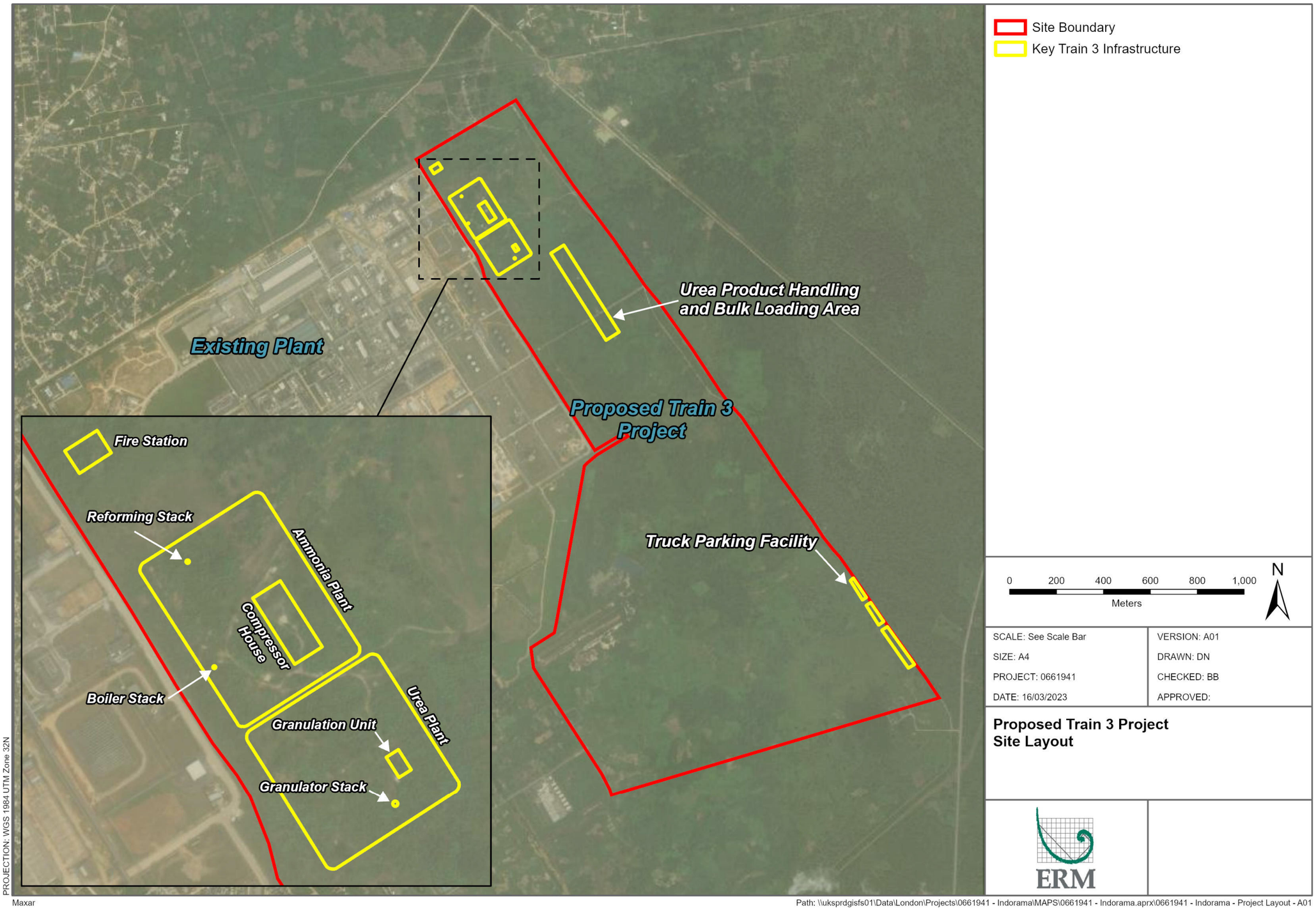

Figure 2.1 Siting and Layout of Key Infrastructure associated with the Train 3 Project

2.4 Operational Phase

A summary of the operational process flow is as follows:

- The ammonia plant is a single train plant consisting of the following key process stages (also refer to Figure 2.2):
  - Feed and fuel gas supply
  - Feed gas desulfurization
  - Primary reforming
  - Process air compression
  - Secondary reforming
  - CO shift conversion, HTS and LTS (High and Low Temperature Shift) conversion
  - CO_2 removal
  - Methanation
  - Syngas drying
  - Cryogenic Purification
  - Synthesis gas compression
  - Ammonia synthesis
  - Ammonia refrigeration system
  - Loop Purge Ammonia Recovery
  - Process condensate stripping

  The ammonia plant is designed to produce 2,300 MTPD of ammonia. Ammonia will be delivered to the urea plant in pipes. The plant will also deliver produced liquid ammonia to an atmospheric storage tank in the event that the urea plant be shutdown.

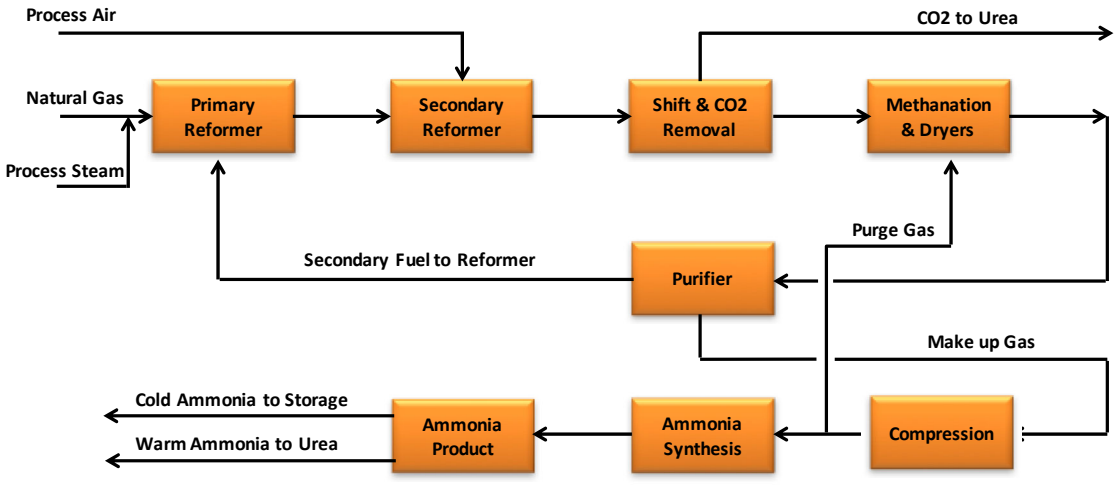

Figure 2.2 Block Diagram of Ammonia Plant

- The urea plant consists of the following main process stages (also refer to Figure 2.3):
  - Urea synthesis, whereby ammonia and CO_2 react to produce a urea solution.

- Urea solution purification and recovery.
- Conversion of the urea solution to granules (employing spout bed fluid granulation technology).

The urea plant is designed to produce 4,000 MTPD of urea. Urea granules produced will be sent to storage either for bagging or bulk shipment.

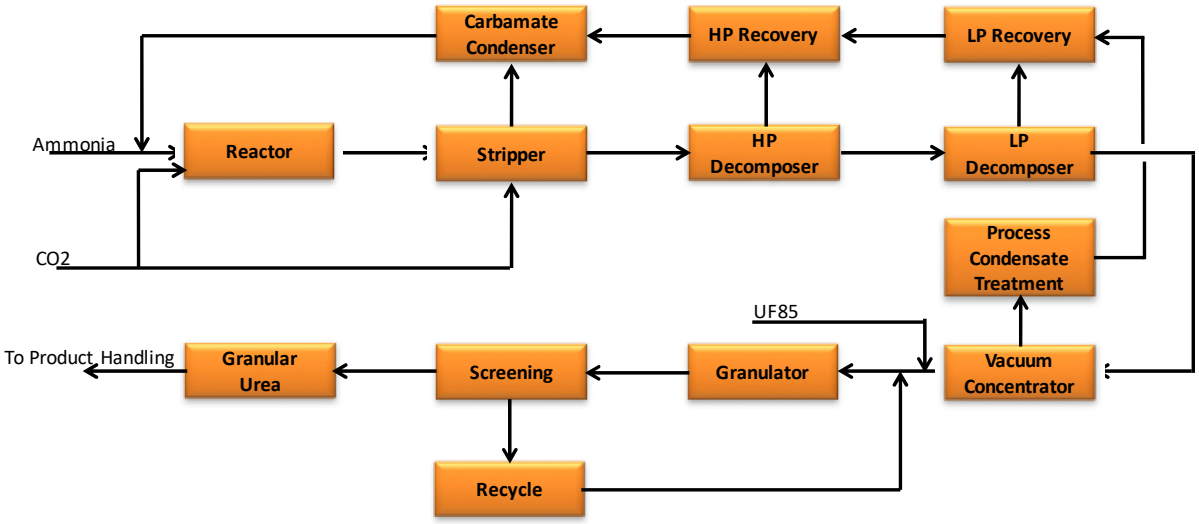

Figure 2.3 Block Diagram of Urea Plant

2.5 Decommissioning Phase

Activities during the decommissioning phase will involve demolition and site clean-up, disposal of waste, demobilisation of the workers, and a final site review. Decommissioning will take place years from now, and the baseline conditions associated with the Project and surrounds are likely to be significantly different to what it is today. When the IEFCL Train 3 Project reaches end of life and should decommissioning be required then this would need to be assessed under a separate ESIA process and a separate ESMMP should be developed in this regard.

2.6 Process Utilities

The IEFCL Project will encompass a number of process utilities. Some of the key process utilities are highlighted below:

- **Power Generation** – power for the construction and operational phases of the proposed IEFCL Train 3 Project will be provided by the existing captive power plant in the Indorama Eleme Petrochemicals Limited (IEPL) complex situated adjacent to the Train 3 Project. The existing power plant consists of six operating Gas Turbine Generators (GTG) and one additional GTG (GT-7) is to be installed. Each of the gas turbines can produce approximately 33 MWH of power. Hence total power generation capacity of total 7 GTG's is 231 MWH and the existing power consumption is about 112 MW. The Project is expected to consume an additional 30 MWH. Thus, the installed capacity is more than sufficient to meet the power demand of the Project and ensuring reliability.
- **Raw Water Treatment** – water for the Project will be supplied by an existing borehole field, as well as two new boreholes that will be developed as a back-up. The location of the two new boreholes have been identified and the relevant groundwater supply studies have been undertaken by an independent agency appointed by IEFCL.
- **Demineralised Water System** – the demineralization (DM) plant will produce ultra-pure water, which will be further de-aerated to produce Boiler Feed Water (BFW) suitable for high-pressure

steam generation. The Project will have a new DM plant to meet Project requirements. The existing IEPL & IEFCL DM plants will be integrated with the new DM plant to improve reliability of supply.

- **Condensate Polishing System** – the Project will include a condensate polishing system, which will consist of a mix of bed polisher units. The system will be used to treat process and steam condensates from the ammonia plant, urea plant and the steam turbine. Return condensates from these plants will be received and stored in a condensate storage tank, polished, and recycled. Sulphur acid and caustic soda are used for regeneration of the polisher beds.
- **Wastewater Recovery Plant** – it is anticipated that with the proposed IEFCL Train 3 Project that the combined wastewater generated by IEPL and IEFCL will be approximately 580 m^3/hr. As part of the Project, IEFCL propose to reduce groundwater consumption and reduce the amount of wastewater discharge. As such, as part of the Project, a water recovery plant will be constructed to treat the wastewater. The water recovered shall be used as makeup for cooling towers. The wastewater recovery plant is designed to treat 580 m^3/hr of wastewater with a recovery of 522 m^3/hr (90%).
- **Steam Generation** – steam for the proposed IEFCL Train 3 Project shall be supplied from new package boiler within the battery limit of the ammonia plant. Moreover, IEPL are in the process of installing four numbers Heat Recovery Steam Generators (HRSG) to recover heat from exhaust gasses from the operational Gas GTGs to generate medium pressure steam.

  It is proposed that the existing steam generators from the existing IEPL and IEFCL operations will be integrated with the Project package boiler through a common network to ensure for overall integration.

  Steam is mainly used to drive turbines associated with compressors in the ammonia and urea plants, as well as in the reforming and CO shift processes.
- **Cooling Tower** - two new cooling towers of sufficient capacity shall be installed to supply cooling water for ammonia and urea production. Make-up water associated with the cooling towers shall be supplied partly from the water recovery plant and partly from raw water.

  A continuous blow-down from Ammonia & Urea circulating cooling water network is provided in order to maintain concentration of dissolved salts, turbidity and other key parameters of circulating water within acceptable limits to avoid deposition and corrosion in piping / equipment.
- **Natural Gas** – the Project requires natural gas as a feed for ammonia production and as a fuel for heat /power generation. IEFCL receives natural gas from two suppliers through an existing underground pipeline. From these suppliers, the natural gas is received in a station consisting of slug catcher, filters, ultrasonic gas flow measurement skid and distribution network. The present surplus capacity of natural gas receiving station is adequate to meet the proposed IEFCL Train 3 Project feed and fuel gas requirement.
- **Wastewate**r – liquid wastes are generated from the boiler blow downs, air compressor intercoolers, turbine condensates, steam condensates, process condensate, and oily effluent from the various processing units in the ammonia and urea plants. Some waste streams will be individually treated in the ammonia and urea plants before being channelled into condensate polisher unit for reprocessing and reuse as boiler feed water.

2.7 Solid Waste Management

Wastes generated from Project activities can be categorised as non-hazardous or hazardous according to their types and associated risks.

Waste types and estimated quantities during the construction phase are shown in Table 2.1. The duration of construction activities up to mechanical completion is estimated at about 35 months.

Table 2.1 Waste Types and Estimated Quantities during the Construction Phase

Activity	Description	Waste Category	Quantity	Destination
Site preparation / ton/year Foundations	Cement / concrete – concrete debris, soil containing cement	Non-hazardous	3000-3500 ton/year	Land fill
	Scrap metal / wire – strips of metal, metal supports, pieces of wire	Non-hazardous	200-500 ton/year	Resale
Construction activities	Scrap plastic / PVC	Non-hazardous	20-30 ton/year	Recycle
Maintenance operations	Paints and solvents – traces of paint, solvents, etc.	Hazardous	0.3-0.5 ton/year	Approved waste management facility
	Light bulbs, fluorescent light fittings; Equipment which can contain traces of neon and tungsten	Hazardous	0.2 ton/year	Approved waste management facility
Personal Protective Equipment (PPE) from work activities	Used PPE – goggles, gloves, etc.	Hazardous	5 ton/year	Existing Incinerator or Approved waste management facility
Lube oil and seal flushing of machinery skid (Pre-Commissioning phase)	Lube and seal oil – oil containing weld splatter, chips, welding flux deposits, powered metal oxides	Hazardous	1.3-1.8 ton/year	Approved waste management facility
Camps, kitchen, offices operations	Cooking organic wastes	Non-hazardous	10-20 ton/year	Municipal/Approved dump side
	Mixed urban wastes	Non-hazardous	150-200 ton/year	Municipal/Approved dump side
	Medical wastes	Hazardous	0.05-0.10 ton / year	Existing Incinerator
	Wastewaters (drinking, washing, shower, sanitary)	Hazardous	150 lt/day per worker	New STP

During the operational phase, wastes contributed by the proposed IEFCL Train 3 Project will form part of the existing waste management system associated with the existing IEPL and IEFCL operations. To this end, IEFCL will update their Waste Management Plan to accommodate operational aspects of the Project.

2.8 Employment and Working hours

A peak workforce of approximately 4,300 persons will be required during the construction phase. During the operational phase, the Project is anticipated to require an additional 57 and 115 expat and national staff. Employment of Nigerians will be prioritised. The established normal working hours in IEFCL is 40 hours per week and 176 hours per month as stipulated in Nigerian Labour Laws and Internal Labour Organisation (ILO) conventions.

3. ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM

3.1 Introduction

This ESIA has identified potential impacts (both positive and negative) to the physical, natural, and socio-economic environments. In order to avoid, minimise and reduce negative impacts, and to ensure opportunities for the enhancement of positive impacts are realised, Environmental and Social Management Plans (Management Plans) have been prepared, and are listed and described in this ESMMP under Section 7. The Management Plans described in Section 7 include the following:

- Climate Change Management Plan
- Air Quality Management Plan
- Soil and Erosion Management Plan
- Ground Water Management Plan
- Surface Water Management Plan
- Biodiversity Management Plan
- Socio-economic Management Plan
- Cultural Heritage Management Plan
- Traffic Management Plan
- Employment and Procurement Management Plan
- Community Health and Safety Management Plan
- Waste Management Plan
- Spill Prevention, Control and Containment Management Plan

The above plans may be combined or included in an overall environmental and social plan as appropriate to streamline the execution of the Project. Each management plan listed above provides the following:

- The objectives and purpose of the plan;
- Applicable phases of the Project when the Management Plan is required;
- The Project related activity resulting in the impact, requiring the elaboration of each Plan;
- An overview of the responsibility for the implementation of each Plan;
- A summary of the Performance criteria to which the Plan must aim to comply (which included Nigerian legal requirements, the IFC performance standards, or applicable good practice), that is relevant to each Plan;
- Mitigation measures (actions) required during various Project phases (*viz.* pre-construction, construction, and operational phases), that were identified and described in the ESIA; and
- Monitoring requirements, including targets, performance indicators and reporting requirements.

3.2 Environmental and Social Management System

The vehicle for the ***integrated*** management and ***implementation*** of these Management Plans is an Environmental and Social Management System (ESMS). Therefore, the ESMS is a key component of the ESIA process.

An ESMS is also a requirement of the IFCs Performance Standards (PS 1: Assessment and Management of Environmental and Social Risks and Impacts). The objective of PS 1 is to:

"Identify and evaluate environmental and social risks and impacts of the Project, adopting a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimise, and, where residual impacts remain, compensate/offset for risks and impacts to workers, affected communities, and the environment, ..." (Undertaken as part of the ESIA process)*..... "and to promote improved environmental and social performance of clients through the effective use of management systems...."*

The main elements of any given ESMS is provided in Figure 3.1 and comprises the following four phases:

- **Planning** – establishing the *objectives* and processes necessary to deliver results in accordance with the Project Guideline for Environmental and Social Management.
- **Doing** – Implementing the processes through defining *mitigation* measures and assigning *responsibilities* for undertaking or implementing such mitigation measures, typically through suites of Management Plans.
- **Checking** – *Monitoring* and *measuring* these processes against the policy, objectives and targets, legal and other requirements (such as those of the IFC), and *reporting* of the results.
- **Acting** – Taking actions to continually improve performance of the ESMS through the *training* of personnel and *auditing* of results.

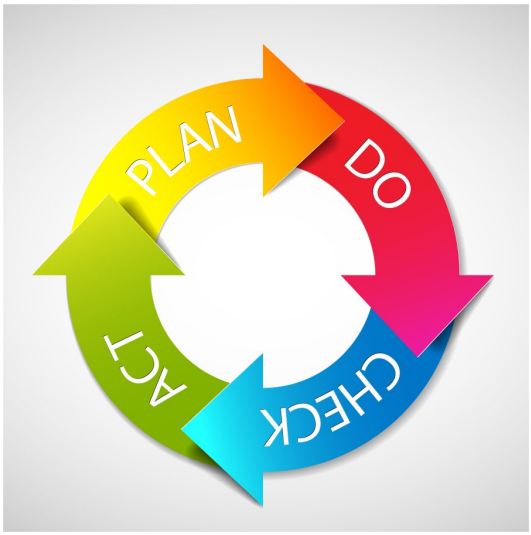

Figure 3.1 The Main Elements of an ESMS

The ESIA process has essentially undertaken most of the initial ***planning*** aspects required by an ESMS by identifying environmental and social impacts and formulating Management Plans.

Further elements of an ESMS related to its implementation (***doing***, ***checking*** and ***acting)***, are described in Chapter 6 of this ESMMP under the following sections:

- **Planning / Doing:** Section 6.2 provides the institutional framework, organisational frameworks and specific roles and responsibilities for implementing the ESMS.
- **Planning / Doing:** Section 6.3 outlines plans for on-going stakeholder engagement including the management of community grievances and concerns.
- **Checking / Acting:** Section 6.4 introduces key components for the implementation of the ESMS including training, monitoring, audits and inspections, and reporting.

- **Acting:** Section 6.4 introduces key components for the implementation of the ESMS; Section 6.4.5 explains the system for the management of change during the implementation of the proposed Project.

As such, an ESMS is implemented to:

- Assist management in establishing priorities for environmental and social impacts;
- Provide a mechanism for ensuring that measures identified in the ESIA and listed in each Management Plan, are addressed and implemented;
- Track changes in Nigerian legislation and/or Lender standards so that they can be addressed in a timely manner;
- Provide a framework for compliance auditing and inspection programmes;
- Ensure environmental and social (including Project induced health issues) continue to be integrated into business decisions;
- Provide a framework for mitigating impacts that may be unforeseen or unidentified until construction or operation is underway;
- Encourage and achieve appropriate environmental and social performance and awareness from all employees and contractors; and
- Provide assurance to regulators, stakeholders, and lenders that their requirements with respect to environmental and social performance are being managed.

At this stage, IEFCL have a number of environmental, social, occupational health and safety and human resource plans, policies and procedures. These plan, policies and procedures relate to all IEFCL's operations in Port Harcourt. Over the life of all of IEFCL's operations, the vehicle by which the commitments set out in this ESMMP and other plans, policies and procedures should be developed into specific actions which can be implemented through an overarching ESMS.

Aligned with IFC PS1, as the Project owner IEFCL, is responsible for the development of an ESMS under which all IEFCL operations (including the proposed Train 3 Project) will be implemented and shall include:

- **Policy Statement** – which described the environmental and social objectives, which will guide IEFCL in achieving environmental and social performance.
- **Process for Risk Identification** – which, in addition to the ESIA, shall include a defined process for evaluating and managing environmental and social risks through life of IEFCL operations.
- **Management Programs** – for environmental and social performance execution which are, in part, detailed for the Train 3 Project below.
- **Organisation Capacity/Competency** – demonstrated through clear division of responsibility and vetting of individual roles holding responsibility and accountability for environmental and social performance execution.
- **Emergency Preparedness and Response** – a plan which addresses how potential risk impacts resulting in emergency response will be managed for life of Project.
- **Stakeholder Engagement Program** – a program which includes stakeholder analysis and planning, disclosure and dissemination of information, consultation and participation, grievance mechanism, and ongoing reporting to Affected Communities through life of IEFCL operations.
- **Monitoring and Review System** – which will detail the process by which IEFCL will monitor and measure the effectiveness of the management program, including compliance with any regulatory requirements, legal requirements and/or contractual obligations

4. LEGAL FRAMEWORK AND INTERNATIONAL BEST PRACTICE

This Chapter presents a summary of the legislative and international good practice environmental and social requirements for the proposed IEFCL Train 3 Project.

4.1 Institutional Framework

The Federal Ministry of Environment (FMEnv) is the principal authority for the regulation and enforcement of environmental laws in Nigeria. The Environmental Impact Assessment Act 86 of 1992 (amended by EIA Act CAP E12 LFN 2004), established by the Ministry, requires that all development and industrial activities, operations and emissions are within the limits prescribed in the national guidelines and standards and comply with relevant regulations for environmental pollution management in Nigeria as and when these are released by the Ministry.

The National Environmental Standards and Regulations Enforcement Agency (NESREA) is charged with the responsibility of enforcing the environmental laws, guidelines, standards, and regulations in Nigeria, specifically during the operational phase of development Project.

4.2 National Regulatory Framework

The following national policies and regulations have E&S implications that pertain to the Project and this ESMMP:

- **National Policies**:
  - National Policy on the Environment, 1989
  - National Climate Change Policy for Nigeria, 2021
  - National Gender Policy, 2021
  - National Policy on Occupational Safety and Health, 2021
  - National policy on Solid Waste Management, 2020
  - National Environmental Sanitation Policy, 2005
  - National Agriculture Promotion Policy, 2016
- **General Environmental**:
  - Environmental Impact Assessment Act 86 of 1992 (amended by EIA Act CAP E12 LFN 2004)
  - Environment Impact Assessment Procedures and Charges Regulations, 2021, S.I 109
  - National Environmental Impact Assessment Procedural and Sectoral Guidelines, 1994
- **Waste and Pollution**:
  - National Environmental (Pollution Abatement in Industries and Facilities Generating Wastes) Regulations, 1991, S.I.9
  - National Environmental Protection (Effluent Limitation) Regulation 1991, S.I.8
  - National Environmental (Management of Solid and Hazardous Wastes) Regulations, 1991, S.I.15
  - National Environmental (Sanitation and Wastes Control) Regulations, 2009, S.I.28
- **Soils and Water**:
  - National Environmental (Soil Erosion and Flood Control) Regulations, 2011, S.I.12
  - National Environmental (Surface and Groundwater Quality Control) Regulations, 2011, S.I.22
  - Water Resources Act, CAP W2 LFN, 2004

- **Climate Change**:
  - Climate Change Act, 2021
- **Air Quality**:
  - National Environmental (Air Quality and Control) Regulations, 2021
- **Noise**:
  - National Environmental (Noise Standards and Control) Regulations, 2009, S.I.35
- **Biodiversity**:
  - National Environmental (Control of Alien and Invasive Species) Regulations, 2013, S.I.32
  - Endangered Species Act CAP E9 LFN, 2004 as amended 2016
  - Environmental (Protection of Endangered species in International Trade) Regulations 2011, S.I. 16
- **Health, Safety and Labour**:
  - Factories Act, CAP F1 LFN 2004
  - Labour Act, CAP L1 LFN 2004
  - Trade Unions Act, 2005
  - Employee Compensation Act, 2010
  - Pension Reform Act, 2014
  - Violence against Persons (Prohibition) Act, 2005
  - National Minimum Wages Act, 2019
  - National Health Insurance Authority Act, 2022
  - National Employment Laws and Regulations, 2023
- **Land**:
  - Land Use Act CAP L5 LFN, 2004
- **Other**:
  - National Environmental (Ozone Layer Protection) Regulations, 2009, S.I.32
  - National Environmental (Construction Sector) Regulations (S.I No. 19), 2011
  - Harmful Waste (Special Criminal Provisions) Act CAP H1 LFN, 2004
  - Criminal Code of 1990 (now CAP 38 LFN, 2004)
- **State Laws**:
  - Rivers State Noise Control Edict, No. 20, 1985
  - Rivers State Environmental Protection and Management Law, CAP A42, 2019

The ESIA and associated ESMMP (this document) has considered the provisions included in the abovementioned national policies and regulations. Descriptions of each policy and regulation mentioned above together with its applicability to the Project is provided in Chapter 2 of the ESIA.

4.3 International Conventions, Protocols and Agreements

Nigeria is a signatory to several international conventions and agreements targeted toward the conservation and protection of the environment to ensure sustainable development. The relevant

international conventions, protocols and agreements most applicable to the Project and this ESMMP include:

- The Paris Accord, 2015
- International Health Regulations (IHR), 2005
- International Labour Organization (ILO): ILO-OSH, 2001 - Guidelines on Occupational Safety and Health (OSH) Management
- The United Nations Convention on Biological Diversity, 1994
- The Rio Declaration on Environment and Development, 1992
- The United Nations Framework Convention on Climate Change, 1992
- International Convention on Oil Pollution Preparedness, Response, and Co-operation (OPRC), 1990
- The Montreal Protocol on Substances that deplete the Ozone Layer. Adopted on September 16, 1987
- Vienna Convention for the Protection of the Ozone Layer., 1985
- Protocol Concerning Cooperation in Combating Pollution in Cases of Emergency in the West and Central African Region, 1981
- Convention on the Conservation of Migratory Species of Wild Animals, 1979
- African Convention on the Conservation of Nature and Natural Resources, 1968

An overview of these international conventions, protocols and agreements is provided in Chapter 2 of the ESIA.

4.4 International Best Practice Standards and Guidelines

The following international best practice standards and guidelines are applicable to the Project and the requirements thereof have been considered in the development of this ESMMP:

- **Equator Principles** – the Equator Principles provide a set of 10 principles of voluntary standards that present a credit risk management framework for determining, assessing and managing social and environmental risk in Project financing. The Equator Principles are based on the IFC Performance Standards on social and environmental sustainability and on the World Bank Group EHS Guidelines. The Project has committed to complying with this set of principles, which together with the IFC Performance Standards and the EHS Guidelines will be used as a benchmark for IBP.
- **International Finance Corporation Performance Standards on Environmental and Social Sustainability, 2012** – IFC's Sustainability Framework (International Finance Corporation, World Bank Group) articulates the Corporation's strategic commitment to sustainable development and is an integral part of IFC's approach to risk management. The Sustainability Framework comprises IFC's Policy and Performance Standards (PSs) on Environmental and Social Sustainability, and IFC's Access to Information Policy.

  The Policy on Environmental and Social Sustainability describes IFC's commitments, roles, and responsibilities related to environmental and social sustainability. IFC's Access to Information Policy reflects IFC's commitment to transparency and good governance on its operations and outlines the Corporation's institutional disclosure obligations regarding its investment and advisory services.

  The PSs are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities.

IFC requires its clients to apply the PSs to manage environmental and social risks and impacts so that development opportunities are enhanced.

The IFC PSs include:

- PS 1: Assessment and Management of Environmental and Social Risks and Impacts.
- PS 2. Labour and Working Conditions
- PS 3. Resources Efficiency and Pollution Prevention
- PS 4. Community, Health, Safety and Security
- PS 5. Land Acquisition and Involuntary Resettlement
- PS 6. Biodiversity Conservation and Sustainable Management of Living Natural Resources
- PS 7. Indigenous Peoples
- PS 8. Cultural Heritage

- **The World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines** – the World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines (1991 and updated in 2007) are a set of technical reference materials that provide pollution related limits and standards. In general, the Guidelines seek to avoid, minimize and control environmental, health and safety (EHS) impacts during the construction, operation and decommissioning phase of a project or facility and are applicable to this Project. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC PSs. Where applicable, the EHS Guidelines were considered in this ESIA process and in the development of this ESMMP.
- **Industry Specific EHS Guidelines: Nitrogenous Fertiliser Production** - In addition to the above General EHS Guidelines, the Guideline for Nitrogenous Fertilizer Production is also relevant to the Project, the ESIA process and associated ESMMP (this document). This Guideline expands on the general EHS Guidelines and includes industry specific management guidance.

  This Guideline includes information relevant to facilities that produce ammonia based nitrogenous fertilizers, including (amongst others) ammonia and urea. The Guideline has identified potential environmental issues associated with nitrogenous fertilizer manufacturing and provides good practice mitigation.

4.5 Project Specific EHS Policies and Standards

The following IEFCL EHS Policies and Standards have been considered in the ESIA process and this ESMMP:

- Non-Discriminatory Policy
- Child Labour Prohibition Policy
- Independent Contractors' Policy
- Gender Based Violence and Harassment Policy
- Anti-Retaliatory Policy
- Community and Stakeholder Policy
- Environment and Climate Change Policy
- Health and Safety Policy
- Human Rights and Labour Policy
- Product Stewardship and Treatment of Customer Policy
- Responsible Business Policy

- Social Media Policy
- Confidential Reporting Policy

5. KEY SENSITIVITIES

Key environmental and social sensitivities associated with the proposed IEFCL Train 3 Project are summarised in Sections 5.1 to 5.3. These sensitivities have been used to provide contextual overview for defining the environmental management requirements in this ESMMP.

5.1 Key Physical Environmental Sensitivities

- In terms of climatic hazards, the broader Project Area is susceptible to extreme heat; water stress and drought; and increased flooding events and wildfires.
- Given the relatively high permeability of the shallow unconfined aquifer, as well as the shallow depth to groundwater (<7.5m), the aquifer is a sensitive resource towards potential contamination from surface sources. This is likely to be experienced by the seven communities surrounding the Site.
- Soils in the Project Area are sensitive to compaction and will increase surface runoff during rainfall events. Further, the local community also rely on the soils for subsistence farming. Therefore, contamination of the soils can impact not only on the quality of water, but also the field carrying capacity for livestock and crop production.
- The Okulu River is located directly downstream of the existing and planned plants. Pollutants from the effluent plant have the potential to be transported from Project Site to the River, resulting in the potential for impact (specifically the potential for a large release related to failure of plant due to flood, retention pond wall failure, or continual undetected release of untreated effluent).

5.2 Key Biophysical Sensitivities

- **Terrestrial Biodiversity** – the terrestrial biodiversity of the site has been impacted upon by anthropogenic disturbances, but still retains both plants and animals that form an integral part of the community's ecosystem services. The loss of the area to be cleared for the proposed IEFCL Train 3 Project could directly affect the surrounding ecosystem through siltation and pollutants, alien invasive species introduction, and changes to the functionality of the systems.
- **Aquatic Biodiversity** – while little to no direct impact is predicted to occur to the aquatic biodiversity of the site, the possibility exists that effluent discharge could lead to contamination of these systems is thus a reduction in aquatic biodiversity, which is already under threat from a number of anthropogenic impacts. Most of the threatened species observed are associated with aquatic habitats.
- **Ecosystem Services** – the ecosystem services of the study area are most likely to be affected by the direct removal of natural systems from the footprint of the Project, as well as the loss of functionality that accompanies the loss of biodiversity noted above.
- **Critical Habitat** – potential critical habitat triggering species appear to be associated with wetland/stream habitats (including seasonally flooded areas), and denser forest/thicket vegetation.

5.3 Key Socio-economic Sensitivities

- **Proximity of communities to site**:
  - The construction phase could result in disturbance to nearby communities to the north and north-west. The access to the site (roads and entrances) should be considered to minimise impacts to adjacent communities.
  - Construction noise, dust, traffic must be managed to prevent impacts on nearby communities.
  - Air quality was raised as a perceived issue from the current Indorama facility – and should be considered in the ESIA – i.e., to what extent does the current facility impact on local air quality and what is the potential for this to change with the proposed Project.

- **Labour**:
  - There is an ongoing influx of people from outside the immediate area moving into Port Harcourt seeking employment and business opportunities. Whereas majority of the workforce (80% - 90%) have been living within the vicinity of Port Harcourt, the proposed Project is likely to create expectations around employment and opportunities. This must be managed through effective and ongoing stakeholder engagement (adjacent communities and the broader public).
  - Sourcing of labour for construction must be done in a manner that is open and transparent, and through reputable organisations or structures.
  - Indorama needs to outline the number and skill levels of employees and contractors required during construction and operation and how labour will be sourced, or provide a commitment statement to this effect, before stakeholder engagement commences.
- **Community Investment**:
  - Currently Indorama have agreements (MoUs) with the host communities (Akpajo, Njuru, Okerewa, Aleto, Agbonchia, Wakoahu Family). The expectation from the communities is likely to be that these will be reinstated with new terms and/or amounts to be paid. With the expansion of the Indorama site, it is likely that communities will expect an increased level of social investment. However, it is noted that the 2023-2025 MoUs will run through the construction phase of Train 3 and include commitments to the host communities.
  - The ESIA team (stakeholder engagement team) needs to be clear about the intentions around community investment prior to engagement with these communities.
- **Town Planning and Development**:
  - The Port Harcourt area has historically suffered from rapid and uncontrolled physical expansion. This trend is likely to continue, with human settlement densifying in adjacent communities and further surrounding the Project site.
  - The cumulative impact of population influx can be expected to exacerbate high-density, unplanned human settlement in the Greater Port Harcourt area with little to no provision of basic services albeit on a smaller scale given the labour will be sourced locally.
- **Cultural Heritage**:
  - An area of land within the south-eastern portion of the Project Area approximately 250 metres in diameter and slightly elevated from the land surrounding (+- 19 masl). This site has the potential to contain intangible cultural heritage in the form of a sacred grove with spiritual or religious value.
- **Traffic**:
  - There is congestion on the East West Road, which connects south-eastern Nigeria to Port Harcourt, resulting from increases in peak hour traffic, increases in large vehicle traffic, as well as turning movements at the Indorama Complex access road.
  - There are also congestion and safety concerns at the intersection of the Indorama Complex access road and the East West Road due to lack of traffic controls (traffic signals or signage) and the volume of vehicle turning movements at this intersection.
  - Congestion on the route from the port at Onne to the East West Road is due to increased truck traffic.
  - The impact of higher traffic volumes and more truck traffic is felt on residents, businesses, and other road users of the Uzaku Alese Road within and near Eleme and nearby towns.

6. IMPLEMENTATION OF THE ESMMP

6.1 Overview of the ESMMP

During the course of the ESIA process, Project design recommendations have been suggested, taking into account the need to avoid, minimise and reduce negative environmental, socio-economic and health impacts, and the opportunity to enhance positive impacts.

To ensure that identified and unforeseen or unidentified impacts are detected and resolved, a set of Environmental and Social Management Plans have been developed as an outcome of the ESIA (refer to Section 7). The Management Plans will be supplemented with additional requirements as detailed design proceeds prior to the commencement of the construction phase. Contractors and subcontractors will be required to develop their working methods and procedures having regard to these Management Plans.

The Management Plans are an integral part of the ESMS (refer to Section 3) and act as the main vehicle for converting the findings of the ESIA into action.

6.2 Institutional Framework

6.2.1 Federal Ministry of Environment (FMEnv)

FMEnv is the principal authority for the regulation and enforcement of environmental laws in Nigeria. The EIA Act established by the Ministry, which ensures that all development and industrial activities, operations and emissions are within the limits prescribed in the national guidelines and standards and comply with relevant regulations for environmental pollution management in Nigeria as and when these are released by the Ministry. Further to the Mandate, FMEnv developed laws/ guidelines on various sectors of the national economy including the Environmental Impact Assessment (EIA Act CAP E12, LFN 2004) Act and procedures for evaluating EIA reports. Furthermore, in September 2021, through Official Gazette No. 105, Vol 108, the Federal Republic of Nigeria published S.I. No. 109, Environment Impact Assessment Procedures and Charges Regulations. FMEnv consults with State Ministries of Environment and their Environmental Protection Agencies during the EIA permitting process.

In addition, other regulatory agencies/authorities with oversight over specific industries have also issued guidelines to regulate the impact of such industries on the environment.

6.2.2 National Environmental Standards and Regulation Enforcement Agency (NESREA)

The National Environmental Standards and Regulations Enforcement Agency (NESREA) was established in 2007 by the Federal Government of Nigeria as an Agency of FMEnv. The Agency is charged with the responsibility of enforcing the environmental laws, guidelines, standards, and regulations in Nigeria, specifically during the operational phase of development projects.

6.2.3 Indorama Eleme Fertilizer & Chemicals Limited (IEFCL)

IEFCL, as the Project proponent, have placed contractual obligations on the Contractor (with flow down requirements in relation to subcontractors), which have been considered in all Management Plans, and which need to be adhered to, and reported on, through the implementation of the ESMS.

6.2.4 Contractors and Subcontractors

IEFCL has already engaged Engineering, Procurement and Construction (EPC) Contractors for the Project. It is understood that where subcontractors will be engaged, subcontractors will be responsible for managing potential environmental, social, safety and health impacts of their contract activities. To this end, Contractors and their associated Subcontractors will need to:

- Demonstrate compliance with the EHS conditions, which apply under the contract;

- Demonstrate commitment to the ESIA and its Management Plans in their management structure;
- Identify individuals responsible for overall environment, social, safety and health management; and
- Undertake regular environmental, social, health and safety inspections and provide reports to allow for the monitoring and evaluation of performance.

During the construction phase, Contractors and Subcontractors will be key implementers of mitigation measures, as defined in Management Plans, and will also be responsible for compliance with the listed Performance Criteria (as provided in each Management Plan).

6.2.5 Lenders to the Project

Lenders to the Project require that the Project, in addition to in-country national laws and regulations, apply their lender specific health, safety, environmental and social standards which include but not limited to:

- Equator Principles (EPIV)
- International Finance Corporation Performance Standards on Environmental and Social Sustainability, 2012 (IFC PSs)
- World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines
- Industry Specific EHS Guidelines – Nitrogenous Fertilizer Production

It is anticipated that the lenders will use in-house environmental and social expertise or independent consultants, to monitor the Project's performance against these standards, during all phases of the Project.

6.3 Continued Stakeholder Engagement

IEFCL will continue to engage with stakeholders throughout the life of the Project. The objectives of ongoing stakeholder engagement are outlined in the separate Stakeholder Engagement Plan (SEP) and include:

- To understand the interests, influence, and concerns of various Project stakeholders.
- To ensure effective, transparent, and timely communication between the Project and its stakeholders, to engender an environment of trust and mutual respect.
- To engage stakeholders on their concerns regarding the Project, and appropriately address these through dialogue and corrective actions.
- To establish effective means of communication to disseminate information from the Project to stakeholders.
- To design stakeholder engagement mechanisms and standards that respect local traditions and cultural norms.
- To effectively manage the expectations of stakeholders regarding socio-economic benefits derived from the Project.
- Establish the appropriate management mechanisms and identify necessary capacity building and training requirements for the effective implementation of the SEP.

The key principles guiding the Project's approach to stakeholder engagement are as follows:

- **Transparency**: to be open and transparent with stakeholders.
- **Accountability**: to be willing to accept responsibility as a corporate citizen and to account for impacts associated with the Project activities.
- **Trust**: to have a relationship with stakeholders that is based on mutual commitment to acting in good faith.

- **Mutual Respect**: to respect stakeholders' interests, opinions, and aspirations.
- **Collaboration**: to work cooperatively with stakeholders to find solutions that meet common interests.
- **Responsiveness**: to coherently respond in good time to stakeholders.
- **Proactiveness**: to act in anticipation of the need for information or potential issues.
- **Fairness**: to engage with stakeholders such that they feel they are treated fairly, and their issues and concerns are afforded fair consideration.
- **Accessibility**: to be within reach of stakeholders so that they feel heard and to provide meaningful information as needed.
- **Inclusivity**: to proactively anticipate, identify and include all stakeholders.

6.4 Key Components for Implementation of the ESMMP

6.4.1 Training

One of the most important mechanisms for the enhancement of the Project's environmental and social performance will be the continued implementation of a training programme for all Project personnel including all subcontractors and third parties.

The key components of training requirements are to ensure that all Project personnel, including all Contractors and Subcontractors and third parties understand the:

- Environmental and Social policies of IEFCL;
- Environmental and social requirements of the Project and how these will be implemented and monitored on site;
- Contents and relevant requirements of Project actions contained within the applicable Management Plans;
- Environmental and social sensitivities of the Project Footprint and surrounds;
- Procedures to be followed in the event of non-compliance with the environmental and social requirements;
- Process for addressing unforeseen environmental and social incidents; and
- Responsibilities with respect to environmental and social issues applicable to their roles.

Training should include:

- Induction training for all staff including modules on: health and safety, environmental awareness, accommodation rules, worker code of conduct, stakeholder engagement, grievance mechanisms and cultural heritage awareness;
- Training on the EHS legal requirements and EHS compliance commitments of the Project. It is critical that all staff on the Project understand the laws and regulations and rules the Project has committed to, and that staff understand the consequences of breaking these rules;
- Toolbox training for specific topics and tasks; and
- Training for individuals involved in tasks with specific responsibilities.

Refresher training programmes will also need to be implemented to ensure continual improvement in environmental awareness for all Project personnel.

Training should be provided at each stage of the Project, from initial establishment of logistical facilities through to construction and (to a lesser degree) operation. The training function will assist managers in developing and coordinating training programmes as required.

Training records should be maintained by the Project and an assessment of the effectiveness of the training.

6.4.2 Emergency Response and Incident Reporting

An Emergency Response Plan (ERP) must be in place for the Project, covering all incidents such as, but not limited to:

- Work Place accidents;
- Traffic accidents;
- Wild fires;
- Flooding;
- Hazardous materials spills and containment; and
- Community and/or Employee uprisings or strikes etc.

The Project should conduct drills on a periodic basis to test the planned response actions.

An incident is any occurrence that has caused, or has the potential to cause, a negative impact on people, the environment, property, or production (or a combination thereof). It also includes any significant deviation from standard operating procedures. The reporting and investigation of all potential and actual incidents that could have a detrimental impact on human health, the natural environment or property is required so that remedial and preventive steps can be taken to reduce the potential, or actual impacts, as a result of all such incidents.

All incidents will be investigated for identification of causes and preventative actions. The actions resulting from any formal or informal investigations will be used to update the ERP.

6.4.3 Audit and Inspection

An audit programme detailing the aspects to be audited, the area (relevant department or section), and the frequency of audits will be established. The audits will be based on appropriate protocols prepared by the various environmental, social and health and safety functions.

Regular environmental, social and health audits and random spot checks will be undertaken by selected audit team members throughout all phases of the Project. The audit and inspection frequencies will be defined and may be increased or decreased according to the audit findings and degree of confidence in the audit programme, and will need to adapt to the Project work scope and locations, and Project activities (some of which will have higher risks). Audits will also assess compliance with agreed objectives and targets as well as the effectiveness of the management plans and their implementation.

Audit findings will be reviewed by the applicable management functions and where corrective actions are deemed necessary; the relevant management plans will be updated.

6.4.4 Reporting

The Project should implement a system of internal reporting that allows for appropriate assessment of the effectiveness of the ESMS. Public reports should also be prepared on defined issues of interest or concern to local communities and /or stakeholders.

During the construction phase, Contractors and associated Subcontractors should take all appropriate measures detailed in the Project ESMS and related plans and procedures to identify and document incidents of environmental, social and health and safety non-conformance. Non-conformity reports should be produced at an appropriate frequency to ensure non-conformances are corrected. Non-conformity reports should identify the nature of the non-conformities and any subsequent actions taken and review the results or successes of any corrective actions taken. The resultant records should be reviewed in the appropriate management meetings so that required corrective actions can be taken,

the results of any such corrective action can be recorded, and to increase management awareness of any opportunities for improvement.

These records are intended to facilitate the purposeful reduction of incidents of non-conformance, leading to a consequential reduction of the root causes of such incidents.

Section 8 presents the monitoring plan, which details parameters that should be monitored. The results from this data will be reviewed by IEFCL.

Annual reporting should be undertaken to review performance over the previous year and to set targets and objectives for subsequent years.

6.4.5 Management of Change

Even with a final design and an unchanging environment, impacts are difficult to predict with certainty. Uncertainty stemming from on-going development of the Project design is inevitable, and the social and biophysical environment is typically variable from season to season and year to year. Similarly, the organisational structure and roles and responsibilities may also change as the Project progresses. Where such uncertainties are material to ESIA findings, they should be clearly stated and conservatively approached ('the precautionary approach') in order to identify the broadest range of likely residual impacts and necessary mitigation measures.

The ESIA process does not stop with the submission of the Final ESIA report. Therefore, this ESMMP will require a mechanism to manage change. Changes will be assessed in terms of the severity to potentially alter the ESIA findings; i.e. those that result in adverse changes to the predicted significance of environmental and social impacts. Some changes may not result in a material change to the ESIA findings; however, in other instances, these changes may be material, potentially influencing the original findings of the ESIA, and hence, the basis for its approval. Such a mechanism to manage change, or a change management system, should ensure that changes to the scope of the proposed IEFCL Train 3 Project are subjected to a robust social and environmental assessment process.

Any changes to Project scope or new substantive environmental and social findings through ongoing post-ESIA baseline studies (as committed to in the ESIA) or monitoring should be evaluated for their degree of significance, and will be incorporated into the appropriate Project documentation as follows:

- Minor changes will be reflected in updates to the applicable Management Plans included in the overall ESMMP; and
- Substantive design changes that might potentially alter the ESIA findings should be subject to re-assessment, further stakeholder consultation, supplementary reporting, and revision of the Project's ESMMP. Typically, such substantive changes will be submitted as an addendum to this ESIA.

7. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

7.1 Introduction

The Environmental and Social Management Measures included in this Chapter cover both construction and operation phases of the proposed IEFCL Train 3 Project. The construction phase measures are primarily the responsibility of the Contractor, and IEFCL, although other parties, such as the Engineer, will also assume certain responsibilities in this regard.

Each management plan provides the following detail:

Table 7.1 Management Plan Structure

Objective	The management objective that applies to each aspect or impact.
Timing and Frequency	During detailed Project design phase, the pre-construction (site establishment) phase, or construction phase of the Project.
Project Activity	Project related activities resulting in the impact.
Responsibility	The party responsible for implementing the management plan.
Performance Criteria	Measurable performance criteria (outcomes) for each element.
Mitigation Measures	The strategies, tasks or action program (to nominated operational design standards) that will be implemented to achieve the performance criteria.

PLEASE NOTE:

This ESMMP has been developed as a framework, which aims to address the specific impacts that are anticipated to occur as a result of the proposed IEFCL Train 3 Project and associated activities as identified in the ESIA and associated impact assessment. These management measures set out a formal system by which the Project can manage mitigation measures that will reduce impacts to the receiving physical, biological and social environments.

This ESMP should be considered a “living” document and should be amended in light of the learning experienced during the implementation thereof.

This Chapter includes the following Management Plans:

- Physical Environmental Management:
  - Air Quality Management (refer to Section 7.2.1)
  - Noise Management (Section 7.2.2)
  - Soil and Erosion Control Management (refer to Section 7.2.3)
  - Groundwater Management (refer to Section 7.2.4)
  - Surface Water Management (refer to Section 7.2.5)
- Biological Management (refer to Section 7.3.1)

- Socio-economic Management:
  - Socio-economic Management (refer to Section 7.4.1)
  - Employment and Procurement Management (refer to Section 7.4.2)
  - Community Health and Safety Management (refer to Section 7.4.3)
  - Cultural Heritage Management (refer to Section 7.4.4)
  - Traffic Management (refer to Section 7.4.5)
- General Management:
  - Waste Management during the Construction Phase (refer to Section 7.5.1)
  - Spill Prevention, Control and Containment Management during the Construction Phase (refer to Section 7.5.2)

7.2 Physical Environmental Management

7.2.1 Air Quality Management Plan

7.2.1.1 Objectives

The overall objective for air quality management during the construction and operational phases is to manage emissions to the point that impacts are negligible, or at worst, minor. Furthermore, a key objective is to keep local communities and regulators informed of activities (where required) and to respond quickly and effectively to issues and complaints.

Construction and operational activities are to be conducted in a manner that manages impacts on ambient air quality such that emissions are in compliance with the Nigerian legislative and IFC requirements.

7.2.1.2 Project Activities Resulting in Air Quality Impacts

With regard to the construction phase, there are potential impacts associated with emissions of dust arising from:

- Exposure of soils during site clearance and construction;
- Batching and mixing of cement, sand and aggregates
- Vehicle movement over unpaved surfaces;
- Vehicles exhaust emissions;
- Exhaust emissions from diesel powered generators used during construction; and
- Transport, handling and stockpiling of friable materials required for construction.

With regard to operations, there are potential impacts associated with emissions of pollutants arising from:

- Gas fired power plants;
- Primary reformer (ammonia plant)
- Gas fired boiler; and
- Urea granulator.

7.2.1.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the air quality management system throughout life of the Project. During construction, field implementation of the air quality controls will be

managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.2.1.4 Performance Criteria

The primary performance criteria associated with air quality management for the proposed IEFCL Project include:

- Implement sufficient controls so as to cause no undue concerns expressed by surrounding stakeholders in terms of atmospheric emissions;
- Respond to all atmospheric emission related complaints received from surrounding stakeholders and implement mitigation measures.

With reference to the ESIA, both the relevant Nigerian and IFC standards and guidelines have been used. As such, the Project specific guidelines (which consider Nigerian ambient air quality standards and air quality guidelines from the WHO/IFC and EAE) are presented in Table 7.2.

Table 7.2 Project Specific Guidelines

Pollutant	Averaging Period	Origin of Guideline	Value (µg/m^3)
NO_2	Annual mean	IFC	40
	1 Hour Maximum	IFC	200
PM_{10}	Annual mean	Nigeria	60
	24 Hour	Nigeria	150
$PM_{2.5}$	Annual mean	Nigeria	20
	24 Hour Maximum	Nigeria	40
NH_3	Annual Mean	EAE	180
	1 Hour Maximum	EAE	2,500

7.2.1.5 Management Measures

The construction of the Project is not predicted to result in significant impacts. In terms of construction dust, with the correct implementation of the appropriate mitigation and management measures (refer to Table 7.3), residual impacts are considered to be Negligible or at worst Minor.

The operation of the proposed IEFCL Train 3 Project is not predicted to result in air quality standards being exceeded in its own right, and only minor impacts are predicted associated with NO_2. However, the baseline undertaken is not suitable for a robust assessment,

NOTE - a dry season ambient air quality baseline survey undertaken in conformance with the requirements of the IFC PSs is recommended to close this gap**.** However, at this stage, based on Train 3 dispersion modelling results, in-combination impacts with Train 1 and Train 2 are not anticipated to lead to air quality standards being exceeded. As such, no further mitigation or design changes are proposed.

The management measures required for general construction related activities are included in Table 7.3.

Table 7.3 Air Quality Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Construction Dust Management				
1	Grievances	The Project will develop and implement a grievance procedure in the event of any dust complaints being received.	Start of construction	Grievance Procedure
2		All potentially impacted receptors will be informed of the nature of works to be carried out, the duration, as well as contact details for a Project representative that be contacted in the event of a complaint. All complaints will be managed as part of the Project's external feedback and grievance mechanism (mentioned above).	Throughout construction	Engagement records and grievance procedure
3		The Project will make efforts to prevent grievances by monitoring conditions and surroundings and taking action to prevent dust emissions off the Project site.	Throughout construction	
4	Vehicle Management	Impacts associated with construction road traffic during the construction phase will be mitigated by treating (dust suppression) unpaved road, to prevent or minimise dust emission from construction vehicles.	Throughout construction	Visual observations and dust complaints
5		Speed limits will be reasonably set on unpaved roads to minimise dust generation.	Throughout construction	
6		Work vehicles will be kept sufficiently clean to avoid tracking dirt around and off the site.	Throughout construction	
7		Work vehicles transporting friable materials will be kept adequately covered to prevent materials being spread around and off the site.	Throughout construction	
8		Where practically feasible and reasonable, vehicles that are compliant with recent emission standards (for example, EURO Tier 3) will be used. These vehicles will be maintained in reasonable working order. When not in use, vehicles will be switched off, unless impractical for health and safety reasons (for example maintenance of air conditioning).	Throughout construction	Vehicle inventory
9	Site Clearing and Earthworks	Where practical and feasible, surface binding agents will be used on exposed open earthworks (e.g. laydown yards).	Throughout construction	

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
10		The smallest possible area for cleared ground for work will be exposed, and where practical feasible, surface binding agents will be used on exposed open earthworks. Where the use of surface binding agents is not possible, the use of localised dampening and activity-specific dampening will be used to reduce localised emissions of dust.	Throughout construction	Visual observations and dust complaints
11	General	Drop heights of material will be minimised.	Throughout construction	Visual observations and dust complaints
12		Where feasible and necessary, windbreaks (perpendicular to the prevailing wind direction and at a height of approx. 0.5m) will be erected around active work sites.	Throughout construction	
Management of Vehicle Emissions				
14	Vehicle Management	Vehicles will be regularly serviced (at least annually or in accordance with manufacturer's recommendations) and maintained in a reasonable working order to reduce emissions. In particular, exhaust emissions should not emit black exhaust fumes or smoke.	Throughout construction	Maintenance records
15		When not in use, vehicles will be switched off, unless impractical for health and safety reasons (for example maintenance of air conditioning)	Throughout construction	Visual observations
16		Establish exclusion zones where the offloading of Project equipment / materials from trucks is not permitted.	Throughout construction	Visual observations
17	Diesel Type	Diesel fuel will be sourced from Indorama's filling station to fuel Project power driven machinery / vehicles / equipment.	Throughout construction	Records

7.2.2 Noise Management

7.2.2.1 Objectives

The primary objective for noise management during the construction and operational phase of the Project is to minimise impacts on the closest and/or most affected noise sensitive receptors (NSR's) situated in the vicinity of the Project Area are minimised. Furthermore, a key objective is to keep local communities and regulators informed of activities (where required) and to respond quickly and effectively to issues and complaints.

7.2.2.2 Project Activities Resulting in Noise Impacts

Predicted noise levels at nearby NSRs due to construction activities are predicted to comply with the relevant criteria at all assessment locations for the day and night- time operating periods. The predicted impact magnitude during the construction phase is anticipated to be **Negligible**.

Predicted noise levels at NSR locations due to the operation of the Project are predicted to comply with the relevant criteria for day and night-time period at all locations assessed. The predicted impact magnitude during the operational phase is anticipated to be **Negligible**.

7.2.2.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the noise management system throughout life of the Project. During construction, field implementation of the noise controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.2.2.4 Performance Criteria

The primary performance criteria associated with noise management for the proposed IEFCL Project include:

- Implement sufficient controls so as to cause no undue concerns expressed by surrounding stakeholders in terms of noise emissions;
- Respond to all noise emission related complaints received from surrounding stakeholders and implement mitigation measures.

With reference to the ESIA, both the relevant Nigerian and IFC standards and guidelines have been used. As such, the Project specific guidelines are presented in Table 7.4.

Table 7.4 Project Noise Criteria for Operational Phase

Receptor	One Hour L_{Aeq} (dB(A))	
	Daytime (06:01 – 22:00)	Night (22:01 – 06:00)
Residential; institutional; educational	55	45

The daytime period will be based on the Nigerian criteria between 06:01 to 22:00 hours and the night-time period will be between 22:01 to 06:00 hours.

7.2.2.5 Management Measures

Given that the predicted impact magnitude for noise impacts during the construction and operational phases is anticipated to be Negligible, no further mitigation or design changes are proposed.

The management measures required for general construction related activities are included in Table 7.5.

Table 7.5 Noise Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1.	Grievances	The Project will develop and implement a grievance procedure that will address any noise complaints being received.	Start of construction	Grievance Procedure
2.		All potentially impacted receptors will be informed of the nature of works to be carried out, the duration, as well as contact details for a Project representative that be contacted in the event of a complaint. All complaints will be managed as part of the Projects external feedback and grievance mechanism (mentioned above).	Throughout construction	Engagement records and grievance procedure
3.		The Project will make efforts to prevent grievances by monitoring conditions and surroundings and taking action to prevent excessive noise emissions off the Project site.	Throughout construction	
4.	General	Where feasible and reasonable, the dropping of materials from height will be avoided.	Throughout construction	Records / visual observations
5.		Where practically feasible and reasonable, metal-to-metal contact on equipment will be avoided.	Throughout construction	
6.		Where needed and practically feasible, onsite chutes and bins will be lined with damping material.	Throughout construction	Visual observation
7.		Effective mufflers, enclosures and low-noise tool bits and blades will be selected, where necessary.	Throughout construction	Records
8.		The hours of operation for specific equipment or operations will consider community sensitivities (e.g., trucks or machines operating in or passing through community areas).	Throughout construction	Records / visual observations
9.	Vehicle and Machinery Management	Where feasible and reasonable, mobile plant parking near residences and other sensitive land uses will be prohibited. Moreover, exclusion zones where the offloading of Project equipment / materials from trucks is not permitted will be established.	Throughout construction	Records / visual observations
10.		Vehicles and equipment will be regularly inspected and maintained to ensure it is in good working order. The condition of mufflers will also be periodically checked.	Throughout construction	Maintenance records
11.		Where feasible and reasonable, silencers or acoustic enclosures will be installed on stationary machinery. For example, procure equipment or install suitable mufflers on engine exhausts and compressor components as well as the use of portable sound barriers around equipment like generators.	Throughout construction	Records

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
12.		Where feasible and reasonable, alternatives to diesel and petrol engines and pneumatic units will be used (such as hydraulic or electric-controlled units).	Throughout construction	Equipment inventory
13.		Less annoying but equally safe alternatives to conventional audible reversing alarms will be considered (such as visual and/ or broadband noise emitting models i.e., 'squashed duck') that provide a safe system of work.	Throughout construction	Records / visual observations
14.		The unnecessary use of truck honking systems will be prohibited (especially when in or passing residential areas or schools) and will only be used to prevent vehicle / pedestrian collision.	Throughout construction	
15.		Where feasible and reasonable, equipment will be turned off when not being used.	Throughout construction	
16.		Where possible, Project traffic routing through community areas will be avoided and the implementation of speed limits for all construction vehicles shall be ensured	Throughout construction	
17.	Training	In addition to the above-mentioned management actions, training in noise control / occupational noise exposure control procedures will be provided to the relevant personnel.	Throughout construction	Training records

7.2.3 Soil and Erosion Control Management

7.2.3.1 Objectives

The primary objectives of the soil management and monitoring plan is to:

- Undertake activities during the pre-construction, construction and operational phases in a manner that minimises impacts on the soil.
- To ensure alignment with the requirements set out in the International Finance Corporation (IFC) Performance Standards and IFC Environmental, Health and Safety Guidelines.

7.2.3.2 Project Activities Resulting in Soil Impacts

The following activities could potentially lead to soil related impacts:

- **Soil Compaction** – due to the increased vehicular movement on site during construction.
- **Soil Erosion and Loss of Topsoil** – this can occur as a result of site preparation and construction activities, de-vegetation, and the associated increased surface runoff during rainfall events.
- **Changes in the Soil-water Balance** – this could occur as a result of surface soil compaction and can lead to flooding due to reduced recharge into the soil.
- **Soil Contamination** – during the construction and operational phase there is the potential for hydrocarbon leakages from equipment, and/or chemical spills, and the subsequent intrusion of oil and chemical substance into the soil.

7.2.3.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the soil management system throughout life of the Project. During construction, field implementation of the soil and erosion controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.2.3.4 Performance Criteria

As there are no Nigerian specific standards for soil qualities, the screening of the soil qualities during construction and operation should compared to both the baseline soil conditions (pre-construction) as well as against a set of control samples situated in an undisturbed area outside of the proposed Project area footprint.

7.2.3.5 Management Measures

The management measures included in Table 7.6 will be implemented to reduce soil related impacts from the Project.

Table 7.6 Soil Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Loss of Topsoil and Soil Compaction from Vehicle and Equipment Movement	■ Limit the zone of vehicle and equipment weight impacts (designate an area for parking and stacking of heavy equipment).	Ongoing throughout construction.	Designated areas to be clearly marked out.
2	Soil Erosion from Foundations Excavation	■ Identify and avoid areas with unstable soil and local factors than can cause soil instability. ■ Develop an erosion control and re-vegetation plan to delineate measures to minimize soil loss. ■ Contractors must limit vegetation clearing to a minimum. ■ Cleared areas should be re-vegetated with beneficial local species known to mitigate against erosion.	Once-off prior to any construction activities. Revegetation should be ongoing during operations	Erosion control plan. Re-vegetation plan
3	Spillages of Chemicals and Fuels	■ Implementation of the Spill Prevention, Control and Containment Management Plan (refer to Section 7.5.2).	Management plan to be developed once-off prior to any construction activities. Monitoring of the soil quality to be undertaken annually during construction and every three years during operation.	Implementation of Spill Prevention, Control and Containment Management Plan Ensure soil qualities remain statistically similar to baseline and control samples

7.2.4 Groundwater Management

7.2.4.1 Objectives

The primary objectives of the groundwater management and monitoring plan is to:

- Undertake activities during the pre-construction, construction and operational phases in a manner that minimises impacts on the groundwater.
- To ensure alignment with the requirements set out in the International Finance Corporation (IFC) Performance Standards and IFC Environmental, Health and Safety Guidelines.
- To ensure groundwater qualities remain compliant with the Nigerian Standard for Drinking Water Quality (NSDWQ). This standard sets parameters and maximum allowable limits in drinking water in Nigeria. It also includes normative references / laws guiding drinking water quality, definition of terminologies, institutional roles and responsibilities, monitoring, data management and compliance criteria.

7.2.4.2 Project Activities Resulting in Groundwater Impacts

The following activities could potentially lead to groundwater related impacts:

- **Construction Activities Resulting in Spillages of Chemicals and Fuels** - during the construction process heavy machinery will be operational on site. There is a risk of impacts to the groundwater quality through accidental spills of fuels and oils, as well as other contaminants related to the transportation of equipment and materials during the construction phase. The spill can enter the soil and migrate vertically into the underlying aquifers from where it will migrate away from site.
- **Operation of Water Treatment Plant** – there is a potential to introduce pollutants to the groundwater courses via:
  - Release of effluent that does not meet required standards due to i) malfunction or failures of treatment plant, ii) due to flood or overflow from retention pond; or
  - Accidental release or intentional dumping of solid waste from the effluent treatment plant.
- **Groundwater Abstraction** – groundwater will be abstracted for use in the proposed IEFCL Train 3 Project. Over abstraction can impact the sustainable groundwater supply in the surrounding sensitive receptors (communities).

7.2.4.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the groundwater management system throughout life of the Project. During construction, field implementation of groundwater controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.2.4.4 Performance Criteria

The performance of groundwater management will be monitored in the following ways:

- Adherence of Project groundwater abstraction volumes.
- Monitoring/recording the levels of groundwater in Project boreholes;
- The quality of groundwater – as measured in Project boreholes – aligned with the legislation; and
- Groundwater sampling procedures and methodology are to be undertaken in line with the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) issued by DPR.

7.2.4.5 Management Measures

The management measures included in Table 7.7 will be implemented to reduce groundwater related impacts from the Project.

Table 7.7 Groundwater Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Grievances	■ The Project will develop and implement a grievance procedure in the event of any water complaints being received.	Start of construction.	Grievance Procedure
2	Spillages of Chemicals and Contaminants during Construction and Operation	■ All construction and operational areas and associated facilities will be maintained in a good and tidy condition. This will include bunding of vehicle parking areas, oil and silt traps in the workshop area and proper disposal of waste material. ■ Chemicals used on site must be stored in a properly constructed area, with sealed floor, roofing, and walls where applicable, and access control. Waste chemicals will be disposed of at a suitable landfill site or by approved waste management facility. ■ A groundwater monitoring program should be implemented prior to the construction phase to monitor any potential construction and operational related impacts. ■ Implementation of the Spill Prevention, Control and Containment Management Plan (refer to 7.5.2).	Ongoing throughout the operation. Monthly groundwater monitoring during construction phase and quarterly monitoring during operation phase.	Ensure groundwater qualities remain compliant with regards to legislation
3	Release of Non-compliant Effluent from the wastewater Treatment Plant due to Malfunction or Failures of Treatment Plant	■ It must be ensured that the wastewater treatment plant is maintained according to the recommended schedule to prevent or minimise malfunction or failure. ■ The wastewater treatment plant must be operated within the relevant specifications to prevent failure or malfunction.	Ongoing throughout the operation. Monthly groundwater monitoring during construction phase and quarterly monitoring during operation phase. Continual monitoring of primary indicators in	Maintenance checklist to be in place. Ensure groundwater qualities remain compliant with regards to legislation

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
			the treatment plant to ensure correct functioning and of discharge quantity.	
4	Overflow of the water Treatment Plant Retention Pond(s)	■ The retention pond(s) must be appropriately sized and engineered to be able to accommodate surface run-offs. In addition, the retention pond(s) must be operated according to specification which includes maintaining the specified freeboard that allows for the management of flood events.	Once-off prior to the construction of the retention pond.	Operation and maintenance checklist to be in place. Ensure groundwater qualities remain compliant with regards to legislation
5	Intentional Dumping of Solid Waste from the Effluent Treatment Plant	■ The retention pond(s) must be appropriately sized and engineered to be able to accommodate flood events. In addition, the retention pond(s) must be operated according to specification, which includes maintaining the specified freeboard that allows for the management of flood events. ■ Solid waste from the Effluent Treatment Plant must be disposed of at the appropriate landfill sites or at an approved waste management facility.	Once-off prior to the construction of the retention pond. Ongoing throughout the operation.	Ensure effluent qualities remain compliant with the Project-specific limits Obtain disposal certificates from authorised landfill site or an approved waste management facility. Ensure groundwater qualities remain compliant with regards to legislation
6	Over Exploitation of the Aquifer	■ An aquifer test must be performed on the Project water supply wells and the sustainable yield of the water supply wells must be calculated. ■ The water supply wells must be located away from the local community water supply wells to prevent or minimise overlap of the groundwater level drawdown cones around the individual water supply wells. This will prevent or minimise the reduction in the sustainable yields of the water supply wells.	Once-off aquifer test prior to groundwater abstraction for supply purposes. Half-yearly groundwater level	Ensure groundwater levels do not drop to levels that affect local community supply wells.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		■ Groundwater levels must be monitored to ensure the aquifer is not being over abstracted.	measurements during operation.	

7.2.5 Surface Water Management

7.2.5.1 Objectives

The primary objectives of the surface water management is to:

- Ensure that activities during the pre-construction, construction and operational phases are undertaken in a manner that minimises impacts on surface water resources and by association, the riverine sediment.
- To ensure alignment with the requirements set out in the IFC PSs and IFC EHS Guidelines.
- To ensure that the quality of effluent and stormwater discharged from site to receiving surface waters remain compliant with the Project-specific standards for effluent. The Project-specific standards for effluent are defined in Chapter 2 of the ESIA and are based on the more stringent per parameter of the two relevant water quality limits: National Environmental Protection (Effluent Limitation) Regulation 1991, S.I.8 and international industry-specific best practice as per the IFC EHS Guidelines for Nitrogenous Fertilizer Production, 2007.
- To ensure that the Project does not contribute to any negative impact on receiving surface water environment, through maintaining the quality and quantity of standard of effluent and stormwater released from site.

7.2.5.2 Project Activities Resulting in Surface Water Impacts

The following activities could potentially lead to surface water related impacts:

- **Construction Activities Resulting in Spillages of Chemicals and Fuels** – during the construction process heavy machinery will be operational on site. There is a risk of impacts to surface water quality through accidental spills of fuels and oils, as well as other contaminants related to the transportation of equipment and materials during the construction phase. Spills can directly impact surface waters, and also indirectly impact through entering the soil and migrating through aquifers ultimately discharging to surface water.
- **Operation of Wastewater Treatment Plant** – there is a potential to introduce pollutants to the surface water receiving environment via:
  - Release of effluent that does not meet required standards due to i) malfunction or failures of treatment plant, ii) due to flood or overflow from retention pond; or
  - Accidental release or intentional dumping of solid waste from the effluent treatment plant.
- **Discharge of Stormwater from Hard Surfacing and Treated Effluent** – the stormwater from site will be directed to the Retention Pond and discharged to the Okulu River. The hard surfacing and the volumes of water used in operations and treated and eventually discharged from the treatment plant both have the potential together to i) cause erosion at discharge location and ii) increase the flow regime in the Okulu River.

7.2.5.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the surface water management system throughout life of the Project. During construction, field implementation of surface water controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.2.5.4 Performance Criteria

The quality of the effluent discharged from site is to adhere to the Project-specific standards for effluent are defined in Chapter 2 of the ESIA and are based on the more stringent per parameter of the two relevant water quality limits: National Environmental Protection (Effluent Limitation) Regulation 1991,

S.I.8, and international industry-specific best practice as per the IFC EHS Guidelines for Nitrogenous Fertilizer Production, 2007.

Table 7.8 presents the effluent standards applicable to the Project.

Table 7.8 Comparison of the Nigerian an IFC Values for Discharged Effluent

Parameter(s)	Project Applicable limit
pH	6.5 – 8.5
Temperature Increase (°C)	<3
TSS (mg/l)	30
Chloride, Cl^-(mg/l)	600
Sulphate, SO_4^{2-}(mg/l)	500
Nitrate, NO_3^-(mg/l)	20
Phosphate, PO_4^{3-} (mg/l)	5.0
Cyanide CN^- (mg/l)	0.01
Ammonium NH_4^+ (mg/l)	5
Urea (prilling/ granulation) (mg/l)	1
Total Nitrogen (mg/l)	15
DO (mg/l)	>4.0
BOD (mg/l)	30
COD (mg/l)	150
O & G (mg/l)	10
Sodium, Na (mg/l)	NS
Potassium, K (mg/l)	NS
Iron, Fe (mg/l)	5.0
Calcium, Ca (mg/l)	200
Magnesium, Mg (mg/l)	200
Zinc, Zn (mg/l)	1.0
Copper, Cu (mg/l)	1.0
Chromium, Cr (mg/l)	1.0
Lead, Pb (mg/l)	1.0
Mercury, Hg (mg/l)	0.05
Cadmium, Cd (mg/l)	0.1
Nickel, Ni (mg/l)	1.0
Arsenic, As (mg/l)	0.1

Surface water sampling procedures and methodology are to be undertaken in line with the Environmental Guidelines and Standards for the Petroleum Industry in Nigeria (EGASPIN) issued by DPR.

7.2.5.5 Management Measures

The management measures included in Table 7.9 will be implemented to reduce anticipated impacts from the Project.

Table 7.9 Surface Water Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Grievances	The Project will develop and implement a grievance procedure in the event of any water complaints being received.	Start of construction.	Grievance Procedure
2	Spillages of Chemicals and Contaminants during Construction and Operation	■ All construction and operational areas and associated facilities will be maintained in a good and tidy condition. This will include bunding of vehicle parking areas, oil and silt traps in the workshop area and proper disposal of waste material. ■ Chemicals used on site must be stored in a properly constructed area, with sealed floor, roofing, and walls where applicable, and access control. Waste chemicals will be disposed of at a suitable landfill site or at an approved waste management facility. ■ A surface water monitoring program should be implemented prior to the construction phase to monitor any potential construction and operational related impacts.	Ongoing throughout the operation. Monthly surface water monitoring at the sites included in the baseline study, during construction phase and during operation phase.	Ensure surface water qualities remain statistically similar to baseline
3	Release of Non-compliant Effluent from the wastewater Treatment Plant due to Malfunction or Failures of Treatment Plant	■ It must be ensured that the wastewater treatment plant is maintained according to the recommended schedule to prevent or minimise malfunction or failure. ■ The wastewater treatment plant must be operated within the relevant specifications to prevent failure or malfunction.	Ongoing throughout the operation. Monthly surface water monitoring at the effluent plant ponds and discharge point monitored during baseline, during construction phase and during operation phase. Continual monitoring of primary indicators in the treatment plant to ensure	Maintenance checklist to be in place. Ensure effluent qualities remain compliant with the Project-specific limits.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
			correct functioning and of discharge quantity	
4	Overflow of the water Treatment Plant Retention Pond(s)	■ The retention pond(s) must be appropriately sized and engineered to be able to accommodate surface run-offs. In addition, the retention pond(s) must be operated according to specification which includes maintaining the specified freeboard that allows for the management of flood events.	Once-off prior to the construction of the retention pond.	Ensure effluent qualities remain compliant with the Project-specific limits
5	Intentional Dumping of Solid Waste from the Effluent Treatment Plant	■ Solid waste must be disposed of at the appropriate landfill sites or at an approved waste management facility.	Ongoing throughout the operation.	Obtain disposal certificates from authorised landfill site or an approved waste management facility. Ensure groundwater qualities remain compliant with regards to legislation
6	Potential Increase of Flow Rate in Okulu River from Hard Surfacing Increasing the Natural Runoff in addition to Release of Treated Effluent	■ Effluent generated will be minimised through minimising freshwater intake, regular monitoring and reporting on water utilisation and wastewater recycled as appropriate using available technology to the greatest extent possible.	Ongoing throughout the operation.	Freshwater intake stable or reducing over life of operations.
7	Dewatering of Construction Sites	■ Stormwater management of the construction site will be planned in advance and implemented to separate clean and dirty water systems to avoid the transport of contaminants and sedimentation into aquatic systems.	Throughout construction	Detailed project planning designs Site audit reports

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
8	Vehicle Management	■ The washing of Project vehicles in any surface water bodies in and around the Project Area will be prohibited. All Project vehicles will be washed at designated wash bays on site. These wash bays will include oil/grease and sediment traps for grey water. ■ The maintenance of vehicles in and around the Project Area will as far as possible be avoided. Major planned maintenance will be performed at a designated workshop. The workshop will include containment and an oil/grease trap.	Throughout construction	Visual observations and records
9	Wastewater	■ Sufficient temporary toilets will be located in strategic locations near active work sites during the construction phase and sited away from any water bodies or wetlands. These toilets will have doors and locks and will be secured to prevent them blowing over. Temporary toilets will be serviced regularly by a competent and suitably qualified person. Emptied waste will be transported and suitably disposed of.	Throughout construction	Visual observations and records
10	Stormwater Infrastructure Blockage	■ Monthly inspections of stormwater infrastructure will be undertaken during the operations phase to check for blockages and erosion.	Monthly, ongoing from end of construction.	Monthly register of erosion incidents and actions taken to rectify incident and control future erosion (photos to be included of incident and corrective actions).

7.3 Biophysical Environmental Management

7.3.1 Biodiversity Management

7.3.1.1 Objectives

To promote the sustainable management of biodiversity resources, maintain the ecological integrity of the broader Project Area and maintain the benefits from ecosystem services through the adoption of practices that integrate conservation needs and development priorities.

7.3.1.2 Project Activities Resulting in Biodiversity Impacts

The following Project activities during the construction and operational phases may result in impacts to biodiversity and ecosystem services:

- The loss of area to be cleared for the proposed IEFCL Train 3 Project could directly affect the surrounding ecosystem through siltation, alien invasive species introduction, and changes to the functionality of the systems.
- While little to no direct impact is predicted to occur to the aquatic biodiversity of the Project Area, the possibility exists that effluent discharge could lead to contamination of these systems is thus a reduction in aquatic biodiversity, which is already under threat from a number of anthropogenic impacts.

7.3.1.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the biodiversity management system throughout life of the Project. During construction, field implementation of biodiversity controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.3.1.4 Performance Criteria

IFC PS6 discourages the loss of natural habitats and requires that any impacts to natural habitats are associated with No Net Loss of Biodiversity, which is to be achieved through the avoidance of sensitive features, minimising of impacts, rehabilitation and possible compensation. If Critical Habitat is present, IFC Performance Standard 6 sets out a goal of delivering a net biodiversity gain. Disruption of ecosystem services are to be avoided and engagement with stakeholders is crucial in understanding these effects.

7.3.1.5 Management Measures

The management measures are included in Table 7.10 and Table 7.11 below and will be implemented to reduce the impacts from the Project to minor or negligible.

Table 7.10 Biodiversity Management during Construction

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Pre-clearing Checks for Fauna	■ Preclearing checks will be conducted ahead of any vegetation removal.	At the start of construction	Survey reports
2	Waste Management	■ Waste management will be in accordance with the waste management measures provided in Section 7.5.1.	Throughout construction	Waste Tracking Records
3	Potential Spillage, Water Quality Issues, and Increased Stormwater Discharge	■ In order to address the aquatic biodiversity impacts related to potential spillage, water quality issues and increased stormwater discharge, aquatic biomonitoring will be conducted in aquatic habitats supporting flowing water that may be affected by spills and discharge from the Project site. Biomonitoring must be undertaken using IBP techniques. Data will be consolidated to develop comprehensive assessments of the Present Ecological State of aquatic ecosystems. Preconstruction Aquatic Ecology baselines will be established and compared against data within the ESIA. Post construction Aquatic Ecology baselines will be established and compared against data from the preconstruction baselines.	Dry season prior to construction and dry & wet season post construction.	No deterioration in aquatic present ecological state attributed to construction of the proposed Project.
4	Potential Spillage of Effluent	■ Implementation of those management measures included for surface water management (Section 7.2.5).	Refer to surface water management section (Section 7.2.5)	Refer to surface water management section (Section 7.2.5)
5	Potential Creep at the Boundary Areas	■ Ensure the construction area is demarcated and no activities take place outside of these demarcations.	Monthly inspection of demarcation boundary	Inspect boundary for completeness, and to ensure no creep of activities. Security to record any incidence of staff leaving the construction area.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
6	Collection of Plant or Animal Products	■ Toolbox talks for all staff regarding fauna and flora, including the fact that collection of plant or animal products is prohibited.	Weekly during construction	Signed registers from toolbox talks, with a copy of all topics discussed during the toolbox talk.
7	Erosion during Construction	■ Implementation of those management measures included for soil and erosion management (Section 7.2.3).	Refer to soil and erosion management (Section 7.2.3)	Refer to soil and erosion management (Section 7.2.3)
8	Introduction of Alien and Invasive Species	■ An alien invasive plant control programme will be designed and implemented for the Project Area and immediately adjacent (5 m buffer) to the demarcated construction zone. All alien invasive plants will need to be controlled by an experienced contractor.	Minimum of Quarterly inspection and control during construction.	Quarterly reports of species identified per inspection, and appropriate control measure implemented (photos of before and after to be included in report).
9	Water Quality Degradation	■ Implementation of those management measures included for surface water management (Section 7.2.5).	Refer to surface water management section (Section 7.2.5)	Refer to surface water management section (Section 7.2.5)

Table 7.11 Biodiversity Management during Operations

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Contamination of Surface Water Resources	■ Implementation of those management measures included for surface water management (Section 7.2.5).	Refer to surface water management section (Section 7.2.5)	Refer to surface water management section (Section 7.2.5)
3	Collection of Plant or Animal Products	■ Toolbox talks for all staff regarding fauna and flora, including the fact that collection of plant or animal products is prohibited.	Monthly during operation	Signed registers from toolbox talks, with a copy of all topics discussed during the toolbox talk.
4	Project activities Outside the Boundary	■ Ensure the Project site is fenced, and no activities take place outside of the fence line.	Monthly inspection of boundary fence	Inspect boundary fence for completeness. Security to record any incidence of staff leaving the fenced site for illegal collection of faunal or floral products.
5	Introduction of Alien and Invasive Species	■ An alien invasive plant control programme will be designed and implemented for the Project Area and immediately adjacent (5 m buffer) to the demarcated zone. All alien invasive plants will need to be controlled by an experienced contractor.	Minimum of quarterly inspection and control during construction and annual during operation.	Annual reports of species identified per inspection, and appropriate control measure implemented (photos of before and after to be included in report).

7.4 Social Management

7.4.1 Socio-economic Management

7.4.1.1 Objectives

To manage the socio-economic aspects of the proposed IEFCL Train 3 Project during the construction and operations phases.

7.4.1.2 Project Activities Resulting in Socio-economic Impacts

- Construction and operation of the Project, as well as the movement of equipment, supplies and product through or near communities.
- The peak demand for temporary contract workforce during construction.
- The demand for permanent operational staff as well as temporary contract workforce during the operational life of the asset.
- Improved economic, employment and business opportunities provided by the presence of the Project.
- IEFCL procurement of goods and services from national, regional, and local service providers and suppliers.
- IEFCL programmes with respect to local business development as part of their Community Development Plans.
- Influx of migrant workers and job seekers.
- IEFCL use of state and private security forces to secure their operations.

7.4.1.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the socio-economic management system throughout life of the Project. During construction, field implementation of socio-economic controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.4.1.4 Performance Criteria

- Implementation of a Local Content / Procurement Plans.
- Engagement with local labour contractors on available skills.
- Approximately 5 to 6% of employment for operational phase should be female.
- Registration of local (appropriately qualified) contractors from Host communities.
- Records of training and recruitment processes that reflect host communities.
- Updated and signed MOUs with Project-affected (host) communities.
- Stakeholder Engagement Schedule:
  - Including proposed dates of engagement, key stakeholders/group to be involved, purpose of meetings for construction and operational phases of the Project.
  - Includes local and regional governments.
- Monitoring, evaluation, and disclosure on progress against SEP.
- Record of contracts, total spend, and indirect employment provided by IEFCL.

- Record of CSI support given to target beneficiaries from affected communities. Number and list of beneficiaries for each CSI initiatives.
- Annual CSI planning and reviews reports / summary.
- Maintained community grievance register, including timeframe for close out of issues and manage measures.
- Community Health and Safety Plan and Emergency Preparedness and Response Plan in place and effective.
- Record of community incidents, emergency events and responses.
- Updated Commitment Register and tracking of all commitments made to stakeholders.
- Recruitment and appointment process in place to meet resourcing requirements for implementation of Health and Safety Plans.
- VPSHR-compliant security policy in place.
- Identification of potential SED/CSI/Infrastructure development interventions into which IEFCL can invest.
- Reporting and disclosure on influx.
- Workplace polices related to gender-based violence in place.

7.4.1.5 Management Measures

The management measures included in Table 7.12 will be implemented to reduce socio-economic impacts from the Project.

Table 7.12 Socio-Economic Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Increased Employment within the Broader Project Area Increased income and Spending within the Broader Project Area	■ IEFCL will appoint local contractors (where reasonable and practical) and implement a Local Content / Procurement Plan as per the ***Local Hiring Plan for Construction & Operation phase of IEFCL Train 3 Project.*** ■ All appointments (direct or through contractors) must abide by international labour laws. ■ Before the construction phase commences IEFCL will meet with representatives from the Project-affected communities (through the PAC or other appropriate forum/s) to establish the existence of a skills and local small and medium sized enterprises database for the area. If such as database exists it should be made available to the contractors appointed for the construction phase. ■ The local authorities, relevant community representatives will be informed of the final decision regarding the Project and the potential job opportunities for locals and the employment procedures that IEFCL intends following for the construction phase of the Project. ■ Where feasible, a training and skills development programmes for local workers should be initiated prior to the initiation of the construction phase. ■ The recruitment selection process will seek to promote gender equality and the employment of women wherever possible.	At least six months before construction commences	■ Implementation of a Local Content / Procurement Plans ■ Approximately 5 to 6% employment for operational phase should be female. ■ Update of existing Local Supplier Database (host communities). ■ Registration of local (appropriately qualified) contractors from host communities. ■ Records of training and recruitment processes that reflect host communities.
2	Socioeconomic Development Benefits	■ IEFCL must ensure that future SED interventions are governed by existing MOUs to reduce exposure to reputational and social risks.	Renewed MOU should be implemented during construction.	■ Existing MOUs with host communities.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		■ A proactive community engagement campaign must be initiated with a view to manage community expectations of future SED plans and benefits. ■ Where possible and appropriate, IEFCL should seek to integrate any SED interventions into broader sectoral economic activities, as well as IEFCL's career progression plans, to ensure maximum benefit is delivered to recipients.	Revised MOUs should be signed within the frequency prescribed.	■ Stakeholder engagement schedule, which includes the Train 3 Project. ■ Monitoring, evaluation, and disclosure on progress against stakeholder engagement plan.
3	Socioeconomic Development Benefits Influx of Migrant Workers and Job Seekers into Adjacent Communities	■ Implementation of Hiring Plan for Construction & Operation phase of IEFCL Train 3 Project. ■ Update of existing Local Supplier Database to include affected communities. ■ Registration of local contractors and service providers from Project-affected communities. ■ Record of development support given to local contractors and service providers from Project-affected communities. ■ Revision of existing CSI plans, programmes, and initiatives to account for Train 3 (expansion of operations).	At least six months before construction commences.	■ Local Supplier database in place. ■ Engagement with local labour contractors on available skills. ■ Record of contracts, total spend, and indirect employment provided by IEFCL. ■ Monitoring, evaluation, and disclosure of local business development activities. ■ Record of CSI support given to target beneficiaries from affected communities. ■ Number and list of beneficiaries for each CSI initiatives. ■ Annual CSI planning and reviews reports / summary.
4	Community dissatisfaction over Unmet Expectations	■ IEFCL must ensure that MOU is signed with host communities and extends its scope to include the Project, if needed.	■ At least six months before construction commences.	■ Stakeholder Engagement Schedule (including proposed dates of engagement, key

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		■ IEFCL will ensure that the increased socio-economic benefits derived to communities are commiserate with the expansion of IEFCL's existing operations in line with 2023-2025 MoUs, which take cognisance of the upcoming IEFCL Line 3 Project. ■ IEFCL will ensure transparent and continued communication with all stakeholders to ensure that community expectations are aligned to what the Project can realistically deliver. This must include the update of the Stakeholder Engagement Plan to include activities related to the Project, as well as continuous oversight to ensure the timely and effective implementation of this plan. ■ IEFCL will capacitate, on an ongoing basis, the PAC to serve as an effective vehicle of communication between the Project and community members. The PAC should serve as the primary means of expectation setting of community members. ■ IEFCL must ensure that an updated Incident and Grievance procedure is in place and that it covers the new activities undertaken in relation to the Project. Additionally, a Commitment Register should be regularly updated to track all commitments made to stakeholders and progress in delivering on these.	■ Stakeholder Engagement Plans and Commitment Register should be updated annually.	stakeholders/group to be involved, purpose of meetings) for construction and operational phases. ■ Maintained community grievance register, including timeframe for close out of issues and manage measures. ■ Record of community incidents, emergency events and responses. ■ Updated and signed MOUs with host communities. ■ Updated Commitment Register and tracking of all commitments made to stakeholders. ■ Lack of grievances raised regarding construction or operation of Train 3.
5	Public and Worker Health, Safety, and Human Rights Impacts	■ Develop a Community Health and Safety Plan – including Emergency Preparedness and Response Plan for host communities. ■ Updated of existing Health and Safety Plans to cover the Train 3 (including Emergency Preparedness and Response Plan). ■ Inclusion of community requirements in any new Health and Safety Plans.	■ At least two months before construction commences. ■ Management plans should be revised annually and comprehensively	■ Community Health and Safety Plan and Emergency Preparedness and Response Plan in place and effective. ■ Recruitment and appointment process in place to meet resourcing requirements for

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		■ Provision of additional resourcing to implement Health and Safety Plans. ■ Recording of community incidents, emergency events and responses.	updated every 5 years.	implementation of Health and Safety Plans. ■ Lack of public incidents or accidents with traffic on public roads.
6	Public and Worker Health, Safety, and Human Rights Impacts	■ Implementation of the Voluntary Principles on Security and Human Rights (VPSHR). ■ Draft security policies in line with the VPSHR. ■ Ensure that all security subcontractors are compliant with or onboarded into the VPSHR. ■ Proactively engage with state security forces to minimise risk of related human rights violations.	■ At least two months before construction commences. ■ Policies should be revised annually and comprehensively updated every 5 years.	■ Zero human rights infringements as a result of private security activities. ■ Membership status of VPSHR. ■ VPSHR-compliant security policy in place. ■ Proof of VPSHR-compliant subcontractors.
7	Influx of Migrant Workers and Job Seekers into the Broader Project Area	■ IEFCL will recruit locally and appoint local contractors (where reasonable and practical) and implement a Local Content / Procurement Plan. ■ IEFCL will engage with local and regional government to understand the impact of direct and cumulative influx. ■ Where possible, IEFCL will partner with government and other industries in the area to undertaken interventions which alleviate the impact of direct and cumulative influx. ■ Ongoing engagement with local authorities in terms of influx perceptions. ■	■ At least six months before construction commences. ■ Stakeholder engagement schedule should be updated quarterly. ■	■ Local recruitment and procurement policies in place. ■ Stakeholder engagement plan and schedule, which includes local and regional governments. ■ Identification of potential SED/CSI/Infrastructure development interventions into which IEFCL can invest. ■
8	Public and Worker Health, Safety, and Human Rights Impacts	■ The IEFCL incident and grievance management process will be updated to appropriately accommodate grievances related to sexual assault or	■ At least six months before construction commences.	■ Zero incidents and grievances related to gender-

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		abuse by contractors, or gender-based harm as a result of Project activities. ■ Workplace policies will be designed in line with IFC guidelines, and ensuring that EPCM contractors do likewise, to prevent gender-based violence and sexual abuse of local communities.	■ Policies and management plans should be revised annually and comprehensively updated every 5 years.	based violence or sexual exploitation. ■ Updated Grievance mechanism, which appropriately accommodates gender-based harm related grievances. ■ Workplace polices related to gender-based violence in place.

7.4.2 Employment and Procurement Management

7.4.2.1 Objectives

The Project is committed to ensuring the rights and health and safety of all workers are respected and protected employed by Contractors and their Subcontractors. This Management Plan has been developed taking into account the requirements of Nigerian law and IFC Performance Standard 2, and seeks to:

- Promote fair and transparent employment and procurement practices.
- Promote reasonable working conditions including health and safety at work, working hours, contracts etc.
- Ensure the fair treatment, non-discrimination, and equal opportunities of all workers.
- Protect Project workers including vulnerable workers from labour abuses.
- Prevent the use of all forms of forced and child labour.
- Support the principles of freedom of association and collective bargaining.
- Provide workers with a means to raise workplace concerns.
- Ensure that worker accommodation is provided in line with IFC/WB Worker Accommodation Guidance or reasonable housing allowance be paid.
- Manage retrenchment / contract termination of contracted workers.

7.4.2.2 Project Activities Resulting in Employment and Procurement Impacts

Regardless of whether people are direct employees, Contractors or subcontractors, workers can be affected either by exposure to insufficient health and safety standards or exposure to insufficient labour and working standards. Exposure to insufficient standards increases the risks of accidents, injuries or of workers not receiving fair treatment.

7.4.2.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring implementation of the requirements under PS2 for employment and procurement management throughout the life of Project. The Contractor will be responsible for ensuring the labour and working conditions of all Project employees (direct employees and subcontractors) are in line with the requirements of Nigerian law, ensuring workplace health and safety and access to grievance mechanisms. Other parties, such as the Engineer, will also assume certain responsibilities in this regard.

7.4.2.4 Performance Criteria

- Fair and transparent recruitment and procurement procedures are in place.
- Policies in place related to discrimination, worker rights, freedom of association, including zero tolerance for any form of forced or child labour (direct employees, contractors or subcontractors).
- Primary supplier workers, have a contract in line with Nigerian Law and IFC PS2 outlining the terms and conditions of employment.
- Accommodation for workers (direct employees and subcontractors) is provided in line with Nigerian Building Code and IFC / WB Worker Accommodation Guidelines or commensurate/compensatory allowances to be paid.
- Promote the fair treatment, non-discrimination, and equal opportunity of all workers.
- All workers have the right to associate and collectively bargain.

- Normal working hours and overtime to align with standard construction practices and Nigerian law.
- Wages for all workers are aligned with minimum wages and minimum industry standards.
- Worker Grievance Mechanism should be in place and implemented.
- Measures should be in place to ensure workers receive all necessary documentation at the end of their employment.

7.4.2.5 Management Measures

The management measures outlined in Table 7.13 will be implemented to manage impacts associated with employment and procurement.

Table 7.13 Management of Employment and Procurement

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		Recruitment and Procurement		
1.	Recruitment of Workers and Procurement of Goods and Services	■ The Project will prioritise the recruitment of workers and procurement of goods and services from within the Eleme then Rivers State as economically appropriate. This will not apply to the provision of highly technical equipment.	Prior to and throughout construction and operations	■ Percentage of workers employed from host communities by skills level.
2.		■ The Project will develop a fair and transparent employment and procurement policy and processes to avoid any potential for nepotism or favouritism. The processes will be shared with the local community members through community leadership.	Prior to and throughout construction and operations	■ Positive feedback from the local community and leadership regarding the employment and procurement policy and processes. ■ Mutually agreed metrics on employment and procurement to be shared quarterly with local leaders.
3.		■ A Local Recruitment Procedure will be developed/updated by the Project, which outlines the percentage of skilled, semi-skilled and unskilled employment, with high targets for unskilled workers. The procedure will also include an emphasis on recruitment of vulnerable groups (e.g., women, etc.). The Project will further engage both local and state Government, Traditional Rulers (Eleme Council) and Community Leaders among other key stakeholders in ensuring local employment is achieved. The requirements of this procedure will form part of the Conditions of Contract with subcontractors.	Prior to and throughout construction and operations	■ At least 60% of unskilled workers from local recruitment process. ■ Percentage of workers employed from the affected areas by skills level and gender (unless this could result in identification of female employees). ■ Percentage of workforce who are women or from other vulnerable groups. ■ Percentage of suppliers based in the affected areas. ■ Zero workers hired at the gate.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
4.		■ Notification will be given to leaders in Eleme of the specific jobs and the skills required for the Project, prior to the commencement of construction phase. This will give the local population time to prepare and apply for the available job opportunities on time. This is mainly applicable to unskilled and semi-skilled workers who will be locally sourced.	Prior to and throughout construction and operations	■ Meeting minutes. ■ Percentage of workers employed from the affected counties by skills level. ■ Percentage of suppliers based in the affected areas.
5.		■ Employment opportunities will be publicly advertised in appropriate mediums, for example: newspapers, public libraries, Eleme youth forums, Eleme Council and in all relevant languages in a timely manner, to allow fair competition.	Prior to and throughout construction and operations	■ Evidence of such advertisements.
6.		■ There will be no requirement for applicants to make payments for applying for, or securing, employment on the Project.	Prior to and throughout construction and operations	■ Any reports or grievances will be investigated, and corrective actions identified to be addressed and closed.
7.		■ The Project will develop and implement a program of up-skilling, training and development for workers to assist them in accessing opportunities associated with the Project and in finding work following completion of their contracts.	Prior to and throughout construction and operations	■ Number of workers who have received training.
8.		■ The Project will provide training on health and safety and quality standards required by the Project for provision of goods and services to the Project to ensure that local businesses have the opportunity to benefit.	Prior to and throughout construction and operations	■ Number of workers or companies who have received training.
9.		■ The Project will review the potential to unbundle contracts to allow a number of small businesses to provide goods and services rather than the supply being monopolised by one larger subcontractor.	Prior to and throughout construction and operations	■ Number of contracts with small businesses
Management System				
10.	Management of Labour and Working Conditions	Labour and Employment Plan and Worker Grievance Mechanism will be implemented. These requirements will also be passed on to any subcontractors. Key issues to be covered	Prior to and throughout construction and operations	■ Grievances related to labour and working conditions, which breach law or IFC PS2, will be

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		by the Human Resource (HR) management will include, but not be limited to the following: ■ Provision of clear and understandable information regarding rights under national labour and employment law, and any applicable collective agreements, including those related to hours of work, wages, overtime, compensation, etc. ■ Provision of reasonable working conditions and terms of employment, including measures for working in extreme high temperatures to ensure worker safety. Measures could include rotating staff based outside and shifting working patterns. ■ Provision of adequate accommodation (where relevant). ■ Provision of employment, compensation/remuneration and working conditions, including working hours, based on equal opportunity and fair treatment, avoiding discrimination. ■ Provision of adequate welfare facilities (such as toilets, showers, canteens, smoking areas, prayer areas etc.) on site. ■ Implementation of a grievance mechanism for the Project workers. ■ Adoption and implementation of a sexual harassment policy. ■ Adoption of open attitude towards freedom of association.		investigated and corrective actions taken ■ Contracts in place for all workers in line with Nigerian Law and IFC PS2 ■ Monitoring and audit of implementation of employment contracts ■ Maintain grievance register ■ Freedom of association and right to collective bargaining not prohibited in work rules
11.		■ The Project will develop a health and safety programme, which will include risk assessments (such as working at heights, confined space machine guarding), work permit systems and a health and safety management system, in line with IFC PS2, including worker performance safety tracking (safety observations) to promote the safety of workers. All workers will receive induction and continuous training regarding this system.	Prior to and throughout construction and operations	■ Grievances related to labour and working conditions, which breach law or IFC PS2, will be investigated and corrective actions taken ■ Zero fatalities involving workers on site

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
				■ All LTI and other incidents to be reported, investigated, corrective actions identified and implemented in agreed timeframes ■ 100% of workers receiving induction and training related to their position
12.		■ The Project will employ practices to assist workers in finding subsequent employment by providing useful documents following completion of the construction activities relevant to each Section of the proposed IEFCL Train 3 Project alignment.	Prior to and throughout construction and operations	■ Certificate of Service given to employees upon assignment complete ■ Documents showing qualifications earned
Subcontractor and Supplier Management				
13.	Management of Suppliers and Subcontractors	■ Subcontractor and Supplier Contracts will reference the need to abide by applicable laws, standards and, policies relating to health and safety, labour, and welfare standards.	Prior to and throughout construction and operations	■ Contracts with suppliers and subcontractors will include these requirements. ■ Ongoing monitoring to ensure implementation
14.		■ As part of the subcontractor and supplier selection process, the Project will take into consideration performance with regard to worker management, worker rights, health and safety as outlined in Nigerian law, international standards and the Proponent's policies.	Prior to and throughout construction and operations	■ Bidder will be informed of the requirements in the bidding process. ■ Contract with suppliers and subcontractors will include these requirements.
15.		■ The Project will provide support to subcontractors and suppliers to ensure that labour and working conditions are in line with Nigerian legislation and IFC PS2 through gap analysis, awareness raising and information provision, as necessary.	Prior to and throughout construction and operations	■ Training provided to subcontractors and suppliers
16.		■ Regular checks / audits by the Project will be undertaken to ensure the relevant labour laws are adhered to at all times.	Prior to and throughout construction and operations	■ Audit reports of all subcontractors and suppliers

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
				■ Corrective actions identified and closed out in the time required
		Workers' Rights		
17.	Protection of Workers' Rights	■ A Project Policy prohibiting discrimination based on his or her gender, marital status, nationality, ethnicity, age, religion or sexual orientation will be employed.	Prior to and throughout construction and operations	■ Percentage of workforce who are women or from other vulnerable groups ■ Grievances are investigated, monitored and tracked from workers or job seekers related to discrimination
18.		■ All workers (including those of subcontractors) will, as part of their induction, receive training on worker rights and responsibilities in line with Nigerian legislation.	Prior to and throughout construction and operations	■ 100% of workers go through induction, which includes training on their rights and responsibilities ■ Workers being able to describe their rights as part of ongoing monitoring
19.		■ Every Project employee will receive clearly stated terms and conditions of employment. Employment contracts will be aligned with Nigerian labour law, the ILO core conventions and the requirements of IFC PS2. Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights. ■ Worker condition requirements will be flowed down as appropriate to subcontractors and suppliers in their contracts.	Prior to and throughout construction and operations	■ 100% of workers having contracts in line with Nigerian Law and IFC PS2 ■ 100% of workers having received training on their rights ■ Workers being able to describe their employment terms as part of ongoing monitoring ■ Tracking of grievances related to employment conditions
20.		■ The Project will put in place a worker grievance mechanism that will be accessible to all workers. The worker grievance mechanism will be open to the Contractor and the Subcontractor workforce in the event that their grievance is not adequately resolved by their	Mechanism in place prior to construction; program active throughout construction and operations.	■ Percentage of grievances received by direct employees, subcontractors and suppliers and resolved in agreed timeframes

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		direct employer. The Contractor would then seek to resolve this grievance.		■ Percentage of grievances received on a theme
21.		■ All workers (including those of the Contractors and their Subcontractors) will have access to training on communicable diseases and STDs and community interactions in general.	Prior to and throughout construction and operations	■ 100% of workers having received induction training ■ Percentage of workers having received training every other month
22.		■ Accommodation will be provided to workers in accordance with international good practice on workers' accommodation, including IFC / WB standards to prevent transmission of diseases associated with poor living conditions or commensurate/compensatory allowances to be paid for housing.	Prior to and throughout construction and operations	■ Monthly inspections showing no breaches of requirements ■ Grievances or issues related to accommodation raised by workers to be closed out in targeted time frame
23.		■ The Project will undertake surveillance aimed at ensuring that no children or forced labour is employed directly, and to the extent possible by third parties related to the Project and primary suppliers where such risk may exist.	Prior to and throughout construction	■ Zero cases of forced or child labour found in direct employees, subcontractors or suppliers

7.4.3 Community Health and Safety

7.4.3.1 Objectives

The Project is committed to ensuring the health, safety and security of all stakeholders who are affected by its activities including local communities and the broader public. Specifically, this plan aims to:

- Continuously identify, evaluate, and prioritise the risks and impacts of proposed activities on the health, safety, and security of local communities.
- Proactively prevent and avoid impacts to community health, safety, and security, and enhance any positive impacts related to community health and safety.
- Identify strategies that will support provision of adequate health related information and prevention measures through which communities can manage their own health and safety.
- Implement security that protects Project employees, assets and business continuity in a manner that adheres to Nigerian legislation and is consistent with the Voluntary Principles on Security and Human Rights (VPs).
- Avoid or minimise for the potential for community exposure to communicable and vector-borne diseases as well as accidents and injuries associated with site trespass and road traffic movements.

7.4.3.2 Project Activities Resulting in Community Health and Safety Impacts

Project activities that could result in impacts to Community Health, Safety and Security include:

- Interaction between the workforce (particularly non-local workers) and communities.
- Presence of opportunistic job seekers / migrants in communities, who are attracted by potential Project opportunities.
- Management of work site notably hygiene, sanitation, waste management and environmental changes that could lead to the creation of breeding grounds for vectors and facilitate the transmission of diseases.
- Presence of work sites with large machinery and other equipment/ supplies that could result in accidents and injuries in case members of the public access the site.
- Movement of Project related traffic during construction.

7.4.3.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring implementation of the community health, safety, and security management system throughout the life of the Project. During construction, field implementation of the health, safety and security management controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in the design of the road (e.g., safety controls) in this regard which are detailed below.

7.4.3.4 Performance Criteria

- Submit annual analysis and report on Vector borne and sexually transmitted diseases
- No outbreaks of diseases created by construction activities.
- Take preventative measures to avoid road traffic or site-based accidents during construction involving community members or assets created by Project activities.
- Take preventative measures to avoid incidents of use of excessive force by security personnel.
- No reduction in access to health care facilities for communities created by the Project.

7.4.3.5 Management Measures

The management measures included in Table 7.14 will be implemented to reduce community health safety and security related impacts from the Project.

Table 7.14 Community Health Safety and Security

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Vector Borne and Communicable Diseases				
1.	Prevention of Transmission of Vector Borne and Communicable Diseases	■ Project will put in place measures for creating awareness for vector borne diseases amongst workers through e-bulletins, posters, signages.	Throughout construction	■ 100% of workers receiving training
2.		■ In the event of a new disease in an area, significant increase in transmission compared to the baseline or outbreak, the Project will interact with local health care facilities and health workers to ensure there is an appropriate response in place. This may involve community education and awareness, training of health care workers etc. depending on the situation. Report to Nigeria Ministry of Health and international Centre for Disease Control and Prevention (CDC) as per legal obligation to report certain disease profiles and outbreaks.	Throughout construction and operations	■ Response plans in place to address disease outbreaks
3.		■ A Worker Code of Conduct will be developed providing a code of behaviour including worker-worker interactions, worker-community interactions, and development of personal relationships with members of the local communities. This would apply to all Project workers and visitors to any Construction Sites.	Throughout construction	■ 100% of workers received training ■ Construction design and operation to standards, confirmed in site inspection reports and periodic audits
4.		■ Accommodation will be provided to workers in accordance with international good practice on workers' accommodation, including IFC / WB standards to prevent transmission of diseases associated with poor living conditions or commensurate/compensatory allowances to be paid for housing.	Prior to and throughout construction	■ Construction design and operation to standards, confirmed in site inspection reports and periodic audits
5.		At worker accommodation and sites, the following will be implemented at a minimum in order to minimise disease transmission: ■ Providing workers with appropriate sanitary facilities, which are appropriately designed to prevent contamination.	Throughout construction	■ Construction design and operation to standards, confirmed in site inspection reports and periodic audits

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		■ Developing a robust waste handling system to avoid the creation of new vector breeding grounds or attracting rodents to the area. ■ Implementing measures to reduce the presence of standing water onsite through environmental controls and source reduction to avoid the creation of new breeding grounds. ■ Ensuring the accommodation is kept clean and free from any accumulation of wastes as well as supplied with clean potable water. ■ Ensuring appropriate food preparation and monitoring measures are in place. Conduct regular assessments of food handlers, kitchens fridges and freezers. ■ Provide for fumigation / mosquito repellents in the residential areas. ■ Monitoring to ensure that all standards are being met by the relevant departments.		
6.		■ The workforce will be provided with access to treatment at health facilities on site. The requirements for these health facilities will be based on a risk assessment taking into account access to existing health facilities and travel time to facilities that offer international standards of care. Access to health care will include direct employees, contractors and subcontractors working or based on site.	■ Prior to and throughout construction and operations	■ Construction design and operation to standards, confirmed in site inspection reports and periodic audits
7.		■ Pre-employment screening will take place prior to mobilisation. The screening protocols will consider heath conditions related to the nature of the work undertaken, employee country of origin and legal requirements.	■ Prior to and throughout construction	■ 100% of workers having received pre-employment screening
8.		■ The Project will ensure adequate health facility for diagnosis and treatment of vector borne diseases.	■ Prior to and throughout construction and operations	■ Construction design and operation to standards, confirmed in site inspection reports and periodic audits

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
9.		■ Project will ensure adequate health facility for diagnosis, referrals, and treatment of TB.	■ Prior to and throughout construction and operations	■ Compliance with measures in plan
10.		■ The Project will monitor the emergence of major pandemics through CDC and World Health Organisation (WHO) alerts and in the event of a pandemic review mobilisation and demobilisation of ex-patriate Project personnel and / or implement appropriate control measures and Emergency Response Plans.	■ Throughout construction and operations	■ ERP in place and implemented as needed
Sexually Transmitted Infections				
11.	Prevention of Transmission of Sexually Transmitted Diseases	Project will manage Information, education, and communication (IEC) amongst site staff and workers with regards to STIs, STDs and HIV / AIDS. The plan should include, among other things, the following measures: ■ Awareness campaign through e-bulleting, posters and signages on HIV / AIDS STIs and STDs; awareness campaign will include avoidance behaviours, use of protections etc. ■ Encouragement of employees to determine their HIV status ■ Development of a comprehensive Construction Camp Management Plan, including rules for on-site behaviour, entrance and exit policies and prohibition of sex workers on site.	■ Prior to and throughout construction and operations	■ IEC activities implement every other month with all Site Staff and immediate local communities
12.		■ As part of the IEC campaigns, information will be provided to workers on STI prevalence rates in Nigeria and/ or the relevant Counties, safe sexual practices and transmission of STIs, as well as the expectations of local communities if a woman becomes pregnant due to sexual activities with an employee (e.g. marriage, financial implications etc.).	Prior to and throughout construction and operations	■ 100% of workers receiving training
13.		■ Workers will have access to confidential health care for the treatment of STDs through medical facilities/ health care at Project sites.	Throughout construction and operations	■ 100% of workers with knowledge about access to treatment

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
14.		■ The Project will partner with other NGOs and CBOs to support the provision of information, education and communication campaigns around safe sexual practices and transmission of STDs. These activities will be targeted to address the drivers associated with the construction supply chain.	Throughout construction	■ Partnerships in place at high-risk locations
15.		A Grievance Mechanism will be implemented, whereby affected people can raise issues and concerns associated with social vices, prostitution and the behaviour of workers and drivers. As part of the Grievance Mechanism KPIs for grievance resolution will be established which may vary between the Sections to reflect local issues and concerns.	Throughout construction and operations	■ Percentage of grievances received about social vices ■ Percentage of grievances resolved within agreed timelines
Construction Traffic Movements				
16.	Prevention of construction traffic accidents	A Traffic Management Plan will be developed and implemented including consideration of: ■ Safe worksite layouts ■ Delivery routes to and from the Project Area considering community safety as well as traffic impacts. ■ Vehicle safety equipment standards (e.g., seat belts and first aid kits) ■ Driving rules (e.g., speed limits, hours of driving, required breaks, carrying passengers and use of mobile phones/ radios) ■ Driver qualifications and selection (e.g., defensive driving courses, accident history and ‘practical’ interviews to test skills); ■ Driver education and training (awareness raising, information on required standards and review of incidents) ■ Vehicle inspection and maintenance (in line with manufacture requirements for vehicle roadworthiness and Project standards) ■ Accident/ incident reporting and investigation; and ■ Disciplinary procedures.	Prior to and throughout construction	■ Plan prepared and available for review prior to construction, compliance assessed in site inspection reports and periodic audits

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
17.		The Project will ensure that all driver candidates meet specific requirements, including but not limited to: ■ Possessing a valid licence to drive each type/class of vehicle required; ■ Sufficient driving experience; ■ An incident-free driving record; ■ Pass an eye chart exam; and ■ Attend and complete the driver safety education and training course. These requirements should not be used as a basis for precluding trainees from accessing employment opportunities.	Prior to and throughout construction	■ Employment record, training record, observation
18.		■ During the construction phase, arrangements, and routes for unusual/ wide loads (if required) will be agreed in advance with the relevant authorities and the appropriate permit will be obtained for the use of public roads.	Prior to and throughout construction	■ Agreements with IEFCL in place for wide load permits, etc.
19.		■ The Project will undertake transport of workers by bus in the safest way possible.	Throughout construction	■ Transport Plan prepared and implemented.
20.		■ In the event of an incident caused by the Project in which a community member is harmed, the Project should organise transport for the injured person to an appropriate health facility capable of dealing with the injuries and facilitate access to medical treatment.	Throughout construction and operations	■ Number of people assisted with treatment
21.		■ Traffic incident reporting and investigation procedures will identify corrective measures to reduce the risk of the accident happening again.	Throughout construction	■ 100% internal incident investigation closed out in an agreed timeframe based on the severity of the accident within 60 days. Where the police etc. are involved, this timeline should be extended accordingly. ■ Implementation of corrective actions documented.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
22.		■ A Grievance Mechanism will be developed, whereby affected people can raise issues and concerns associated with vehicle movements, driver behaviours and report accidents or damage to property they feel are caused by Contractor vehicles. As part of the Grievance Mechanism KPIs for grievance resolution will be established which may vary between the Sections to reflect local issues and concerns.	Throughout construction	■ Percentage of grievances received about traffic movements. ■ Percentage of grievances resolved within agreed timeframes
Community Safety and Security				
23.	Protection of Community Safety and Security	■ Project security will comply with Nigerian laws and regulations as well as the requirements of the Voluntary Principles for Security and Human Rights. The security will include, among other things, selection of personnel based on a careful background screening, training with regards to human rights requirements, and monitoring of performance. As part of the Grievance Mechanism KPIs for grievance resolution will be established which may vary between the Sections to reflect local issues and concerns.	Throughout construction and operations	■ Security personnel recruited in line with the requirements of the Voluntary Principles as evidence by recruiting records ■ Any use of force to be avoided where possible and in the event of security personnel using force incident investigation should be undertaken to determine if the use of force was reasonable based on the circumstances ■ Number of grievances received related to the behaviour of security personnel
24.		■ The Project will implement a Security Management Plan containing measures to protect the Project facilities and personnel against potential violent protest or social unrest and to train security personnel in safeguarding of community human rights.	Prior to and throughout construction and operations	■ 100% compliance with measures in plan

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
25.		■ High-risk or value elements of construction sites will be fenced to minimise the risk of trespass and robbery. In addition, clear and visible signage will be put in place where appropriate to advise community members of the risk of site trespass in multiple languages	Throughout construction	■ Fencing and signage in place ■ All site trespass and theft will be investigated, and corrective actions implemented
26.		■ Sensitise local community members prior to the commencement of the construction phase so that they are aware of presence and role of security guards, the risk of site trespass and how to interact with the Project in the event of any concerns or issues.	Prior to and throughout construction	■ Records of stakeholder engagement meetings
27.		■ The Project will consult with local community. The consultations will be aimed at finding ways of ensuring trespass and attempted robbery are minimised	Prior to and throughout construction	■ Records of stakeholder engagement meetings
28.		■ The Project will develop and implement a grievance mechanism to address any security related grievances.	Throughout construction	■ Number of grievances received about security issues ■ Percentage of grievances resolved within agreed timelines

7.4.4 Cultural Heritage Management

7.4.4.1 Objectives

The objectives of the plan are to:

- Manage the Cultural Heritage in compliance with Nigerian laws and regulations as well as IFC PS8 and Good International Practice.
- Minimise the impact of the Project on the Cultural Heritage through the application of the mitigation hierarchy
- Develop tools, such as a Chance Finds Procedure (CFP) to minimize impacts to not yet identified Cultural Heritage that may be discovered during the Project
- Minimize Project delays by detailing out step-by-step processes to dealing with unexpected discoveries through a Chance Finds Procedure.
- Define the Company and Contractor roles and responsibilities for successfully implementing the plan.

7.4.4.2 Project Activities Resulting in Cultural Heritage Impacts

The primary sources of impact in relation to cultural heritage is during construction and mainly attributed to ground disturbance activities (earthworks).

7.4.4.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the cultural heritage management system throughout life of the Project. During construction, field implementation of cultural heritage controls will be managed and executed by the Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

The Local Regulator (National Commission for Museums and Monuments (NCMM)) is the regulatory body in charge of drafting, proposing, monitoring, and controlling the texts regulating and organising the conservation, management and protection of historical cultural heritage.

7.4.4.4 Performance Criteria

Limiting impact to cultural heritage sites through implementation of the proposed Chance Finds Programme and implementation of the cultural heritage training program.

7.4.4.5 Management Measures

The management measures included in Table 7.15 will be implemented to reduce the minor to moderate impacts from the Project.

Table 7.15 Cultural Heritage Management

Ref No.	Aspect Activity	Management Measure	Timing	Performance Indicator
1	All Project Staff/Contractors Operating in the Field who will be Engaged with Ground Disturbing Activities	The Project will implement a Cultural Heritage tool box briefing for all field staff. The objective of the Cultural Heritage tool box briefing is to manage potential impacts to known and unknown cultural heritage sites by facilitating the identification and reporting of potential Chance Finds encountered during construction works. The programme will consist of training; *Chance Finds* tool box talks/training for field staff; and the development of reference materials such as fliers, signage, and educational posters to be posted in the Construction Camps and facilities. The plan should cover: ■ Defining Chance Finds; ■ Identifying Chance Finds in the field; ■ Local sensitivity to damage to cultural heritage resources; ■ Sensitivity of cultural heritage sites to looting and legal penalties for looting or the destruction of cultural heritage sites; ■ Chance Finds reporting procedures; and ■ The consultation process with local and national stakeholders and regulatory agencies.	Prior to and throughout construction	■ Plan in place and implemented. ■ Occurrences of impact to sub-surface cultural heritage resources

7.4.5 Traffic Management

7.4.5.1 Objectives

The purpose of this plan is to manage and reduce Project-related risks and potential impacts on traffic operations, road condition, and transportation safety risks along affected public roads. Project construction and operation will generate additional traffic, including heavy truck trips, on existing public roads between the proposed IEFCL Train 3 Project and surrounding areas.

The impact assessment for this plan identified transportation-related impacts in terms of traffic operations (i.e., congestion and delay), degradation of road facilities, and safety risks during both construction phase and the operations phase. Impacts on traffic congestion were found to be moderate due to the impact on the heavily travelled East West Road, while impacts on road condition and safety were found to be minor. This plan presents the recommended strategies and measures to prevent, mitigate, or reduce potential adverse impacts for affected public roads. This plan also describes monitoring and reporting processes, including identification of the performance indicators.'

7.4.5.2 Project Activities Resulting in Traffic Impacts

A new access road to the Indorama Complex is under construction by the Rivers State Government. The new access road would intersect the East West Road approximately 800m east of the Onne Road/East West Road intersection. From the East West Road, the new access road would cross rural land to the east and north of Ogoni, Eleme, and other settlements; cross the Uzaku-Alese Road in a rural area north of Eleme; and enter the Project Area at its southeastern corner. The new access road would be 10.5 km long, constructed of asphalt, and with 2 lanes in each direction and street lighting. Except for the 800m segment east of the Onne Road, the new access road would bypass the heavily travelled East West Road.

The proposed IEFCL Train 3 Project construction period would require the following Project activities resulting in traffic impacts: approximately 448 daily one-way vehicle trips, including 400 bus trips and 48 truck trips. Many of the truck trips would be oversized loads originating at Onne Port. Most of the construction-related Project equipment movement, oversized loads, and employee buses would use the new access road. The route for other types of shipments (sand, aggregate, other deliveries) would depend upon where the trip originates.

Upon completion of construction, Train 3 operations would increase operational traffic from the Indorama Complex by about 1,000 vehicle trips daily, including about 100 bus trips, 660 passenger vehicles, 200 trips by trucks transporting urea to Onne Port (including the return trip to the Indorama complex), and 40 additional truck trips.

7.4.5.3 Responsibility

IEFCL will have responsibility for implementing the management measures by establishing and continually implementing standards and procedures for its own vehicles and employees and for its Contractors.

The new access road will require a new intersection with the heavily travelled East West Road and increased turning movements at the intersection of the East West Road and Onne Road. IEFCL is responsible for coordinating with the Rivers State Road authority and the Federal Roads Maintenance Agency to minimize congestion and maximize safety.

Road maintenance and improvement are governed and implemented by the Federal Roads Maintenance Agency (for the East West Road), the Rivers State Road Maintenance and Rehabilitation Agency (for the Onne Road, Uzaku-Alese Road, and other state roads) and the Nigerian Port Authority (for the Federal Ocean Terminal Roadway). This plan recognises that IEFCL has no direct authority or ability to direct or provide road maintenance and improvements but can advocate and provide guidance for such improvements.

7.4.5.4 Performance Criteria

Performance criteria are listed in Table 7.16 and include the number of accidents or grievances and volume of spills.

7.4.5.5 Management Measures

The management measures included in Table 7.16 will be implemented to reduce the minor to moderate impacts from the Project.

Table 7.16 Traffic Management

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Road Infrastructure Maintenance	■ Work with appropriate national and state road authorities to advocate for maintenance of public roads to avoid continued pavement deterioration.	Provide advocacy at least annually	■ Road conditions are maintained at or better than pre-construction condition.
2		■ Maintain the existing Project access road and the proposed new access road in good condition	As needed	■ Project access roads are in good condition at all times.
3	Traffic Management for Improved Safety and Reduced Road Congestion	■ Schedule employee shifts and truck deliveries to minimise congestion and conflicts with local traffic at the intersection of the new access road with the Uzaku-Alese Road and East West Road. Avoid truck trips that would cross the Uzaku-Alese Road during time periods when the road is more likely used by school children, school buses or other sensitive receptors.	Maintain schedules daily for ongoing construction or operations; update in response to grievances or other need.	■ Traffic management plan and schedule maintained by IEFCL and available for review. ■ Number of crashes or other traffic incidents at the intersection of the new access road with Uzaku-Alese Road and East West Road during morning and evening peak hours.
4	Enhanced Safety through Stakeholder Engagement and Education	■ Maintain (or initiate, where needed) relationships with local stakeholders to understand risks particular to the crossing of the Uzaku-Alese Road by the new access road.	Community / PAC meeting at least 6 months prior to construction;	■ IEFCL captures meeting notes and makes them available. Number of crashes or other traffic incidents at the intersection of the new access road with Uzaku-Alese Road during morning and evening peak hours.
5		■ Provide a grievance mechanism that is easy to access, transparent, and responsive. Accept grievances related to IEFCL road traffic in writing, electronically, by telephone, or verbally at community stakeholder meetings. Create written record of all grievances submitted verbally.	Ongoing availability during construction and operations; initial response within one week; timely resolution or final response	■ Number of grievances received. ■ IEFCL maintains records of grievances, initial response, and final resolution or disposition.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
6	Enhanced Safety through Driver Qualification Standards and Training, both General and Project-specific	■ Use only drivers with the required driving license. Enforce driver qualifications and training for all drivers, whether employees or sub-contractors. Include requirements in applicable contracts. ■ Establish driver training program specific to the vehicles, roads and risks encountered for the particular tasks. ■ Require regular truck driver safety training, defensive driving training, and testing.	Continual during construction and operations	■ Annual verification of all driving licenses for Project drivers. ■ Provision of driver training to all Project drivers, including at least annual refresher training. ■ IEFCL and contractors retain relevant records of licenses and driver training program materials and record of completion for all drivers. ■ Number of IEFCL-related road crashes or other incidents.
7	Enhanced Safety through Consistent safe Driving Practices	■ Establish and enforce rest and break standards that comply with industry and national standards. ■ Structure contracts with truck contractors to avoid incentives for speeding or insufficient fatigue break ■ To the degree permissible by law, require daily or periodic drug and alcohol testing for all drivers. ■ Equip trucks with speed governors or on-board GPS, and/or monitor vehicle speed and location. ■ To the agree allowed by law, enforce driver quality through loss of jobs or contracts for individual drivers for drug or alcohol offenses, chronic or egregious speeding, or other notable or repeated unsafe behaviours.	Continual during construction and operations	■ IEFCL and contractors provide all drivers with written policies, and require drivers to sign agreement, indicating rest and break standards, drug and alcohol standards, and speeding; managers implement ongoing enforcement of policies. ■ IEFCL contracts prioritise safe driver practices. ■ Daily or periodic drug and alcohol testing (to the degree allowed by law). ■ Use of speed governors, GPS, or other monitoring efforts. ■ Number of IEFCL-related road crashes or other incidents.
8	Vehicles in Good Condition and Safe to Operate on Public Roads	■ Require scheduled, preventative vehicle maintenance according to manufacturers' recommendations for all Project vehicles, whether owned by Project or a contractor ■ Require completion of a vehicle safety checklist daily prior to vehicle operation on public roads	Periodic during construction and operations	■ Establishment of regular schedule for vehicle preventive maintenance. ■ Documented completion of scheduled maintenance. ■ IEFCL and contractor managers require completion of vehicle safety checklist by each driver daily prior to vehicle operation. ■ IEFCL retains completed checklists for one year.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
9	Driver Communication in Case of Emergencies	■ Provide uniform in-vehicle communications systems that enable contact with truck traffic controllers and other drivers	Continual during construction and operations	■ IEFCL and contractors provide (or require, for independent truck operators) and ensure proper operation of in-vehicle communication systems.
10	Noise Impact Reduction	■ Require that noise-control devices be in good operating condition.	Continual during construction and operations	■ IEFCL and contractors provide (or require, for independent truck operators) and ensure proper operation of noise-controlling devices.
11	Prevention of Nuisance and Visibility Hazard from Airborne Dust or Dirt on Roads	■ Wash all trucks leaving the Project site using a dedicated wash station where water can be continually recycled.	Throughout construction	■ IEFCL or contractors provide wash station at construction site; require truck washing prior to leaving Project site.
12	Prevention of Hazard and Nuisance from Truck Spills	■ Securely cover loads on trucks to minimise spillage and dust.	Throughout construction and operations	■ IEFCL and contractors develop and enforce policies requiring truckload covers. ■ Record of all spill incidents from IEFCL and contractor vehicles.
13		■ Do not overload trucks	Throughout construction and operations	■ IEFCL and contractors develop and enforce policies prohibiting truck overloading. ■ Record of all spill incidents from IEFCL and contractor vehicles.

7.5 General Management

7.5.1 Waste Management (during the Construction Phase)

7.5.1.1 Objectives

The objectives for waste management are:

- To ensure that the waste strategy for the proposed IEFCL Train 3 Project complies with the Nigerian legislative requirements.
- To ensure alignment with the good practice requirements set out in the IFC Performance Standards and IFC Environmental, Health and Safety Guidelines.
- Identify high level waste streams associated with the construction phase of the proposed IEFCL Train 3 Project.
- Categorise anticipated waste streams and ensure that the waste management hierarchy model is adopted for waste management, i.e., to **REDUCE** the amount of waste produced on site by procuring bulk goods rather than packaged goods and training workers on waste reductions, and to actively promote the **REUSE**, **RECYCLE** and **RECLAIM** waste management concept and subsequently minimising the amount of waste that needs to be disposed of.
- To ensure the end use of waste is as per its waste category assigned.
- To prevent and protect soil; surface water and groundwater from contamination through hazardous substance (including sewage) spills.
- To prevent and protect flora, fauna and people from indirect impacts associated with contaminated soil and water (both surface- and groundwater).
- To prevent health impacts arising via contact with general and/ or hazardous waste.
- To manage waste storage facilities in such a manner to minimise social as well as visual impacts.

7.5.1.2 Project Activities Resulting in Waste

Wastes generated from Project activities can be categorised as non-hazardous or hazardous according to their types and associated risks. The definitions of waste categories are as follows:

- **Non-hazardous Wastes** – wastes that do not exhibit any hazardous properties and are relatively low risk to human health and the environment. This category would include a range of materials that may be recycled or can safely be disposed of in a landfill.
- **Hazardous Wastes** – wastes that exhibit one or more characteristics which mean that the wastes are potentially harmful to human health and/or can cause damage to the environment (air, land, and/or water) or natural ecosystems. For example, the waste may be corrosive, reactive, toxic, mutagenic, teratogenic, infectious, carcinogenic, ecotoxic, flammable, or explosive.

Waste types and estimated quantities during the construction phase are shown in Table 2.1. The duration of construction activities up to mechanical completion is estimated at about 32 months.

Table 7.17 Waste Types and Estimated Quantities during the Construction Phase

Activity	Description	Waste Category	Quantity	Destination
Site preparation / ton/year Foundations	Cement / concrete – concrete debris, soil containing cement	Non-hazardous	3000-3500 ton/year	Land fill

Activity	Description	Waste Category	Quantity	Destination
	Scrap metal / wire – strips of metal, metal supports, pieces of wire	Non-hazardous	200-500 ton/year	Resale
Construction activities	Scrap plastic / PVC	Non-hazardous	20-30 ton/year	Recycle
Maintenance operations	Paints and solvents – traces of paint, solvents, etc.	Hazardous	0.3-0.5 ton/year	Approved waste management facility
	Light bulbs, fluorescent light fittings; Equipment which can contain traces of neon and tungsten	Hazardous	0.2 ton/year	Approved waste management facility
Personal Protective Equipment (PPE) from work activities	Used PPE – goggles, gloves, etc.	Hazardous	5 ton/year	Existing Incinerator or Approved waste management facility
Lube oil and seal flushing of machinery skid (Pre-Commissioning phase)	Lube and seal oil – oil containing weld splatter, chips, welding flux deposits, powered metal oxides	Hazardous	1.3-1.8 ton/year	Approved waste management facility
Camps, kitchen, offices operations	Cooking organic wastes	Non-hazardous	10-20 ton/year	Municipal/Approved dump side
	Mixed urban wastes	Non-hazardous	150-200 ton/year	Municipal/Approved dump side
	Medical wastes	Hazardous	0.05-0.10 ton / year	Existing Incinerator
	Wastewaters (drinking, washing, shower, sanitary)	Hazardous	150 lt/day per worker	New STP

Note - during the operational phase, wastes contributed by the proposed IEFCL Train 3 Project will form part of the existing waste management system associated with the existing IEPL and IEFCL operations. To this end, IEFCL will update their Waste Management Plan to accommodate operational aspects of the Project.

7.5.1.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring the waste management systems are implemented and aligned with the requirements under Nigerian Law. During construction, field implementation and management/storage/disposal of construction wastes are the responsibility of the

Contractor. Other parties, such as the Engineer, will also assume certain responsibilities in this regard which are detailed below.

7.5.1.4 Performance Criteria

- Zero incidents of illegal dumping of wastes, both general and hazardous.
- Zero discharge of raw sewage directly into the environment
- No unauthorised access to the waste storage facilities.
- No loss of health to personnel or third parties as a result on inappropriate waste management practices.
- All waste disposal to be carried out by a licensed waste contractor per the Nigerian legislated requirements.

7.5.1.5 Management Measures

The management measures included in Table 7.17 will be implemented to reduce waste related impacts from the Project.

Table 7.18 Waste Management (during the Construction Phase)

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Waste Management Method Statements				
1.	Waste Management Procedure	■ Waste Management Procedure shall be prepared covering all waste expected to be generate during construction. The Waste Management Procedure will need to include methods associated with waste handling; waste transport; waste storage and segregation; and waste disposal / treatment / recycling / reclamation options identified for the proposed IEFCL Train 3 Project.	Prior to construction	■ Waste Management Procedure
Waste Handling				
2.	Waste Segregation	■ Waste will be segregated according to its composition, source, and type at source and contained in appropriately labelled and/or colour coded waste containers or waste skips.	Throughout construction	■ Proper segregation of waste in appropriately labelled waste containers
3.	Waste Containers	■ Appropriately labelled bins will be located in all locations onsite where waste is generated and will make provision for the sorting of solid waste.	Throughout construction	■ Adequate number of bins
4.		■ All bulk waste containers on site (skips, bins, drums etc.) shall be appropriately labelled to show what class and type of waste can be disposed of in them.	Throughout construction	■ Appropriately labelled waste containers
5.		■ Waste containers will be appropriately designed in terms of volume, composition, and shape. Containers that may react with the waste to produce a harmful substance will not be used. All waste containers will be secured to prevent spillage and interference from birds and animals.	Throughout construction	■ Provision of adequate waste containers
6.		■ Only one class or type of waste will be stored in each container.	Throughout construction	■ Waste separation
7.		■ All waste containers will be closed with a lid and kept at designated area.	Throughout construction	■ Enclosed waste containers in accessed controlled area
8.	Mixing of Wastes	■ Solid and liquid wastes will not be mixed.	Throughout construction	■ Segregation of solid and liquid wastes

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
9.	Waste Handling and Training	■ All waste will be handled in accordance with its class (hazardous or non-hazardous) and personnel collecting, handling, transporting, or disposing of waste will be trained in the proper procedures for dealing with the said waste class.	Throughout construction	■ Training records
10.	Waste Management	■ To promote “4Rs” (Reduce, Reuse, Recycle and Reclaim) waste management concept, all waste will be sorted and managed as appropriate, either for reuse, recycling, or disposal.	Throughout construction	■ Waste logs
11.	Wastewater (including sewage)	■ All wastewater (including sewage) will be treated onsite and treated wastewater discharge will be in compliance with the ambient water quality criteria for the area where discharge will take place.	Throughout construction	■ As per Section 7.2.5 on Surface Water management
12.	Concrete Waste Management	■ A concrete washing area will be set aside for concrete trucks, to avoid build-up of waste concrete in site areas.	Throughout construction	■ Concrete washing area. No build-up of waste concrete on site
13.	Vehicular Repair and Maintenance	■ Vehicle repair and maintenance pits will be regularly cleaned, and any liquid build-up will be removed and treated as necessary.	Throughout construction	■ No build-up of liquids
Waste Transport				
14.	Transport Containers	■ The nature, composition and integrity of transport packaging and containers will be appropriate to the type and class of waste being transported.	Throughout construction	■ Designated waste transport vehicles
15.	Transport Vehicles	■ Transport vehicles will cater for the type, class and quantity of waste being transported in terms of its composition, load capacity, covering etc.	Throughout construction	
16.		■ All transport vehicles will be equipped with suitable materials or equipment to contain, manage, and remove accidental spillages.	Throughout construction	
17.		■ Vehicles carrying hazardous wastes shall be labelled appropriately.	Throughout construction	■ Labelling of waste trucks
18.	Waste Loading and Unloading	■ Loading and unloading as per waste management procedure procedures to avoid waste loss will be followed.	Throughout construction	■ Training records, site inspection

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
19.	Training	■ Employees associated with transport of waste will be trained in the correct procedure to address accidents and emergencies.	Throughout construction	■ Training records
Waste Storage and Segregation for Non-hazardous Waste				
20.	Waste Segregation	■ Non-hazardous waste will be segregated into specific waste types, for those waste types that can either be recycled, reused, or reclaimed.	Throughout construction	■ Waste segregation
21.	Waste Storage Areas	■ Separate storage areas will be constructed and utilised where appropriate. Separate storage areas will be appropriately designated and labelled.	Prior to construction	■ Waste segregation
22.	Mixing of Wastes	■ If by error a hazardous waste is mixed with non-hazardous waste, the entire consignment will be regarded as hazardous.	Throughout construction	■ Operating procedure and waste management records
Waste Storage and Segregation for Hazardous Waste				
23.	Waste Storage Areas	■ Temporary hazardous waste storage facilities at the main waste handling facility will be appropriately designed to prevent any contamination of the physical, biological, and social environments.	Prior to construction	■ Provision of adequate hazardous waste storage facilities
24.		■ Where appropriate, hazardous waste will be stored in sealed containers and placed in a fenced and gated storage facility within the main waste handling facility. The facility will have an impermeable floor, bunded and be covered to prevent rain from entering.	Throughout construction	
25.	Hazardous Waste Storage Duration	Hazardous waste will be temporarily stored before being collected by an authorised contractor for removal and offsite disposal, in an accredited facility. Removal of hazardous waste from site will follow a regular schedule (frequency to be determined). In this respect, the Contractor will adopt the 'cradle to grave' principle. Tracking documents, proving that the disposal of hazardous wastes has been delivered to an accredited facility, and disposed of in such a facility, correctly, will be retained by the Project for audit and verification purposes.	Throughout construction	Record of up-to-date tracking documents

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
26.	Sewage	Treated sewage will conform to recognised sewage effluent standards before discharge into the environment.	Throughout construction	
Disposal / Treatment / Recycling / Reclamation				
27.	Auditing Waste Contractors	The Project will audit waste contractors prior to agreeing any formal contracts and will ensure that all facilities that receive wastes from the proposed IEFCL Train 3 Project are suitable and in line with the Nigeria National policy on Solid Waste Management 2020 and IFC EHS General Guideline for Waste management (1.6). Waste contractors will need to keep detailed records on how waste from the Project has been disposed, or a facility as approved by respective authority.	Prior to construction	Audit records
28.	Removal of Waste	All remaining waste including (but not limited to) used materials, broken concrete, redundant fencing, fence posts, and litter will be removed when construction sites are closed. Waste will not be buried within the protected areas.	At the end of the construction phase for a specific section of the proposed IEFCL Train 3 Project	Audit records

7.5.2 Spill Prevention, Control and Containment Management Plant (during the Construction Phase)

7.5.2.1 Objectives

The objectives for spill prevention, control and containment management are:

- Protect the environment and community members who are dependent on its natural resources through the development of spill response and containment strategies and capabilities.
- Identify the sources of potential land contamination associated with construction activities.
- Categorise potential spill hazards.
- Plan for rapid and efficient response to manage hazardous material spills during construction.
- Identify and document management measures to prevent, control and mitigate spill events during construction.

7.5.2.2 Project Activities Resulting in Spillage Impacts

During the construction phase of the proposed IEFCL Train 3, dangerous or hazardous chemicals may accidently be released into the environment in the form of small spills or a major unplanned event (e.g., oil tanker or cement truck accident). Spillages may occur as a result of leakage of containers used to store or transport the following pollutants:

- Hydrocarbons (including diesel, greases, oils and other lubricants);
- Hazardous chemicals / materials (e.g., paints, batteries, etc.);
- Cement; and
- Effluent.

7.5.2.3 Responsibility

IEFCL, as Project owner, shall assume responsibility for ensuring spill management and prevention requirements are established and implemented on the Project. During construction, field implementation of the spill prevention and management controls will be executed by the Contractor.

7.5.2.4 Performance Criteria

- No unplanned release of dangerous goods or hazardous substances.
- All transport, storage and handling of dangerous goods or hazardous and dangerous substances is performed in accordance with the materials data sheets for the chemicals and the management measures included in this ESMMP.

7.5.2.5 Management Measures

The management measures included in Table 7.18 will be for spill prevention, control, and containment management.

Table 7.19 Spill Prevention, Control and Containment Management (during the Construction Phase)

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Spill Prevention				
1.	Training	■ Training regarding proper methods for transporting, transferring, and handling hazardous substances that have the potential to impact surface- and groundwater resources.	Throughout construction	■ Training records
2.		■ Train personnel with responsibility for hazardous substances. No untrained staff shall be allowed to handle hazardous substances.	Throughout construction	■ Training records
3.	General Management	■ Concrete batching/mixing shall only take place at agreed specific areas on site and runoff from the batching area will not be allowed to flow into natural streams and watercourses.	Throughout construction	■ No concrete batching in non-designated areas
4.		■ Provide collection systems (i.e., drip trays or impervious linings) under machinery or stationary equipment that may dispense or leak hydrocarbons / hazardous substances (i.e., generators and pumps).	Throughout construction	■ Collection systems in place
5.		■ The bulk loading and unloading of hazardous materials and fuels will be confined to areas that are provided with secondary containment and in line with hazardous material handling procedures.	Throughout construction	■ Suitably designed areas for loading and offloading
6.		■ Maintain an inventory of all dangerous and hazardous goods onsite, together with all relevant Safety Data Sheets (SDS) for all contaminants on-site. These will include human health effects of chemicals handled and will be included in the required chemical environmental and safety training for all employees handling or otherwise exposed to the contaminants. All appropriate personal protective equipment, handling and response procedures will also be identified in the SDS or otherwise recommended by the suppliers / manufacturers and followed by all Project staff.	Throughout construction	■ Inventory, SDS, training records and suitable PPE

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
7.		■ Prior to introduction to site, a hazardous material / substance will be reviewed, and proper storage, handling and transportation procedures and spill risk analysis will be established.	Throughout construction	■ All procedures in place prior to introduction to site
8.	Transport of Hazardous Materials	■ Transportation vehicles and tanks suitable for the hazardous materials being transported will be used. These vehicles and tanks will be maintained in adequate condition to ensure proper handling and safety of chemicals.	Throughout construction	■ Records of all deliveries
9.		■ Drivers will be trained in spill and emergency response and will have a means of communicating with the site, their administrative offices and emergency personnel for the entire transportation route.	Throughout construction	■ Provision of training records for drivers
10.	Storage of Hazardous Materials	■ Segregation of corrosive substances that are kept in bulk from incompatible goods and goods with which they may react dangerously.	Throughout construction	■ Suitable segregation of goods
11.		■ Fuel, lubricants / oils, chemicals, hazardous waste and hazardous material stores and handling areas will be provided with secondary containment capable of holding110% of the largest stored container or 25% of the total volume for all liquids stored in the bunded area. The containment will be checked daily, and debris removed. The storage of such substances shall be maintained away from moving water source or water abstraction source. Further, fuels will be kept away from areas that are at more risk from wildfires (e.g. near dry grasslands).	Throughout construction	■ Bunding of hazardous stores
12.		■ Prevent the integrity and capacity of the bunded areas being compromised by rainwater and stormwater ingress.	Throughout construction	■ Records and visual observations
13.		■ A preventative maintenance program will be instituted that includes inspection schedules to confirm and maintain the mechanical integrity and operability of storage vessels and associated containment areas and	Throughout construction	■ Evidence of maintenance records/inspection reports

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		process equipment for fuel, lubricants / oils, chemicals, hazardous waste, and hazardous materials.		
14.		■ Hazardous and dangerous material storage areas will be equipped with emergency spill response and fire prevention equipment.	Throughout construction	■ Well maintained spill response kits in place at all hazardous and dangerous material storage areas
15.		■ Hazchem signage used where hazardous goods are being stored, hazardous materials to be clearly labelled and fencing and controlled access to limit unauthorised access.	Throughout construction	■ Signage and access controls in place
Spill Control and Containment				
16.	Method Statement / Procedure	■ Method Statements/Procedure detailing spill emergency response and clean-up procedures for spills will be developed. Emergency response measures will also include methods for response and clean-up for release into any natural stream, river, or wetland. ■ Emergency response procedures will be tested regularly to ensure rapid response to, containment of, and neutralisation of any spillages.	Start of construction	■ Method Statements/Procedure
17.	Spills and Clean-up	■ Areas where spillage of soil contaminants occurs will be excavated (to the depth of contamination) and suitably rehabilitated. If any other minor spillage occurs, the spillage will be cleaned immediately, and the contaminated area will be rehabilitated. All contaminated material will be suitably disposed of. Clean-up procedures will need to be fully recorded.	Throughout construction	■ Detailed clean-up (incident) records
18.		■ Spill kits will be provided at any fuel or chemical storage location. Spill kits must be maintained.	Throughout construction	■ Inspection reports showing well maintained spill response kits in place
19.		■ Designated and qualified staff designated for responsibility to respond to emergencies.	Throughout construction	■ Training records
20.		■ A maintained emergency contact list will be placed at all spill response kit locations.	Throughout construction	■ Emergency contact list at spill response kit locations

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
21.		■ Development, implementation and regular training and testing of a Project wide Spill Response Plan will be implemented.	Throughout construction	■ Training records

8. ENVIRONMENTAL AND SOCIAL MONITORING

8.1 Introduction

The purpose of the environmental and social monitoring programme is to ensure that management measures, identified and described in Section7 are implemented and are effective at achieving an acceptable level of compliance with the ESMMP.

8.2 Construction Monitoring

Table 8.1 presents the monitoring specifics / requirements that will be monitored during the pre-construction & construction phase (including post-construction).

Construction activities will be monitored by the IEFCL on site, with regular audits against the requirements of this ESMMP. The ultimate target is to achieve 100% compliance with the ESMMP.

Key aspects to monitor during the pre-construction & construction phase and operational phase include:

- Air Quality;
- Water Monitoring;
- Biodiversity Monitoring;
- Social Monitoring;
- Waste Monitoring; and
- Spill Monitoring.

Contractor work sites must be monitored during construction, under the guidance of key IEFCL environmental and social (E&S) resource persons who will be responsible for reporting the monitoring of the E&S issues. IEFCL may undertake independent monitoring of selected parameters to verify the results of the Contractor and to audit the implementation of environmental mitigation measures contained in this ESMMP and construction contract for the Project.

The FMEnv holds the general responsibility for approval of the Project and verifying that applicable environmental guidelines are adhered to during Project implementation. The FMEnv's role therefore is to evaluate environmental monitoring and environmental compliance documentation submitted to them, and they would not usually be expected to be directly involved in monitoring the Project unless a specific, major environmental issue arose.

8.3 Operational Monitoring

Note – monitoring during the operational phase will form part of the existing monitoring campaign associated with the existing IEPL and IEFCL operations. To this end, IEFCL will update their monitoring campaign to accommodate operational aspects of the Project. Key aspects of ongoing monitoring during the operations phase will include:

- Ongoing monitoring of the Project grievance procedure and that any complaints received are being duly handled and closed out.
- Ongoing monitoring of the water treatment plant to check that the plant is being operated within the relevant specifications to prevent failure and malfunction.
- Ongoing monitoring of the retention pond to check that it is being operated according to specification, maintaining the specified freeboard that allow management of flood events.
- Ongoing groundwater level and quality monitoring in the boreholes included in the IEFCL monitoring network.
- Ongoing surface water quality monitoring in the surface water sampling sites included in the IEFCL monitoring network and an additional site on the Okulu River.

- Ongoing monitoring of stormwater & wastewater discharge to the environment to check that quality and quantity meets the requirements of the effluent discharge limits.
- Continued monitoring and auditing of the effectiveness of the biodiversity management actions and reviews of at least every 5 years, with adaptive updates to management actions where required.
- Ongoing social monitoring, including (but not limited to) –
  - Number of Project workers screening (health) prior to employment.
  - Ongoing health, education, and training.
  - Ongoing driver training.
  - Ongoing stakeholder engagement.
  - Grievances redress management.
  - Recruitment (in terms of achieving a certain employment percentage from the relevant affected Location and Rivers State.
  - Ongoing OHS induction and training (through toolbox talks).
  - Worker rights being respected and in line with the requirements of Nigerian Law and IFC PS2
- Ongoing waste handling/storage/transport/ disposal monitoring.
- Ongoing spill monitoring.

Table 8.1 Construction Monitoring

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
	Air Quality Monitoring		
1.	■ Undertake regular on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust and record inspection results. ■ Carry out regular site inspections to monitor compliance with this ESMMP, record inspection results and identify any events that require further investigation or actions. ■ Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.	Throughout construction	■ Recommendations and corrective actions taken when dust generation or combustion sources are noted. ■ Complaints arising from air quality emissions managed through the grievance procedure.
	Water Monitoring		
2.	■ Groundwater levels in the boreholes included in the IEFCL monitoring network (refer to Chapter 7 of the ESIA) will be monitored on a quarterly basis.	Pre-construction to obtain a seasonal baseline for capturing multi-seasonal data and1-yr post construction Quarterly	■ Yield and water levels in private / community wells not affected.
3.	Monitoring of surface- and groundwater quality will take place – ■ Groundwater - in the boreholes included in the IEFCL monitoring network (refer to Chapter 7 of the ESIA). ■ Surface water – in the surface water sampling sites included in the IEFCL monitoring network and an additional site on the Okulu River. ■ Surface and groundwater samples will be collected at least quarterly, twice during the wet season and twice during the dry season and for one year thereafter. Samples will be analysed for a suite of analyses suitable to identify potential contaminants from Project activities.	Pre-construction to obtain a seasonal baseline for capturing multi-seasonal data and1-yr post construction	■ Water quality results compliant to performance criteria
4.	Water quality monitoring of all discharge, and stormwater outlets to determine that discharge meet the requirements of the effluent discharge limits	Monthly during construction	■ Water quality reports and results for discharge point.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
	Biodiversity Monitoring		
5.	■ In order to address the aquatic biodiversity impacts related to potential spillage, water quality issues and increased stormwater discharge aquatic biomonitoring will be conducted in aquatic habitats supporting flowing water that may be affected by spills and discharge from the Project site. Established international best practice aquatic monitoring protocols will be applied. Data will be consolidated to develop comprehensive assessments of the Present Ecological State of aquatic ecosystems. Preconstruction Aquatic Ecology baselines will be established. Post construction Aquatic Ecology baselines will be established and compared against data from the preconstruction baselines.	Dry-season prior to construction and for Wet & dry season post construction.	■ No deterioration in aquatic present ecological state attributed to construction of the proposed Project.
6.	■ Appropriate toilets available.	Monthly	■ Toilet servicing receipts for all portable toilets installed on site, and visual inspection of toilets for cleanliness and use by staff.
7.	■ Ensure the construction area is demarcated and no activities take place outside of these.	Monthly inspection of demarcation boundary	■ Inspect boundary for completeness, and to ensure no creep of activities. Security to record any incidence of staff leaving the construction area.
8.	■ Toolbox talks for all staff regarding fauna and flora, including the fact that collection of plant or animal products is illegal.	Monthly during construction	■ Registers from toolbox talks, all topics discussed during the toolbox talk.
9.	■ An alien invasive plant control programme will need to be designed and implemented for the Project site and immediately adjacent (5 m buffer) to the demarcated construction zone. All alien invasive plants will need to be controlled by an experienced contractor.	Minimum of quarterly inspection and control during construction and annual during operation.	■ Quarterly reports of species identified per inspection, and appropriate control measure implemented (photos of before and after to be included in report).
	Social Monitoring		
	Community Health, Safety and Security		

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
10.	**Health Surveillance and Monitoring System**: To record Project workers 'health details, identifying actions or follow-up where necessary, and the type of healthcare that is being sought. This information will be used to identify the emergence of any health concerns or trends, which need to be proactively managed. Records will be kept strictly confidential.	Throughout construction Data should be reviewed quarterly	■ Number of cases of communicable diseases in total and by disease. ■ Number of cases of vector borne diseases in total and by disease. ■ Number of cases of STIs in total and by disease. ■ Number of cases of Diarrhoeal diseases. ■ Number of cases referred for treatment at other health facilities. ■ Number of cases of any new or novel diseases in the area. ■ Percentage of workers that have received pre-employment health screening.
11.	**Health Education and Training Database**: To record details of the health, education and training provided to Project workers and other stakeholders. This information will be used to determine the success of the training and the need to amend training and information in light of diseases, which are occurring.	Quarterly throughout construction	■ Records of training topics delivered. ■ Records of attendees by grade and location with aim of 100% of workers receiving training. ■
12.	**Traffic Database**: The Project needs to demonstrate that drivers are being trained and acting in accordance with the measures outlined in this plan. This should include recording accidents or non-compliance related to traffic and training provided to workers and collaborating with local communities on traffic education.	Annual throughout construction	■ Number of drivers trained. ■ Number of community members/ stakeholders engaged with on road safety. ■ Number of RTAs involving Project vehicles. ■ Number of incidences of speed exceedances. ■ Number of vehicles that fail inspections for roadworthiness.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
13.	**Grievance Mechanism**: Will log all grievances, issues and concerns raised. The system will also include areas to record information on actions required to address issues, timeframes, personnel responsible and any subsequent feedback that is required.	Quarterly throughout construction	■ Number of grievances received related to Community Health, Safety and Security through the Project Grievance Mechanism. ■ Percentage of grievances resolved within 60 days unless longer timeframes have been agreed due to complexity.
14.	**Stakeholder Engagement Database**: Will be used to track and record the dates, minutes and attendance at engagement activities. In addition, the database will be used to log relevant stakeholders and contact details. Actions agreed along with timeframes will also be logged and tracked.	Quarterly throughout construction	■ Number of stakeholder engagement meetings held with stakeholders where community health, safety and security issues are discussed as part of stakeholder engagement activities. ■ Number of actions from stakeholder meetings closed within 60 days unless longer timeframes have been agreed.
	Employment and Procurement		
15.	**Recruitment and Procurement**: The Project needs to demonstrate it is meeting commitments in relation to local employment and procurement for skilled, semi-skilled and unskilled workers using a fair and transparent procedures.	Quarterly throughout construction	■ Percentage of the skilled, semi-skilled and unskilled workforce hired from within the relevant affected Location and Rivers State. ■ Percentage of skilled, semi-skilled and unskilled workforce hired from within Nigeria. ■ Percentage of procurement of goods and services from affected Locations and Nigeria respectively. ■ Zero hiring / procurement at the gate.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
16.	**Occupational Health and Safety (OHS)**: The OHS system will include a variety of plans and procedures depending on the activities being undertaken and associated risks. Staff will also receive training on this and incidents and accidents recorded and investigated. Implementation of the OHS system will be monitored to ensure that it is being implemented appropriately and that risks are being managed. This will include regular (daily) site walkovers to observe behaviours and more detailed weekly checks of performance. Accident and incident data will be reviewed monthly to spot trends where further health and safety measures or training may need to be implemented.	Monthly throughout construction	■ Percentage of workers (direct employees, contractors, and subcontractors) that have received OHS induction prior to working on site. ■ Number of workers (direct employees, subcontractors and suppliers) that have received task specific training. ■ Percentage of workers attending toolbox talks. ■ Number of stop work notices issued by activity. ■ Number and type of non-compliances observed during daily and weekly site inspections. ■ Percentage of workers that receive PPE (without payment). ■ Zero fatalities involving workers on site. ■ Number of Lost Time Incidents involving workers on site. ■ Number of minor incidents and injuries. ■ Number of incidents investigated, corrective actions identified and closed out/ not closed out within the required timeframe.
17.	**Retrenchment Plan**: The Project needs to monitor implementation and compliance to demonstrate workers have been provided with assistance to find alternative incomes following construction such that their livelihoods are improved.	Six months after significant retrenchment of workers	■ Percentage of workers that receive training or other support identified. ■ Percentage of work who receive all documentation (references, final pay, certificates etc.) upon completion of their contact.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
18.	**Supplier and Subcontractor Management**: The Project needs to monitor the performance of suppliers and subcontractors in relation to labour and working conditions to ensure workers' rights are being protected. Where issues are identified the Project needs to work with the supplier or subcontractor to develop remedial action	Annual throughout construction (depending on size of the contract)	■ Percentage of suppliers and subcontractors hired where assessment has identified issues associated with forced labour, child labour or significant safety violations. ■ 100% of contracts including clauses on labour and working conditions in line with Nigerian Law and the IFC PS2. ■ Number of issues (non-conformities) not closed out in the agreed timelines. ■ Number of suppliers/ contractors removed from the Project due to failure to address non-conformities.

19.	**Workers' Rights**: The Project needs to monitor that workers' rights are being respected in line with the requirements of Nigerian Law and IFC PS2 related to: working conditions, discrimination, equal remuneration, freedom of association, forced labour, child labour, grievance mechanism and worker accommodation (where provided).	Quarterly throughout construction	■ Percentage of workforce who receive training/ induction on HR policies, plans and procedures. ■ Percentage of workforce who are women or from other vulnerable groups. ■ 100% of workers having contracts in line with Nigerian Law. ■ 100% of workers having received information on their rights and responsibilities, as enshrined in law and IFC PS2. ■ Average number of hours worked per week. ■ Average number of days worked without a rest day (excluding rotational workers) ■ Average number of overtime hours worked per week. ■ Number of casual or day workers hired. ■ Percentage of workers that have joined a union or workers forum to raise issues. ■ Number of meetings of workers forums per quarter. ■ Percentage of workers who are covered by a collective bargaining agreement. ■ Number of incidences of forced or child labour within direct employees, subcontractors, and suppliers. ■ Monthly inspections of all accommodation provided completed. ■ Number of non-compliances identified related to accommodation ■ Number of non-compliances not closed out within 14 days.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
			■ Number of workers (direct employees and subcontractors) trained on the worker grievance mechanism. ■ Percentage of grievances resolved within 60 days (or agreed longer timescales where relevant). ■ Number of grievances received by theme. ■ Number of grievances from workers or job seekers related to discrimination, abuse of labour rights, sexual harassment.
	Cultural Heritage		
20.	■ The implementation of the Chance Finds Programme will need to be monitored through construction to determine if impacts to known, probable and unknown cultural heritage sites during the Project construction phase are being managed in line with the requirements of the Programme.	Continuous throughout construction	■ Chance Find Incidence to be recorded and escalate to Indorama for Appropriate action.
	Waste Monitoring		
21.	■ Waste contractors will be audited to ensure that facilities and waste disposal/treatment/recycling / reclamation processes are suitable and in line with national Nigerian and international good practice standards.	At the start of construction	■ Waste contractor facilities and process fully licensed and performance is in line with local and international requirements.
22.	■ Housekeeping checks will be conducted to ensure waste is being transferred to and stored correctly and that no littering is occurring at active work sites.	Visual inspections on an *regular* basis	■ Well-maintained and clean active work areas that are free of litter and other wastes.
23.	■ Regular Inspections of waste disposal areas at active work areas and waste storage facilities will be undertaken to ensure compliance with this ESMMP, Environmental Licence conditions and relevant legislation.	Visual inspections on an *regular* basis	
24.	■ A complaints register will be maintained detailing complaints about waste management.	Throughout construction	■ Up to date complaints register.
25.	■ A record will be maintained of all impacts to health that are potentially attributable to waste management.	Throughout construction	■ Up to date record.
	Spill Monitoring		
26.	■ Weekly inspections where any missing response equipment, personal protection equipment, or documentation will be replaced or improved as necessary.	Weekly throughout construction	■ No missing response equipment, personal protection equipment or documentation.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
27.	■ Quarterly reporting to identify any upcoming required preventative maintenance required, as well as what preventative maintenance was performed the previous quarter.	Quarterly throughout construction	■ Well implemented preventative maintenance programme.
28.	■ Bi-annual spill response drill to provide information regarding required revisions to training or the ESMMP.	Bi-annual throughout construction	■ Undertaking bi-annual spill response drills.
29.	■ All spills and associated control and containment measures taken will be recorded and the effectiveness of response will be audited.	Throughout construction	■ Spill log maintained and up to date with corrective actions closed out.

ERM has over 160 offices across more 40 countries and territories worldwide

ERM's Cape Town Office
1st Floor | Great Westerford | 240 Main Road | Rondebosch | 7700 | Cape Town | South Africa
T: +27 21 681 5400

www.erm.com

The business of sustainability

ERM