



Note: the Updated ESIA Supplementary Disclosure Package V2 assigned by Indorama to ERM has been prepared in order to ensure compliance with International Standards International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD).

This document updates:

- the Updated ESIA Supplementary Package produced in September 2025 by ERM
- the ESIA Supplementary Package produced in May 2025 by ERM

The **Updated ESIA Supplementary Package V2** prepared in May 2026 by ERM includes the following reports:

UPDATED NON-TECHNICAL SUMMARY (NTS) V2, OF THE ESIA CONDUCTED BY ENVIRONICS IN APRIL 2026

UPDATED PROJECT DESCRIPTION AND ALTERNATIVE ANALYSIS (PD&AA) V2

UPDATED STAKEHOLDER ENGAGEMENT PLAN (SEP) V2

UPDATED ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF) V2

ANNEX 1: ANNEXES INCLUDED IN THE UPDATED ESIA SUPPLEMENTARY PACKAGE V2 (PREPARED BY ERM, MAY 2026)

Updated Annex Project Description and Alternative Analysis (PD&AA)

Annex 1: Radioactive study of Egyptian Phosphate rocks

Annex 2: Energy Efficiency Management Policy

Annex 3: Phosphogypsum Generation study and optimization

Updated Annex Stakeholder Engagement Plan (SEP)

Annex A: Grievance log

Annex B: Grievance register

Annex C: Letter of submission of the project description to the SCZone

Updated Annex Environmental and Social Management Framework (ESMF)

Annex 1: Indorama Corporation Group Handbook. February 2025

Annex 2: Employee Handbook (HR policies & Procedures guide). 2021

Annex 3: Gender Based Violence and Harassment policy. 2021

Annex 4: Guidelines for prevention and addressing issues of retaliation. 2021

Annex 5: Procedural manual social material topics. July 2022



Annex 6: Indorama Compass Handbook. 2022

ANNEX 2: ANNEX - ADDITIONAL STUDIES INCLUDED IN THE UPDATED ESIA SUPPLEMENTARY PACKAGE V2

- A. Cumulative impact assessment on water uses in SCZone (conducted by Indorama)
- B. ESMS Contractor management (conducted by ECEC)
- C. Hazardous Material Management (during construction) (conducted by Environics)
- D. HAZID risk assessment report (conducted by Indorama)
- E. Human Resources Plans and Procedures (conducted by Indorama)
- F. Influx Management Plan (IMP) (conducted by Indorama)
- G. Security Management Plan & Policy (conducted by Indorama)
- H. Security Risk Assessment (conducted by Indorama)
- I. Supplier Code of Conduct (conducted by Indorama)
- J. Supply chain management policy (conducted by Indorama)
- K. Supply chain monitoring procedure (conducted by Indorama)
- L. Greenhouse Gas Emissions (GHG) to IFC
- M. Traffic Assessment (conducted by a local company)

ANNEX 3: ANNEX – EXECUTIVE SUMMARIES V2

- A. Cumulative impact assessment on water uses in SCZone (conducted by Indorama)
- B. ESMS Contractor management. (conducted by ECEC)
- C. Hazardous Material Management (during construction) (conducted by Environics)
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- K. Supply chain monitoring procedure (conducted by Indorama)



L. Traffic Assessment (conducted by a local company)



Non Technical Summary

Updated ESIA Supplementary
Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone,
Sokhna

PREPARED FOR



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Non Technical Summary

Updated ESIA Supplementary Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

NON -TECHNICAL SUMMARY OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) OF THE PHOSPHATE FERTILIZER COMPLEX IN SOKHNA, EGYPT	1
1. INTRODUCTION	1
2. BACKGROUND	1
3. PROJECT DESCRIPTION	1
3.1 PROJECT SCHEDULE	3
3.2 AREA OF INFLUENCE (AOI)	3
3.3 PROJECT COMPONENTS	4
3.4 USE OF RESOURCES AND ENVIRONMENTAL INTERFERENCES (KEY ASPECTS)	8
4. PROJECT ALTERNATIVES	11
5. ESIA OBJECTIVES	11
6. STAKEHOLDER ENGAGEMENT	12
7. ENVIRONMENTAL & SOCIAL BENEFITS, ADVERSE IMPACTS AND MITIGATION MEASURES	12
7.1 CUMULATIVE IMPACT ASSESMENT	14
7.2 MITIGATION MEASURES	15
8. MONITORING OF IMPACTS	17

NO TABLE OF CONTENTS ENTRIES FOUND.

LIST OF TABLES

TABLE 7.1 SUMMARY OF CIA DURING OPERATION	15

LIST OF FIGURES

FIGURE 3.1 PRODUCTION SITE, PHOSPHOGYPSUM STORAGE AREA, AMMONIA PIPELINES AND SURROUNDING LAND USE.	2
FIGURE 3.2 ENVIRONMENTAL AOI DURING OPERATION FOR THE PROJECT SITE	4
FIGURE 7.1 IMPACT ASSESSMENT MATRIX.	13
FIGURE 7.2 SUMMARY OF IMPACTS DURING CONSTRUCTION PHASE.	13
FIGURE 7.3 SUMMARY OF IMPACTS DURING OPERATION PHASE.	14

NON -TECHNICAL SUMMARY OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) OF THE PHOSPHATE FERTILIZER COMPLEX IN SOKHNA, EGYPT

1. INTRODUCTION

Indorama Investments Limited (hereinafter, Indorama) is one of the subsidiaries of Indorama Group, Ltd., which has several phosphate fertilizer plants in different countries (Senegal, Brazil, Uzbekistan and India). Indorama plans to establish a Phosphate fertilizer complex in Sokhna, Egypt (hereinafter, the Project).

The Project will produce Di-Ammonium phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers, as a main product. Sulphuric acid and phosphoric acid will be produced as intermediate products. In addition, phosphogypsum will be a byproduct of the industrial process.

In Egypt, the Project is categorized as high risk (Category C), therefore, a full Environmental Impact Assessment (EIA) study is required. Internationally, the Project is categorized as follows: A according to Appendix of European Bank for Reconstruction and Development (EBRD) E&S Policy (2019), and B according to International Finance Corporation (IFC) categorization (Sustainability Framework, 2012) and feedback received by IFC in the context of the Project.

Where national regulations differ from the levels and measures included in the IFC and EBRD guidelines, the Project will comply with the more stringent of the two options, to ensure best practices.

2. BACKGROUND

An **ESIA for the Project was prepared by Environics** in April 2026.

This document represents the Non-Technical Summary (hereinafter, NTS) of the ESIA prepared by Environics and has been developed to support the process of disclosing the results of the impact assessment process and the mitigation measures defined for the Project within an international context.

3. PROJECT DESCRIPTION

The Project is located within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone (hereinafter, SC Zone), in Sokhna, Suez Governorate, Egypt.

The complex includes a production site, a phosphogypsum storage, and ammonia pipelines.

The Project site covers a total area of 56 ha, separated into two parts of approximately 28 ha each. One part will be used as a phosphogypsum storage area, and the other part will be for the production site.

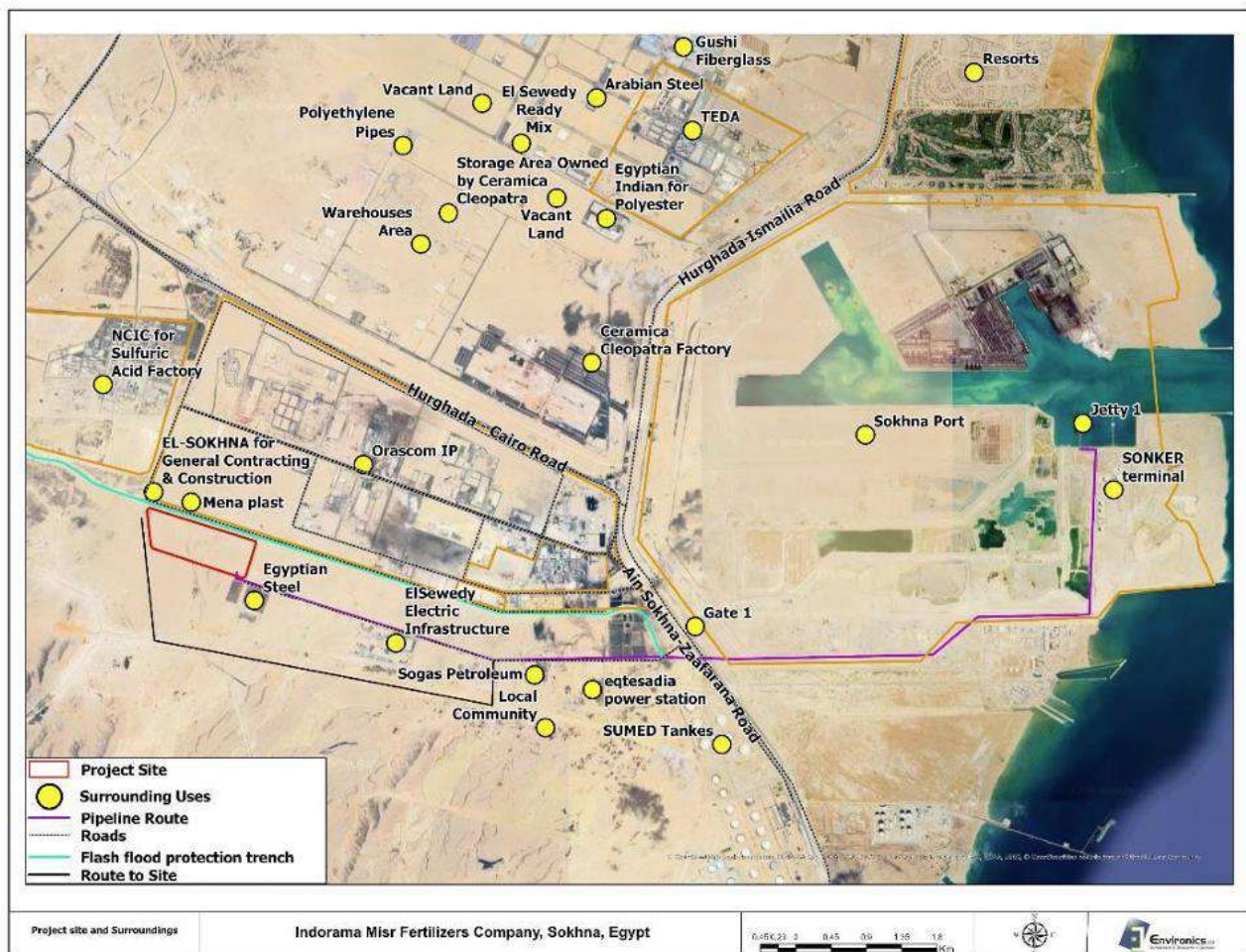
The Project site is located approximately 4.5 km west of Sokhna Port and about 43 km south of Suez City..

On the other hand, the ammonia pipelines (main and secondary) are routed for 13 km starting from the Sokhna Port (specifically the Sonker' Bulk Liquids Terminal) and ending at the

production site. Most of the pipelines' route will pass inside Sokhna Port, and the remaining (smaller part) will be outside the port crossing Hurghada-Ismailia Road and then routed to the Indorama production site, all within the Sokhna Industrial Zone.

The elevation of the Project site ranges from 20 m to 40 m above sea level.

FIGURE 3.1 PRODUCTION SITE, PHOSPHOGYPSUM STORAGE AREA, AMMONIA PIPELINES AND SURROUNDING LAND USE.



Source: EIA 2026 by Environics.

In addition to the abovementioned elements (i.e.: production site, phosphogypsum storage, ammonia pipelines), Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. The unloading arm will be connected to the ammonia pipeline addressed in the current ESIA.

At the time of preparation of this Supplementary ESIA, the unloading arm has not yet reached a level of design definition that would allow for a meaningful environmental and social impact assessment, and no site-specific baseline information for the port area is available.

Consequently, this component does not form part of the scope of the ESIA prepared by Environics, nor of the present Supplementary ESIA.

For clarity, the proposed port facilities are considered a **separate future development** and are therefore **excluded from the scope of this ESIA**. Once the design of port facilities is finalised, **it is anticipated that a dedicated ESIA will be undertaken to assess its potential environmental and social risks and impacts in line with applicable international lender standards.**

3.1 PROJECT SCHEDULE

The Project schedule includes the following three phases:

- **Construction and commissioning phase (Phase 1):** includes civil works, construction of buildings and installation of temporary site facilities, and mechanical and electrical works. In addition, it includes performance tests for specific infrastructures. It is anticipated that the construction and commissioning phase of the Project will last for about 15-18 months in total, estimated to start in Q2 2026.
- **Operations and maintenance phase (Phase 2):** the operation will commence and involve periodic maintenance activities at the Project site facilities and associated infrastructure. Finally, the Project's operation lifespan will be about 25 years.
- **Decommissioning phase (Phase 3):** at the end of the planned operational lifetime, the operation of the Project facilities and associated infrastructure will be reviewed and either extended or decommissioned. Decommissioning will involve the removal and reuse / recycling / disposal of surface structures and the reinstatement and restoration of the affected sites (similar activities/impacts as Phase 1).

3.2 AREA OF INFLUENCE (AoI)

The AoI for the Project is used to describe the boundaries of the extent to which Project impacts may extend or be experienced. The AoI was determined based on receptor exposure, project footprint, regulatory guidance, and stakeholder input. Two AoIs are defined: environmental (during construction and operation) and social.

Environmental AoI

- **Construction:** The AoI mainly comprises the Project footprint of the production site and ammonia pipelines where noise and air emissions are expected from the equipment, machinery and vehicles used for the construction.
- **Operation:** The AoI mainly comprises the production plant and the extent of the noise and air emissions expected from its operation. A segment of approx. 1.8 km of the ammonia pipeline will be aboveground. Given the hazardous (toxic) nature of ammonia, a Quantitative Risk Assessment (QRA) was conducted to assess the potential risk of accidental leak from the aboveground segment of the pipeline (see complete document in Annex 6 of the EIA 2026 by Environics).

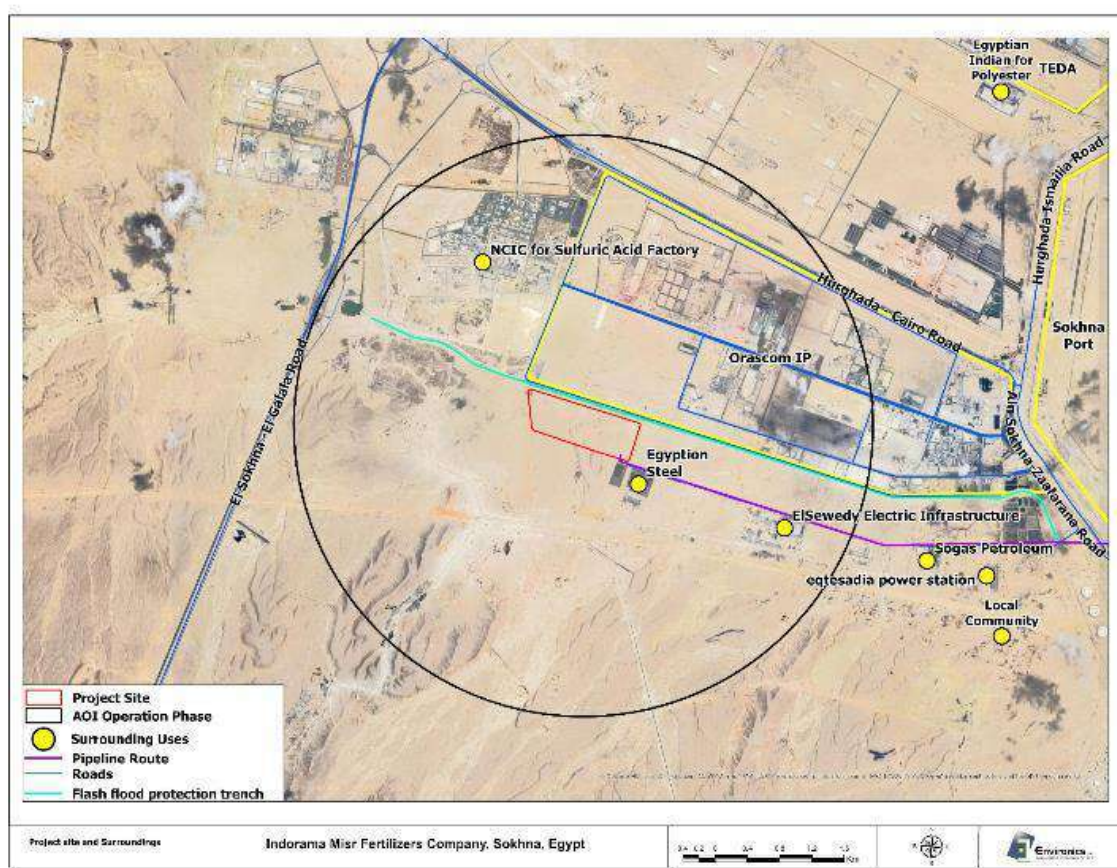
The AoI for noise emissions is conservatively established as 1 km from the production plant, considering that equipment will be installed within enclosed structures/buildings; it is thus unlikely that the noise will disperse significantly beyond the plant boundaries and affect a distant area. Noise is mainly influencing the workplace environment.

Regarding air quality, according to Article 34 of the Executive Regulations for Law 4/1994, the AoI is determined by a circle of a radius 50 times the height of the highest stack of the production site, considering weather variations at the area. Given that the highest point source of air emissions is approximately 65 m, the AoI is accordingly delineated as a circular area of radius 3.25 km, as shown in the following figure.

Social AoI

The direct social AoI comprises the surrounding users of the Sokhna Industrial Area within the environmental AoI (3.25 km buffer), including the existing labour accommodation within Orascom Industrial Park (approx. 1.6 km northeast of the production site), and the local community located 2.5 km southeast of the production site.. On the other hand, the indirect social AoI comprises the Suez Governorate.

FIGURE 3.2 ENVIRONMENTAL AOI DURING OPERATION FOR THE PROJECT SITE



Source: EIA 2026 by Environics.

3.3 PROJECT COMPONENTS

The Project will consist in the following key elements:

- **Sulfuric acid plant (SAP):** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of double contact double absorption (DCDA).

It will be operated continuously for 24 h/day over 7 days a week. This plant is part of the **production site**.

- **Phosphoric acid plant (PAP):** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of Dihydrate technology. It will be operated continuously for 24 h/day over 7 days a week. This plant is part of the **production site**.
- **DAP/ NPK fertilizer plant:** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of Dihydrate technology. It will be operated for 22 h/day and cleaning activities will be done for approximately 2 h/day. This plant is part of the **production site**. **Utilities and service units:** comprising a series of equipment to conduct the activity, such as water treatment unit, industrial wastewater treatment unit, waste heat recovery boiler, storage tanks, etc. These are part of the **production site**.
- **Phosphogypsum storage area:** phosphogypsum will be stored within the Project site, in an open yard of a total area of 280,000 m². It is planned to stockpile the phosphogypsum throughout 20-25 years. Indorama is currently exploring the possible options for sales of gypsum through other industries, such as cement, gypsum board, brick, etc. The phosphogypsum from the plant will be conveyed to the phosphogypsum storage area by an enclosed conveying system, for proper stacking by the help of gypsum thrower and loaders.
- **Ammonia pipelines:** a main pipeline for ammonia supply (12" diameter) and another secondary pipeline (4" diameter) for precooling the main pipeline. A segment of approx. 1.8 km of the ammonia pipeline will be aboveground. **Temporary construction facilities:** Only for the construction phase, the project will count with temporary facilities (accommodation, warehouses, laydown area, etc), which will be dismantled and restored post-construction.

In addition, the following associated facilities¹ are considered for the Project:

- Electricity connection from site to the nearest tie-in.
- Natural gas connection from site to the nearest tie-in.
- Water connection from site to the nearest tie-in.
- Sewage connection from the site to the nearest tie-in site.
- **Primary supply chain elements:** These are activities required for the Project's production process. Sulphur will be supplied through the Sokhna port and the Adabiya port by trucks, while phosphate rock will be supplied by trucks from the Misr Phosphate Company in the Red Sea Governorate (475 km away).

The Project comprises the construction and operation of a Phosphate fertilizer complex. The activity will generate the following **products**:

¹ Associated Facilities (AFs) to the Project are facilities (i.e. infrastructure developments) that are not funded by the Project and that would not have been constructed or expanded if the Project did not exist, and without which the Project would not be viable.

- **Main Products:** granulated Di-Ammonium Phosphate (DAP) and NPK fertilizers. Production capacity: 1,935 metric ton/day (hereinafter, MTPD). The final products will be delivered to the market by trucks to the Sokhna/Adabiya/Damietta/Alexandria ports for exportation.
- **Intermediate Products:** For producing the main products, two intermediate products will be produced:
 - Sulphuric acid (98.5 %). Production capacity: 3,100 MTPD.
 - Phosphoric acid (52%). Production capacity: 1,000 MTPD.
- **Byproduct:** Phosphogypsum will be generated from phosphoric acid filtration at an annual rate of 1.98 million metric ton/year (hereinafter, MTPY). Indorama will study the possibility of selling it to Cement companies. The Project site will include a designated area (280,000 m²) for gypsum storage/stacking. The storage area is capable of a storage capacity for about 20 - 25 years.

In summary, the construction/commissioning and operation phase will comprise of the following activities:

Construction phase	Operation phase
The construction phase will not commence until the Local ESIA report is approved by the Egyptian authorities and the corresponding permits are obtained. The construction phase will take 15 to 18 months.	The Project will be operated continuously for 24 h/day over 7 days a week, except for the DAP/NPK plant, which will be operated 22 h/day and cleaning activities will be done for approximately 2 h/day. The Project's operation lifespan will be about 25 years.
• Site preparation, including clearing and levelling to create flat land in both plots, the one dedicated to the Production site; and the one dedicated to the phosphogypsum storage area. • Construction of temporary construction facilities. No additional land outside the production site plot and Phosphogypsum storage area plot will be used as laydown area. • Vehicle movement, including road transportation of labour, materials, equipment and waste. • Influx of workers. • Excavations, foundations, civil and electromechanical works, including building erection, equipment installation	• Vehicle movement, including road transportation of phosphate rock from the Red Sea mine of the Misr Phosphate company to the site (primary supply chain). • Vehicle movement, including road transportation of Sulphur from the Sokhna port and Adabiya port to the site. • Transportation of ammonia through pipelines from the tanks of the Sokhna Port to the site. • Workers management. • Resource consumption (water, energy, etc). • Waste and wastewater management. • Air emissions management.

Construction phase	Operation phase
and piping construction, for the production site. - Horizontal Directional Drilling (HDD) technique for the ammonia pipeline segment crossing the road. - Testing and commissioning of equipment (ammonia tanks, ammonia pipeline). See detailed description below. - Resource consumption (water, energy, etc.). - Waste and wastewater management. - Removal of construction equipment and temporary facilities and reinstatement.	- Remote monitoring of the plant/pipelines performance. - Routine inspections and site maintenance and security. - Utilization of the existing Port facilities (import of sulphur and use of stored ammonia).

Activities during the decommissioning phase will involve demolition and site clean-up, disposal of waste, demobilization of the workers, and a final site review. The activities during the decommissioning phase will be very similar to those during construction.

Long-term decommissioning and lifecycle management for critical infrastructure will be evaluated following industry's best practices.

Finally, as mentioned, Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. The future port facilities **(out of the scope of this study)** are the following:

- **One unloading arm for ammonia import.** To further ensure the uninterrupted supply of ammonia (the main raw material for DAP/NPK fertilizer), the company will also install one unloading arm for ammonia ships. This will be constructed on the Terminal of the Jetty within Sokhna Port, to directly feed the ammonia pipelines. The unloading arm will be connected to the ammonia pipeline refereed in the current ESIA.
- **Two storage tanks of phosphoric acid** (52% concentration). Those will be considered as an ancillary facility intended for storage and opportunistic export of excess product. Each tank will have a capacity of 15,000 metric tons (MT). The operation will be based on tanker unloading system and Ship loading system for export of phosphoric acid.

3.4 USE OF RESOURCES AND ENVIRONMENTAL INTERFERENCES (KEY ASPECTS)

The key aspects of the use of resources and environmental interferences are summarized in the following table. For the decommissioning phase, the use of resources and environmental interferences will be very similar to those during construction

Topic	Construction phase	Operation phase
Land use	- The Project site covers a total area of 56 ha, divided into two parts of approximately 28 ha each. One part will be used as a phosphogypsum storage area, and the other part will be for the production site. - Area of 130,000 m², corresponding to 13 km ammonia pipeline. - Temporary facilities will be located on the site.	- Area of 56 ha, corresponding to the Project site. Storages of: sulphur (open paved yard, 6,750 m² - 1.2 % of the total area), phosphate rock (uncovered and paved, 6,994 m² - 1.2 %) and phosphogypsum (open 280,000 m² - 50 %). - Area of 130,000 m², corresponding to 13 km ammonia pipeline (underground, except a segment of 1,550 m of the ammonia pipeline which will be aboveground).
Water supply and consumption	- Use: domestic purposes and drinking water. - Estimated consumption: 8-10 m³/hr (approx. 80,000 l/day) for civil concreting and cleaning, through the public network of SC Zone; 200,000 l/day potable water (peak conditions), through water tanks as required; and 20,000 m³ (testing of ammonia tanks) and 1,800 m³ (testing of ammonia pipelines).	- Use: industrial process, drinking water and irrigation. - Estimated consumption (industrial process): 650-700 m³/hr (maximum of 5 million m³/year). Raw desalinated water will be supplied through SC Zone and will be treated at the site. 140,000 l/day for drinking water, through SC Zone and will be treated at the site. 50 m³/day for irrigation.
Raw materials	Materials for excavation, foundations, buildings, structures, etc.	The main raw materials for the operation phase will be: - Phosphate rock - Raw sulphur - Ammonia

Topic	Construction phase	Operation phase
Oils and chemical requirements	Heavy equipment and motor engine driven equipment will be fueled with diesel oil. In addition, portable diesel power generators will be used only for emergency.	During operation, diesel will be used in the following: • Emergency generators • Forklifts • Heavy earth movers, etc A diesel storage tank (30 m³) will be located on the site. As per requirement, the tank will be provided with bund walls and will be designed to contain 110% of the capacity of the tank.
Energy	• Estimated consumption: 12-13 million KWh. • Supply through national grid.	Total power demand of the project is 29.5 MW. The project will mainly depend on the self-generated electricity through the onsite captive power plant, which will supply 27 MW (85-90% of the total power demand). The remaining power (2-3 MW) will be supplied by the national grid of SCZone. In addition, natural gas will use. The total consumption of natural gas is 7.5 million m³ annually. Natural gas will be supplied by SCZone.
Transportation and traffic	• Labour, materials, equipment and waste will be transported from Sokhna Port to the site. • The roads' capacity in Sokhna (especially in SCZone) is high and designed for industrial activities.	Relatively high load on the roads is expected mainly during transporting raw materials. These periods will include vehicles and trucks delivering the main raw materials: • Phosphate rock, from Red Sea mine of Misr Phosphate company. 65-75 trucks every day, with a truck capacity of 60 Ton. Distance approx. 475 km. • Sulphur, from Sokhna Port and the Adabiya Port. 50 trucks every 10 days, with a truck capacity of 60 Ton.
Atmospheric emissions	• Sources: predominantly from the use of vehicles.	• Sources: related to the industrial process and phosphogypsum storage.

Topic	Construction phase	Operation phase
	Expected pollutants: NO_x, CO, SO₂ and PM₁₀.	- Expected pollutants: SO_x, HF and particulates, ammonia, CO and NO_x. – Industrial process. - Radon – from phosphogypsum storage.
GHG emissions	Sources: carbon dioxide from vehicle exhaust emissions and the potential use of portable diesel power generators on site (in emergency situations).	- Sources: phosphoric acid production, consumption of national grid electricity and main supply chain of phosphate rock and ammonia. - The project will avoid 101,830 tCO_{2e}/year through self-generation of power. - Total annual GHG emissions of the project: 21,586 tCO_{2e}/year (without CO₂ from the reaction emissions) or 76,586 tCO_{2e}/year (with reaction).
Noise emissions	Sources: movement of the heavy equipment, machinery and vehicles.	Sources: industrial process equipment (most of them operated 24 h/day and 7 days a week, within enclosed structures/buildings), such as belt conveyors and elevators, crusher and mill, fertilizer granulator, etc.
Waste handling and disposal	Both hazardous and non-hazardous waste will be generated. Estimated generation: 2-3 tons/day.	Both hazardous and non-hazardous waste will be generated, due to the industrial process mainly, and maintenance. - Estimated generation: depending on the waste. E.g.: 10,000-12,000 metric tons of fluorosilicic acid (FSA). - Either reused on site, managed through licensed contractors or returned to the vendor.
Effluents management	- Source: domestic wastewater. - Estimated generation: 5-8 m³/ day.	Source: domestic and industrial wastewater.

Topic	Construction phase	Operation phase
	Management: insulated septic tanks and regularly emptied through a licensed contractor.	- Estimated generation: domestic 9 m³/day and industrial 0 m³/day (Zero Liquid Discharge). - Management: domestic will be routed to the public sewage system of SCZone.
Employment and labor	Expected total of 500-700 workers employed in direct and indirect jobs. Peak may go up to 1,500-2,000 workers.	Expected total of 260 direct workers.
Health, safety and security	Internationally recognized standards for worker Health Safety and Environment will be applied. In addition, Indorama corporate standards will be applied. During the operation phase, the following health, safety and security aspects will need to be managed: Worker's safety from fumes and fugitives, noise, heat stress, fugitive emissions and particles, physical hazards (from material handling, machinery, working at height, etc), chemical hazards, potential ammonia leaks (tank), radon in the phosphogypsum.	

4. PROJECT ALTERNATIVES

An alternative analysis of technically and financially feasible alternatives, including the non-Project alternative was conducted to justify the selected project. The analysis of alternatives is based on the results of the evaluation of many of the project's alternatives during the initial design stages. In assessing alternatives, particular emphasis was placed on the environmental and social connotations of alternatives to ensure that the chosen alternative is compatible with the national environmental requirements, IFC performance standards, EBRD environmental and social requirements and EU Best Available Techniques (BAT).

The alternatives analysis is divided into the following parts: no development alternative, site selection alternatives, technology alternatives and transport alternatives (for ammonia transport from the port and phosphate rock).

5. ESIA OBJECTIVES

The broad goal of the ESIA is to provide decision-makers and project proponents with information on potentially significant environmental and social impacts and risks associated with the proposed Project. The specific objectives are:

- To identify potential positive and negative impacts of the proposed project.

- To suggest mitigation and enhancement measures for the identified significant adverse and beneficial impacts.
- To provide the means by which the mitigation measures will be implemented and residual impacts managed, through the provision of an Environmental and Social Management Framework (ESMF).

The ESIA includes, per EBRD & IFC requirements, the following studies: GHG emissions (Scope 1 & Scope 2) and Physical risk of Climate Change.

6. STAKEHOLDER ENGAGEMENT

Past engagement (with SC Zone): in September 2024, it was conducted a Scoping meeting to disclose, present the Project, confirm categorisation and obtain requirements and concerns regarding the ESIA. The general feedback on the project was positive as SC Zone was satisfied with the discussed clarifications and agreed to extend the support for the ESIA study in all aspects. In addition, engagement with the SCZone was conducted in July and August 2025, in relation with long term water allocation and the submission of the Project details, respectively. More recently, in April 2026, engagement with the SCZone was conducted in relation to the change in location and minor changes in the project description, for which an updated Project Application and Project Description were submitted. **ESIA disclosure:** According to the EEAA guidelines methodology, it is necessary to conduct a public consultation as part of the ESIA study. The involvement of the public and concerned entities in the ESIA planning and implementation phases is mandatory for Category C projects through the public consultation process with concerned parties.

Disclosure of relevant material is an important process and should be undertaken in a timely manner for all Category C projects. This process permits meaningful consultations between the project proponent and project-affected groups and local NGOs is required to take place. Before the public consultation on the draft ESIA, the draft technical summary in Arabic should be disclosed to all concerned parties.

Before the public consultation on the draft ESIA report and supplementing documents ("ESIA package"), including the Non-Technical Summary (NTS), Environmental and Social Management Plan (ESMP) and the SEP, will be made widely available to the public as hard copy prior to Public consultation along with Invitation.

Community grievance management: Grievance management (GM) was included in the Stakeholder Engagement Plan (SEP), which is a standalone report included in the Updated ESIA Supplementary Disclosure Package. The GM outlines the principles and process for grievance management, and defines the organisational structure and processes required to implement a functional, effective and culturally appropriate grievance mechanism that is responsive to stakeholder needs.

7. ENVIRONMENTAL & SOCIAL BENEFITS, ADVERSE IMPACTS AND MITIGATION MEASURES

The potential environmental and social impacts of the Project according to their significance is assessed in the ESIA prepared by Envirionics. In addition, as per EBRD and IFC requirements, it includes the cumulative impact assessment (hereinafter, CIA). Finally, it includes the

implementation of the preventive and mitigation measures, resulting in residual impacts. For this purpose, the mitigation hierarchy is followed: Avoid, Minimize, Restore, Offset.

The identification of the impacts conducted by Environics has been based on the potential interaction (i.e., potential impact) between the specific Project activities and the assessed environmental or social and health receptor or resource (e.g. terrestrial and marine ecology, noise, groundwater, surface water, economy and employment, community health and safety, etc.). The following impact assessment matrix has been used:

FIGURE 7.1 IMPACT ASSESSMENT MATRIX.

Magnitude of the Aspect	Sensitivity / Vulnerability / Value of Resource / Receptor		
	Low	Medium	High
Negligible	Insignificant	Insignificant	Insignificant
Small	Insignificant	Minor	Moderate
Medium	Minor	Moderate	Major
Large	Moderate	Major	Extreme

Source: ESIA April 2026 (Environics).

An assessment of potential impacts generated by the Project has been conducted on the construction and operation phase. It is expected that the impacts during decommissioning are similar to those of construction. The following tables show a summary of impact assessment during construction and operation:

FIGURE 7.2 SUMMARY OF IMPACTS DURING CONSTRUCTION PHASE.

Impacts and Sources	Impact Significance			Magnitude	Sensitivity of Receptor	Impact Level before Mitigation	Residual Impacts after Mitigation
	Temporal scale	Spatial Scale	Severity				
Air Quality							
• Emissions from Construction Equipment • Dust Generated from Construction Activities	Short term	Localized	Large	Medium	Low	Moderate	MINOR
Ambient Noise							
Construction Machinery and Equipment	Short term	Localized	Slight	Medium	Low	Moderate	MINOR
Soil & Ground Water							
• Solid and Hazardous Wastes • Domestic Wastewater	Short term	Localized	Moderate	Medium	Low	Minor	INSIGNIFICANT
Workplace Health and Safety							
Occupational Health and Safety Risks	Short term	Localized	Moderate	Medium	Medium	Moderate	MINOR
Public Health and Safety							
Unsafe/ random disposal of sanitation and wastes Vehicles, transporting materials and waste, collision/accidents	Short term	Study area	Slight	Small	Low	Minor	INSIGNIFICANT
Road Traffic							
Traffic load during the following activities: • Transportation of construction materials • construction equipment • construction wastes	Short term	Regional	Moderate	Medium	Low	Minor in general Moderate during peak times	INSIGNIFICANT in general MINOR during peak times
Impacts of Invasive Alien Species and Pests							
Changes in species composition	Permanent	Study Area	Slight	Medium	Low	Minor	MINOR
Attraction of pests and alien species due to project activities	Short term	Study Area	Slight	Small	Medium	Minor	INSIGNIFICANT
Growth of marginal vegetation	Short term	Localized	Slight	Small	Low	Insignificant	INSIGNIFICANT

Source: ESIA April 2026 (Environics).

FIGURE 7.3 SUMMARY OF IMPACTS DURING OPERATION PHASE.

Impacts and Sources	Impact Significance			Magnitude	Sensitivity of Receptor	Impact Level before Mitigation	Residual Impacts after Mitigation
	Temporal scale	Spatial Scale	Severity				
Air Quality							
Emissions from stacks (SAP, PAP, DAP/NPK)	Long term	Study Area (Aoi)	Severe	Large	Low	Moderate	MINOR
Ambient Noise							
Belt conveyors, elevators, crusher and mill, granulator, pumps, power turbines, blowers, fans and compressors	Long term	Localized	Moderate	Medium	Low	Minor	INSIGNIFICANT
Soil &Groundwater							
• Phosphogypsum storage	Medium term	Localized	Moderate	Medium	Low	Minor	INSIGNIFICANT
• Occasional Liquid spills/ leaks	Long term	Localized	Slight	Small	Low	Minor	INSIGNIFICANT
• Storage of hazardous waste							
• Domestic and industrial wastewater							
Public Health, Security and Safety							
• Air emissions	Long term	Study Area (Aoi)	Moderate	Large	Low	Moderate	INSIGNIFICANT
• Unsafe disposal of wastes	Long term	Study Area (Aoi)	Slight	Small	Low	Minor	INSIGNIFICANT
• Traffic during materials and wastes transportation							
Workers' Health and Safety							
• Occupational health and safety risks: - Chemical risks from chemical handling, spills and leaks - Electrical risks - Physical such as noise, heat stress, material handling and accidents/ incidents	Long term	Localized	Severe	Medium	Medium	Major	MODERATE
• Process Emissions							
Road Traffic							
Traffic load during the following activities: • phosphate rock and Sulphur transportation • chemicals and waste transportation	Long term	Governorate level	Severe	Large	Moderate	Major	MODERATE

Source: ESIA April 2026 (Environics).

7.1 CUMULATIVE IMPACT ASSESMENT

Considering the baseline characteristics and project activities, the following are the key value environmental and social components (VECs) relevant to the Project:

- Air shed (ambient air quality)
- Water resources and scarcity
- Power resources
- Roads
- Groundwater

According to the ESIA prepared by Environics, the project construction will be carried out over a relatively short period (about 15 months) and its impacts are either minor or insignificant. Accordingly, the project construction is not anticipated to add cumulative impact on the VECs. Therefore, the following CIA focuses on the operation phase. The following table show a summary of the CIA during operation:

TABLE 7.1 SUMMARY OF CIA DURING OPERATION

VEC	Project impact after Mitigation	Significance of Cumulative Impact
Roads	A moderate impact is expected to result during operation, due to the number of trucks moving from/to the Project site.	Major
Groundwater	Related to the phosphogypsum storage. A minor impact is anticipated, as the contamination in leachate will not reach groundwater even before mitigation.	Minor
Air shed	Minor impact is expected as the project integrates extract measures in its design.	Minor
Power resources	The project will self-generate 90% of its power through the captive power plant.	Insignificant
Water resources and scarcity	The project will use seawater, which is designated for industrial developments in the SC Zone. Accordingly, it will not affect any public network. See more detail in Annex A Cumulative impact assessment on water uses in SCZone (ANNEX – Additional studies).	Insignificant

Source: ESIA April 2026 (Environics) and Indorama (for the water resources and scarcity impact).

The surrounding environment may impact the proposed project, particularly if anomalous environmental circumstances are not taken into account within the project design. These impacts are typically referred to as natural hazards and include such aspects and seismic events and unusual precipitation events, which may cause floods. In all cases, the Project design took into account the above risks. In particular, a flood risk assessment was conducted for the Project, which can be found in Annex 7 of the EIA 2026 by Environics.

7.2 MITIGATION MEASURES

The project management will ensure that the contractors will carry out the necessary measures to minimize impacts. This is to be included in the contractor's agreements. A non-exhaustive list is included below:

Construction phase

Air quality

- Dust suppression using water on bulk materials and unpaved passages within the site.
- Providing workers with awareness on maintaining good practice in machinery usage.
- Maintaining machinery and vehicles in good working conditions to minimize fugitive emissions.
- Regulate the vehicles speed inside the site to minimize dust emissions.

Ambient noise

- Compact the internal pathways at the site, as possible.
- Inspect and maintain machinery, vehicles, and vessels in good working conditions to minimize noise generation and ensure that they do not exceed permissible limits.
- Construction will be carried out during daytime, as possible.

Soil & Groundwater

- Domestic wastewater will be collected in PVC tanks (aboveground) of sufficient capacity to be positioned on lined concrete basins. These will be regularly emptied through seepage trucks to the nearest approved wastewater treatment facility.
- Hazardous waste will be collected in sealed barrels, positioned on pallets and temporary stored separate from non-hazardous.
- Diesel will not be stored onsite, as all vehicles and machineries will be fueled before entering the site. Diesel will be stored on site only for Diesel Generators.

Workers Health and Safety (H&S)

- Provide workers with the suitable PPEs.
- Excavated areas during construction will be surrounded with a safety fence of a reasonable height, depending on the ground conditions, to restrict access.

Public H&S

- Avoid roads closure or diversion during the pipeline construction, by using the horizontal directed drilling technique.
- Develop a Grievance Mechanism (GM) explaining the objective, channels and a clear complaint form that ensures the feedback on the concern or grievance.

Road traffic

- Develop and implement a traffic management plan.
- Schedule operating hours and delivery.

Indorama will ensure that the EPC Contractor prepares and implements environmental and social (E&S) management plans to address construction-related impacts. To support this, Indorama has already shared the ESMS (see Annex B in ANNEX– Additional Studies) with the EPC Contractor and will actively follow up to ensure compliance.

Operation phase

Air quality

- All process equipment in DAP/NPK plant will be operated under a slight negative pressure to prevent the fugitive emissions of unreacted ammonia, other gases and dust.

- Phosphate rock grinder will be provided by a bag filter.
- Phosphoric acid plant: Gas scrubber equipped with spray nozzles (top and bottom stage) and a Fume Scrubber Droplets Separator to eliminate the acid mist.
- Sulphur and phosphate rock conveying systems will be operated at low speed to reduce dust emissions.

Ambient noise

- Selecting equipment with lower sound power levels.
- Installing silencers for fans and equipment with high expected noise.
- Coconducting a periodic maintenance programs will be implemented to track and minimize noise impacts.

Soil & Groundwater

- Measure the infiltration rates (Vadose zone) at several locations within the boundaries of the designated area for the Phosphogypsum storage to verify the model results.
- Conduct infiltration test on a Gypsum sample (typical sample) to validate the leachate rate from the developed model.
- Monitor soil and groundwater quality.
- Specific mitigation measures for the phosphogypsum storage area (280,000 m²), such as compacting and grading, installing an adequate leachate collecting system, etc.

Workers Health and Safety (H&S)

- All equipment will be operated under relatively negative pressure to prevent fugitive emissions into workplace.
- The machinery and equipment will be designed to operate at lower noise levels.
- Relevant Personal Protective Equipment (PPE) will be normally provided to workers at different locations, while special respirators will be provided during unloading, conveying and chemicals handling.

Public H&S

- Ensure that the contracted waste disposal company(ies) are licensed and approved by the environmental authorities.
- Ensuring adequate transport vehicle specifications.
- Proper labeling of containers, including the identify and quantity of the contents, hazards, and shipper contact information.

Road traffic

- Minimizing pedestrian interaction with the transportation trucks.
- Collaboration with the competent authority to improve signage, visibility and overall safety of roads, particularly along stretches located near the resorts.
- Coordination with emergency responders to ensure that appropriate first aid is provided in the event of accidents.

8. MONITORING OF IMPACTS

At a local level, the Egyptian Environmental Affairs Agency (EEAA) will have the role in compliance monitoring, inspections, and audits post-approval.

The **Environmental and Social Management Framework (ESMF)**, which is an integral component of the ESIA Report, provides the framework to support the implementation of the mitigation and preventive measures identified in the ESIA process.

Based on the impact assessment, the following specific management plans will be developed for the Project, following the ESIA phase. **The plans may be combined or included in an overall environmental and social plan as appropriate to streamline the execution of the Project.**

- Physical Environmental Management Plans:
 - Air Quality Management Plan. In order to control the Radon gas emissions in the workplace at the Phosphogypsum storage area, Indorama will follow the Monitoring plan of Radon emissions Plan (see Annex 10 of the EIA 2026 by Environics).
 - Noise Management Plan
 - Groundwater Management Plan
- Social Management Plans:
 - Socio-economic Management Plan
 - Employment and Procurement Management Plan
 - Community Health and Safety Management Plan
 - Traffic Management Plan
- General Management Plans:
 - Waste Management Plan
 - Spill Prevention, Control and Containment Management Plan
- Health and Safety Management Plans:
 - Emergency Response Plan
 - Firefighting Plan

To ensure that the management measures included in the abovementioned plans are implemented and are effective, **environmental and social monitoring** is included.

Monitoring results will inform the decision-making process, triggering corrective actions to maintain compliance with environmental laws and regulations, ensure environmental protection and workplace safety, and ensure the effective operation of mitigation measures and management plans.

The monitoring will be **implemented across both land plots designated for the project**, ensuring consistent application of environmental and social safeguards throughout the entire project area.

Both **construction and operational activities will be monitored** by Indorama on site, with regular audits against the requirements of this ESMF. The ultimate target is to achieve 100% compliance with the ESMF.

The results from the monitoring will be reviewed by Indorama. **Annual reporting** should be undertaken to review performance over the previous year and to set targets and objectives for subsequent years.



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Project Description and Alternatives Analysis

Updated ESIA Supplementary
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Note: This document is part of the Updated ESIA Supplementary Disclosure Package assigned by Indorama to ERM in order to ensure compliance with International Standards International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD).

Project Description and Alternatives Analysis

Updated ESIA Supplementary Disclosure Package: Phosphate

Fertilizer Complex Project, SCZone, Sokhna

0774474



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CONTENTS

1.	PROJECT DESCRIPTION	1
1.1	OVERVIEW	1
1.2	PROJECT JUSTIFICATION	1
1.3	PROJECT LOCATION	2
1.4	SITE OWNERSHIP	4
1.5	PROJECT AREA OF INFLUENCE	4
1.6	PROJECT SCHEDULE	7
1.7	PROJECT COMPONENTS	7
1.7.1	Project Overview	7
1.7.2	Project Layout	10
1.8	DESCRIPTION OF THE PROJECT COMPONENTS	1
1.8.1	Sulfuric Acid plant (SAP)	1
1.8.2	Phosphoric Acid plant (PAP)	4
1.8.3	DAP/NPK Fertilizer Plant	8
1.8.4	Phosphogypsum (PG) Storage	11
1.8.5	Utilities & Service Units	13
1.8.6	Ammonia Pipelines	19
1.8.7	Ammonia unloading arm at Sokhna Port (out of the scope of this study)	21
1.8.8	Temporary Construction Facilities	22
1.8.9	Electricity, Natural Gas, Water, Wastewater connections from site to the nearest tie-ins (Associated Facilities)	22
1.8.10	Sulphur and Phosphate Rock Transportation (Primary Supply Chain)	22
1.9	CONSTRUCTION PHASE	22
1.9.1	Horizontal Directional Drilling (HDD)	23
1.9.2	Ammonia Tanks Testing	25
1.9.3	Ammonia Pipeline Testing	25
1.9.4	Equipment	26
1.10	OPERATION PHASE	27
1.11	DECOMMISSIONING PHASE	27
1.12	USE OF RESOURCES AND ENVIRONMENTAL INTERFERENCES	28
1.12.1	Land Use	28
1.12.2	Water Supply and Consumption	29
1.12.3	Raw Materials	30
1.12.4	Oils and Chemical Requirements	31
1.12.5	Energy	32
1.12.6	Transportation and Traffic	32
1.12.7	Atmospheric Emissions	36
1.12.8	GHG Emissions	1
1.12.9	Noise Emissions	1
1.12.10	Waste Handling and Disposal	2
1.12.11	Effluents Management	5
1.12.12	Employment and Labor	6
1.12.13	Health, Safety & Security	7
2.	ALTERNATIVES ANALYSIS	9
2.1	OVERVIEW	9
2.2	NO DEVELOPMENT ALTERNATIVE	9
2.3	SITE SELECTION ALTERNATIVES	10
2.3.1	Production Site Location	10

2.3.2	Ammonia Pipelines Route	10
2.4	TECHNOLOGY ALTERNATIVES	11
2.4.1	Sulphuric Acid Absorption	11
2.4.2	Phosphoric Acid Production	12
2.4.3	Industrial Wastewater Disposal	15
2.4.4	Waste Heat Energy management	15
2.5	TRANSPORT ALTERNATIVES	16
2.5.1	Ammonia	16
2.5.2	Phosphate Rock	17

LIST OF TABLES

TABLE 1.1	PROJECT PLOT GEOGRAPHIC COORDINATES	2
TABLE 1.3	AREA OF INFLUENCE: PROJECT COMPONENTS	4
TABLE 1.4	KEY PROJECT COMPONENTS	8
TABLE 1.5	EXPECTED SPECIFICATIONS OF INLET WASTEWATER	14
TABLE 1.6	EXPECTED SPECIFICATIONS OF WASTEWATER AFTER TREATMENT	14
TABLE 1.7	STORAGE TANKS	17
TABLE 1.8	MAIN AND AUXILIARY RAW MATERIALS OF THE PROJECT	31
TABLE 1.9	AUXILIARY CHEMICALS EXPECTED TO BE USED DURING OPERATION	31
TABLE 1.10	PHOSPHATE ROCK TRANSPORTATION	33
TABLE 1.11	TRAFFIC LOAD OF SULPHUR TRANSPORTATION	34
TABLE 1.12	POINT SOURCE EMISSIONS FROM INDORAMA' PHOSPHATE FERTILIZER PROJECT	1
TABLE 1.13	HAZARDOUS WASTES FROM THE PROJECT OPERATION	4
TABLE 1.14	SOLID WASTE FROM THE PROJECT OPERATION	5
TABLE 1.15	KEY ISSUES OF THE PROJECT COMPARED TO IFC AND EBRD GUIDELINES AND BAT/BREF BENCHMARKS	7
TABLE 2.1	COMPARISON BETWEEN SINGLE AND DOUBLE CONTACT TECHNOLOGIES	11
TABLE 2.2	ADVANTAGES AND DISADVANTAGES OF SINGLE AND DOUBLE CONTACT TECHNOLOGIES	12
TABLE 2.3	COMPARISON OF WET PROCESSES FOR PHOSPHORIC ACID PRODUCTION	13
TABLE 2.4	DESCRIPTION OF THE AVAILABLE MAIN ROADS FROM THE MISR MINES TO THE PRODUCTION SITE	19

LIST OF FIGURES

FIGURE 1.1	PRODUCTION SITE, PHOSPHOGYPSUM STORAGE AREA, AMMONIA PIPELINES AND SURROUNDING LAND USE	3
FIGURE 1.2	AREA OF INFLUENCE (AOI): CLASSIFYING PROJECT COMPONENTS	5
FIGURE 1.3.	AREA OF INFLUENCE (AOI) DURING OPERATION PHASE	6
FIGURE 1.4	OVERALL BLOCK DIAGRAM OF INDORAMA PHOSPHATE FERTILIZER PROJECT	8
FIGURE 1.5	PRODUCTION SITE	1
FIGURE 1.6	TYPICAL PHOTO FOR SULPHUR HANDLING AND STORAGE	2
FIGURE 1.7	BLOCK DIAGRAM OF SULPHURIC ACID PRODUCTION	3
FIGURE 1.8	PRELIMINARY MATERIAL BALANCE FOR THE SULPHURIC ACID PLANT	4
FIGURE 1.9	PHOSPHATE ROCK HANDLING AND STORAGE	5
FIGURE 1.10	BLOCK FLOW DIAGRAM OF PHOSPHORIC ACID PRODUCTION	8
FIGURE 1.11	PRELIMINARY MATERIAL BALANCE FOR PHOSPHORIC ACID PLANT	8
FIGURE 1.12	BLOCK FLOW DIAGRAM OF DAP/NPK FERTILIZERS PRODUCTION	10
FIGURE 1.13	PRELIMINARY MATERIAL BALANCE FOR DAP PLANT.	11
FIGURE 1.14	SCHEMATIC DIAGRAM OF PHOSPHOGYPSUM STACKING	12

FIGURE 1.15 EXAMPLE PHOTO OF CONVEYOR	12
FIGURE 1.16 WATER SUPPLY & DISTRIBUTION	13
FIGURE 1.17 PROCESS OF STEAM PRODUCTION	16
FIGURE 1.18 TYPICAL HORIZONTAL DIRECTIONAL DRILLING (HDD) PROCESS	24
FIGURE 1.19 OVERALL WATER BALANCE (INDUSTRIAL PROCESS)	30
FIGURE 1.20 TENTATIVE ROUTES FOR PHOSPHATE ROCK TRANSPORTATION FROM THE MISR MINE TO THE PRODUCTION SITE	34
FIGURE 1.21 ROUTE FOR SULPHUR TRANSPORTATION FROM THE SOKHNA PORT (TOP) AND THE ADABIYA PORT (BOTTOM) TO THE PRODUCTION SITE	35

LIST OF ANNEXES

ANNEX 1	RADIOACTIVITY ASSESSMENT OF PHOSPHATE ROCK FROM THE MISR PHOSPHATE COMPANY
ANNEX 2	ENERGY EFFICIENCY MANAGEMENT POLICY
ANNEX 3	PHOSPHOGYPSUM GENERATION STUDY AND OPTIMIZATION

ACRONYMS AND ABBREVIATIONS

Acronym	Description
AoI	Area of Influence
BAT	Best Available Techniques
BREF	Best Available Techniques Reference Document
DAP	Di-Ammonium Phosphate
DCDA	Double Contact Double Absorption
DH	Dihydrate
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
ERM	Environmental Resources Management
ESIA	Environmental and Social Impact Assessment
FEDI	Fractional Electro Deionization
FSA	Fluorosilicic Acid
GIIP	Good International Industry Practice
HDD	Horizontal Directional Drilling
HF	Hydrogen Fluoride
IFC	International Finance Corporation
ILO	International Labor Organization
IRL	Information Request List
LLFC	Low-Level Flash Cooling
LDS	Leak Detection Systems
MTPD	Metric Ton per Day
MTPY	Metric Ton per Year

Acronym	Description
NPK	Nitrogen, Phosphorus, and Potassium
PA	Phosphoric Acid
PAP	Phosphoric Acid Plant
PM	Particulate Matter
SAP	Sulfuric Acid Plant
SC Zone	Suez Canal Economic Zone
SO ₂	Sulfur Dioxide
SO ₃	Sulfur Trioxide
TSP	Total Suspended Particulates
ZLD	Zero Liquid Discharge

1. PROJECT DESCRIPTION

1.1 OVERVIEW

This part of the document provides a description of the Project, its components, and its activities during the construction, operation, and decommissioning phases. The information is based on the Local ESIA Draft dated April 2026 prepared by local consultancy Environics and further details provided by Indorama to ERM through an Information Request List (IRL) and meetings.

The Project comprises a phosphate fertilizer complex within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone (SC Zone) in Egypt, promoted by Indorama Investments Limited (hereinafter, Indorama). The Project will produce Di-Ammonium phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers, as a main product. Sulphuric acid and phosphoric acid will be produced as intermediate products. In addition, phosphogypsum will be a byproduct of the industrial process.

In **Egypt**, the Project is categorized as high risk (**Category C**), therefore, a full Environmental Impact Assessment (EIA) study is required.

Internationally, the Project is categorized as follows:

- According to **EBRD's** E&S Policy (2019), phosphate fertilizer projects are classified as **Category A**.
- According to **IFC** (Sustainability Framework, 2012), Category A includes business activities with potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented. On the other hand, Category B includes business activities with potential limited adverse environmental or social risks and/or impacts that are few, generally site-specific, largely reversible, and readily addressed through mitigation measures. Phosphate fertilizer industry from ore rock is a heavy industry with many environmental aspects that may have a wide impact and require highly efficient design procedures. Based on IFC feedback, the project is categorized as **Category B**; however, it has been flagged as High Risk.

1.2 PROJECT JUSTIFICATION

Indorama has a wide experience and a proven track record in establishing and operating phosphate and ammonia fertilizer factories around the world. The Company already has investments in Egypt since 2007 in PET production. Accordingly, investing in this Project will enable the transfer of the company's expertise and the localization of the latest technologies in the phosphate fertilizer sector to Egypt.

Indorama's Project is consistent with the Egyptian state's strategy to attract and encourage foreign direct investments and enter into partnerships with major international investors to localize the latest and modern technologies. It will also increase the added value of the Egyptian phosphate resource that is produced by the Misr Phosphate Company.

Moreover, the Project will contribute to transforming Egypt into an export centre for high quality fertilizers. It will also contribute to the growing phosphate fertilizer market worldwide. Furthermore, the Project is expected to have a positive impact on the local development, contribution to market creation and generating employment opportunities.

1.3 PROJECT LOCATION

The Project is located within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone, in Sokhna, Suez Governorate, Egypt.

The complex includes a production site, a phosphogypsum storage area, and ammonia pipelines.

The Project site covers a total area of 56 ha, divided into two parts of approximately 28 ha each. One part will be used as a phosphogypsum storage area, and the other part will be for the production site.

The Project site is located approximately 4.5 km west of Sokhna Port and about 43 km south of Suez City.

On the other hand, the ammonia pipelines (main and secondary) are routed for 13 km starting from the Sokhna Port (specifically the Sonker' Bulk Liquids Terminal) and ending at the production site. Most of the pipelines' route will pass inside Sokhna Port, and the remaining (smaller part) will be outside the port crossing Hurghada-Ismailia Road and then routed to the Indorama production site, all within the Sokhna Industrial Zone.

The elevation of the Project site ranges from 20 m to 40 m above sea level.

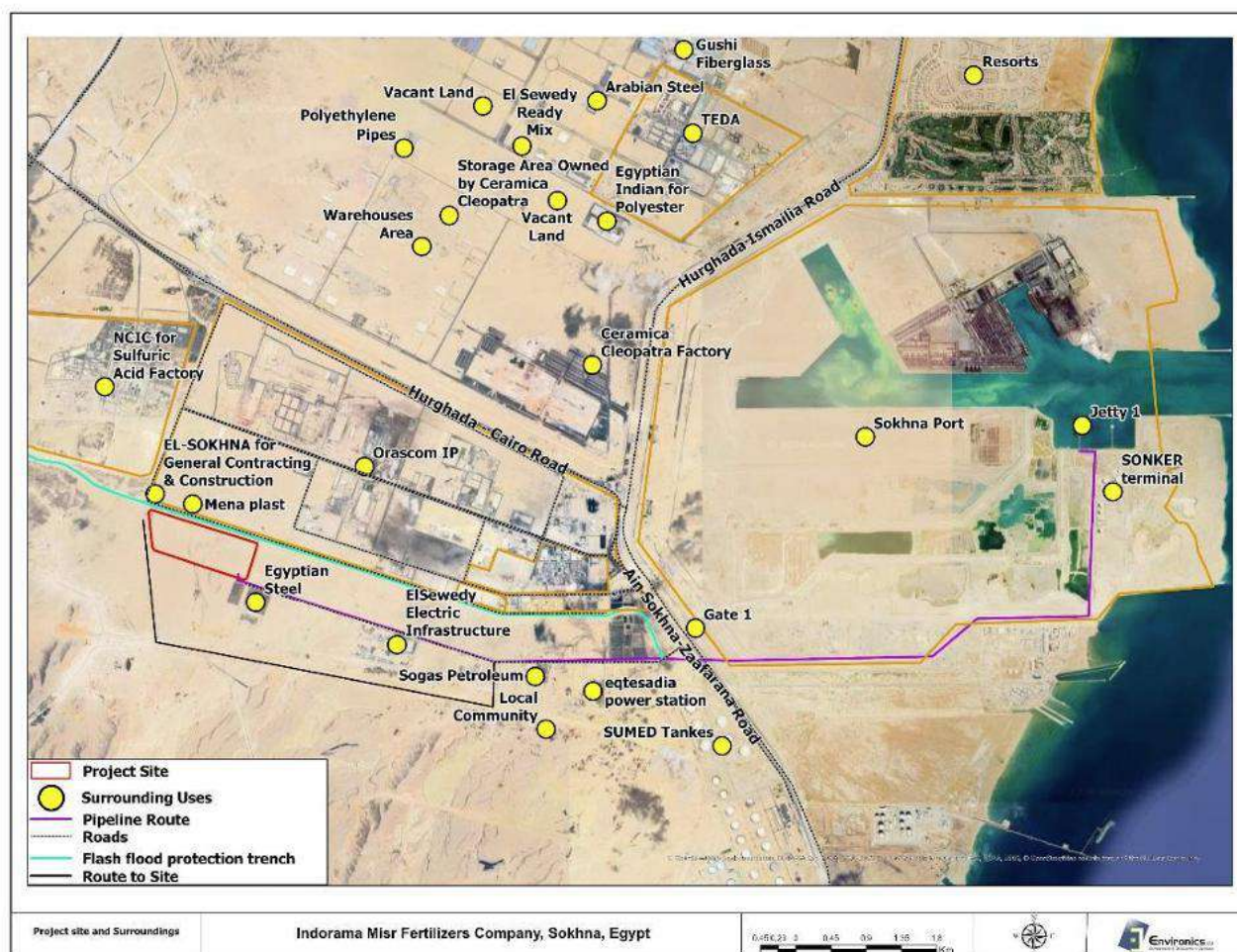
The coordinates of the production site plot are the following:

TABLE 1.1 PROJECT PLOT GEOGRAPHIC COORDINATES

Point No.	Latitude	Longitude
1	29°37'51.60"N	32°15'50.41"E
2	29°37'52.01"N	32°15'50.17"E
3	29°38'3.87"N	32°15'6.46"E
4	29°38'3.06"N	32°15'5.33"E
5	29°37'50.57"N	32°15'6.89"E
6	29°37'49.47"N	32°15'7.75"E
7	29°37'42.18"N	32°15'32.73"E
8	29°37'38.84"N	32°15'44.92"E
9	29°37'39.36"N	32°15'46.04"E

Source: Indorama.

FIGURE 1.1 PRODUCTION SITE, PHOSPHOGYPSUM STORAGE AREA, AMMONIA PIPELINES AND SURROUNDING LAND USE



Source: Indorama ,2026

In addition to the abovementioned elements (i.e.: production site, phosphogypsum storage, ammonia pipelines), Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. The unloading arm will be connected to the ammonia pipeline addressed in the current ESIA.

At the time of preparation of this Supplementary ESIA, the unloading arm has not yet reached a level of design definition that would allow for a meaningful environmental and social impact assessment, and no site-specific baseline information for the port area is available. Consequently, this component does not form part of the scope of the ESIA prepared by Environics, nor of the present Supplementary ESIA.

For clarity, the proposed port facilities are considered a **separate future development** and are therefore **excluded from the scope of this ESIA**. Once the design of port facilities is finalised, **it is anticipated that a dedicated ESIA will be undertaken to assess its potential environmental and social risks and impacts in line with applicable international lender standards.**

1.4 SITE OWNERSHIP

The land ownership to the Project site, covering an area of 56 ha, is currently owned by SCZone and will be secured to Indorama for the development of the Project.

The ammonia pipelines will extend over 13 km and cross land owned by SC Zone and the public Hurghada-Ismailia Road. The rights of way and easements necessary for the construction and operation of this infrastructure will be duly acquired and registered by Indorama, ensuring access and use in accordance with local regulations.

1.5 PROJECT AREA OF INFLUENCE

IFC Performance Standard (IFC PS) 1 defines the Area of Influence (hereinafter, AoI) as follows:

- *The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.*
- *Associated facilities are facilities that will not have been constructed or expanded if the project did not exist and without which the project will not be viable.*
- *Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.¹*

The appropriate level of assessment and management of risks and impacts is determined by the degree of control that a project can exercise over its facilities or activities, and by the importance of the facilities or activities to a project's successful operation. The facilities and activities (the components') that make up this Project are therefore classified in determining the AoI, as illustrated in the following table and figure.

TABLE 1.2 AREA OF INFLUENCE: PROJECT COMPONENTS

IFC Category	Project Component
Core Components	Construction, operation, and decommissioning of: • Production site • Phosphogypsum storage area • Ammonia pipelines (main and secondary) • Ammonia unloading arm at Sokhna Port ² Temporary construction facilities
Associated Facilities	• Electricity connection from site to the nearest tie-in • Natural gas connection from site to the nearest tie-in • Water connection from the site to the nearest tie-in • Sewage connection from the site to the nearest tie-in

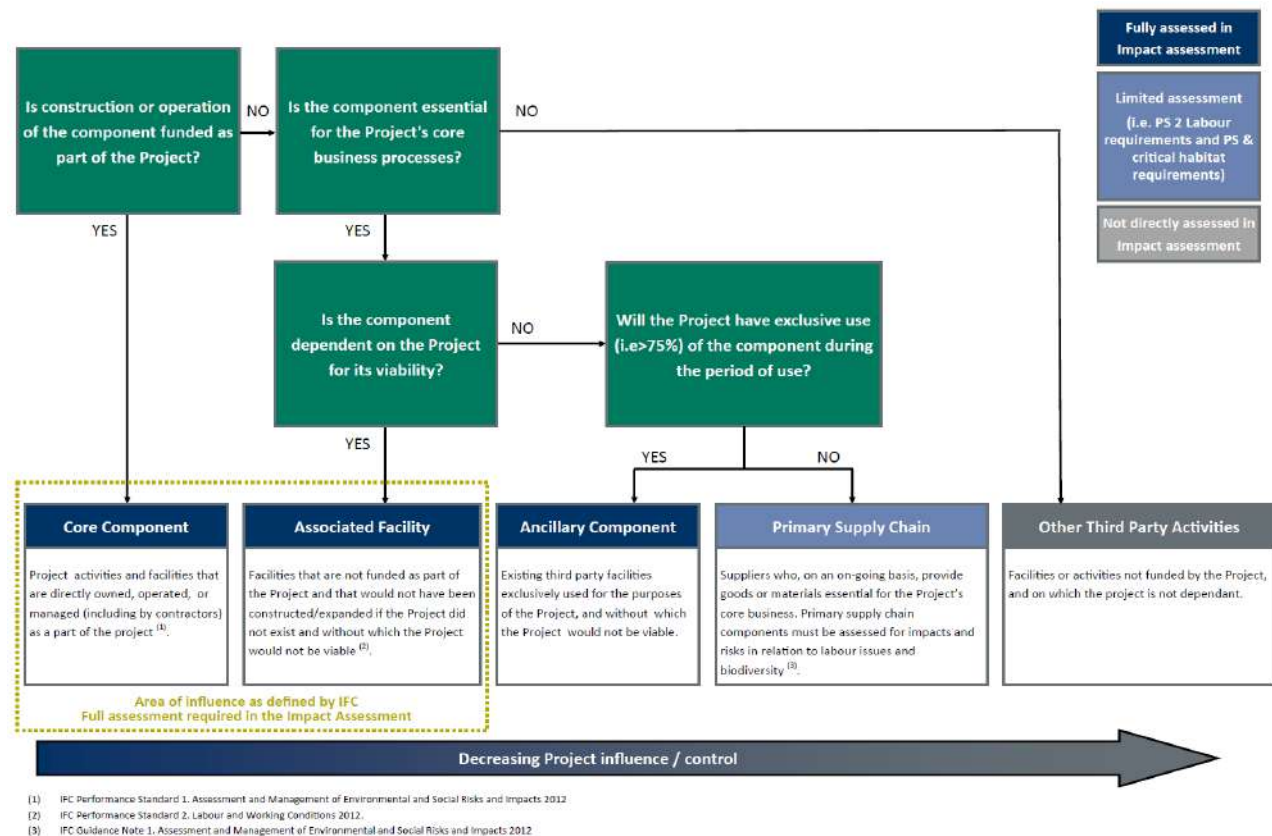
¹ IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts, January 1, 2012.

² The ammonia unloading arm at Sokhna Port currently falls outside the scope of this study and has not been considered in the defined Area of Influence.

IFC Category	Project Component
Primary Supply Chain	- Road transportation of sulphur from the Sokhna/Adabiya ports to the production site - Road transportation of phosphate rock from the Misr Mine to the production site - Road transportation of ammonia from the local market
Third Party Activities	- Raw material transport - Waste transport and disposal sites - Existing mining activities to extract phosphate rock by the Misr Phosphate Company (public ownership) - Existing ammonia tank at Sonker' Bulk Liquids Terminal (Sokhna Port) - Existing facilities (loading/unloading, terminal and Jetty 1) at the Sokhna Port for import sulfur, loading the new ammonia pipeline and export DAP/NPK fertilizers abroad

Source: Indorama.

FIGURE 1.2 AREA OF INFLUENCE (AOI): CLASSIFYING PROJECT COMPONENTS



Source: ERM, 2025.

Environmental AoI

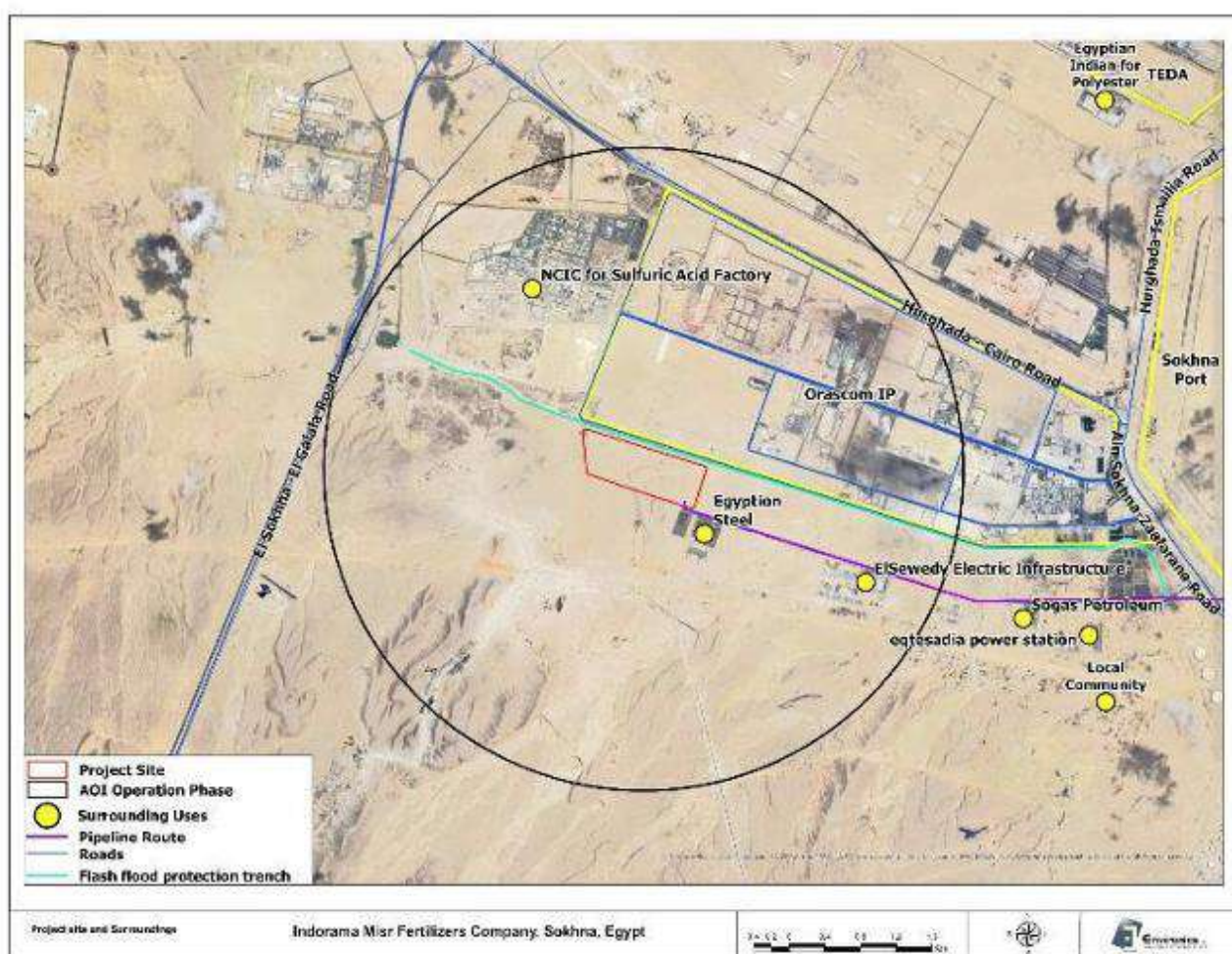
- Construction:** The AoI mainly comprises the Project footprint of the production site and ammonia pipelines where noise and air emissions are expected from the equipment, machinery and vehicles used for the construction.
- Operation:** The AoI mainly comprises the production plant and the extent of the noise and air emissions expected from its operation. A segment of approx. 1.8 km of the ammonia pipeline will be aboveground. Given the hazardous (toxic) nature of ammonia, a

Quantitative Risk Assessment (QRA) was conducted to assess the potential risk of accidental leak from the aboveground segment of the pipeline (see complete document in the EIA 2026 by Environics).

The AoI for noise emissions is conservatively established as 1 km from the production plant, considering that equipment will be installed within enclosed structures/buildings; it is thus unlikely that the noise will disperse significantly beyond the plant boundaries and affect a distant area. Noise is mainly influencing the workplace environment.

Regarding air quality, according to Article 34 of the Executive Regulations for Law 4/1994, the AoI is determined by a circle of a radius 50 times the height of the highest stack of the production site, considering weather variations at the area. Given that the highest point source of air emissions is approximately 65 m, the AoI is accordingly delineated as a circular area of radius 3.25 km, as shown in the following figure.

FIGURE 1.3. AREA OF INFLUENCE (AOI) DURING OPERATION PHASE



Source: Indorama, 2026

Social AoI

The direct social AoI comprises the surrounding users of the Sokhna Industrial Area within the environmental AoI (3.25 km buffer), including the existing labour accommodation within Orascom Industrial Park (approx. 1.6 km northeast of the production site), and the local

community located 2.5 km southeast of the production site. On the other hand, the indirect social AoI comprises the Suez Governorate.

1.6 PROJECT SCHEDULE

The Project schedule includes the following three phases:

- **Construction and commissioning phase (Phase 1):** includes civil works, construction of buildings and installation of temporary site facilities, and mechanical and electrical works. In addition, it includes performance tests for specific infrastructures. It is anticipated that the construction and commissioning phase of the Project will last for about 15-18 months in total, estimated to start in Q2 2026.
- **Operations and maintenance phase (Phase 2):** the operation will commence and involve periodic maintenance activities at the Project site facilities and associated infrastructure. Finally, the Project's operation lifespan will be about 25 years.
- **Decommissioning phase (Phase 3):** at the end of the planned operational lifetime, the operation of the Project facilities and associated infrastructure will be reviewed and either extended or decommissioned. Decommissioning will involve the removal and reuse / recycling / disposal of surface structures and the reinstatement and restoration of the affected sites (similar activities/impacts as Phase 1).

1.7 PROJECT COMPONENTS

1.7.1 PROJECT OVERVIEW

The Project comprises the construction and operation of a phosphate fertilizer complex. The activity will have the following products:

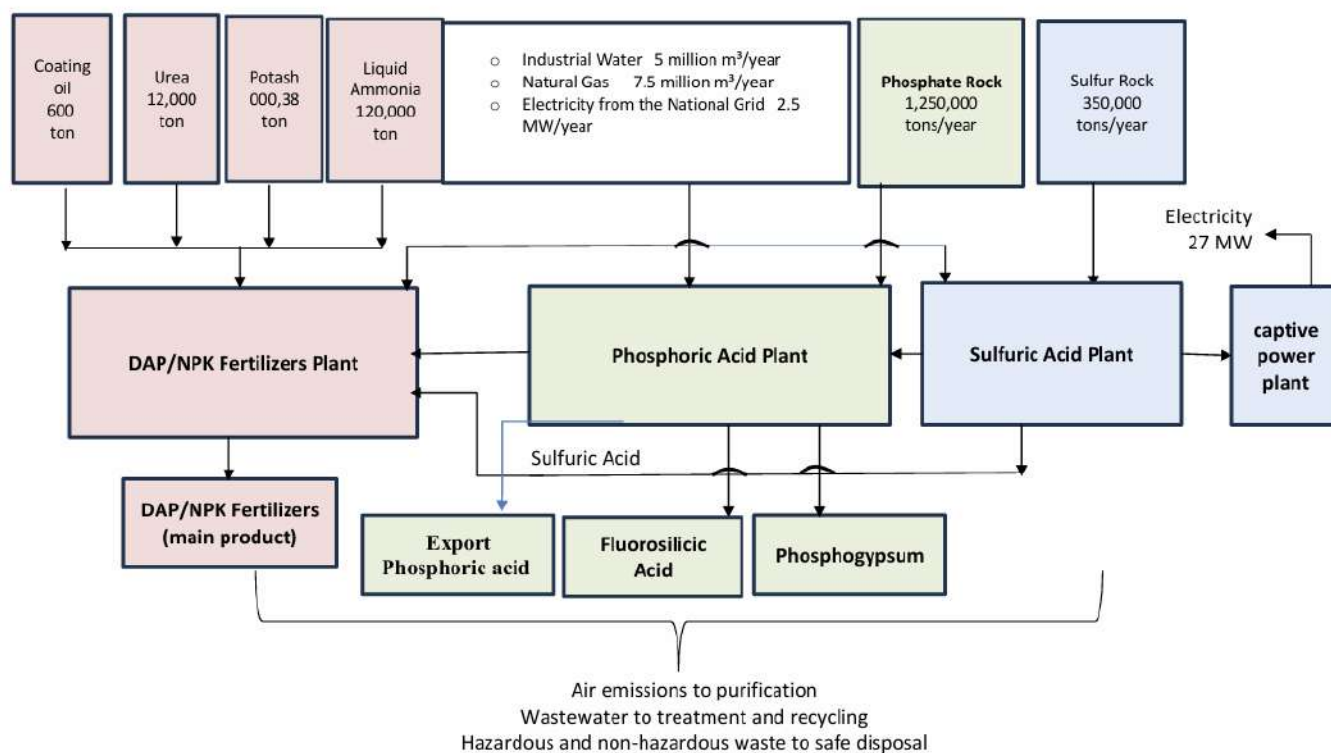
- **Main Products:** granulated Di-Ammonium Phosphate (DAP) and NPK fertilizers. Production capacity: 1,935 metric ton/day (hereinafter, MTPD). The final products will be delivered to the market by trucks to the Sokhna/Adabiya/Damietta/Alexandria ports for exportation.
- **Intermediate Products:** For producing the main products, two intermediate products will be produced:
 - Sulphuric acid (98.5 %). Production capacity: 3,100 MTPD.
 - Phosphoric acid (52%). Production capacity: 1,000 MTPD.
- **Byproduct:** Phosphogypsum will be generated from phosphoric acid filtration at an annual rate of 1.98 million metric ton/year (hereinafter, MTPY). Indorama will study the possibility of selling it to Cement companies. The Project site will include a designated area (280,000 m²) for gypsum storage/stacking. The storage area is capable of a storage capacity for about 20 - 25 years.

The main raw materials needed for the industrial process area include: (1) phosphate rock (that will be supplied from Misr Phosphate Company, 475 km away); (2) sulphur (that will be supplied through the Sokhna/Adabiya port); and (3) ammonia (that will be supplied through Sokhna Port jetty-1 or from the local market EBIC storage tanks in the Sonker storage area at Sokhna port).

The overall block diagram of the phosphate fertilizer complex is shown in the following figure.

FIGURE 1.4 OVERALL BLOCK DIAGRAM OF INDORAMA PHOSPHATE FERTILIZER PROJECT

SOURCE: INDORAMA.



Source: Environics EIA 2026.

Key project components are summarized in the following table:

TABLE 1.3 KEY PROJECT COMPONENTS

Element	Details
Sulfuric Acid Plant (SAP)	SAP is designed to produce 3,100 MTPD of Sulfuric acid (98.5%) using the well proven technology of double contact double absorption (DCDA). It will be operated continuously for 24 h/day over 7 days a week.
Phosphoric Acid Plant (PAP)	PAP is designed to produce 1,000 MTPD of Phosphoric acid (52%) using the well proven Dihydrate technology. It will be operated continuously for 24 h/day over 7 days a week.
DAP/ NPK Fertilizer Plant	This plant will produce a maximum of 1,935 MTPD of granulated Di-ammonium Phosphate (DAP) or NPK fertilizers. As mentioned above, this is the main product of the Project. The plant will be operated 22 h/day and cleaning activities will be done for approximately 2 h/day.
Phosphogypsum storage area	The Project site will include a designated area (280,000 m ²) for gypsum storage/stacking.
Utilities & Service Units	In addition to the above three main plants, the Project' site will include the following utilities & service units: - Water Supply and Treatment Unit - Industrial wastewater treatment Unit - Cooling System

Element	Details
	• Power Supply & Substation (waste heat recovery boiler) • Air Compressing Unit • Auxiliary Boiler • Storage Tanks • Final Product Warehouse • Storage Areas • Fire water tank and pumps • Admin building and offices • Workshop and warehouse building • Weigh bridges • HSE Infrastructures
Ammonia Pipelines	A main pipeline for ammonia supply (12" diameter) and another secondary pipeline (4" diameter) for precooling the main pipeline. A segment of approx. 1.8 km of the ammonia pipeline will be aboveground. The length of each line will be 13 km. The main pipe will connect the Sokhna Port with the production site. Specifically, the main pipe will be connected to the pumping system of Jetty-1 located at Sonker' Bulk Liquids Terminal. Also, the main pipe will be connected to the EBIC' ammonia tanks at Sonker' Bulk Liquids Terminal. Finally, the pipeline will end at the ammonia tanks (10,000 MT/each) at Indorama' production site.
Ammonia unloading arm at Sokhna Port (out of the scope of this study)	The ammonia unloading arm will be part of the future port facilities (out of the scope of this ESIA). To further ensure the uninterrupted supply of ammonia (the main raw material for DAP/NPK fertilizer), the company will also install one unloading arm for ammonia ships. This will be constructed on the Terminal of the Jetty within Sokhna Port, to directly feed the ammonia pipelines.
Temporary Construction Facilities	Only for the construction phase, the Project will count on temporary facilities (accommodation, warehouses, laydown area, etc.), which will be dismantled and restored post-construction.
Electricity connection from site to the nearest tie-in (associated facility)	The nearest tie-in point to the electricity network is about 12 km from the production site.
Natural gas connection from site to the nearest tie-in (associated facility)	The nearest tie-in point to the gas network is about 2.5 km from the production site.
Water connection from site to the nearest tie-in (associated facility)	The nearest tie-in point to the water network is about 1.8 km from the production site.
Sewage connection from the site to the nearest tie-in site (associated facility)	The nearest tie-in point to the wastewater network is about 1.8 km from the production site.
Transportation of sulphur from the Sokhna/Adabiya ports to the production site (primary supply chain)	The Sokhna port is located within the Sokhna industrial/port area. The Adabiya port is located approximately 28 km northeast from the production site.
Transportation of the phosphate rock from the Misr Mine to the production site (primary supply chain)	The Red Sea mine of the Misr Phosphate company is located between Safaga and Quseir, at about 475 km from the production site.

Source: ERM, 2026.

In line with IFC standards, during the Project's life cycle, resource efficiency and pollution prevention principles and techniques that are best suited to avoid, or where avoidance is not possible, minimize adverse impacts on human health and the environment will be applied. The principles and techniques will be consistent with good international industry practice (GIIP), as reflected in various internationally recognized sources, including the World Bank Group Environmental, Health and Safety Guidelines (EHS Guidelines).

In addition, for the design, a Hazard Identification (HAZID) process safety assessment and mitigation measures to inform the Project design has been conducted for the Project. The primary objective of the HAZID study is to proactively identify and assess potential hazards associated with the design and operation of the fertilizer complex. This includes risks related to chemical handling, emissions, dust generation, high-pressure systems, and emissions (see Annex D in ANNEX - Additional studies). An executive summary can be found in Annex D in ANNEX – Executive summaries.

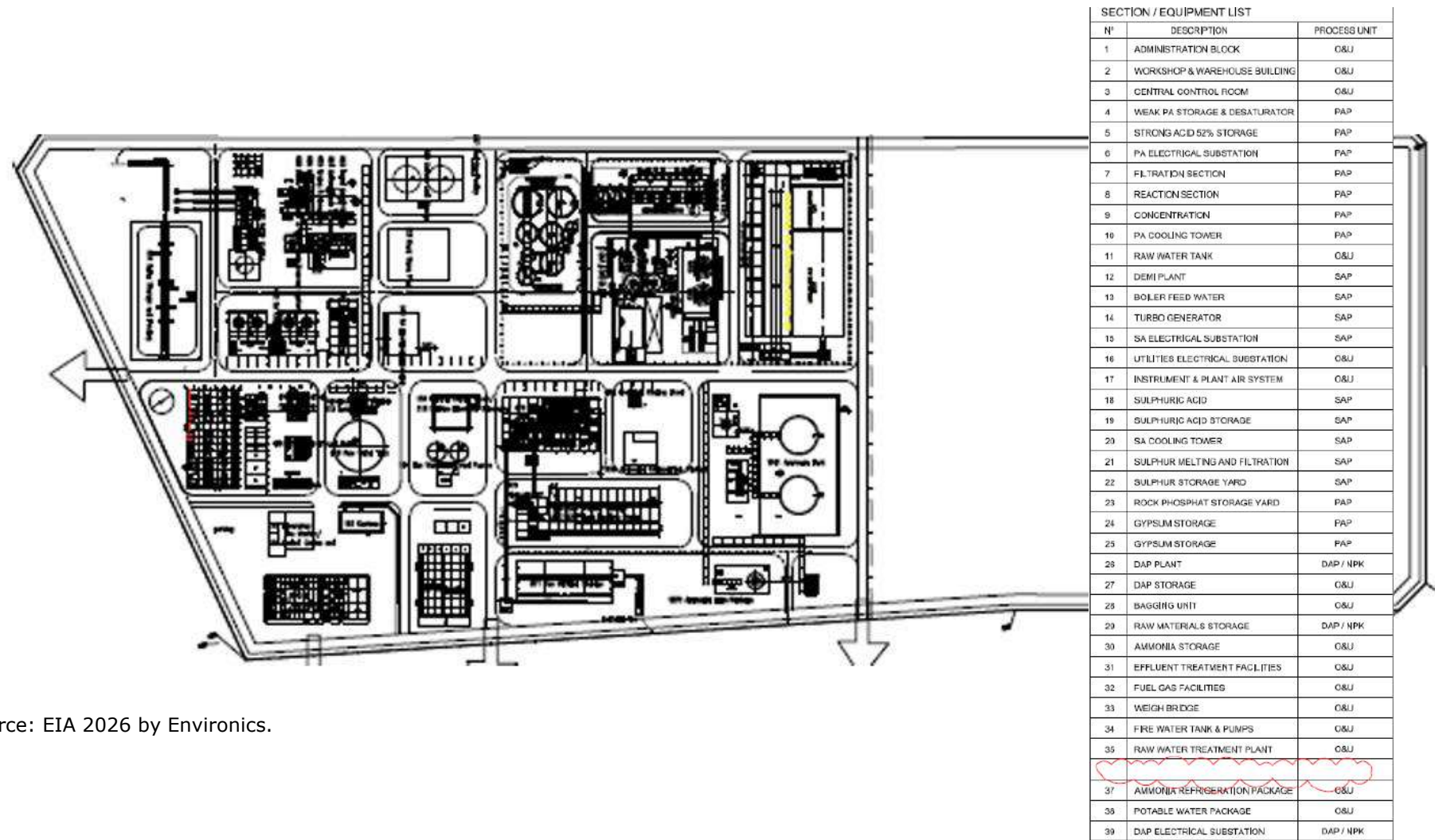
Finally, as mentioned, Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. The future port facilities **(out of the scope of this study)** are the following:

- **One unloading arm for ammonia import.** To further ensure the uninterrupted supply of ammonia (the main raw material for DAP/NPK fertilizer), the company will also install one unloading arm for ammonia ships. This will be constructed on the Terminal of the Jetty within Sokhna Port, to directly feed the ammonia pipelines. The unloading arm will be connected to the ammonia pipeline refereed in the current ESIA.
- **Two storage tanks of phosphoric acid** (52% concentration). Those will be considered as an ancillary facility intended for storage and opportunistic export of excess product. Each tank will have a capacity of 15,000 metric tons (MT). The operation will be based on tanker unloading system and Ship loading system for export of phosphoric acid.

1.7.2 PROJECT LAYOUT

The Project layout is included in the following figure:

FIGURE 1.5 PRODUCTION SITE



Source: EIA 2026 by Environics.

1.8 DESCRIPTION OF THE PROJECT COMPONENTS

1.8.1 SULFURIC ACID PLANT (SAP)

The Project will produce 3,100 metric ton/day (1.023 million ton/year) of concentrated Sulphuric acid (98.5%) as an intermediate product for phosphoric acid and fertilizers production. The Project will use the well proven technology of Double Contact Double absorption (DCDA). The Sulphuric Acid Plant (SAP) will be operated 24 h/day and 7 days a week.

The main components of this plant are as follows:

- Sulphur storage yard
- Water demineralization plant (DM)
- Boiler feedwater unit
- Turbo generator
- Sulphur reception, storage and handling system
- Air suction, filtration and drying
- Sulphur melting and filtration
- Oxidation to produce SO₂ gas
- SO₂ conversion to SO₃ gas
- Double absorption and drying towers
- Waste heat recovery system
- Distribution system of steam for the captive power plant (turbine), and processes requiring steam heating
- SA acid tanks
- SA cooling tower

The following bullets clarify the industrial processes of concentrated sulphuric acid production as an intermediate product.

- ***Sulphur Handling and Storage***

Indorama will import 350,000 tons/year of granular sulphur with a minimum purity of 99.8% through the Sokhna Port. Granular sulphur will be transported via trucks from Sokhna/Adabiya ports to the sulphur storage yard (open area of capacity 40,000 MT) within Indorama site. The storage capacity will supply the SAP for 40 operating days to ensure stable operation.

The following figure shows a typical photo for sulphur handling and unloading system in an open storage yard.

FIGURE 1.6 TYPICAL PHOTO FOR SULPHUR HANDLING AND STORAGE



- **Air Drying Section**

Ambient air will be passed through air filters and then compressed by the main air blower into the packed drying tower to remove the moisture content. Dried air will be sent to sulphur furnace for combustion of sulphur.

- **Sulphur Melting and Filtration**

Raw granular sulphur will be transferred to the above ground jacketed melting tank (145°C) via a belt conveyor. Steam will be used as a heat source in the melting tank, which will be insulated with mineral wool.

Each melting tank will be an above ground cylindrical tank provided with heated conical bottom to remove the impurities; steam heating elements immersed at the top; and an agitator to promote the mixture of fed solid sulphur and the molten sulphur inside the tank.

Polishing and leaf filters will be used to filter the molten sulphur from the associated ashes.

The leaf filter is cleaned on a cycle of 16 hours. Polishing filter candles will be replaced as per the requirement. On the other hand, the filter cake will be collected periodically. It will be crushed and used in DAP Plant as filler.

- **Sulphur Oxidation**

Molten sulphur will be burned in a sulphur furnace to form SO_2 . Since the oxidation is an exothermic reaction, the temperature will rise to 1,050°C. This generated heat will be sent to a waste heat recovery boiler (WHB) to utilize the waste heat.

- **SO_2 Cooling**

The resulted SO_2 from the furnace (at 1050°C) will be cooled down to about 400°C in the waste heat recovery boiler (WHB), which benefits from the high heat of the gas to produce high pressure saturated steam (HPS). HPS will be routed to super-heaters and then to the steam turbine of the captive power plant to produce more than 90% of the project electricity.

- **Conversion of SO_2 to SO_3**

SO_2 (at 400°C) from the waste heat boiler will be sent to 4-stage Catalyst converter. SO_2 will be converted to SO_3 in presence of catalyst, where the temperature of the gas is raised due to

exothermic reaction. The excess waste heat is recovered in the superheater and heat exchangers.

- **Absorption of SO_3**

SO_3 produced up to third bed will be directed to the intermediate absorption tower to absorb the SO_3 in sulphuric acid. The remaining SO_2 is again passed through the fourth bed for the remaining conversion. SO_3 formed in fourth bed will be directed to the final absorption tower to absorb the SO_3 . The remaining gas will be released into the atmosphere through the stack.

The absorption towers will be provided with mist eliminators to prevent acid/gas mist from exiting the towers to the ambient environment. The resulted concentrated sulphuric acid (98.5%) from the pump tank will finally be sent to the acid storage tanks to feed phosphoric acid production process, as described later.

The absorption process is exothermic and accordingly cooling will be needed for controlling the absorption process. Cooling of sulphuric acid is carried out in heat exchangers.

- **Sulfuric Acid Storage**

The resulted concentrated sulphuric acid (98.5%) will finally be sent to the acid storage tanks (2 tanks) with total capacity 20,000 MT to feed the phosphoric acid and fertilizers production process as described later.

The following figure shows the process flow diagram of sulphuric acid production.

FIGURE 1.7 BLOCK DIAGRAM OF SULPHURIC ACID PRODUCTION

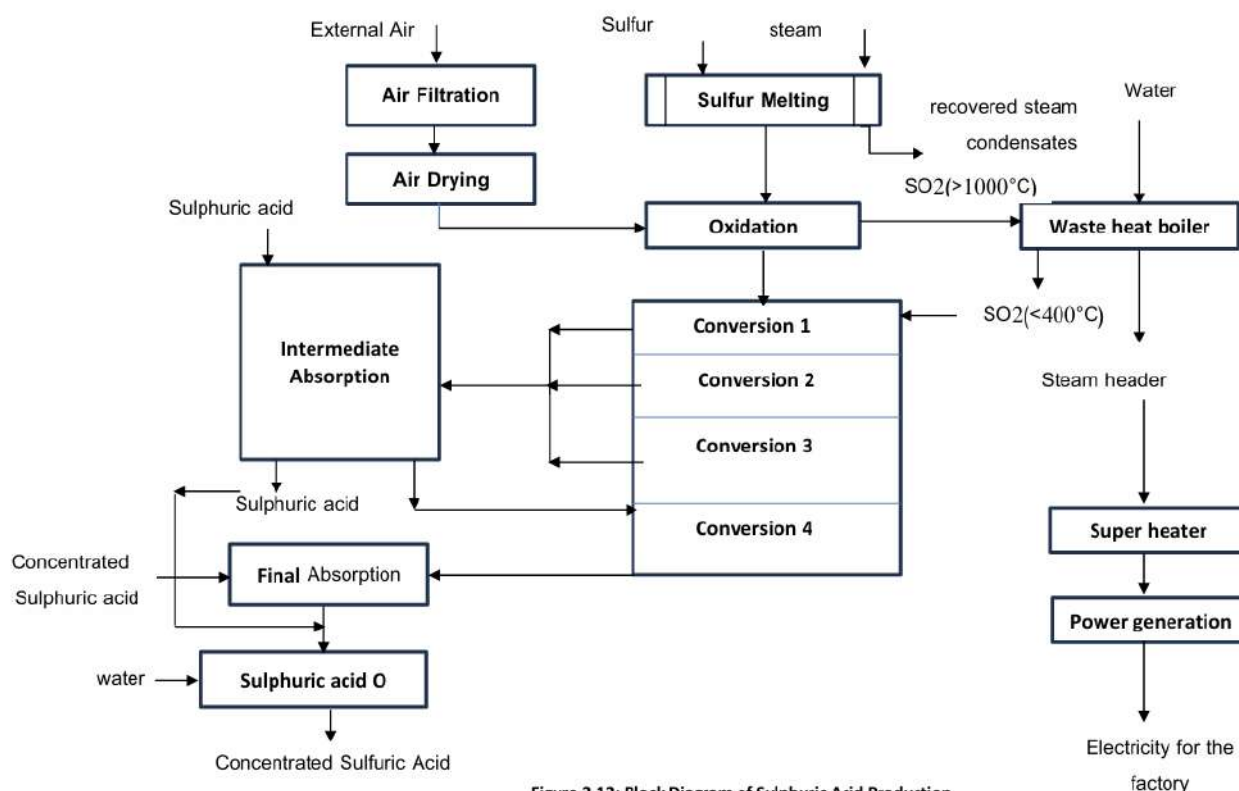


Figure 2-12: Block Diagram of Sulphuric Acid Production

Source: EIA 2026 by Environics.

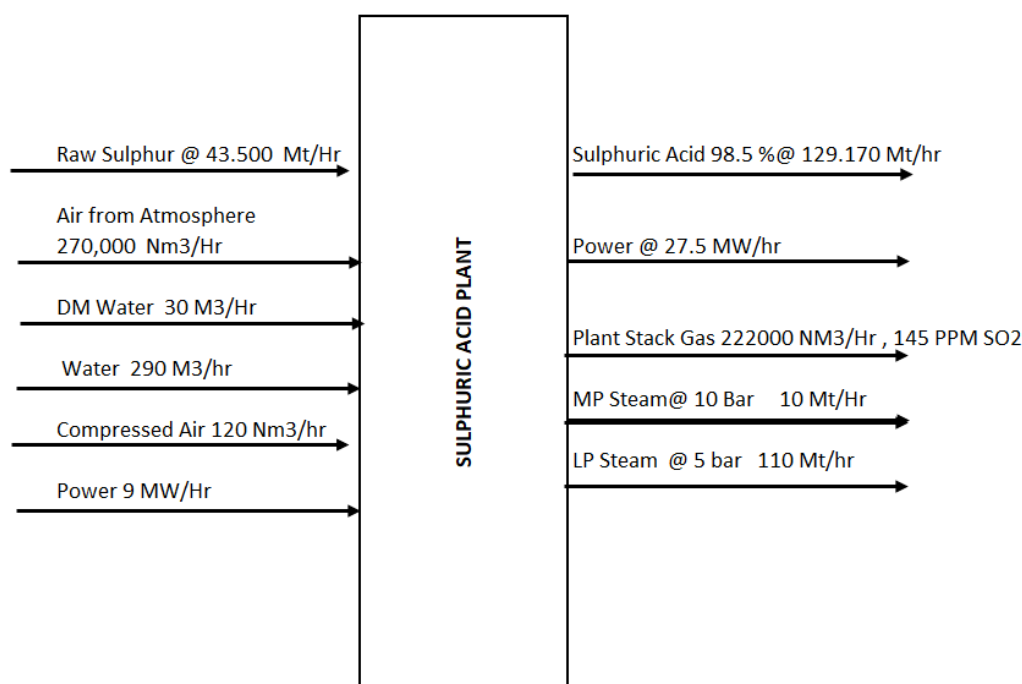
• **Power Generation System**

In order to make full use of waste heat steam, the steam will be used to generate power through a steam turbo generator. The inlet steam with pressure of 62 bar will be admitted to the steam turbo generator. The turbine has options for extraction of steam at medium pressure (9 Bar) and low pressure (4 Bar) for the requirement of sulphur melting, steam jacketing and PAP concentration section.

The exhaust steam will be sent to the surface condenser. The surface condenser uses cooling water to condense the exhaust steam. The steam turbine is coupled with a power generator where about 27 MW of power is produced as average. The detailed description is in the section 1.8.5.4.

The following figure provides a preliminary material balance for the SAP.

FIGURE 1.8 PRELIMINARY MATERIAL BALANCE FOR THE SULPHURIC ACID PLANT



Source: Indorama.

1.8.2 PHOSPHORIC ACID PLANT (PAP)

The wet process is the nowadays technology used for phosphoric acid production worldwide. The Project includes a plant to produce phosphoric acid (52% concentration) as an intermediate product with total capacity 1,000 MTPD. It will be operated continuously for 24 h/day over 7 days a week.

The main components of this plant are as follows:

- Reception, storage and handling of phosphate rock
- Grinding mills of rock phosphate to reach proper size for further processing
- Phosphate rock reaction with Sulphuric Acid to produce Phosphoric Acid

- Filtration section and Phosphogypsum separation
- Phosphogypsum conveying and storage
- Weak PA storage & desaturation
- Purification and concentration (multiple effect evaporation)
- Strong acid (52%) storage tank(s)
- Emissions control/ treatment systems (scrubbers, etc.)
- Gas washing and recovery of fluorides
- Fluorosilicic acid collection and storage (will be sent to an external company for treatment)
- PA cooling tower

The following bullets describe the production processes of the PAP.

• **Phosphate Rock Reception and Storage**

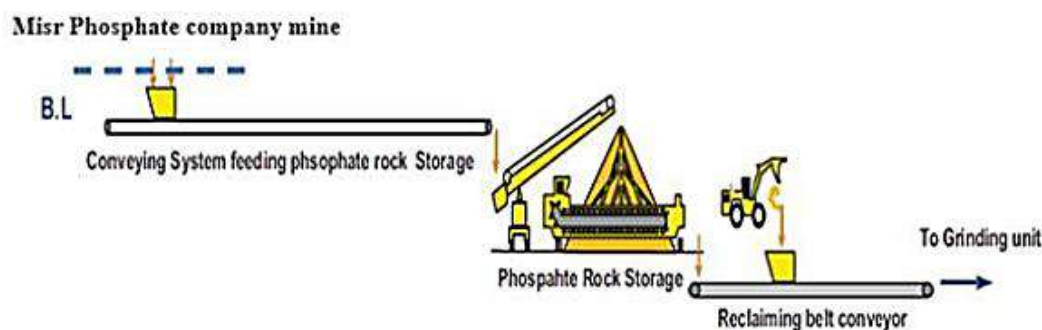
It is planned to consume 1.2 million MT of phosphate rock annually, which will be supplied by the Misr Phosphate Company from the Red Sea Mines. For more information about the phosphate rock, see Annex 1.

Phosphate rock will be transported by trucks from Misr Phosphate mining area in the Red Sea to the Indorama site (approx. 475 km).

Phosphate rock will be unloaded in the rock storage yard at the Indorama site. The conveyor will be equipped with a high accuracy belt scale to continuously measure the amount of the received phosphate rock. Storage and handling will be carried out through a set of conveyors and reclaimers equipped with a dust suppression system.

The following figure shows a diagram of the phosphate rock handling and storage.

FIGURE 1.9 PHOSPHATE ROCK HANDLING AND STORAGE



Source: Indorama.

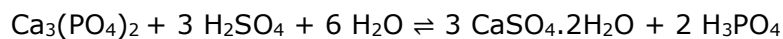
• **Phosphate Rock Grinding**

The phosphate rock will be fed to the grinding mills and screens. The grinding process will be provided with air classifier (cyclone) to separate the fine from the oversize particles that will be recycled to the mills. The product ground rock will be stored in a silo of a capacity approx. 1,200 ton.

• **Attack and Digestion Reaction**

The milled phosphate rock will be transferred from the ground rock silo to a concrete “attack tank”, where it is reacted with concentrated sulphuric acid. The tank is maintained under a slight negative pressure to avoid the release of evolved gases (HF) and assist in the cooling of the slurry.

The phosphate rock reacts with sulphuric acid at temperature of 75-80°C forming weak phosphoric acid and phosphogypsum as shown below. For more information about phosphogypsum, see Annex 1.



The reaction process is exothermic and accordingly low-level flash cooling (LLFC) will be needed for controlling the temperature of the process. LLFC is maintained under vacuum by using cooling water and a vacuum pump.

• **Filtration and Phosphogypsum Separation**

The slurry from the digestion tank is routed to a continuous proprietary filter for separating Phosphogypsum.

After feeding the slurry to the filter, the initial filtrate of produced acid (sometimes cloudy with solids and slightly diluted by water retained in the filter) is discharged. This liquor is recycled to the reactor.

The weak acid is collected and sent to a designated tank and clarification.

The gypsum cake after counter current washing in 3 stages, is discharged and conveyed to the stockpiling area within the site (280,000 m²).

As explained in Section 1.8.5.9, gypsum cake (which is phosphogypsum) will be stored on the production site. In this context, a hydrodynamic modelling was carried out to assess the impact of phosphogypsum storage at the site on soil and the possibility of the contaminants to reach groundwater aquifer. It should be noted that the hydrodynamic study was conducted for Indorama' at a nearby location at apporx. 4.5 km north of the Project's site. Considering the short distance and similar physical/geological setting, soil and groundwater conditions are expected to be broadly comparable. Therefore, the study results are considered representative and acceptable as baseline conditions for the Project site. This assumption will be verified during the construction phase through appropriate site-specific monitoring, in order to confirm local groundwater conditions and identify any potential deviations from the baseline assumptions. The conclusions of this study show that, for a worst -case scenario, long term impact is predicted for 50 years, which is beyond the storage lifetime (20-25 years). In this worse-case scenario:

- (1) insoluble pollutants (mainly CaSO₄, AL and Fe) will precipitate on the top layer ground surface and will not penetrate through the unsaturated zone,
- (2) soluble pollutants (mainly P₂O₅) will leach through the unsaturated sone of the soil to a maximum depth of 9.5 m below ground level. However, they will not reach the groundwater aquifer (assumed at more than 30 meters below ground level) due to the predominant adsorption processes in the vadose zone.

(3) Only water (without the pollutants) may slightly reach the groundwater aquifer (30 m below the ground level) beyond 25 years of storing the modelled Phosphogypsum quantity. This prediction is based on the worst-case scenario.

For more detail see Annex 4 of the EIA 2026 by Environics.

- **Gas Scrubbing**

A gas scrubber equipped with spray nozzles (top and bottom stage) and a fume scrubber droplets separator is used to eliminate the mist. The gas scrubber fan draws gases (HF) from the various emission points of the reaction and filtration units discharging to the fume stack.

The gases will be washed with an aqueous solution circulating through the fume scrubber circulation pump. The last washing step is performed with clean process water to reach the emission limit for pollutants. The effluent of the scrubber is recirculated to the attack section through the flash cooler pre-condenser in order to avoid liquid effluent.

- **Desaturation and Clarification**

In this process, a settling tank will be used for separating and recycling the solids associated with weak acid (27%). The clear weak acid will then be collected by overflowing and stored in an intermediate tank.

- **Acid Concentration**

Diluted phosphoric acid will be concentrated from 27% to 52% through vacuum evaporators using low pressure 4-bar steam.

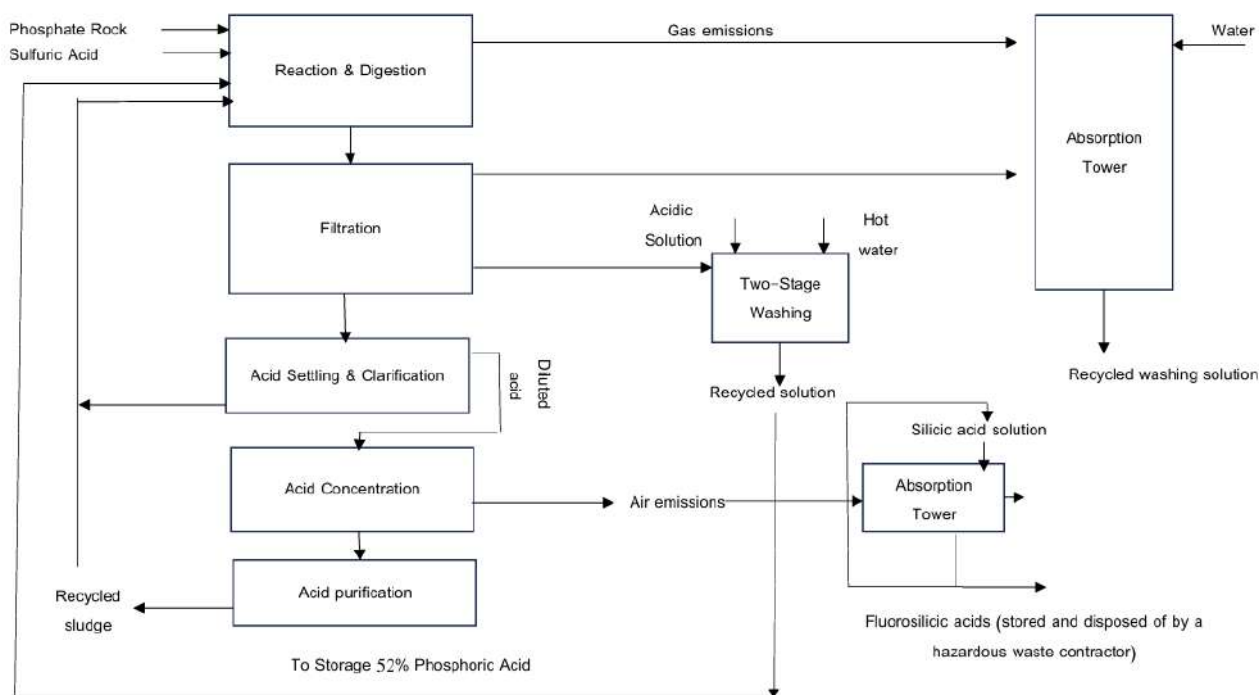
The resulting steam condensate will be recycled to SAP as boiler feed water for steam generation. The final product of phosphoric acid (52% P_2O_5) is then sent to the storage tanks.

Vapors generated from the evaporators will mainly contain steam, HF, and SiF_4 . They will be collected and directed to a wet scrubber (fluorine recovery unit). Gases are absorbed by low concentrated fluorosilicic acid (FSA) to produce about 18% FSA.

FSA (18% wt/wt) will be stored and then disposed of off-site through a licensed and environmentally approved company. No gases are emitted from the absorption section as all the fluorine will be recovered.

The following figure provides a simplified block diagram of phosphoric acid production.

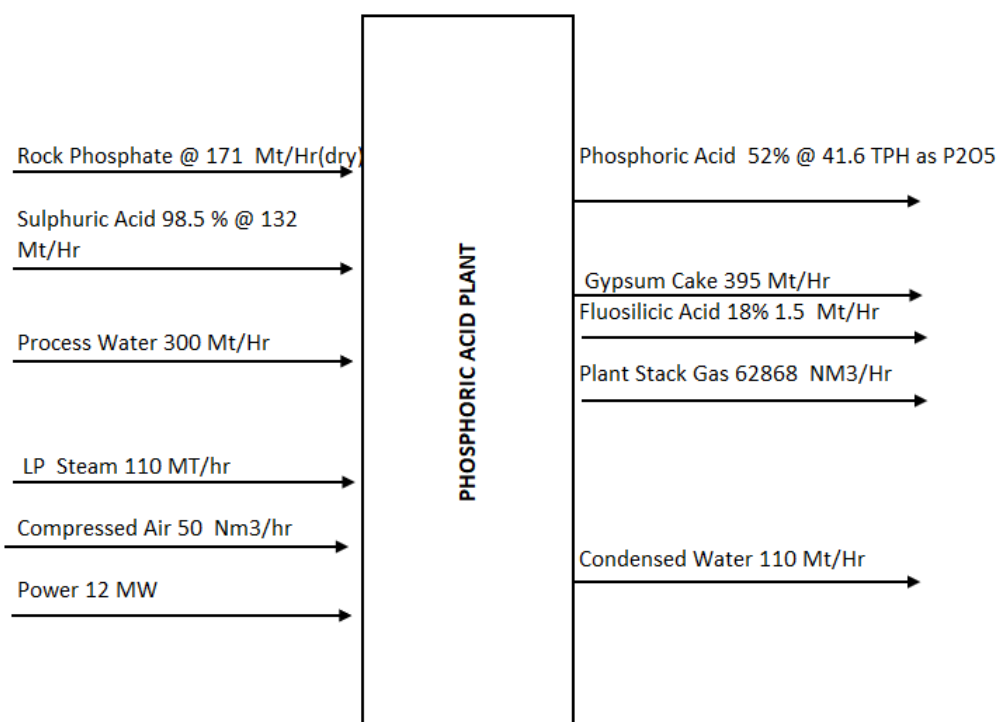
FIGURE 1.10 BLOCK FLOW DIAGRAM OF PHOSPHORIC ACID PRODUCTION



Source: EIA 2026 by Environics.

The following figure provides a preliminary material balance for the phosphoric acid plant.

FIGURE 1.11 PRELIMINARY MATERIAL BALANCE FOR PHOSPHORIC ACID PLANT



Source: Indorama.

1.8.3 DAP/NPK FERTILIZER PLANT

The Project includes a plant for the production of DAP/NPK as a main product with total capacity 1,935 MTPD. The plant will be used for production of DAP or NPK according to the

market demand. The DAP/NPK plant will be operated 22 hrs/day and cleaning activities will be done for approximately 2 hrs per day.

The main components of DAP/NPK plant include the following:

- Raw materials storage
- Ammonia storage tank
- Ammonia refrigeration unit
- Ammonia and H_3PO_4 acid reactor
- Granulation of Mono Ammonium Phosphate (MAP)
- Addition of Ammonia to MAP for DAP formulation
- DAP drying, cooling and screening
- Crushing and recycling of oversize
- Control room & DCS
- Conveyors system
- Emission control and treatment system (wet scrubbers, cyclones)
- DAP storage
- Bagging unit

The DAP/NPK plant requires ammonia, phosphoric acid, sulfuric acids and other raw materials such as potassium chloride (muriate of potash - MOP) and urea.

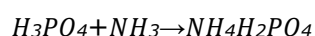
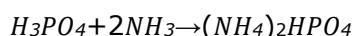
The following bullets describe the production process of Granulated DAP.

- **Slurry Preparation and Reaction**

This process is based on the use of licensors pipe reactor and pre-neutralizer technology. The main raw materials are liquid anhydrous ammonia, phosphoric acid and sulfuric acid. Liquid coating agent (as oil mixture) is also used for coating the produced granules.

The pipe reactor facilitates the mixture of acid and ammonia to react generating heat, and accordingly energy saving (and cost) is achieved by providing the necessary heat to dry out the material.

The pre-neutralizer is a tank where phosphoric acid and a small amount of sulfuric acid are neutralized with ammonia producing slurry. This reaction takes a few seconds and the heat inside the reactor reaches 130:135° C. The main reactions inside the reactor are:



- **Granulation**

The produced slurry is pumped into the solid bed of the granulator (rotary drum) to convert the slurry from its semi-liquid state to solid granules. The solid bed is composed of fresh solid raw materials and recycled products from recycled elevator.

Granulator is also provided with a set of spargers that spray liquid ammonia over the solid bed to make the final ammonization of the product.

- **Drying and Final Preparation**

The solid granules generated in the granulator will be directed through co-current of continuous hot air to a rotary drum dryer (RDD) to eliminate residual moisture without inducing product decomposition. Natural gas will be used as a fuel for heating the drying air.

The exhaust air from the dryer is accompanied by particles, ammonia and water vapour.

Exhaust air will therefore be purified by passing on cyclones with conical bottom to collect particles by centrifugal force. Particles are recovered and directed to the granulator. The resulting gases are drawn and directed to a wet scrubber.

- **Screening and Recycle**

There are two sections of screening to separate oversize and undersize particles from the “on size” particles (2-4 mm). All the oversize particles will be crushed and recycled, and undersize particles will also be recovered to the granulator drum.

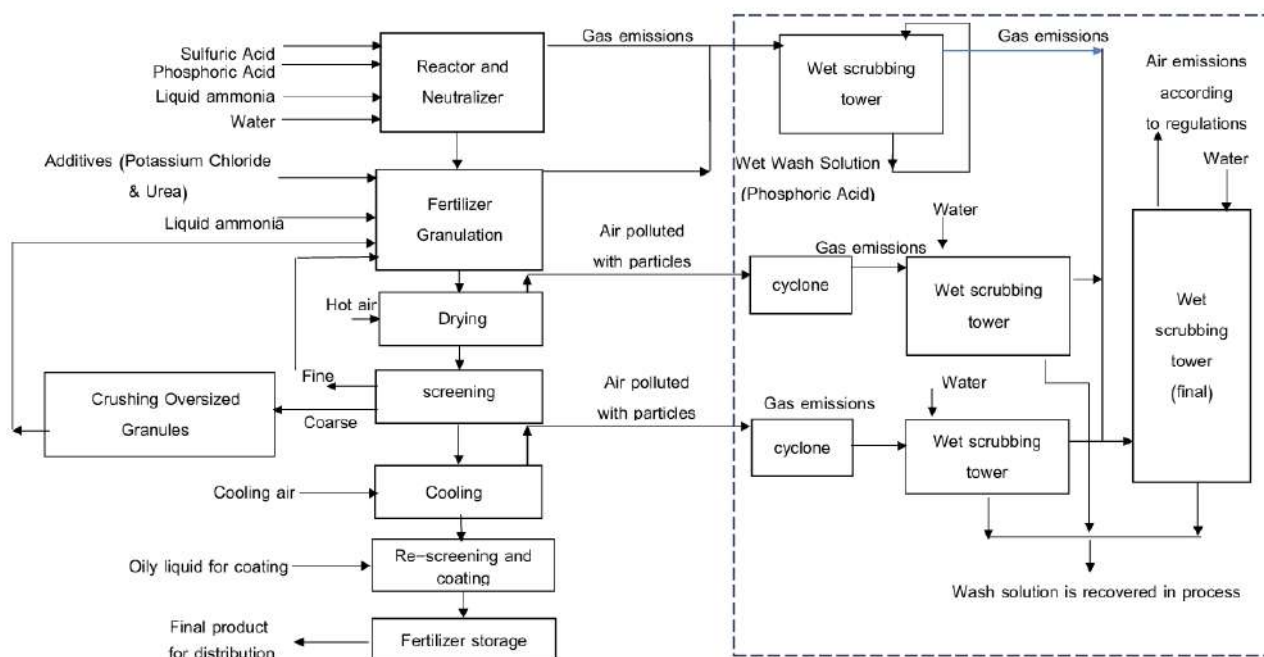
- **Cooling and Coating**

The produced granules of fertilizer (DAP) from the screening process will be cooled by counter-current of cold air from 90°C to at least 10°C over ambient temperature. Cooling air will be passed through a closed-loop cooling system using liquid ammonia.

After cooling, the product will be elevated and re-screened by the polishing screens to improve the quality of the product by eliminating all the residual oversize / undersize before coating with specific oil mixture.

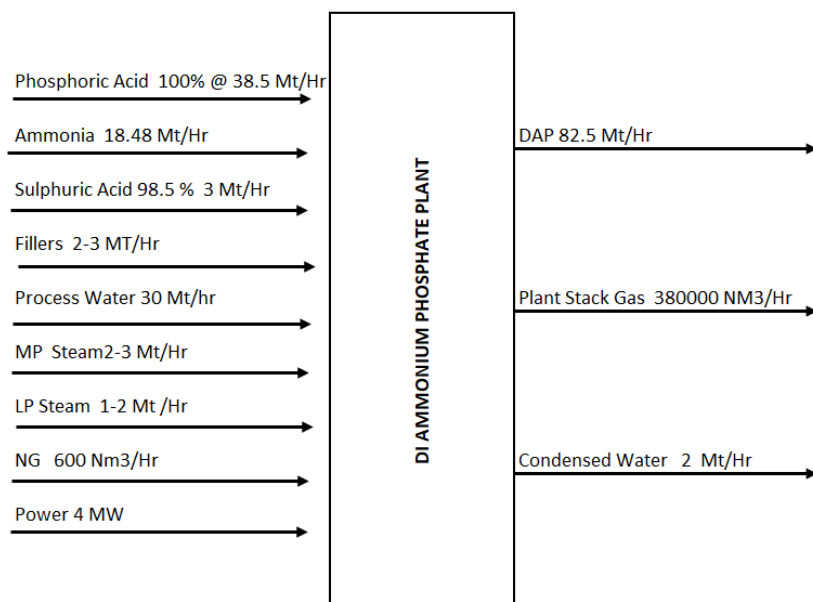
Final DAP will be stored or packaged automatically and then conveyed to the finished products warehouse.

FIGURE 1.12 BLOCK FLOW DIAGRAM OF DAP/NPK FERTILIZERS PRODUCTION



Source: EIA 2026 by Environics.

FIGURE 1.13 PRELIMINARY MATERIAL BALANCE FOR DAP PLANT.



Source: Indorama.

1.8.4 PHOSPHOGYPSUM (PG) STORAGE

As mentioned earlier, PG will be stored at an onsite storage yard of a total area 280,000 m². It is planned to stockpile the Phosphogypsum throughout 20-25 years. Indorama is currently exploring the possible options for selling PG to other industries, such as cement, gypsum board, brick, etc. As mentioned before, the potential environmental impact of PG storage on soil and potential reaching groundwater is assessed through a hydrodynamic modeling study detailed in Annex 4 of the EIA 2026 by Environics. .

PG from PAP's filter will be conveyed by gypsum conveyor, which is further transported by stacker conveyor for proper stacking by the help of gypsum thrower and loaders. Continuous extension of stacker conveyor will be done after compacting the gypsum heap. Overall shape of gypsum stacking will be like trapezium. The thrower will throw the gypsum at a distance of about 20 m by centrifugal action. This will reduce the requirement of wheel loaders for spreading Gypsum and to make space for further storage. The Gypsum thrower will handle about 400 MT /hr. of Gypsum.

In addition, adequate loading hopper will be provided internally lined with UHMWPE. Slope is to be designed to avoid any PG deposit. Bibs are to be provided on hopper sides to seal completely for Phosphogypsum spillages without creating wear on the belt. Impact bars are to be provided below the belt all along the hopper area. Figures 2-19, 2-20 & 2-21 show typical photos of Phosphogypsum stacking equipment.

FIGURE 1.14 SCHEMATIC DIAGRAM OF PHOSPHOGYPSUM STACKING



FIGURE 1.15 EXAMPLE PHOTO OF CONVEYOR



The conveying system will be provided by efficient safety system including pull cord switches, belt misalignment switches and zero speed switches. A pull cord switch is an emergency switch that is used to stop the belt conveyor directly once an accident occurs. They are mainly designed for providing safety for men & machines to keep away from accidents and also to stop the machines in emergency cases.

It will also be equipped with lighting and earthing along the conveyor path through earthing pits at regular intervals.

The following safety measures will also be installed at the conveying system:

- Covering and enclosure to prevent dust emissions.
- Dust suppression near the discharge zone.
- Emergency stop switches provided at intervals.
- Noise attenuation measures for motor and drive station.

Operation and maintenance of the conveying system will be carried out as follows:

- The system is designed for continuous operation with minimal downtime.
- It is provided by walkways, as mentioned above, and platforms throughout its path to enable the maintenance work without disturbing the surrounding environment.

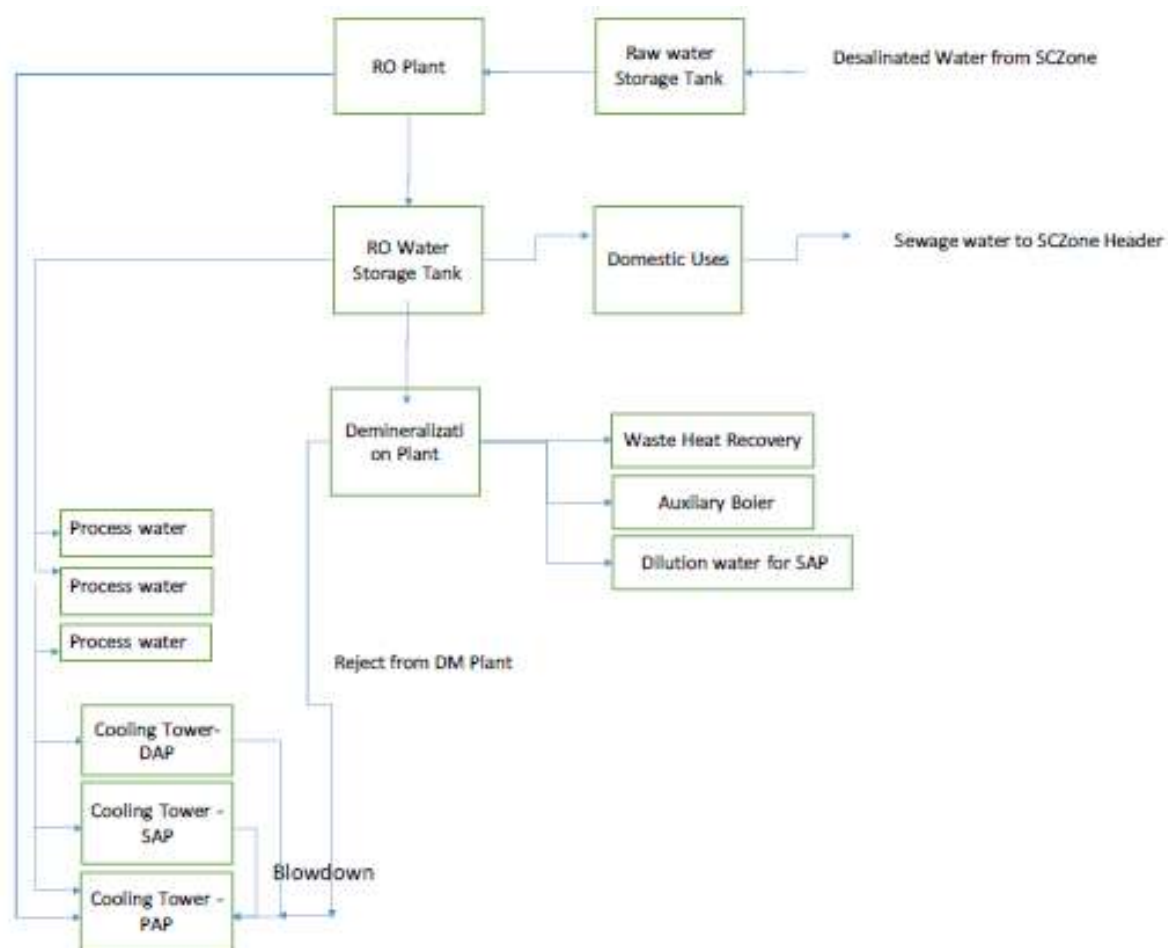
1.8.5 UTILITIES & SERVICE UNITS

1.8.5.1 WATER SUPPLY AND TREATMENT UNIT

Water for the Project will be raw desalinated water. It will be supplied by the SC Zone. A total of 650-700 m³/h (maximum of 5 million m³/year) will be needed for the industrial process, and specifically feeding the demineralization unit (DM), SA, PA and DAP plants and utilities.

Raw water will be pumped to the raw water tank of capacity 32,000 m³ at Indorama site and then sent to the reverse osmosis (RO) unit (total capacity of 770 m³/day). Reverse osmosis water is continuously required for feeding the auxiliary boiler and supply make up water to Sulphuric Acid Plant (SAP) and cooling towers.

FIGURE 1.16 WATER SUPPLY & DISTRIBUTION



Source: Indorama.

The major components of the DM unit are as follows:

Reverse Osmosis (RO)

Raw water will be stored in raw water tank shall be further treated through RO system in the DM plant to meet the water quality required for the Fractional Electro Deionization (FEDI) system.

Water shall be passed through cartridge filters, which is a safeguard against media breakthrough in the preceding units. The cartridge filter will be followed by the reverse osmosis system.

The RO Block comprises of RO membranes in a desired configuration with high pressure pumping. This RO block works on approximately 90% recovery.

The permeate from RO block will be sent to RO treated water tank. Reject water from RO will be sent to the effluent tank.

Fractional Electro Deionization System (FEDI)

The FEDI system is used to obtain the necessary quality of feed water of the high-pressure boiler. It comprises a membrane process with combination of desalination technology of membrane and demineralization technique of ion exchange resin that allows to generate ultra-pure water without generating any effluent.

Around 100 m³/day of effluent is expected from the DM Plant which will be consumed in PAP cooling tower.

1.8.5.2 INDUSTRIAL WASTEWATER TREATMENT UNIT

The Project design is based on Zero Liquid Discharge (ZLD). It includes an industrial wastewater treatment unit with a capacity of 85 m³/h.

Industrial wastewater will be generated as follows:

- Gas scrubbers, which will be recycled to the process.
- Boiler blowdown, which will be sent to the cooling towers.
- Cooling towers blowdown from sulphuric acid which will be utilized in PAP cooling tower after treatment.
- Waste water from the water treatment plant will be utilized in PAP after required treatment.

All condensates will be collected in a condensate recovery tank and recycled back to the process after suitable treatment. All effluents will be treated suitably and recycled to the respective project units (cooling towers, general cleaning and the process).

The following tables provide the expected influent wastewater and treated effluent water characteristics, respectively.

TABLE 1.4 EXPECTED SPECIFICATIONS OF INLET WASTEWATER

Parameter	Concentration
Average Oil and Grease (O&G)	50 mg/l
Maximum Suspended Solids (SS)	500 mg/l
Biochemical Oxygen Demand (BOD)	500 mg/l

Source: Indorama.

TABLE 1.5 EXPECTED SPECIFICATIONS OF WASTEWATER AFTER TREATMENT

Parameter	Concentration
Maximum Total Oil and Grease (O&G)	5 mg/l
Maximum Suspended Solids (SS)	20 mg/l
Biochemical Oxygen Demand (BOD)	20 mg/l

Parameter	Concentration
Minimum Dissolved Oxygen (DO)	4 mg/l
Colonial count in 100 cm ³	Less than 100
pH	6-9

Source: Indorama.

1.8.5.3 COOLING SYSTEM

The Project includes two types of cooling systems:

Cooling Towers

Water cooling system includes cooling towers for the Sulphuric Acid Plant (SAP) and the Phosphoric Acid Plant (PAP).

SAP cooling tower will have a capacity of around 9,000 m³/h circulating water. Make up water will be around 180 m³/h for compensating losses due to evaporation and blowdown.

Blowdown water is expected to be 90 m³/h, which will be collected and sent to PAP.

PAP cooling tower will have a capacity of around 7,500 m³/h circulating water. Make up water will be around 150 m³/h. Blowdown is expected to be 75 m³/h, which will be reused in the process.

Closed Loop of Ammonia Cooler

Ammonia will be used in a closed loop to cool the granulated DAP before coating. It is equipped with finned coil with capacity to cool 85 Tons/h of product.

1.8.5.4 POWER SUPPLY & SUBSTATION

The total maximum power of the Project is about 29.5 MW. An average of 27 MW (85-90% of the total power demand) will be self-generated through the captive power plant within the site. The remaining 2-3 MW will be provided by the national grid through the SC Zone.

Waste heat is generated in the Sulphuric Acid Plant primarily during the oxidation of Sulphur and the subsequent conversion of sulphur dioxide (SO₂) to sulphur trioxide (SO₃) in the contact process. This waste heat is recovered in the waste heat recovery boiler (WHB).

The major sources of waste heat generation are:

1. Combustion of Sulphur

- In a Sulphur Burner, elemental Sulphur (S) are burned in dry air to produce Sulphur dioxide (SO₂).
- This reaction is highly exothermic, generating significant heat.
- The hot gases from Sulphur combustion and SO₂ oxidation are passed through a waste heat boiler.
- The excess heat is recovered in the Waste heat Boiler (WHB) as saturated steam.

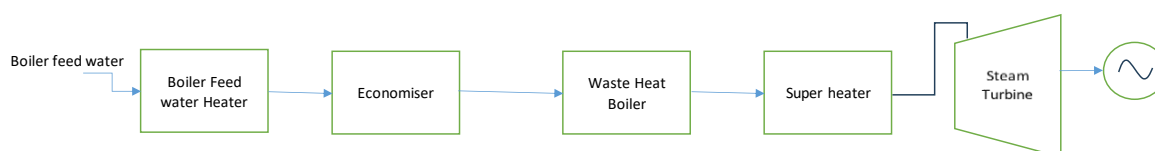
2. SO₂ to SO₃ Conversion in the Converter

- In the converter, SO₂ is oxidized to SO₃ using vanadium pentoxide (V₂O₅) as a catalyst.
- This is an exothermic reaction that releases substantial heat.

- Four catalyst beds are used, and heat is generated at each stage.
 - Intermediate cooling is required to maintain optimal temperature for conversion, which is done using heat exchangers like Economisers and Superheater.
3. SO₃ Absorption section Heat recovery
- In the absorption system the heat generated during the absorption is recovered in the Boiler feed water heater.

The total production of steam is expected to be 160 Ton/h at pressure of 60 bar and 480°C. It will be utilized in the steam turbine with a generator to produce power. The process is indicated below:

FIGURE 1.17 PROCESS OF STEAM PRODUCTION



Source: Indorama.

The steam turbine is coupled with a power generator where an average 27 MW of power will be produced. The generator is synchronized with the national grid. Synchronization implies that the generator and the electricity grid must have coincident parameters, such as voltage and frequency, to function together without problems. The energy generated by the generator will be used within the plant for its operational needs. If the plant needs more energy than the generator can produce, the difference will be obtained from the electricity grid.

Also, regarding power, the Project will include the following substations (transformers) for voltage adjustment.

- DAP electrical substation
- SA electrical substation
- PA electrical substation
- Utilities' electrical substation

Required transformers will be installed to adjust the electric current as suitable to the purposes (equipment operation, illumination, running devices, etc.). The transformers will be dry and wet with VCB type. Vacuum Circuit Breaker (VCB) is type of circuit breaker which uses vacuum between the electrodes as the arc quenching medium. Compared to an air circuit breaker, VCB type provides a more environmentally friendly solution by reducing greenhouse gas emissions, less maintenance, and offering longer life.

1.8.5.5 AIR COMPRESSING UNIT

The Project includes one air compressing unit with 3 screw compressor of capacity 2000 m³/h. Compressed air will be dried using dryer. Suitable air receiver is provided to maintain the pressure and for safe shutdown of the plants.

1.8.5.6 AUXILIARY BOILER

The Project includes one auxiliary boiler which will be used only during shutdown and startup, expected once in 2 years will be installed, using natural gas & diesel as emergency fuel, for supporting the steam supply during startup. The capacity of the boiler is 15 TPH.

The boiler's blowdown will be less than 2 m³/day, which will be reused as make-up water of the cooling towers.

The expected natural gas consumption in the auxiliary boiler is around 5,000- 6,000 m³/d.

The height of the boiler's stack will be about 10 m above its building.

1.8.5.7 STORAGE TANKS

The Project includes several tanks with different capacities for storage of water, diesel, sulphuric and phosphoric acids. The following table provides the number of tanks and their capacities.

TABLE 1.6 STORAGE TANKS

Material	No. of Tanks	Tank Capacity	Unit	Material of Construction
Sulphuric acid	2	10,000	MT	Carbon Steel
Weak phosphoric acid	1	10,000	m ³	Carbon steel with Rubber lining
Concentrated phosphoric acid	1	20,000	m ³	Carbon steel with Rubber lining
Ammonia	2	10,000	MT	A537CL1+S5 (Low temperature CS)
Raw water	1	32,000	m ³	Carbon Steel
Diesel oil (aboveground)	1	30	m ³	Carbon Steel
Fire water tank	1	2,000	m ³	Carbon Steel
DM Tank	1	2,000	m ³	Carbon Steel with epoxy lining

Source: ESIA 2026 by Envirionics.

Based on the statutory requirement, tanks will be provided with bund walls to contain any leaks. The bund walls will be designed to contain 110% of the capacity of the largest storage tank as per requirement.

1.8.5.8 FINAL PRODUCT WAREHOUSE

The final product (DAP/NPK fertilizer) will be stored in a warehouse with a maximum capacity of 16,000 tons. The warehouse area is 410 m². It will be a closed steel structure provided by a firefighting system and adequate ventilation.

1.8.5.9 STORAGE AREAS

The project will include 4 storage areas as follows:

- **Sulphur storage area**

Sulphur will be stored in an open paved yard (around 6,750 m²) with a capacity of 40,000 MT that will supply SAP operation for 40 days. The storage yard will be provided by a fire and explosion control system. The sulphur storage area will be located as close as possible to the onsite truck unloading system and the processing section in order to minimize the mechanical conveying distance. Fog guns will be installed to keep the sulphur moist and avoid any dust formation. As a standard practice, water will be sprayed periodically on the sulphur heap to avoid any fire hazard.

- **Phosphate rock storage area**

Phosphate rock will be stored in an uncovered and paved storage yard (around 6,994 m²) with a capacity of 36,000 MT to supply the Phosphoric Acid Plant (PAP) for 8 operating days.

All precautions will be taken to eliminate airborne dust during handling and storage. See Environmental and Social Management Framework (ESMF) as part of this Updated ESIA Supplementary Package.

- **Chemicals storage area**

- The closed area allocated for chemicals is around 200 m². All precautions will be considered during the handling of chemicals to avoid spills, and the spill-control and firefighting in the storage area will be included in the Emergency Response Plan (ERP) of the site. See Environmental and Social Management Framework (ESMF) as part of this Updated ESIA Supplementary Package.

Phosphate rock will be stored in an uncovered and paved storage yard (around 6994 m²) with a capacity of 36,000 MT to supply Phosphoric acid plant for 12 operating days.

All precautions will be taken to eliminate airborne dust during handling and storage.

1.8.5.10 CENTRAL CONTROL ROOM

Leak Detection System (LDS) master unit will be installed in Indorama Control Room, in order to detect leaks in the ammonia pipelines.

1.8.5.11 FIRE WATER TANK AND PUMPS

Fire water tanks and pumps are essential components of a fire protection system. The tanks store water specifically for firefighting purposes, ensuring a reliable supply during emergencies. Fire pumps are used to maintain adequate pressure and flow rate to the firefighting system, ensuring effective water delivery to extinguish fires.

At the production site, one tank of 2,000 m³, made of carbon steel will be installed. The water used for firefighting purposes will be raw desalinated water coming from the SC Zone.

1.8.5.12 ADMIN BUILDING AND OFFICES

An administrative building and offices are designed to provide a functional and comfortable workspace for staff. The buildings include office spaces, meeting rooms, reception areas, and other facilities necessary for administrative operations. The design focuses on creating a safe, healthy, and aesthetically pleasing environment that supports productivity and efficient workflow.

1.8.5.13 WORKSHOP AND WAREHOUSE BUILDING

Workshop and warehouse buildings are designed to support industrial activities and storage needs. Workshops provide space for manufacturing, assembly, and other industrial processes, equipped with specialized equipment and machinery. Warehouses offer storage solutions for inventory, materials, and products, ensuring they are kept safe and organized.

1.8.5.14 WEIGH BRIDGES

Weigh bridges are large scales used to measure the weight of vehicles and their loads. They consist of a robust platform, load cells, and a weight indicator. Weigh bridges are used to ensure compliance with weight regulations.

1.8.5.15 HSE INFRASTRUCTURES

Basic first-aid facilities will be available on-site during construction and operation of the Project and staff will have completed appropriate training. If injured staff require more-serious medical attention, they will be transported to the nearest medical center.

Fire-fighting equipment will also be available at the Project site and staff will be suitably trained to manage any incidents.

The project will follow IFC EHS Guidelines and best industry practices in design and engineering.

1.8.6 AMMONIA PIPELINES

The ammonia will arrive at the port of Sokhna both by ship and from EBIC tanks at the Sonker liquid Bulk terminal. On the other hand, when there is a shortage of ammonia ships, Indorama will use road tankers to directly transport ammonia from EBIC' tanks to the production site.

The Project includes a main pipeline for ammonia supply (12" diameter) and another secondary pipeline (4" diameter) for precooling the main pipeline. The second pipeline will be parallel to the main pipeline.

A segment of approx. 1.8 km of the ammonia pipeline will be aboveground. Given the hazardous (toxic) nature of ammonia, a Quantitative Risk Assessment (QRA) was conducted to assess the potential risk of accidental leak from the aboveground segment of the pipeline (see complete document in Annex 6 of the EIA 2026 by Environics).

The length of each line will be 13 km. The main pipe will connect the Sokhna Port with the production site. Specifically, the main pipe will be connected to the pumping system of Jetty-1 located at Sonker' Bulk Liquids Terminal. Also, the main pipe will be connected to the EBIC' ammonia tanks at Sonker' Bulk Liquids Terminal. Finally, the pipeline will end at the ammonia tanks (2 tanks of 10,000 MT each) at Indorama' production site.

Specifically, for the ammonia pipes, the transport of ammonia will be continuous and might stop in emergency cases only. Liquefied ammonia will be pumped into the main pipeline by pumps located at Sonker Terminal. Ammonia will be pumped into Indorama pipeline at the following specifications:

- Cooled and liquefied at (- 33° C)
- Pressure 25 Bar
- Flow rate 550 TPH

As clarified earlier, the function of the secondary pipeline is to precool the main pipeline a day before arrival of the ammonia shipment. Precooling will ensure safe transfer of liquid ammonia and will prevent vaporization. Liquefied ammonia will be pumped at the following specifications:

- Cooled and liquefied at (- 33° C)
- Pressure 25 Bar
- Flow rate 10 TPH.

The day before the shipment, liquefied ammonia will be pumped in a closed loop into the secondary pipeline. It will be pumped from the ammonia tanks at the production' site, through the secondary pipeline and then through the main pipeline to cool it down and then recycled to the tank at the production' site. Liquefied ammonia will be pumped through the secondary pipeline at the same above conditions/specifications.

Regarding the technical design of the ammonia pipelines, the two pipelines will be selected according to ASTM A333 Grade 6³. The wall thickness of each pipeline will be about 10 mm. In addition, it should be noted that the ammonia pipelines will be provided with leak detection and prevention systems (LDS), based on fibre optic sensing cable, which is described below.

• **Leak Detection Systems (LDS)**

The LDS will be able to detect and locate small leaks on all pipeline length before they evolve into large and dangerous leakages. If a leak is confirmed, the LDS will identify the leak size, location and shall notify the event to the Integrated Control and Safety System. (ICSS) located in Indorama plant generating an alarm. Global System for Mobile Communications (GSM) will be used for communication between each field mounted panel containing the Field Signal Processors and the LDS master server.

The LDS will work completely as standalone system and will be able of detecting the pipeline leaks due to the real time processing of dynamic events in the pipeline, fast response time and ability to locate the leak position along the pipeline precisely.

The technology involves installation of a Fiber Optic Cable that will be provided for the leak detection of the 12" import pipeline and the 4" cool-down pipeline between Jetty 1 and Indorama plant.

The system consists of an optic fiber that is connected to a Field unit located at the Jetty area.

The fiber cable generally will be underground. The field unit including the signal processing unit constantly launches a high frequency light pulse thorough the fiber and analyses the back scattered spectrum. Any activity up to a certain distance from the fiber or even a pipe leak produces acoustic energy that is absorbed by molecules of the fiber material. This causes a phase shift in the backscattered spectrum that is analyzed by the signal processing unit.

The location of an event results from measuring the time that has lapsed between launching of the pulse and receipt of the backscattered light.

It is not necessary that the fiber cable deforms or starts vibrating. The intended effect is caused solely by the fact that the silica molecules of the fiber material absorb the acoustic

³ ASTM A333 is a standard specification (such as chemical, tensile, impact and temperature requirements) for seamless and welded steel pipe for low-temperature service and other applications with required notch toughness-1.

energy generated by the event as a result of which they attain a different energy state. This causes the phase shift in the backscattered light.

One processing unit can detect an event with a couple of meters accuracy over distance up to 50 km.

The LDS architecture will be evaluated by contractor prior approval. The LDS master unit will be installed in Indorama Control Room.

Finally, as mentioned at the beginning of this section, when there is a shortage of ammonia ships, Indorama will use road tankers to directly transport ammonia from EBIC' tanks to the production site. The tankers will mainly move inside Sokhna Port area and then on Hurghada-Ismailia Road and finally to the side road leading to the production site.

During tankers' loading, the following standard operation procedures will be undertaken:

- Truck is positioned and grounded
- Loading arm lines are connected
- Transfer pump is started, valves are opened
- Loading continues under monitored parameters
- After completion, lines are purged and disconnected
- Truck is sealed and documentation completed

1.8.7 AMMONIA UNLOADING ARM AT SOKHNA PORT (OUT OF THE SCOPE OF THIS STUDY)

The ammonia unloading arm will be part of the future port facilities (out of the scope of this ESIA).

To further ensure the uninterrupted supply of ammonia (the main raw material for DAP/NPK fertilizer), the company will also install one unloading arm for ammonia ships. This will be constructed on the Terminal of the Jetty within Sokhna Port, to directly feed the ammonia pipelines.

Based on the currently available engineering information, the unloading arm is being designed to operate at pressures of up to approximately 49 barg and temperatures as low as -38°C , with an operating flowrate in the range of 325–450 tonnes per hour. The system will be equipped with automated valves connected to the ammonia loading/unloading control panel, with a maximum valve closing time of approximately 10 seconds under emergency conditions.

The unloading arm will incorporate a nitrogen (N_2) purge and pressure control system as a key safety feature. This system includes dedicated N_2 pipelines, pressure control and safety valves, normally closed emergency shut-off valves, and pressure relief devices designed to manage overpressure scenarios and ensure safe isolation of the system. The control system is envisaged to include a local control panel integrated into a central PLC-SCADA system to monitor and manage operating parameters, safety interlocks, and emergency shutdown functions.

1.8.8 TEMPORARY CONSTRUCTION FACILITIES

Only for the construction phase, the Project will have temporary facilities (accommodation, warehouses, laydown area, etc.), which will be dismantled and restored post-construction.

The area designated for phosphogypsum storage will be used as a laydown area and labor accommodation during the construction phase, which comprises an area of 280,000 m².

No additional land outside the production site will be used as a laydown area.

Indorama will satisfy all the Labour accommodation requirements for a project in accordance with the International Labor Organization's (ILO) "Workers' Housing Recommendation, 1961 (No. 115) and Workers' Accommodation Processes and Standards" guidance issued by IFC and EBRD.

1.8.9 ELECTRICITY, NATURAL GAS, WATER, WASTEWATER CONNECTIONS FROM SITE TO THE NEAREST TIE-INS (ASSOCIATED FACILITIES)

Electricity will be connected to the nearby municipal network of SC Zone. The nearest tie-in point to the electricity network is about 12 km from the production site.

The name of the company that will provide natural gas to the production site is TAQA gas. The nearest tie-in point to the gas network is about 2.5 km from the production site.

The water will be raw desalinated water. Raw desalinated water will be supplied through SC Zone. The nearest tie-in point to the water network is about 1.8 km from the production site.

Sewage will be connected to the nearby municipal network of SCZone. The nearest tie-in point to the sewage network is about 1.8 km from the production site.

1.8.10 SULPHUR AND PHOSPHATE ROCK TRANSPORTATION (PRIMARY SUPPLY CHAIN)

These are activities required for the Project's production process. Sulphur will be supplied through the Sokhna port and the Adabiya port by trucks, while phosphate rock will be supplied by trucks from the Misr Phosphate Company in the Red Sea Governorate (475 km away).

1.9 CONSTRUCTION PHASE

The construction phase will not commence until the Local ESIA report is approved by the Egyptian authorities and the corresponding permits are obtained. The construction phase will take 15 to 18 months. In summary, the construction and commissioning phase will comprise of the following activities:

- Site preparation, including clearing and levelling to create flat land.
- Construction of temporary construction facilities. No additional land outside the production site plot and Phosphogypsum storage area plot will be used as laydown area.
- Vehicle movement, including road transportation of labour, materials, equipment and waste.
- Influx of workers.
- Excavations, foundations, civil and electromechanical works, including building erection, equipment installation and piping construction, for the production site.

- Horizontal Directional Drilling (HDD) technique for the ammonia pipeline segment crossing the road. See detailed description below for horizontal directional drilling.
- Construction of the storage and handling facilities at the Sokhna Port, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. These are **out of the scope of this study**.
- Testing and commissioning of equipment (ammonia tanks, ammonia pipeline). See detailed description below.
- Resource consumption (water, energy, etc.).
- Waste and wastewater management.
- Removal of construction equipment and temporary facilities and reinstatement.

1.9.1 HORIZONTAL DIRECTIONAL DRILLING (HDD)

The Horizontal Directional Drilling (HDD) will be used for the ammonia pipeline segments crossing the road, to avoid traffic congestion. This technique is divided into the following phases:

- Pre-Construction Preparations
 - Route Selection: Define the horizontal drilling path, considering factors like existing infrastructure, land usage, and environmental sensitivity.
 - Drill Design: Determine the size of the drill hole, length, and depth, which will vary depending on the size of the pipeline and the type of soil or rock.
 - Equipment Mobilization: Bring all necessary HDD equipment, including the drill rig, drill pipe, and pipeline string.
- Drilling the Pilot Hole
 - Pilot Hole Drilling: The first step in HDD is to drill a pilot hole along the planned route. The drill head is typically guided by a tracking system (such as a guidance tool) to ensure the hole is drilled at the correct depth and location. High-Density Polypropylene (HDP) pipeline will be used for drilling.
 - No drilling fluids will be used during drilling.
- Reaming the Hole
 - Hole Enlargement: After the pilot hole is drilled, the hole must be enlarged to a size that can accommodate the ammonia pipeline. This is done by gradually reaming the hole with larger and larger reaming tools, progressively enlarging the diameter to match the size of the pipeline.
- Pipeline Preparation
 - Pipeline Stringing: The ammonia pipeline is prepared for insertion. This will involve assembling the pipeline sections and attaching necessary fittings. For ammonia, special materials (such as carbon steel or corrosion-resistant alloys) and welding procedures will be used.
 - Pulling Head Attachment: A pulling head is attached to the end of the pipeline. This head is connected to the drill string, which will pull the pipeline back through the drilled hole.
- Pipeline Pullback

- **Pullback Process:** The pipeline is then pulled back through the hole by the drill rig. The drill string is slowly retracted, pulling the pipeline through the enlarged hole. The pipeline will be carefully monitored for tension, ensuring it is not damaged during the pullback.
- **Post-Installation Inspection**
 - **Pipeline Integrity Testing:** After installation, hydrostatic testing methods will be conducted to ensure the pipeline is structurally sound and free of leaks.
 - **Site Restoration:** Finally, the site will be restored to its original condition, with minimal disruption to the surrounding environment.
- **Ammonia Pipeline Specific Considerations**
 - **Material Selection:** Given the ammonia's corrosive nature, the pipeline materials will be chosen with care (e.g., carbon steel or alloy steel, often with a special coating).
 - **Leak Detection and Safety:** a leak detection system will be installed along the pipeline.
 - **Safety standards for ammonia transport** will be ensured.
 - **Pressure Testing:** a pressure testing will be conducted to confirm the integrity of the pipeline, since ammonia is stored and transported at high pressure.
- **Final Inspection and Commissioning**
 - **Final Testing:** After the pipeline is installed, a final testing will be performed, and an inspection will be conducted to ensure the system is operational and leak-free.
 - **System Commissioning:** Once everything is tested and approved, the ammonia pipeline will be ready for use.
- **Safety Measures**
 - **Hazardous Materials Safety:** Since ammonia is toxic, all personnel involved will wear appropriate protective equipment (PPE), and the worksite will have emergency response plans (ERP) in place.
 - **Continuous Monitoring:** Gas detection equipment will be used to monitor potential leaks during and after installation.
 - **Environmental Precautions:** Minimal environmental impact will be ensured, especially in sensitive areas where the pipeline passes.

The following figure includes a schematic of typical HDD process.

FIGURE 1.18 TYPICAL HORIZONTAL DIRECTIONAL DRILLING (HDD) PROCESS



Source: EIA 2026 by Environics.

1.9.2 AMMONIA TANKS TESTING

A primary non-destructive test (NDT) will be performed to ensure safe operation of the ammonia tanks throughout its life. The test will use the acoustic emission (AE) test method.

The tank design will include all permanent fittings/modifications required to minimize time and disruption during set-up and testing. The tank will be provided with waveguides for AE tests during initial fabrication.

The initial AE test will be conducted at the hydrotest stage to fix any construction defects before placing the tank in service with the pipeline.

A second AE test also will be carried out during the first fill of liquid ammonia into a tank.

Following the hydrostatic and AE tests, water will be held in the inner tank at the height equivalent to the maximum operating level for seven days to ensure that future foundation settlement does not occur. The constructor inspection test plan (ITP) will also include witness points during construction.

For commissioning the two tanks, the following will be performed by the contractor:

- Purge the tanks with nitrogen until the discharge of gas measured oxygen is less than 4 per cent (vol.).
- Purge with ammonia vapour until the tank's oxygen is less than 0.5 % (vol.).
- Cool the tanks down to as low as possible by injecting liquid ammonia at a cooling rate of less than 2°C/hour, preferably using a spray system.
- Measure the temperatures in the tanks away from the gas inlet.
- Take samples from the ammonia liquid in the tanks and analyze concentration of water and oxygen.
- Maintain moisture levels, a minimum of 2,000 ppm during the operation of the ammonia tanks to prevent stress corrosion cracking (SCC).
- Annex 5 of the EIA by Environics details the Quantitative Risk Assessment of the accidental leak from an of the two Ammonia tanks.

1.9.3 AMMONIA PIPELINE TESTING

Hydrostatic testing will be used to determine and verify pipeline integrity. No chemicals will be used during testing. The hydrostatic test procedures and specification are clarified according to the International Piping Code 3 as follows:

- All ammonia pipelines operating at loop stress of more than 20% of the specified minimum yield strength must undergo hydrostatic proof testing.
- The hydrostatic test must be performed at a pressure of at least 1.25 times the internal design pressure for a minimum duration of 4 hours.
- If the hoop stress exceeds 90% of the specified minimum yield strength, extra precautions must be taken to avoid overstraining the pipe.
- Water is the preferred test medium for ammonia pipelines.
- Thermal expansion is not expected as a secondary pipeline will be installed for pre-cooling of the main ammonia pipeline.

The following activities will be carried out during the construction of the pipeline:

Cleaning and Gauging Procedure

The cleaning of the pipeline will be carried out after non-destructive tests for all welds have been done and accepted; all wrapping and insulation has been completed; and backfilling is completed. A cup pig will be used for cleaning operation. Compressed air will be used to move cleaning pig. The cleaning section will be ready for gauging operation.

Equipment and Instruments

The following equipment will be used for constructing the pipeline: air compressors; welding machines; pressure gauge; and double cabin truck.

Dewatering and Drying Procedure

After the hydrostatic test is accepted, the test section will be dewatered from water by driving back the filling pig. Hydrostatic test water generated may contain suspended solids such as the small metallic debris resulting from the construction process (i.e. welding rods), welding fragments (excessive weld bead), rust and oxides and dust present in the pipeline.

Pipeline Commissioning

Commissioning of pipelines (i.e., integrity and function checking activities prior to the introduction of fluid) will occur to ensure compliance with engineering completions, testing, firefighting, gas safety and process control systems.

Commissioning activities involve the introduction of ammonia into the system and undertaking testing procedures to confirm the systems function as designed.

Commissioning activities will involve testing of the control systems to verify functionality prior to connection with the subsea equipment for commissioning and leak testing of systems after tie-in.

Finishing Processes

Finishing processes include insulation, painting and labelling of the two ends of ammonia the pipelines (port and production site).

Records and Documentation

Indorama will develop and update the following records:

- Test pressures and durations.
- Pipeline material specifications.
- Inspection results for welds and fittings.
- Route maps and test sections.

1.9.4 EQUIPMENT

The equipment, machinery and vehicles included below will be used during the construction phase. It must be noted that the equipment, machinery and vehicles will be used intermittently during the day, i.e., all equipment, machinery and vehicles will not be used simultaneously.

The construction equipment used will mainly include, not exhaustively, the following:

- Cranes of various capacities
- Trucks
- Bulldozers
- Excavator
- Forklifts
- Dumpers
- Trailers
- Scaffolding material
- Welding, grinding and cutting machines
- Batching plant
- Concrete vibrators
- Concrete mixers
- Piling rigs
- Rigging tools and tackles

1.10 OPERATION PHASE

The Project will be operated continuously for 24 h/day over 7 days a week, except for the DAP/NPK plant, which will be operated 22 h/day and cleaning activities will be done for approximately 2 h/day. The Project's operation lifespan will be about 25 years. The operation of the Project will require the following activities:

- Vehicle movement, including road transportation of phosphate rock from the Red Sea mine of the Misr Phosphate company to the site (primary supply chain).
- Vehicle movement, including road transportation of Sulphur from the Sokhna port and Adabiya port to the site.
- Transportation of ammonia through pipelines from the tanks of the Sokhna Port to the site.
- Workers management.
- Resource consumption (water, energy, etc.).
- Waste and wastewater management.
- Air emissions management.
- Remote monitoring of the plant/pipelines performance.
- Routine inspections and site maintenance and security.
- Operation of the storage and handling facilities at the Sokhna Port, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. These are **out of the scope of this study**. Utilization of the existing Port facilities (import of sulphur and use of stored ammonia).

1.11 DECOMMISSIONING PHASE

Activities during the decommissioning phase will involve demolition and site clean-up, disposal of waste, demobilization of the workers, and a final site review. The activities during the decommissioning phase will be very similar to those during construction.

Decommissioning will take place years from now, and the baseline conditions associated with the Project and surrounds are likely to be different to what it is today. When the Project reaches the end of life and should decommissioning be required then this would need to be assessed under a separate ESIA process.

Long-term decommissioning and lifecycle management for critical infrastructure will be evaluated following industry's best practices.

1.12 USE OF RESOURCES AND ENVIRONMENTAL INTERFERENCES

The use of resources and environmental interferences are summarized in the following sections. Please note that for the decommissioning phase, no available information is available at the moment of writing this report. Therefore, the use of resources and environmental interferences shall be detailed in the Decommissioning Management Plan.

In line with IFC standards, Indorama will implement technically and financially feasible and cost-effective measures for improving efficiency in its consumption of energy, water, as well as other resources and material inputs, with a focus on areas that are considered core business activities. Such measures will integrate the principles of cleaner production into product design and production processes with the objective of conserving raw materials, energy, and water.

1.12.1 LAND USE

1.12.1.1 CONSTRUCTION PHASE

It is estimated that an area of 560,000 m², which corresponds to the production site and the phosphogypsum storage area, will be used for the construction of the production site itself. No additional land outside the production site will be used as a laydown area.

Regarding the ammonia pipelines construction, it is estimated that an area of 130,000 m², which considers a maximum temporary occupation width of 5 m on each side of the line, along its 13 km route, will be used.

1.12.1.2 OPERATION PHASE

The operational land comprises an area of 560,000 m², which corresponds to the production site, and will include the following:

- Sulphur storage area: Sulphur will be stored in an open paved yard of around 6,750 m², which corresponds to an approximate 1.2 % of the total area.
- Phosphate rock storage area: Phosphate rock will be stored in an uncovered and paved storage yard of around 6,994 m², which corresponds to an approximate 1.2 % of the total area.
- Phosphogypsum storage area: Phosphogypsum will be stored within the site, at an open yard of 280,000 m², which corresponds to the 50% of the total area.
- The rest of the land will be used for the SAP, PAP and DAP/NPK plants, offices, among other facilities.

Regarding the ammonia pipeline, from a conservative perspective, operational land is estimated to be around 130,000 m², which considers a safety width of 5 m on each side of the line, along its 13 km route. The pipelines will be underground, except for a segment of approx. 1.8 km of the ammonia pipeline which will be aboveground.

1.12.2 WATER SUPPLY AND CONSUMPTION

1.12.2.1 CONSTRUCTION PHASE

Water requirements on-site will primarily consist of water for the construction process itself and water for domestic purposes for the construction teams.

Water demand during construction phase is expected to be 8-10 m³/h (approx. 80,000 l/day) for civil concreting and cleaning. Water will be supplied to the site through a temporary connection through the public network of the SCZone.

In addition, potable water is estimated to be 200,000 l/day at peak construction time (assumed 200 l/worker/day). Water will be supplied to the site through water tanks as required. Groundwater abstraction to supply water is not considered as part of the Project activities. It should be noted that this figure represents the maximum estimated water consumption during the busiest period of the construction phase with a workforce of 1,000 people. This volume will fluctuate depending on the number of workers on-site over the construction period.

In addition, for the testing of the ammonia tanks, the estimated volume of water will be 20,000 m³. As for the ammonia pipelines testing, 1,800 m³ will be required.

1.12.2.2 OPERATION PHASE

Water requirements on-site will primarily consist of water for the industrial process. Additionally, potable water will be also needed for workers and irrigation.

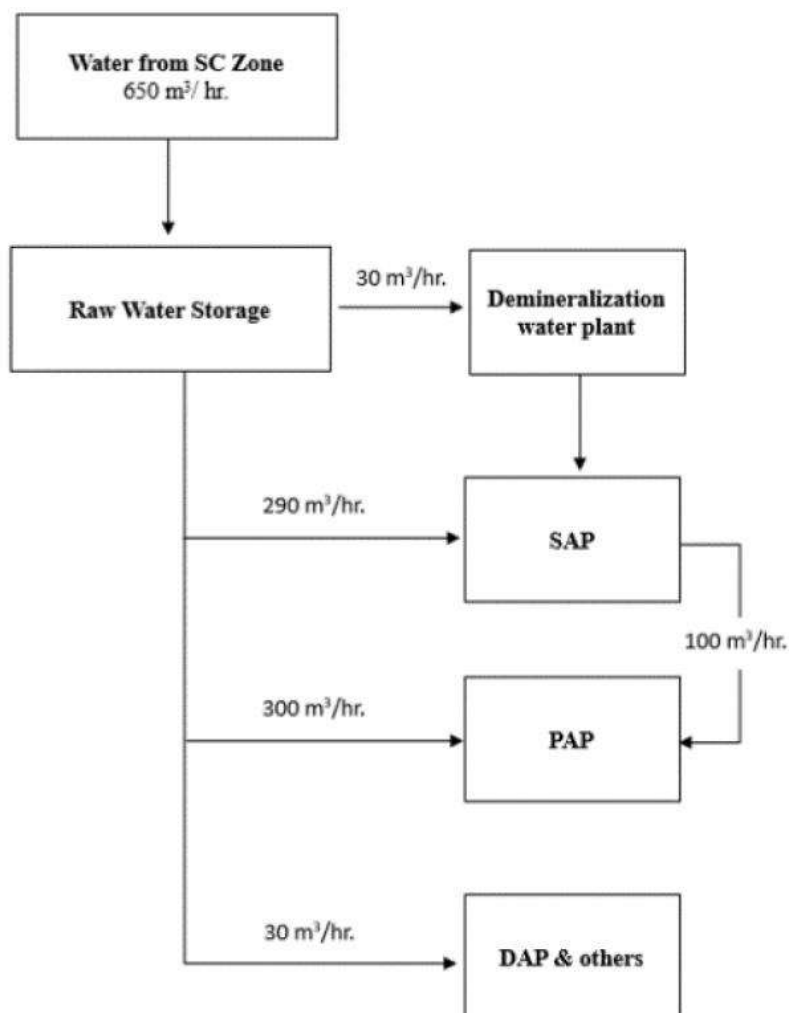
The maximum estimated water consumption during operation is indicated below:

- Water consumption for the industrial process: 650-700 m³/h (maximum of 5 million m³/year). The water will be raw desalinated water. Raw desalinated water will be supplied by the SC Zone and will be treated at the site. The water consumption is distributed as follows:
 - Process water
 - Make-up water
 - Cooling towers
 - Boiler
- Potable water consumption: 140,000 l/day (assumed 200 l/worker/day), assuming workforce of 700 people (including company workforce, contractors, etc). Water will be supplied to the site through the SC Zone and will be treated in a potable water treatment plant (capacity of 15 m³/h) and stored in a tank of 30 m³.
- Water consumption for irrigation of the green belt, that surrounds the production site: 50 m³/day.

Groundwater abstraction to supply water is not considered as part of the Project activities.

The overall water balance block diagram for the industrial process is presented below:

FIGURE 1.19 OVERALL WATER BALANCE (INDUSTRIAL PROCESS)



Source: Indorama.

1.12.3 RAW MATERIALS

1.12.3.1 CONSTRUCTION PHASE

Raw materials required for the construction of the Project will predominantly be aggregates for the installation of the foundations, etc. Most construction materials will be transported to the site by road. Locally sourced materials, such as sand and fill, will be utilized wherever possible to reduce the requirement to import bulk materials from other locations, therefore reducing highway movements bringing material from further.

1.12.3.2 OPERATION PHASE

The main raw materials for the operation phase will be:

- Phosphate rock
- Raw sulphur
- Ammonia

In addition, other materials will be used in the activity, such as lime, filter aids, urea, potash and coating oil.

Raw materials required for the operation of the Project are presented below:

TABLE 1.7 MAIN AND AUXILIARY RAW MATERIALS OF THE PROJECT

Materials	Physical State	Annual Quantity (Metric Ton)	Storage	Vendor
Main Raw Materials				
Phosphate Rock	Solid	1,250,000	Rock yard	Miser Phosphate Company
Raw Sulphur	Solid	350,000	Sulphur yard	Imported
DAP/NPK fertilizers				
Ammonia	Liquid	120,000		Local/Imported

Source: Indorama.

1.12.4 OILS AND CHEMICAL REQUIREMENTS

1.12.4.1 CONSTRUCTION PHASE

During construction, heavy equipment and motor engine driven equipment will be fueled with diesel oil. In addition, portable diesel power generators will be used only for emergencies.

The estimated diesel consumption during construction phase in normal situations is 50 m³.

The total consumption of diesel is about 1.5 m³/day only in case of emergency and it will be stored in small capacity above ground diesel tank (5 m³). As per requirement, the tank will be provided with bund walls and will be designed to contain 110% of the capacity of the tank.

The use of chemicals is not foreseen except for small quantities of lubricant for the heavy equipment or cleaning before equipment assembly.

In addition, in the commissioning phase of the ammonia tanks chemicals will be needed, as part of the Acoustic Emission (AE) test method. The chemicals needed for the test are nitrogen and ammonia.

1.12.4.2 OPERATION PHASE

During operation, auxiliary chemicals will be used for the industrial process. The auxiliary chemicals are shown in the following table:

TABLE 1.8 AUXILIARY CHEMICALS EXPECTED TO BE USED DURING OPERATION

Materials	Physical State	Annual Quantity (Metric Ton)	Storage	Vendor
Sulphuric Acid				
Lime	Solid	50	Chemicals yard	Imported
Filter aids	Solid	100	Chemicals yard	Imported
DAP/NPK fertilizers				
Urea	Liquid	12,000	Chemicals yard	-
Potash	Liquid	38,000	Chemicals yard	-

Materials	Physical State	Annual Quantity (Metric Ton)	Storage	Vendor
Coating Oil	Liquid	600		-

Source: Indorama.

In addition, diesel will be used in the following:

- Emergency generators
- Forklifts
- Heavy earth movers, etc.

A diesel storage tank (30 m³) will be located on the site. As per requirement, the tank will be provided with bund walls and will be designed to contain 110% of the capacity of the tank.

1.12.5 ENERGY

1.12.5.1 CONSTRUCTION PHASE

Power will be supplied through national grid. However, diesel generators will be used as backup only during emergencies. About 12-13 million KWh will be required for the entire construction period.

1.12.5.2 OPERATION PHASE

The total power demand of the Project is 29.5 MW. The Project will mainly depend on the self-generated electricity through the onsite captive power plant, which will supply 27 MW (85-90% of the total power demand). The remaining power (2-3 MW) will be supplied by the national grid of the SC Zone.

In addition, natural gas will be mainly used for drying fertilizer products. Natural gas will also be used occasionally for heating of sulphur furnace and auxiliary boiler during startup of the Sulphuric Acid Plant (SAP). The total consumption of natural gas is 7.5 million m³ annually. Natural gas will be supplied by the SC Zone.

Finally, an Energy Efficiency Management Policy has been developed for the operation phase of the Project, specifically addressing road transport of raw materials and finished products to and from the site. This phase involves significant fuel consumption, which contributes to atmospheric emissions. The objective of this policy is To reduce energy use, fuel costs, and greenhouse gas emissions associated with road transport of raw materials and finished products to and from the Project site. For more information see Annex 2.

1.12.6 TRANSPORTATION AND TRAFFIC

1.12.6.1 CONSTRUCTION PHASE

During the construction phase, an increase in traffic is expected as a result of:

- labour influx;
- transportation of construction materials/equipment/machinery; and
- Waste transportation.

The Project is expected to use main access roads during transportation of the construction materials, equipment and wastes, being the peak times when several types of work (civil and electromechanical) are overlapped, and many logistics (labour, materials and equipment) need

to be transported when the most intense traffic is expected. It should be noted that the roads' capacity in Sokhna (especially in the SC Zone) is high and designed for industrial activities.

During construction period, it is expected that additional average daily traffic of about 10-15 trucks/containers for the transport of equipment/ materials (logistics) and 20 buses average per day during peak manpower leading to a deployment of about 1,500-2,000 people (maximum).

It is proposed that the equipment, machinery and vehicles will be used during the construction phase. It must be noted that the equipment, machinery and vehicles will be used intermittently during the day, i.e., all equipment, machinery and vehicles will not be used simultaneously.

1.12.6.2 OPERATION PHASE

The Project will involve traffic movements during the operation phase. Relatively high load on the roads is expected mainly during transporting raw materials, in particular rock phosphate to the production site. The main raw materials which will be transported by road are:

- Phosphate rock, from the Red Sea mine of the Misr Phosphate company (located between Safaga and Quseir) (primary supply chain).
- Sulphur, from the Sokhna/Ababiya Ports (primary supply chain).
- Ammonia, from the local market to the production site (primary supply chain)

Transportation of other materials (to the site) and waste (from the site) will not be daily. These will, however, be transported by a smaller number of trucks with a smaller capacity.

- The expected loads and routes for the main raw materials are provided below. Due to the expected heavy traffic load (in particular, for the phosphate rock), mitigation measures will be applied by Indorama and the contractors following the corresponding Environmental and Social Management Plan of the Project. In addition, a traffic assessment (conducted by local subcontractor) will be developed and included in the ESIA. ToR for Traffic Impact Assessment from SGS were commented by ERM on 18th July 2025. In alignment with the IFC Performance Standards, a comprehensive traffic management plan to ensure road safety, minimize congestion, and control dust emissions will be implemented.

Phosphate Rock

Phosphate rock will be transported by road from the Red Sea mine of Misr Phosphate company (located between Safaga and Quseir) to the production site. It is expected 60-65 trucks every day, with a truck capacity of 60 Ton and a daily amount of material of 4,500 t/day. The route will be approximately 475 km.

TABLE 1.9 PHOSPHATE ROCK TRANSPORTATION

Daily Amount (t/d)	Transportation Route	Truck Capacity (Ton)	No. of Daily Trucks
4,000(*)	Trucks on the international road within Phosphate Misr	60	60-65

Note: (*) This amount is based on daily consumption of 4,500 MTPD.

Source: Indorama.

FIGURE 1.20 TENTATIVE ROUTES FOR PHOSPHATE ROCK TRANSPORTATION FROM THE MISR MINE TO THE PRODUCTION SITE



Source: Indorama.

Sulphur

Sulphur will be transported by road from the Sokhna Port and the Adabiya Port to the production site, using trucks from the loading system at the Port to the conveying system at the production site. It is expected 50 trucks every 10 days, with a truck capacity of 60 Ton and a daily amount of material of 1,060 Mt/day.

TABLE 1.10 TRAFFIC LOAD OF SULPHUR TRANSPORTATION

Daily Amount (Mt/d)	Transportation Route	Truck Capacity (Ton)	No. of Trucks/ 10 Days
1060	Trucks from the loading system at the Port of the conveying system at Indorama site	60	50

Note: The above daily amount is based on 330 operating days/ year and 350,000 Mt/y of raw Sulphur.

Source: Indorama.

FIGURE 1.21 ROUTE FOR SULPHUR TRANSPORTATION FROM THE SOKHNA PORT (TOP) AND THE ADABIYA PORT (BOTTOM) TO THE PRODUCTION SITE



Source: Indorama and ERM.

Ammonia

Ammonia will be transported by road from the local market to the production site, using road tankers. Given the hazardous nature of ammonia (toxic, corrosive, and transported under pressure), transporting via road tankers requires strict safe measures and emergency preparedness.

As indicated by the IFC, a route risk assessment is required for Ammonia tankers prior to transporting ammonia by road. This assessment includes the layout of the transport route, the type of roads to be used, road tankers specifications and the locations where ammonia will be loaded and unloaded. This step is completed before developing the Emergency Management Plan, as it provides the necessary foundation for identifying and evaluating potential risks. Based on the findings, a comprehensive Emergency Management Plan is then developed to ensure safe transport, mitigate risks, and establish coordinated response procedures in case of an incident.

The Emergency Management Plan for Ammonia Road Tankers provides the safe road transportation of ammonia tankers, including the identification of potential leak scenarios, applicable risk controls, and coordinated emergency response procedures [see Quantitative Risk Assessment (QRA) in EIA 2026 by Environics].

1.12.7 ATMOSPHERIC EMISSIONS

1.12.7.1 CONSTRUCTION PHASE

Emissions during construction will arise predominantly from the use of vehicles.

Dust will be generated from vehicles traffic on un-paved roads, earth clearance, site constructions and ammonia pipeline excavation and connection.

Vehicles and other construction and excavation machinery are other sources of gaseous emissions, including NO_x, CO, SO₂ and PM₁₀.

The emissions will be minimized through construction site's good practices which will be documented in the management plans.

1.12.7.2 OPERATION PHASE

Air emissions during operation will be related to the industrial process:

- Emissions from the production plants SAP, PAP, DAP/NPK:
 - SO₂ is the main pollutant generated from Sulphuric acid production. They will be directed to one main stack. Double Contact- Double Absorption (DCDA) technology guarantees low emissions from the process.
 - HF and particulates are the main emissions from Phosphoric acid plant. They are directed to bagfilters and cyclones and then a wet scrubber for removal.
 - Particulates and ammonia are the main pollutants from DAP/NPK manufacturing (rock milling and crushing, Phosphogypsum stockpiling and belt conveyors). Multi-cyclones and multiple stage scrubbing are integrated in the project' design and thus Acceptable level of pollutants will be released to the atmosphere.
- Particulates are expected from unloading and handling of the bulk raw material (mainly Sulphur).
- Radon emissions from phosphogypsum storage.

- CO and NO_x pollutants are also generated from natural gas.

The following are the main point sources of air emissions during operation of the project:

1. **Wet Scrubber:** hydrogen fluoride (HF) and Total Suspended Particulates (TSP) emissions from phosphoric acid production will be purified using a wet scrubber and then released into the atmosphere through the top of the scrubber.
2. **Main Stack:** SO₂ emissions from sulfuric acid production will be collected and routed to the main stack. The plant is equipped with a Tail gas scrubber where the residual SO₂ would be further absorbed with Aqueous Ammonia and converted to Ammonium Sulphate. The SO₂ at the exit of the scrubber will comply with EU BAT Standard.
3. **Wet Scrubber:** HF, TSP and NH₃ emissions from the DAP plant will be purified using cyclones and a wet scrubber before being released into the atmosphere. The DAP scrubber has been designed to reduce the dust emissions, so that at the exit of the scrubber will comply with EU BAT Standard.
4. **Rock grinding section:** The Rock grinding section in phosphoric acid plant is designed for the emission level less than 10 mg/Nm³ of dust which is complying with the EU BAT requirement

In all cases, the air emissions will meet national and international standards, including IFC, EBRD and EU BAT requirements. The following table provides the concentrations and loads of point source emissions compared against the Egyptian limits, IFC Guidelines and Benchmarks of BAT/BREF.

In addition, phosphogypsum emissions are expected provided the storage of this byproduct on the production site. According to the US EPA's regulations⁴, it is required that phosphogypsum be managed in engineered stacks to limit public exposure from emissions of radon. See Radioactive study of Egyptian Phosphate rocks provided by the Misr Phosphate Company in Annex 1. The study concludes that El-Mahamid and Wadi El-Mashash phosphate rocks have low activity levels of exploited phosphate rocks of sedimentary origin resulting in minor radiation dose and environmental impacts through processing. Also, it is concluded that the radiation dose to a member of the public resulting from the use of El-Mahamid and Wadi El-Mashash's phosphate rocks and fertilizers is negligible compared to the average annual effective dose from natural sources (2.4 mSv/y), even under a worst-case scenario assuming the complete accumulation of radio-nuclides in soil over many years.

⁴ [Phosphogypsum | US EPA](#)

TABLE 1.11 POINT SOURCE EMISSIONS FROM INDORAMA' PHOSPHATE FERTILIZER PROJECT

Plant	Emission Source	No. of Stacks	Volumetric Flow Rate (Nm³/h)	Gas Velocity (m/s)	T (°C)	Emission Load at Normal Conditions (g/s)								D (m)	H (m)
						HF		TSP/Dust		SO₂		NH₃			
						Load (g/s)	Conc. (mg/Nm³)	Load (g/s)	Conc. (mg/Nm³)	Load (g/s)	Conc. (mg/Nm³)	Load (g/s)	Conc. (mg/Nm³)		
Phosphoric Acid (PA)	Rock grinding	-	45,000	15.92	60	-	-	0.13	10	-	-	-	-	1.0	20
	Wet scrubber	1	196,800	13.05	50	0.27	<5	-	-	-	-	-	-	2.31	18.48
Sulphuric Acid (SA)	Main Stack	1	224,317	6.48	82	-	-	-	-	18.44	296	-	-	3.5	65
Di-Ammonium Phosphate (DAP)	Wet scrubber	1	380,000	12.73	60	0.53	<5	3.69	35	-	-	3.17	<30	3.25	62.5
Maximum Egyptian Limit (mg/Nm³)						--	5	--	50	--	450	--	50	--	--
IFC Guideline (mg/Nm³)						--	--	--	--	--	450	--	50	--	--
BAT/BREF Value (mg/Nm³)						--	5	--	10 for PA 25 for DAP/NPK	--	340	--	30	--	--

Source: EIA 2026 by Environics.

1.12.8 GHG EMISSIONS

1.12.8.1 CONSTRUCTION PHASE

GHG emissions during construction will be limited to carbon dioxide from vehicle exhaust emissions and the potential use of portable diesel power generators on site (in emergency situations).

1.12.8.2 OPERATION PHASE

GHG emissions during operation, depending on its scope will be associated with:

- Phosphoric acid production (Scope 1):
 - GHG emissions due to natural gas combustion (Scope 1)
 - GHG emissions due to reaction of sulphuric acid and CaCO_3 in the rock (Scope 1)
- Consumption of national grid electricity (Scope 2).
- Main supply chain of phosphate rock and ammonia (Scope 3).

The Project will avoid 101,830 $\text{tCO}_2\text{e/y}$ through self-generation of power, which has a positive impact on GHG emissions.

The IFC and EBRD set specific limits for greenhouse gas emissions. The key thresholds, along with their obligations if exceeded, are:

- If they exceed 25,000 tons of CO_2 equivalent per year, clients must measure and report to Lenders the GHG emissions annually.
- If they exceed 100,000 tons of CO_2 equivalent per year, a detailed plan is required that includes strategies to reduce emissions, such as the adoption of cleaner technologies and efficient operating practices.

The total annual GHG emissions of the Project, without CO_2 from the reaction emissions, equals 21,586 $\text{tCO}_2\text{e/y}$. The Project's GHG emissions are, therefore, lower than IFC and EBRD threshold of 25,000 $\text{tCO}_2\text{e/y}$. Accordingly, no annual reporting to the Lenders is required.

In case that CO_2 emissions from the reaction are added, the Project's emissions will be increased to 76,586 $\text{tCO}_2\text{e/y}$. However, this value is lower than the maximum threshold of IFC and EBRD of 100,000 $\text{tCO}_2\text{e/y}$. If CO_2 from the reaction is considered, Indorama will be required to annually quantify and report GHG emissions.

The estimations are shown in Annex 8 of the EIA 2026 by Environics. In addition, GHG emissions to IFC are found in Annex L in ANNEX – Additional studies.

1.12.9 NOISE EMISSIONS

1.12.9.1 CONSTRUCTION PHASE

During the construction phase, noise emissions will be generated by the movement of heavy equipment, machinery and vehicles. It must be noted that the equipment, machinery and vehicles will be used intermittently during the day, i.e., all equipment, machinery and vehicles will not be used simultaneously.

1.12.9.2 OPERATION PHASE

During operations, noise emissions will be generated by the following sources:

- Belt conveyors and elevators,
- Crusher and mill,
- Fertilizer granulator,
- Air compressors. Blowers, fans and pumps,
- Turbines of the captive power plant,
- Heat recovery boiler, and
- Materials loading and unloading.

Most of the sources will be operated 24 h/day and 7 days a week. Taking into consideration that the equipment will be installed within enclosed structures/buildings, it is thus unlikely that the noise will disperse significantly beyond the project boundaries and affect a distant area. Noise is mainly affecting the workplace environment.

The sound pressure level resulting from the operation of the facility will not exceed the national and International (IFC) regulation limits at any boundary line of the site, which is 70 dB(A) at fence for industrial sites during daytime, evening, and night.

1.12.10 WASTE HANDLING AND DISPOSAL

In line with IFC standards, Indorama will avoid the generation of hazardous and non-hazardous waste materials as much as feasible. Where waste generation cannot be avoided, Indorama will reduce the generation of waste and recover and reuse waste in a manner that is safe for human health and the environment. Where waste cannot be recovered or reused, Indorama will treat, destroy, or dispose of it in an environmentally sound manner that includes the appropriate control of emissions and residues resulting from the handling and processing of the waste material.

1.12.10.1 CONSTRUCTION PHASE

During construction activities, the main types of waste expected to be produced are listed below:

Hazardous waste:

- Solid: batteries, filters, empty oil, chemical, insulators or paint containers, fabrics contaminated with oil, spent electrical equipment.
- Liquid: spent oils, lubricants, fuels, solvents; paint; thinners; and hydraulic fluid.

Non-hazardous waste:

- Solid: construction debris, wood, empty drums and containers (plastic and metal), packaging (paper, cardboard, plastics), municipal waste and pipe cuttings.

It is expected that the total amount of waste is 2-3 tons/day will be generated during the construction phase.

Non-recyclable waste will be managed and collected regularly by a licensed contractor for safe disposal. Recyclable waste will be sold to accredited agencies / licensed contractors for proper

recycling. The management of hazardous and non-hazardous waste generated during construction will be detailed in the Construction Waste Management Plan (CWMP).

The basic approach to waste management is the incorporation of a hierarchy of five best environmental operating practices, including source reduction, reuse, recycling, treatment and ultimately disposal. Source reduction is the primary focus. Waste generation will primarily be reduced at source through suitable operating practices rather than being managed later. Where waste generation is unavoidable, an attempt will be made to minimize it through the reuse, recycling, or recovery of waste to a practicable extent. Treatment will only be considered after reuse, recovery and recycling options have been completely exhausted. The last option is disposal, and this will be confined to designated and approved areas.

Working areas will be kept clean and tidy and any waste that is generated from these areas will be properly collected.

All waste from work areas and from the temporary site facilities, if any, will be placed in the nearest appropriately covered waste containers. These containers will be kept in good condition and clearly identified and labelled, according to the variety and quantity of the waste envisaged to be collected.

All hazardous waste generated during the construction activities will be stored in a secure and clearly identified compound for subsequent disposal. Hazardous waste will be securely packaged and labelled, in accordance with legislative requirements, to ensure that the waste can be transported safely by an accredited waste disposal contractor for subsequent disposal in an approved disposal site, without risk to either those handling the waste or the environment. All necessary precautions will be taken during the handling and transport of the waste to the storage area to avoid spillage of any hazardous waste.

Wood, metal and other materials with a commercial or recycling value will be properly separated and stored in segregated areas prior to removal. Good practices will be implemented in order to avoid the mixing or contamination of valuable waste, but also to keep this waste in a valuable form, easy to transport and recycled.

Domestic waste may also include certain recyclable materials, such as paper, plastics, glass, and printer toner cartridges. Domestic non-hazardous waste produced at the camp as well as the small quantities of hazardous waste (e.g., fluorescent lamps, detergents, clinical waste, spent lubricants and filters) will be taken off site and disposed of at a licensed landfill facility based on the waste acceptance criteria.

1.12.10.2 OPERATION PHASE

During operation, both hazardous and non-hazardous waste will be generated at the production site, mainly due to the industrial process.

The types of waste that will be produced due to the project activities are expected to be the following:

Hazardous waste:

- Solid: spent catalyst. Generated in the industrial process.
- Solid: spent candles of molten sulphur filters. Generated in the industrial process.
- Solid: spent filters. Generated in the industrial process.

- Liquid: fluorosilicic acid (FSA). Generated in the industrial process.
- Solid: sludge from wastewater treatment unit. Generated in the industrial process
- Solid: empty containers of the used chemicals. Generated in the industrial process.
- Liquid: spent oils. Generated in the industrial process maintenance.

Hazardous waste will be sold, if feasible, to licensed contractors approved by the Egyptian Environmental Affairs Agency (EEAA) and the Waste Management Regulatory Authority (WMRA) for safe final disposal or recycling, except from spent catalyst that will be returned to the supplier and spent oils that will be delivered to Petrotrade company.

TABLE 1.12 HAZARDOUS WASTES FROM THE PROJECT OPERATION

Hazardous Waste	Annual Quantity	Onsite Storage	Disposal Mean
Spent catalyst	15-20 MT	Stored separately in closed containers, at a designated area at the site	Will be returned to suppliers (every 8 years, approximately) for recycling at their facilities
Spent Candles of Molten Sulphur Filters	10 MT		Through a licensed HW contractor approved by EEAA and VMRA
Spent filters	500 kg		
Fluorosilicic acid (FSA)	10,000-12,000 MT		
Sluge from wastewater treatment unit	200 MT		
Empty containers of the used chemicals	200 MT	Stored in tightly closed barrels positioned on pallets with spill contingency mean	To be disposed through an environmentally approved contractor for delivery to Petrotrade Company
Spent oils	20 MT		

Source: Indorama.

Non-hazardous waste:

- Solid: Sulphur cake (as long as its physical-chemical characteristics do not present hazardous properties). Generated in the industrial process, specifically during sulfuric acid production. The filter cake will be collected periodically. It will be crushed and used in DAP Plant as filler. Also, it could be sold as a soil conditioner with a permit from the Ministry of Agriculture.
- Solid: broken pallets. Generated in the industrial process.
- Solid: scrap. Generated in the industrial process.
- Solid: packaging waste (plastic bags). Generated in the industrial process.
- Solid: domestic waste. Generated from the kitchen, admin and labor of the project.
- Solid: spent filters from demineralization unit. Generated in the industrial process maintenance.

Non-hazardous waste will be sold to licensed contractors approved by EEAA and WMRA for safe final disposal or recycling. Except from spent filters, that will be returned to the supplier.

The following table includes the industrial solid waste from the project operation:

TABLE 1.13 SOLID WASTE FROM THE PROJECT OPERATION

Waste	Annual Quantity	Onsite Storage capacity	Disposal Mean
Sulphur cake	~800 MT	100 MT	Could be sold as a soil conditioner with a permit from the Ministry of Agriculture. Also, it will be Crushed & recycled in the DAP Plant
Packaging waste (plastic bags)	~10 MT	2.5 MT	Will be sold to recycling contractors
Spent filters from DM unit	5 MT	5 MT	It will be returned to the supplier

Source: Indorama.

Finally, Indorama has carried out an optimization study aimed at minimizing phosphoric acid losses, primarily through sludge cake and gypsum streams. The study involved a thorough revision of the material balance and fine-tuning of process parameters. As a result, overall process efficiency was improved, the specific consumption of rock phosphate per ton of phosphoric acid was reduced, and phosphogypsum generation was significantly lowered. The improvements identified during this study will be incorporated into the design of the Indorama plant. This study supports the IFC requirement of reduction of the generation of Phosphogypsum in the Project (see Annex 3 for more detail).

1.12.11 EFFLUENTS MANAGEMENT

1.12.11.1 CONSTRUCTION PHASE

Domestic wastewater will be generated from the construction workforce. As the daily number of workers is changing depending on the type and level of needed labour (civil, welding, electromechanical, etc.), the amount of sanitary wastewater will therefore change.

However, it is expected that a total amount of 5-8 m³/ day will be generated during construction phase. This will be managed and collected in insulated septic tanks and regularly emptied through a licensed contractor for transferring wastewater to the nearest wastewater treatment unit for proper treatment as per the regulations of Sokhna municipality.

In addition, water generated from hydrostatic of ammonia pipeline testing will be collected and discharged safely through a licensed contractor.

1.12.11.2 OPERATION PHASE

Effluents generated from the proposed project include domestic, industrial wastewater and rainfall, as follows:

a. Domestic Wastewater

Domestic wastewater (9 m³/day) will be routed to the public sewage system of the SCZone.

b. Industrial Wastewater

The Project design is based on Zero Liquid Discharge (ZLD). It includes an industrial wastewater treatment unit with a capacity of 85 m³/h. Industrial wastewater will be generated as indicated in section 1.8.5.2.

c. Rainfall

The project design includes independent stormwater collection and drainage systems within the site: one for the open storage areas (phosphogypsum storage) and one for the plant. This system will collect all runoff water and screen it and finally discharge it into the public sewage system of the SC Zone.

1.12.12 EMPLOYMENT AND LABOR

1.12.12.1 CONSTRUCTION PHASE

For the construction period, it is expected that there will be a total of 500-700 workers employed in direct and indirect jobs. The peak period may go up to 1,500-2,000 workers.

Indorama will encourage contractors to hire most workers from nearby sites and Suez governorate. Egyptian regulations regarding local quota will be followed.

Temporary accommodation will be arranged on-site in the designated area for phosphogypsum storage, away from the laydown area. The contractor will construct temporary accommodation.

Indorama will satisfy all the Labour accommodation requirements for a project in accordance with the International Labor Organization's (ILO) "Workers' Housing Recommendation, 1961 (No. 115) and Workers' Accommodation Processes and Standards" guidance issued by IFC and EBRD.

The accommodation must ensure safe, hygienic, and comfortable living conditions, adequate space allocation is essential, typically providing at least 4–6 m² per worker, with well-ventilated sleeping areas, proper lighting, and secure storage facilities.

Sanitary provisions must include sufficient toilets, showers, and clean water supply, following recommended ratios such as one toilet per six workers and one shower per ten workers.

Essential infrastructure also includes kitchen and dining areas, medical and first-aid facilities, and fire safety measures such as extinguishers and emergency exits.

Security measures like fencing, CCTV, and controlled access are necessary to ensure a safe living environment. Additionally, sustainable waste management and energy-efficient practices will be implemented. Properly planned labour accommodation enhances worker safety, legal compliance, and overall project efficiency. A Security Risk Assessment can be found in Annex H in ANNEX - Additional studies), and an executive summary can be found in Annex H in ANNEX – Executive summaries.

The labour and working conditions to be implemented by all contractors will be according to international standards, ILO requirements and Egyptian legislation.

1.12.12.2 OPERATION PHASE

During operation, the Project will require a number of 260 direct workers including technical staff, operators and administrative staff. According to the company's employment policy,

opportunities will be provided to domestic workers. Egyptian regulations regarding local quota will be followed.

During the operation phase, the Project will operate for around 330 -340 days annually for 3 shifts daily, with 8 hr per shift. About 25 days/year will be left for maintenance of the plants.

1.12.13 HEALTH, SAFETY & SECURITY

For both construction and operation phase, internationally recognized standards for worker Health Safety and Environment will be applied. In addition, Indorama corporate standards will be applied. The different facilities of the Project components are designed with respect to safety and risks as part of an integral approach. The World Bank's Environmental, Health and Safety Guidelines for Phosphate Fertilizer Manufacturing will be applied.

In particular, during the operation phase, the following health, safety and security aspects will need to be managed:

- Worker's safety from fumes and fugitives and inspection and management of Safety Critical Equipment (SCE) principles.
- Noise is expected from different sources of the proposed project including boiler, turbines, air compressors, materials loading and unloading systems, pumps and evaporator.
- Heat stress is expected at the processes involving exothermic reactions and heating (such as sulphur melting, oxidation, gas converter, steam turbine, auxiliary boiler, fertilizer' granulation and drying).
- Fugitive emissions and particulates are expected from fittings, reaction vessels and material and product handling system (conveyors and elevators). These may include ammonia, HF, PM10, TSP, SO_x and acid mist.
- Physical hazards from material handling, machinery, working at height, accidental fire, incidents and accidents are other sources of occupational risk.
- Chemical hazards are mainly due to handling of chemicals at the process and utilities (wastewater treatment and DM unit) and exposure to chemicals spills (such as acids product and process chemicals).
- Potential ammonia leaks from storage tank or the closed loop ammonia cooling system are another source of hazard.
- Radon (Ra 226) in the phosphogypsum.

The following table summarizes the key issues of the Project compared to IFC and EBRD Guidelines and BAT/BREF benchmarks.

TABLE 1.14 KEY ISSUES OF THE PROJECT COMPARED TO IFC AND EBRD GUIDELINES AND BAT/BREF BENCHMARKS

Benchmark	Threshold	Reference	IFC threshold	Indorama	
				Per tonne	Total
Sulphuric acid					
Solid waste (Spent catalyst)	10-20g/tonne H ₂ SO ₄	EFMA, 2000	-	14.6 g/tonne H ₂ SO ₄	15-20 MT/yr

Benchmark		Threshold	Reference	IFC threshold	Indorama	
					Per tonne	Total
Phosphoric acid						
Material consumption	Phosphate rock	2.6-3.6 tonne/tonne P ₂ O ₅	EFMA, 2000	2.6-3.5 tonne/tonne P ₂ O ₅	3.7 tonne/tonne P₂O₅	1,250,000 MT/yr
Phosphogypsum ^a		4-5 tonnes/tonne P ₂ O ₅	BREF-LVOC- AAF IFC	3.2-4.5 tonnes/tonne P ₂ O ₅	6 tonne/tonne P₂O₅	1,980,000 MT/yr

Note: European Fertilizer Manufacturers Association (EFMA).

Source: Indorama.

Necessary control and mitigation measures of the above risks will be managed through the Environmental and Social Management Plans to be developed for the Project.

2. ALTERNATIVES ANALYSIS

2.1 OVERVIEW

This part of the document provides an analysis of technically and financially feasible alternatives, including the non-Project alternative. The information is based on details provided in the local ESIA Draft dated April 2026 prepared by local consultancy Environics and further details provided by Indorama to ERM through an Information Request List (IRL) and meetings.

The analysis of alternatives is based on the results of the evaluation of many of the project's alternatives during the initial design stages. In assessing alternatives, particular emphasis was placed on the environmental and social connotations of alternatives to ensure that the chosen alternative is compatible with the national environmental requirements, IFC performance standards, EBRD environmental and social requirements and EU Best Available Techniques (BAT).

2.2 NO DEVELOPMENT ALTERNATIVE

The no-development alternative consists in the no implementation of the Project and serves as a baseline scenario for comparing the environmental and social impacts of the proposed Project.

The Project's non-implementation would imply the absence of direct or indirect environmental impacts, such as land occupation, the use of resources and environmental interferences, but it would also mean the loss of the positive socioeconomic impact. In addition, if the Project is not implemented, another industrial project is likely to develop there due to the demand for space for economic activities in the Sokhna industrial zone in any case.

If no development alternative is chosen, the following positive environmental and socioeconomic impacts would be lost:

- **Utilization of Existing Facilities:** The Project will use the existing infrastructure in the SC Zone, including labour accommodation, desalinated water from the Sokhna desalination plant and paved roads. This utilization helps reduce both the Project's costs and its environmental footprint and produces business/economic flux in the SC Zone.
- **Phosphate Fertilizer Production:** By addressing the local deficit in phosphate fertilizer, the Project will support agricultural land. Additionally, exporting fertilizer and reducing the import of strategic food goods will contribute to the country's foreign currency reserves.
- **Added Value to Local Resources:** The Project will enhance the value of local phosphate ore by manufacturing it into high-quality phosphate fertilizer. This initiative would unlock the potential of Egypt's low-grade rock phosphate deposits.
- **Job Opportunities:** The Project will create approximately 800 jobs during the construction phase and around 260 direct jobs during the operation phase, significantly benefiting the local community. In addition, the area and Location are already having run similar kind of projects; hence it will be good synergy for getting skilled manpower and other resources.

Given these significant positive impacts, the no-development alternative will not be pursued further.

2.3 SITE SELECTION ALTERNATIVES

2.3.1 PRODUCTION SITE LOCATION

Different alternatives for the location of the production site were considered such as three locations in Sokhna industrial site and one location in Safaga golden triangle (which is part of the Golden Triangle Economic Zone (GTEZ) located in Qena, Safaga and Al Qusair); however, its final location in the Sokhna industrial site was motivated by the following environmental and socioeconomic aspects:

Environmental Aspects:

- **Minimization of Environmental Impacts:** The Project needed to be located in an already established industrial zone to avoid impacts on natural habitats. This led to the Project being located in an available industrial area near the Red Sea.
- **Reduction of Transportation Costs:** The proximity to Sokhna port significantly reduced the transportation costs of raw materials such as sulphur and ammonia, as well as the main products (DAP/NPK), which will also help minimize environmental impacts (air emissions). The Sokhna port is closer to the Suez Canal allowing closer connection to the Mediterranean Sea.
- **Use of Existing Facilities:** The availability of many facilities owned by the SC Zone, such as accommodation, the Sokhna Desalination Plant, and fuel stations, which are to be utilized by the Project without constructing new ones, contributes to reducing the project's environmental impacts.

Socioeconomic Aspects:

- **Synergy with Similar Projects:** The area already has similar projects in operation, which will facilitate the acquisition of skilled manpower and other necessary resources.
- **Ammonia Supply:** The proximity to EBIC storage tanks will allow the supply of ammonia from the local market through a pipeline, improving operational efficiency.
- **Space for Expansion:** The proposed site includes enough space for the current phase and a reserve for future expansion of the project, ensuring sustainable growth.
- **Positive Socioeconomic Impact:** The Project's location will contribute to job creation and the economic development of the region.

Other alternatives were mainly rejected due to the non-availability of water and the large distance from the port.

2.3.2 AMMONIA PIPELINES ROUTE

There are several options for the routing of the ammonia pipelines running from the Sokhna port to the production site currently being managed by Indorama. Indorama is discussing internally and externally with the Port authorities to identify the best route that encompasses the less environmental and social interactions and the less length. The most favorable option up to date is shown in Figure 1.1 and comprises a 13-km route. In any case, the pipelines will run within the Sokhna Industrial Zone and Port affiliated with the Suez Canal Economic Zone.

2.4 TECHNOLOGY ALTERNATIVES

2.4.1 SULPHURIC ACID ABSORPTION⁵

Recently, the production of sulphuric acid mainly depends on the absorption of SO₃ generated from oxidation of SO₂ gas. Generally, there are two main technologies for the absorption of sulphuric acid, namely, single absorption (SA) and double contact double absorption (DCDA).

The following section discusses the difference between these two technologies:

Single Absorption (SA)

In the single absorption process, SO₃ gas is routed to one absorption tower to produce sulphuric acid. Although this technology is easier in operation and maintenance, significant SO_x are generated from the single SO₃ absorption tower. Therefore, installation of an efficient wet scrubber is essential to reduce SO_x emissions below the allowable limits.

As SO₃ gas is wasted through the wet scrubber, the yield of sulphuric acid could not approach 99%. Generally, the conversion efficiency is about 98.5% as a daily average and can be upgraded to 99.1% depending on good design and the use of specially adapted catalyst doped with cesium.

Double Contact Double Absorption (DCDA)

Double contact double absorption is considered the most modern technology of sulphuric acid production. In this technology, SO₂ is passed through the catalytic convertor twice and SO₃ are passed through absorption towers twice to achieve further absorption.

The absorption of SO₃ brings about a considerable shift in the reaction equilibrium towards the formation of SO₃, resulting in considerably higher overall conversion efficiencies when the residual gas is passed through the contact beds. SO₃ formed in the secondary stage is absorbed in the final absorber. The conversion efficiency in new plants can reach about 99.87%.

Conclusion

For new plants, the DCDA technology must be considered as the Best Available Technique (BAT), when achievable. The average conversion rate corresponding to this technique is at least 99.87%. The DCDA process for sulphuric acid production is the best available technique (BAT) for this industry. The following tables provide a comparison between single and double contact processes and the advantages and disadvantages.

TABLE 2.1 COMPARISON BETWEEN SINGLE AND DOUBLE CONTACT TECHNOLOGIES

Type of Process	Single Contact/Single Absorption	Double Contact/Double Absorption
SO ₂ (kg/t)*	6.7-13.3	1.5-3.9
SO ₃ (kg/t)*	0.4	0.1
Efficiency	98%	99.87%

Note: *kg/t Sulphuric acid 100%.

⁵ Source: Best Available Techniques for Pollution Prevention and Control in the European Sulphuric Acid and Fertilizer Industries, FEMA, 2000

Source: Indorama.

TABLE 2.2 ADVANTAGES AND DISADVANTAGES OF SINGLE AND DOUBLE CONTACT TECHNOLOGIES

Single Absorption Technology	DCDA Technology
Easy to operate and maintain	More complex and require more operational control, specifically control of temperature and pressure
Generates higher concentrations of SO _x with difficulties to comply with environmental standards	Generates low SO _x emissions and therefore more able to meet the environmental standards
Lower capital and operation costs	Higher capital and operation costs due to the presence of two absorption towers and more heat exchangers
Requires installation of SO _x scrubber	Does not require a wet scrubber, because SO _x are significantly absorbed in the second absorption tower
Generate significant heat which is recovered in steam and power generation	

Source: Indorama.

Accordingly, the project design of sulphuric acid production has been finally based on Double Contact Double Absorption (DCDA) technology, provided the following environmental and socioeconomic aspects:

- The DCDA technology is considered the Best Available Technique (BAT).
- This technology significantly minimizes environmental impacts by achieving higher conversion efficiencies, up to 99.87%, thereby reducing SO_x emissions.
- The DCDA process involves passing SO₂ through catalytic converters and SO₃ through absorption towers twice, ensuring more efficient absorption and less waste.
- By significantly reducing SO_x emissions, the project will lower the risk of respiratory issues and other health problems associated with sulfur dioxide and sulfuric acid exposure.

2.4.2 PHOSPHORIC ACID PRODUCTION

There are two main commercial processes to produce phosphoric acid: the wet process and the dry process (known as electrical furnace process).

Although the acid produced (technical grade) with the dry process is pure, its production cost is much higher than that of the wet process phosphoric acid. The use of the electrical furnace process is limited to the production of phosphoric acid for use in food and pharmaceutical industries. Production capacity of the wet process is increasing in addition to the capacity which already exceeds that of the furnace process.

In the wet process process, phosphoric acid can be obtained by digesting phosphate rock in the acid (such as sulphuric acid). The use of sulfuric acid is the conventional technique and is normally referred to as "wet process". Depending on the temperature, as well as P₂O₅ and SO₃ content of the solution, the applicable processes will be Dihydrate (DH), Hemihydrate (HH), Hemihydrate/Dihydrate (HH/DH), or Dihydrate/Hemihydrate (DH/HH).

- Dihydrate processes are still the most popular ones because they are simple to operate and have been proven many times to be adaptable to various types of phosphate rocks; therefore, they are considered to be reliable.
- Hemihydrate processes can produce phosphoric acid in high concentration; therefore, in many cases the concentration step can be eliminated, which means lower capital cost and lower usage of steam and process water. In many cases, less Sulphuric acid and power are required and less aluminum and sludge are found in the product acid. However, the main disadvantages are the higher reaction temperature which stimulates corrosion and low P_2O_5 yield and higher phosphate rock requirement, and enhanced foaming.
- Hemihydrate/Dihydrate processes also produce phosphoric acid with a high concentration and have the added advantage of high P_2O_5 yield. Therefore, lower capital investment and lower operation costs with savings in concentration storage and clarification are possible. In addition, the gypsum produced is free of impurities.

The main disadvantages are the corrosiveness due to high temperature in the reactors and the complexity of the process which puts a burden on the operators.

The Dihydrate/Hemihydrate process has almost the same advantages and disadvantages as Hemihydrate/Dihydrate process except that the reaction temperature is lower, and a hemihydrate by-product is produced which may be advantageous when the other sources of gypsum are in short supply.

Generally, in the last two decades the main concern in the wet process of phosphoric acid production has been the energy cost. Although, the energy consumption per kg of P_2O_5 produced is not very high, because of the large production rates, the total energy cost is high.

The important features of each process are listed in the following table.

TABLE 2.3 COMPARISON OF WET PROCESSES FOR PHOSPHORIC ACID PRODUCTION

Important factors	DH process	HH process	DH/HH process	HH/DH process
Phosphate rock processed	40% 100 Mesh	Dry, 100% 1mm	Dry, 100% 0.5mm	Dry, 100% 1mm
Gypsum P_2O_5 losses	0.5-1%	1-3%	0.5-1%	0.5-1%
P_2O_5 recovery	93.5-96.5%	88-93%	98-98.5%	98%
H_2SO_4 Used/ton P_2O_5	3-3.5 ton	3-3.5 ton	2.3-2.7 ton	2.4-2.8 ton
Use of dilute H_2SO_4	Yes	90-95% H_2SO_4	70-80% H_2SO_4	Yes
Water consumption (a)	6-7 tons/ton P_2O_5 in the filter	Low	Less than DH	Higher than DH
Electrical power cons.	Grinding + Air cooling	Low	Much lower than DH	Higher than DH
Steam used vs acid strength (b)	High	Lowest	Less than DH	Low
High grade alloys required	316L and 317L	Corrosive	Corrosive	Corrosive

Important factors	DH process	HH process	DH/HH process	HH/DH process
Reaction temp. (°C)	70-85	85-100	65-70	90-100
Recrystallization temp. (°C)	-	-	90-100	50-65
On line factor (days/year)	315-325	315-320	310-320	305-315
Ease of operation	Easy	Needs care in filtration	Crystallization acid may be needed	Needs control
Solids content in product	1-4%	0.5%	0.5-3%	0.5%
Quality of product	See text	1.5% SO ₃ , 40-48% P ₂ O ₅	Low SO ₃ , Low Organics 35-38% P ₂ O ₅	1.5% SO ₃ , 40-45% P ₂ O ₅
Gypsum quality	Good quality	Impure	Pure	Pure

Source: Indorama.

Conclusion

The key to successful operation of the phosphoric acid plant is the control and operation of the chemical reaction occurring in the attack system. The objectives in controlling the attack reaction are:

- To achieve the maximum recovery efficiency of P₂O₅, the P₂O₅, sulphate and temperature are controlled in the attack section.
- To provide easily washable gypsum, there will be a minimal amount of soluble P₂O₅ discharged with the waste gypsum.

In addition, the Project follows the Best Available Technique (BAT), which mainly includes the following procedures:

- Separation of fumes containing a large proportion of fluoride compounds from phosphoric acid concentration. These gases pass on a wet scrubber to get fluorosilicic acid (FSA) that will be disposed of off-site.
- As the fertilizer industry is one of the industries that produces large quantities of dust and particles in rock grinding sections, this was taken into account in the design of the project, where the design included the installation of bag filters at the rock grinding mill and the ground phosphate silo in order to protect the environment and workers' health and reduce waste of raw materials.

The Project has been finally designed using the Dihydrate process (DH) (wet process) to produce phosphoric acid as intermediate product, provided the following environmental and socioeconomic aspects:

- The DH process is considered the Best Available Technique (BAT).
- The wet process minimizes environmental impacts by efficiently digesting phosphate rock with sulfuric acid, producing phosphoric acid and phosphogypsum.
- The DH method is simpler to operate and has lower energy consumption compared to other methods.

- The DH method's lower reaction temperatures and simpler operation reduce the likelihood of accidents and health hazards for workers.

2.4.3 INDUSTRIAL WASTEWATER DISPOSAL

When considering industrial wastewater disposal methods for a Project, several options are available. Conventional wastewater disposal alternatives such as wastewater treatment and offsite discharge methods could have environmental impacts on the environment, impacting ecosystems and associated flora, fauna, soil, etc. In this case, from the early Project design, the selection of the Zero Liquid Discharge (ZLD) was based on the best available technologies (BAT) and Good Industrial Practices (GIP).

The ZLD technology focuses on advanced filtration and neutralization techniques to recover and reuse all wastewater, ensuring no liquid waste is discharged.

The Project has been designed using ZLD technology, provided the following environmental and socioeconomic aspects:

- ZLD technology ensures that no harmful pollutants are released into waterways, effectively eliminating the risk of water pollution and protecting aquatic ecosystems.
- By recovering and recycling all wastewater, ZLD significantly reduces the demand for freshwater resources, which is crucial in water-scarce regions like the Suez governorate.
- The reuse of treated water for cooling towers and other industrial processes supports the sustainable use of limited water resources, benefiting both the industry and the community.

2.4.4 WASTE HEAT ENERGY MANAGEMENT

In line with the IFC standards, Indorama considered alternatives to reduce project-related GHG emissions during the design and operation of the Project. Specifically, when considering methods for managing waste heat energy produced by concentrated sulfuric acid plants, two primary alternatives were evaluated: the utilization of waste heat energy through a thermal energy recovery boiler, and the release of waste heat into the environment without recovery. Each alternative offers distinct environmental and social implications.

The utilization method involves capturing and repurposing waste heat for heating processes and electricity production, thereby enhancing energy efficiency and reducing environmental impacts. On the other hand, the release method involves venting excess heat into the atmosphere, which is simpler but may lead to thermal pollution and higher operational costs, including the need for more energy required from the existing grid.

The Project has been designed using waste heat energy, providing the following environmental and socioeconomic aspects:

- By recovering and utilizing waste heat, the project reduces its reliance on primary energy sources, leading to lower GHG emissions and contributing to sustainability goals.
- The use of waste heat for heating processes and electricity production improves overall energy efficiency, reducing the environmental footprint of the project.
- Utilizing recovered heat for industrial processes and electricity production can significantly lower energy expenses.

- By easing the load on the national power grid, the project contributes to greater energy security and stability.

2.5 TRANSPORT ALTERNATIVES

2.5.1 AMMONIA

When considering methods for transporting ammonia from the port for the Project, two primary alternatives were evaluated: pipeline transportation from the port and truck transportation. Each alternative offers distinct environmental and social implications.

The following section discusses the difference between these two technologies:

Pipeline Transportation of ammonia from the port

Ammonia will be supplied from abroad through Sokhna Port “jetty-1” or from the local market “EBIC storage tanks in Sonker storage area at Sokhna Port” through underground pipeline (except for a segment of approx. 1.8 km of the ammonia pipeline which will be aboveground).

Pros

- Pipelines are more economical for transporting large volumes over long distances compared to truck transport.
- Once constructed, pipelines incur lower ongoing operational costs than other transportation methods.
- Pipelines allow for a continuous flow of ammonia, reducing the need for frequent loading and unloading and this leads to improved supply chain efficiency and reliability.
- Advanced monitoring technologies can detect leaks early, enabling quick responses to prevent accidents.
- Fewer transport vehicles on the road minimize the risks associated with road accidents.
- Transporting ammonia via pipeline results in fewer vehicles and lower greenhouse gas emissions compared to trucking.
- Pipelines are less affected by weather conditions compared to road transport, ensuring more consistent delivery schedules

Cons

- Building a pipeline involves significant capital investment for construction, materials, and permits.
- Pipelines require ongoing maintenance and regular inspections to ensure safety and integrity, and maintenance activities can lead to temporary disruptions in supply.
- Pipelines may be vulnerable to damage from natural disasters such as earthquakes, floods, or landslides, leading to potential spills.
- Construction may necessitate temporary road closures, affecting local traffic patterns and access to businesses.

Truck transportation of ammonia from the port

Ammonia will be supplied from the port to the site in tank trucks equipped with insulated containers (which are used for shorter distances or delivery to end users).

Pros

- Trucks can access a wide range of locations, including remote areas and sites without rail or pipeline infrastructure.
- Transport routes can be adjusted easily based on traffic conditions, customer needs, or logistical challenges.
- Truck transport can offer quicker delivery times for urgent needs, making it suitable for just-in-time logistics.
- Ideal for transporting smaller loads that may not be economical to ship via rail or pipeline
- Compared to pipelines, which require significant investment in infrastructure, truck transport involves lower initial costs in case of small quantities.
- Need less complex permitting processes compared to pipeline construction.

Cons

- Ammonia is a hazardous material, posing significant health risks in case of spills or leaks, thus road accidents can lead to catastrophic releases, endangering public safety and the environment.
- Truck transport can be more expensive per ton compared to pipeline or rail options, especially for large volumes, also fluctuating fuel prices can significantly impact overall transport costs.
- Trucks have limited capacity, making them less efficient for transporting large quantities, in addition smaller loads may require multiple trips, increasing time and costs.
- Trucks are subject to road traffic, which can lead to delays in delivery schedules.
- Adverse weather conditions can further disrupt transport and increase the risk of accidents.
- Truck transportation contributes to greenhouse gas emissions and air pollution, impacting environmental sustainability.

Conclusion

The Project has been designed using pipelines for ammonia transportation from the port, provided the following environmental and socioeconomic aspects:

- Pipelines contribute to less air pollution as they eliminate the need for fuel combustion associated with truck transport.
- Advanced monitoring technologies in pipelines can detect leaks early, enabling quick responses to prevent accidents and minimize environmental contamination.
- Pipelines allow for a continuous flow of ammonia, reducing the need for frequent loading and unloading, which can lead to accidental spills and environmental hazards.
- Fewer transport vehicles on the road minimize the risks associated with road accidents, reducing the potential for catastrophic releases of hazardous materials like ammonia.

Pipeline transportation represents the primary mode of ammonia supply, while road transportation would only be used as a contingency option.

2.5.2 PHOSPHATE ROCK

The following options have been considered for transporting phosphate rock from the Misr Phosphate Company mine (located between Safaga and Quseir) to the production site (about 475 km): road, maritime, and rail transport.

1. Road transport: In Egypt, the road and highway network have a total length of approximately 65,050 km, with 74% of these roads paved. Although the road infrastructure is reasonably good, traffic can be dense, and safety conditions vary. However, road transport remains a viable and flexible option for transporting large volumes of material.

In particular, for the proposed route from the Misr Phosphate Company mine to the production site, the characteristics (width, length, speed limit) and conservation status of the main roads have been assessed (presented below). Some of the main roads have been recently upgraded, such as Safaga Quseir road, Ras Ghareb Hurghada road, Al Galala road.

Additionally, there are numerous reputable transport companies that can efficiently handle this task.

2. Maritime transport: Maritime transport in Egypt is growing, with several developments in recent years. The Ministry of Transport has announced various projects under the Egypt 2030 plan, aiming to reach 18 ports and 100 km of berths by 2030⁶.
3. Rail transport: Egypt's railway network has a total length of 7,024 km. However, the railway infrastructure is not sufficiently developed to handle large volumes of cargo such as phosphate rock.

Road transport has been chosen due to the following environmental and socioeconomic aspects. However, the possibility of using other means of transport in the future is not ruled out, as the railway and maritime infrastructure develops in Egypt.

- The lack of adequate trains and the need for significant investments in modernizing the network limit the viability of rail transport in the short term.
- Road transport is the most developed infrastructure in the region and nationally capable of handling such a large amount of material and the conservation status of the main roads is good.
- Modern trucks are increasingly efficient in terms of fuel consumption and emissions of pollutants.
- Road transport offers greater flexibility and accessibility, allowing direct delivery from the mine to the final destination without the need for transshipments.
- This method also facilitates local job creation and infrastructure development in nearby communities.

Below are presented the characteristics (width, length, speed limit) and conservation status of the main roads that might be used. Figure 1.20 shows the main roads.

⁶ [Egipto compite por ser un centro mundial de comercio y logística-SIS](#)

TABLE 2.4 DESCRIPTION OF THE AVAILABLE MAIN ROADS FROM THE MISR MINES TO THE PRODUCTION SITE

Road name	Width	Length	Speed limit	Road conditions
Safaga Quseir Road	Approx. 10 m	Approx. 85 km	Trucks and Semi-Trailers: 60-70 km/h	Recently upgraded for improving the road conditions and overall safety. The road was developed and upgraded to 2-ways road with 2 lanes in each way and was opened in 2021.
Ras Ghareb Hurghada Road	Approx. 10 m	Approx. 200 km	Trucks and Semi-Trailers: 60-70 km/h	Upgraded in recent years, improving road conditions and overall safety. Two ways road, with 2 lanes in each way. The road is provided with radars to control traffic speed.
Hurghada Cairo Road	10 m	Approx. 170 km	Light transport vehicles: 80 km/h	Includes a lane designated for the trucks, facilitating efficient transport of goods.
Al Galala Road	Approx. 12 m	82 km	Trucks and Semi-Trailers: 70 km/h	Recently upgraded for improving the road conditions and overall safety. It includes a lane designated for trucks, which consists of 2-ways each includes 3 lanes.
Safaga Qena Road	11.5 m	Approx. 120 km	Trucks and Semi-Trailers: 60-70 km/h	Two-ways (directions) road, with 2 lanes in each direction. The road passes through mountainous area. It was developed in 2016 to reduce the hazard of curvatures.
Quseir Qena Road	Approx. 7 m	Approx. 190 km	Trucks and Semi-Trailers: 60 km/h	This road was subject to intermittent closures due to severe weather conditions.

Source: Indorama.

- Due to the expected heavy traffic load (in particular, for the phosphate rock), mitigation measures will be applied by Indorama and the contractors through the Environmental and

Social Management Plan to be developed for the Project. A traffic assessment (conducted by local subcontractor) has been developed and included in the ESIA (see Annex M in ANNEX - Additional studies). An executive summary can be found in Annex L in ANNEX – Executive summaries.).



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Stakeholder Engagement Plan

Updated ESIA Supplementary
Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone,
Sokhna

PREPARED FOR

INDORAMA
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8 May 2026

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Note: This document is part of the Updated ESIA Supplementary Disclosure Package assigned by Indorama to ERM in order to ensure compliance with International Standards International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD).

Stakeholder Engagement Plan

Updated ESIA Supplementary Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone, Sokhna
0774474



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CONTENTS

1.	INTRODUCTION	4
1.1	PURPOSE	4
1.2	PROJECT DESCRIPTION	5
1.3	STRUCTURE OF THE SEP	8
2.	LEGAL FRAMEWORK	8
2.1	KEY NATIONAL REGULATIONS	8
2.2	INTERNATIONAL REQUIREMENTS	9
2.3	THE IFC PERFORMANCE STANDARDS	10
3.	PRINCIPLES OF ENGAGEMENT	11
4.	PROJECT STAKEHOLDERS	12
4.1	ASSUMPTIONS AND LIMITATIONS	12
4.2	ESIA AREA OF INFLUENCE (AOI)	12
4.3	STAKEHOLDER IDENTIFICATION AND MAPPING	15
4.3.1	Preliminary stakeholder identification	15
4.3.2	Stakeholder database	20
4.3.3	Stakeholder analysis and prioritisation	20
5.	STAKEHOLDER ENGAGEMENT CONDUCTED TO DATE	23
6.	STAKEHOLDER ENGAGEMENT PROGRAMME	24
6.1	PLANNED ENGAGEMENT DURING THE ESIA DISCLOSURE PROCESS	24
6.2	POST ESIA STAKEHOLDER ENGAGEMENT	25
6.2.1	Construction phase	25
6.2.2	Operational phase	26
6.2.3	Preliminary engagement strategy	26
6.3	ENGAGEMENT WITH VULNERABLE GROUPS	33
7.	GRIEVANCE MANAGEMENT (GM)	34
7.1	PURPOSE	34
7.2	PRINCIPLES OF GRIEVANCE MANAGEMENT	35
7.3	ELIGIBILITY OF GRIEVANCE	36
7.4	GRIEVANCE PROCEDURE	36
7.4.1	Step 1: Publicising the grievance mechanism	37
7.4.2	Step 2: Receiving a Grievance	37
7.4.3	Step 3: Acknowledging receipt of a grievance	38
7.4.4	Step 4: Documenting grievances	38
7.4.5	Step 5: Assess grievances	39
7.4.6	Step 6: Investigate grievances	40
7.4.7	Step 7: Respond to grievances	41
7.4.8	Step 8: Close grievance	41
7.4.9	Step 9: Monitor and report	42
8.	ORGANISATIONAL CAPACITY	43

8.1	COMMUNITY LIAISON OFFICER	43
8.2	SITE MANAGER	43
8.3	HHSE TEAM	43
8.4	E&S CORPORATE TEAM	44
9.	MONITORING, EVALUATION AND REPORTING	44
9.1	MONITORING AND EVALUATION	44
9.2	REPORTING	45

APPENDIX A GRIEVANCE LOG

APPENDIX B GRIEVANCE REGISTER

LIST OF TABLES

TABLE 1-1	MAIN PROJECT COMPONENTS	6
TABLE 2-1	REQUIREMENTS FOR STAKEHOLDER ENGAGEMENT IN IFC PERFORMANCE STANDARD 1	10
TABLE 4.1	AREA OF INFLUENCE: PROJECT COMPONENTS	13
TABLE 4-2	STAKEHOLDER IDENTIFICATION	16
TABLE 4-3	STAKEHOLDER PRIORITISATION CRITERIA	20
TABLE 4-4	GENERAL APPROACH TO STAKEHOLDER ENGAGEMENT ACTIVITIES	21
TABLE 4-5	ENGAGEMENT APPROACH FOR PRELIMINARY IDENTIFIED STAKEHOLDERS	22
TABLE 5-1	PREVIOUS ENGAGEMENT ACTIVITIES	23
TABLE 6-1	STRATEGIES TO CAPTURE VULNERABLE GROUPS' VIEWS	33
TABLE 7-1	TIPS FOR RECEIVING GRIEVANCES	37
TABLE 7-2	TIPS FOR AKNOWLEDGING GRIEVANCES	38
TABLE 7-3	SIGNIFICANCE RATING CRITERIA	40

LIST OF FIGURES

FIGURE 1-1	PRODUCTION SITE, PHOSPHOGYPSUM STORAGE AREA, AMMONIA PIPELINES AND SURROUNDING LAND USE	6
FIGURE 1-2	GEOGRAPHICAL MAP OF SOKHNA REGION	7
FIGURE 4.1	AREA OF INFLUENCE (AOI): CLASSIFYING PROJECT COMPONENTS	14
FIGURE 4.2	ENVIRONMENTAL AOI DURING OPERATION FOR THE PROJECT SITE	15

ACRONYMS AND ABBREVIATIONS

Acronym	Description
AOI	Area of Influence
CBO	Community-based Organisation
CLO	Community Liaison Officer
DAP	Granulated Diammonium Phosphate
E&S	Environmental and Social
EEAA	Ministry of Environment - Egyptian Environmental Affairs Agency
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FGD	Focus Group Discussion
GM	Grievance Mechanism
HHSE	Hygiene, Health, Safety and Environment
IFC	International Finance Corporation
ILO	International Labour Organisation
KPI	Key Performance Indicator
MTPD	Metric Ton per Day
NGO	Non-governmental Organisation
NPK	Nitrogen, Phosphorus, and Potassium
NTS	Non-technical Summary
PAP	Phosphoric Acid Plant
SAP	Sulfuric Acid Plant
SC Zone	Suez Canal Economic Zone
SEP	Stakeholder Engagement Plan
UNFCC	United Nations Framework Convention on Climate

1. INTRODUCTION

This Stakeholder Engagement Plan (SEP) has been developed specifically for the Indorama Phosphate Fertilizer Project proposed within the Suez Canal Economic Zone (SC Zone) in Sokhna (hereafter referred to as the Project). It provides an implementation plan for stakeholder engagement activities post Environmental and Social Impact Assessment (ESIA). The SEP aims to define a technically and culturally appropriate approach to consultation and disclosure. The SEP seeks to ensure that adequate and timely information is provided to stakeholders, and that these groups are given sufficient opportunity to voice their opinions and concerns, which in turn will have a positive influence on Project execution.

The SEP is a working document that will be updated and adjusted as required during Project development and execution.

This SEP draws reference to the following existing Indorama documentation pertaining to stakeholder engagement:

- ESIA for Indorama Phosphate Fertilizer Complex, SC Zone, Sokhna, by Environics, 2026.

1.1 PURPOSE

The aim of the SEP is to describe how the Project will engage external stakeholders during the different Project phases. It demonstrates the Indorama Investments Limited Company's commitment to an 'international best practice' approach to stakeholder engagement. Indorama is committed to full compliance with Labor Law No. 12 of 2003, the Environmental Protection Law (Law No. 4 of 1994), and the Environmental Impact Assessment (EIA) regulations (including Ministerial Decrees No. 1085 of 2015 and No. 710 of 2006). In addition, Indorama Investments Limited Company will align with the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability, 2012. In line with current international best practice, this SEP aims to ensure engagement that is free of manipulation, interference, coercion and intimidation.

The objectives of this SEP are as follows:

- 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

To this end, this SEP provides the following:

- Requirements for consultation and disclosure;

- Identification and prioritisation of stakeholders;
- Strategy for sharing information and consulting with stakeholders;
- Identification of structures and processes to deal with conflicts and grievances; and
- Resources and responsibilities for implementing stakeholder engagement activities.
- Monitoring, evaluation and reporting approach.

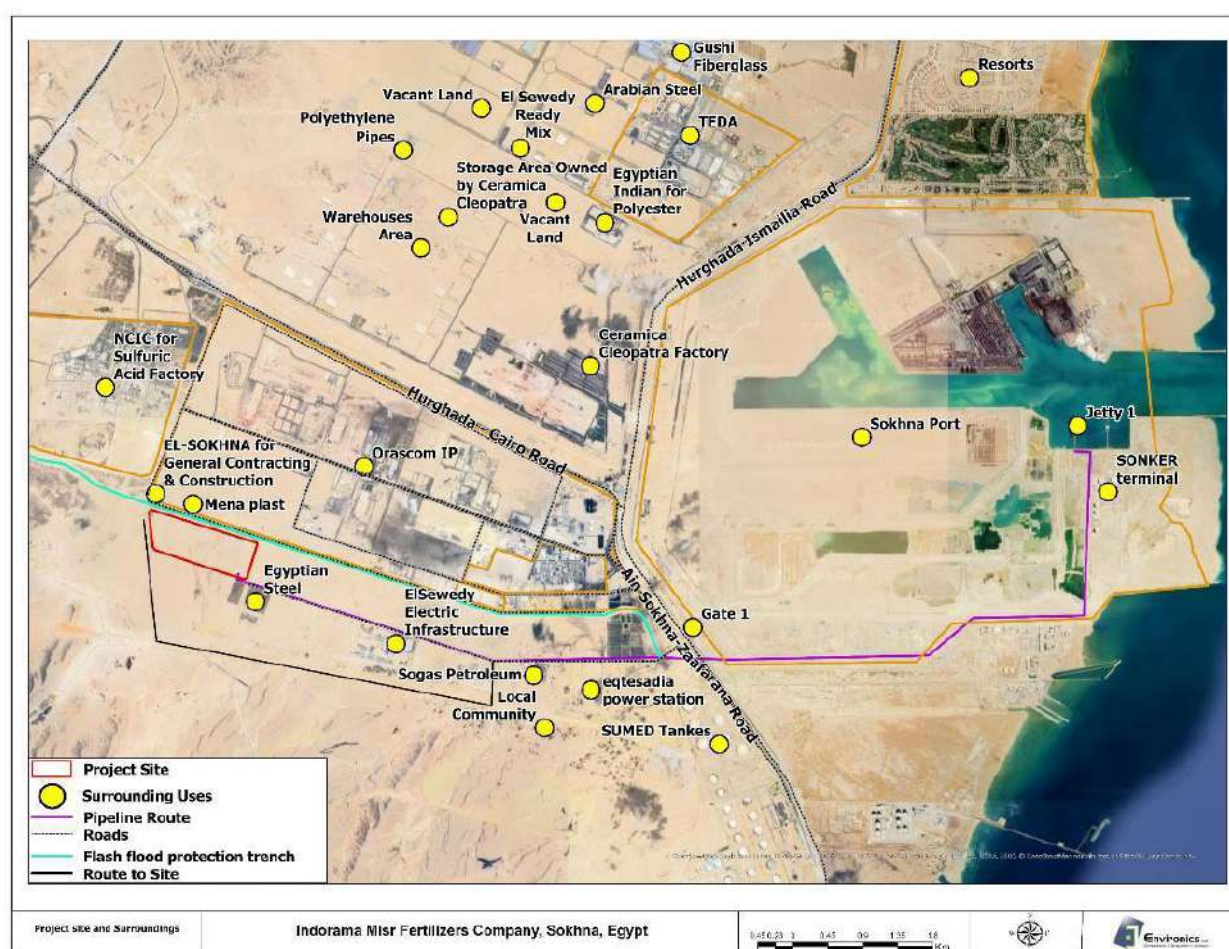
1.2 PROJECT DESCRIPTION

Indorama Investments Limited (hereafter 'Indorama') is one of the subsidiaries of Indorama Group, Ltd., which has several phosphate fertilizer plants in different countries (Senegal, Brazil, Uzbekistan and India). The Company now plans to establish a Phosphate Fertilizer Complex (hereafter 'the Project') within SC Zone Sokhna, Egypt. Indorama Phosphate Fertilizer project will focus its productions on Granulated Diammonium Phosphate (DAP) or NPK fertilizers. In addition, also Sulphuric and Phosphoric acids will be produced as intermediate products.

Indorama will establish its Phosphate Fertilizer project within SC Zone, in Sokhna, Suez Governorate. The Project site covers a total area of 56 ha, divided into two parts of approximately 28 ha each. One part will be used as a phosphogypsum storage area, and the other part will be for the production site. The Project site is located approximately 4.5 km west of Sokhna Port and about 43 km south of Suez City.. Another project components are the main and secondary pipelines of ammonia which will stretch across 13 km, starting from SONKER' Bulk Liquids Terminal and will be ending at the operations ammonia tanks. The project will use already existing facilities at the SONKER' Terminal within Sokhna Port.

Figure 1-1 shows the project location:

FIGURE 1-1 PRODUCTION SITE, PHOSPHOGYPSUM STORAGE AREA, AMMONIA PIPELINES AND SURROUNDING LAND USE



Source: Indorama, 2026

In addition to the abovementioned project site, Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities. For clarity, the proposed port facilities are considered a **separate future development** and are therefore **excluded from the scope of this ESIA**. Their potential environmental impacts will be assessed independently under a standalone EIA to be submitted to SCZone.

The Project will consist of infrastructures detailed in Table 1-1.

TABLE 1-1 MAIN PROJECT COMPONENTS

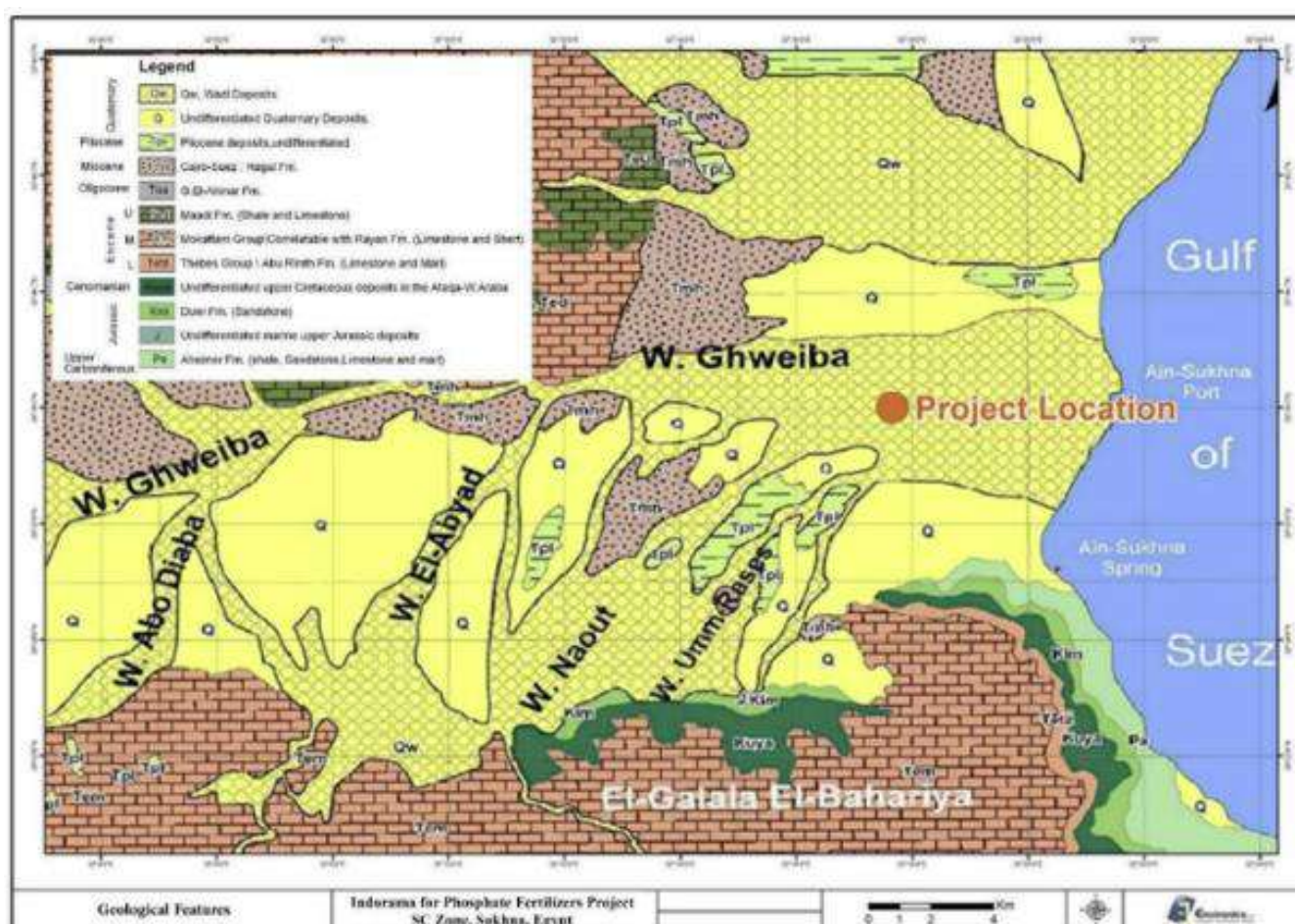
Project components	Connection to Project
Sulfuric Acid Plant (SAP)	SAP is designed to produce 3,100 Metric Ton per Day (MTPD) of Sulfuric acid (98.5%), operating continuously for 24 h/day over 7 days a week.
Phosphoric Acid Plant (PAP)	PAP is designed to produce 1000 MTPD of Phosphoric acid (52%), operating continuously for 24 h/day over 7 days a week.
DAP/ NPK Fertilizer Plant	This plant will produce a maximum of 1,935 MTPD of granulated Di-ammonium Phosphate

Project components	Connection to Project
	(DAP) or NPK fertilizers. The plant will be operating 22 h/day. Cleaning activities will be done for approximately 2 h/day.
Phosphogypsum storage area	The Project site will include a designated area (280,000 m ²) for gypsum storage/stacking.
Utilities & Service Units	Overall service units
Ammonia Pipelines	Indorama will construct a main pipeline for ammonia supply and another secondary pipeline for precooling the main pipeline.
Ammonia unloading arm at Sokhna Port (out of the scope of this study)	The ammonia unloading arm will be part of the future port facilities (out of the scope of this ESIA). To further ensure the uninterrupted supply of ammonia (the main raw material for DAP/NPK fertilizer), the company will also install one unloading arm for ammonia ships. This will be constructed on the Terminal of the Jetty within Sokhna Port, to directly feed the ammonia pipelines.

Source: Indorama, 2026.

Figure 1-2 below shows the geographic location and surroundings of Sokhna Region.

FIGURE 1-2 GEOGRAPHICAL MAP OF SOKHNA REGION



Source: Conoco Coral 1987

1.3 STRUCTURE OF THE SEP

The remainder of this Document is structured as follows:

- Section 2: Legal Framework
- Section 3: Principles of Engagement
- Section 4: Project Stakeholders
- Section 5: Stakeholder engagement conducted to date
- Section 6: Stakeholder Engagement Programme
- Section 7: Grievance Management (GM)
- Section 8: Organisational Capacity
- Section 9: Monitoring, Evaluation and reporting

2. LEGAL FRAMEWORK

2.1 KEY NATIONAL REGULATIONS

This section presents a list of key legislation of the Arab Republic of Egypt relevant within the context of the ESIA and the SEP:

- Law No. 4/1994 on Environment;
- Environmental Law No.9/2009 (amending some provisions of Law No.4 of 1994 on Environment);
- Environmental Law No.105/2015 (amending some provisions of Law No.4 of 1994 on Environment);
- Law No 93/1962 for Discharge of Waste waters;
- Law No.38/1967 General Public Cleaning;
- Law No. 117/983 promulgating the Antiquities' Protection Law;
- Law No. 83/2002 On Economic Zones of a Special Nature;
- Law No. 12/2003 Labour Code;
- Law No. 501/ 2005 for the reuse of wastewater in agriculture;
- Waste Management Law No. 202/2020;
- Law No. 147/2021 for promulgating the Water Resources and Irrigation;
- Minister Decree No. 134/1968 on the collection, transport and disposal of non-hazardous solid waste;
- Minister Decree No. 44/2000 of the wastewaters discharged to the public sewer system;
- Minister Decree No. 134/2003 determining the establishments committed to institute functional agencies, committees for vocational safety and health and ensuring labour environment security, and the quarters assuming the training and the rules to be followed in this respect;
- Minister Decree No. 211/2003 on safety levels, precautions, and terms to prevent detrimental physical, chemical, biological and mechanical hazards and securing the work environment;

- Minister Decree No. 1741/2005 amending Minister Decree No. 338/1995 issuing the Implementing Regulation of Environment Law;
- Minister Decree No. 458/2007 defining maximum limits for criteria and requirements necessary for drinking water and domestic use;
- Minister Decree No. 2282/2015 on establishing the General Authority for Suez Canal Economic Zone;
- Minister Decree No. 722/2022 issuing the Executive Regulations of the Waste Management Law no. 202 of 2020.

According to the EEAA guidelines methodology¹, it is necessary to conduct a **public consultation** as part of the ESIA study. The involvement of the public and concerned entities in the ESIA planning and implementation phases is mandatory for Category C projects through the public consultation process with concerned parties.

Disclosure of relevant material is an important process and should be undertaken in a timely manner for all Category C projects. This process permits meaningful consultations between the project proponent and project-affected groups and local NGOs is required to take place. Before the public consultation on the draft ESIA, the draft technical summary in Arabic should be disclosed to all concerned parties.

2.2 INTERNATIONAL REQUIREMENTS

This section presents a list of key relevant international conventions and standards:

- International Labor Organisation (ILO) conventions including:
- Core ILO conventions:
- Freedom of Association and Protection of the Right to Organize Convention; 1948 (No. 87); ratified on 6 November 1957;
- Right to Organize and Collective Bargaining Agreement; 1949 (No. 98); ratified on 3 July 1949;
- ILO Forced Labor Conventions; 1930 (No. 29); ratified on 29 November 1955;
- Abolition of Forced Labor Convention; 1957 (No. 105); ratified on 23 October 1958;
- Minimum Age Convention 1973 (No. 138); ratified on 9 June 1999;
- Worst Forms of Child Labor Convention 1999 (No. 182); ratified on 6 May 2002;
- Equal Remuneration Convention 1951 (No. 100); ratified on 26 July 1960;
- Discrimination regarding employment and occupation Convention; 1958 (No. 111) ratified on 10 May 1960.
- Governing conventions:
- Labor Inspection Convention 1947 (No. 81); ratified on 11 October 1956;
- Employment Policy Convention, 1964 (No. 122); not ratified;
- Labor Inspection in Agriculture Convention; 1969 (No. 129); ratified on 20 June 2003; and
- Tripartite Consultation (International Labor Standards) Convention, 1976 (No. 144), ratified on 25 March 1982.

¹ EEAA (2009) Guidelines of Principles and Procedures for Environmental Impact Assessment. Available from: [Microsoft Word - 01-English EIA guidelines-final.doc](#)

- Other relevant conventions and treaties:
- United Nations Framework Convention on Climate Change (UNFCCC) ratified on 12 May 1994;
- Stockholm convention ratified on 02 May 2003;
- Kyoto Protocol ratified on 12 January 2005;
- Paris Agreement ratified on 12 December 2015;
- Stockholm convention ratified on 02 May 2003.
- Standards of international financial institutions:

2.3 THE IFC PERFORMANCE STANDARDS

The IFC Performance Standards are considered a benchmark for good practice for environmental and social (E&S) risk management in private sector developments. The IFC Performance Standards require that clients engage affected communities through disclosure of information, consultation, and informed participation, in a manner proportional to the risks to and impacts of the project on the affected communities.

The IFC Performance Standards include specific guidance on conducting stakeholder engagement both during the planning phase and throughout the project lifecycle.

Stakeholder engagement requirements are contained in Performance Standard 1: Assessment and Management of E&S Risks and Impacts. The key requirements for consultation and disclosure through the life of the Project are summarized in Table 2-1.

TABLE 2-1 REQUIREMENTS FOR STAKEHOLDER ENGAGEMENT IN IFC PERFORMANCE STANDARD 1

Requirements	Description
Aims	To ensure that affected communities are appropriately engaged on issues that could potentially affect them; to build and maintain a constructive relationship with communities; and to establish a grievance mechanism (GM).
Who to consult	Specifically with: • Directly and indirectly affected communities²; • Positively and negatively affected communities/individuals; • Those with influence due to local knowledge or political influence; • Elected representatives; • Non-elected community officials and leaders; • Informal/traditional community institutions and/or elders; • Indigenous peoples, where the Project is identified to have adverse impacts on them; • Non-Governmental Organisations (NGOs) and community-based organisations (CBOs); • Key interest groups; and • Communities in the wider area of influence (AoI).
When to consult	As early as possible, or at the latest consultation should begin prior to construction. Consultation should be an on-going process throughout the life of the Project, i.e., iterative. Consultation should also allow for a feedback mechanism where affected people are able to present their concerns and grievances for consideration and redress.

² Where engagement relies substantially upon a community representative the client will aim to ensure that the views of affected communities are communicated, and that the results of consultation are communicated back to the community.

Requirements	Description
What to consult on	Disclosure of Project information (purpose, nature, scale); • Be inclusive and culturally appropriate; • Allow for free, prior and informed participation of affected communities; • Be in the language preferred by the affected communities; • Consider the needs of disadvantaged and vulnerable groups; • Be fed into the decision-making process including proposed mitigation, sharing of benefits and opportunities; • Be iterative; • Be documented; • Be responsive to community concerns and grievances; • Be easily understood and transparent; and • Allow for differentiated means of engagement particularly for disadvantaged or vulnerable groups.
How to consult	Consultation should: • Be inclusive and culturally appropriate; • Allow for free, prior and informed participation of affected communities; • Be in the language preferred by the affected communities; • Consider the needs of disadvantaged and vulnerable groups; • Be fed into the decision-making process including proposed mitigation, sharing of benefits and opportunities; • Be iterative; • Be documented; • Be responsive to community concerns and grievances; • Be easily understood and transparent; and • Allow for differentiated means of engagement particularly for disadvantaged or vulnerable groups

Source: Source: IFC Performance Standard 1, (paragraphs 25-35) 2012

3. PRINCIPLES OF ENGAGEMENT

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.

These principles have informed the Project's approach to stakeholder engagement.

4. PROJECT STAKEHOLDERS

To develop an effective SEP, it is necessary to identify Project stakeholders and understand their interest, priorities and objectives in relation to the Project. For the purposes of this SEP, a stakeholder is defined as any individual or group who is potentially affected by the Project, or who has an interest in the Project and its potential impacts.

Stakeholders closer to the Project site will be directly affected by the Project activities (both positive and negative) and should be engaged more frequently to mitigate adverse impacts and seek to ensure that they benefit from opportunities associated with the Project, such as employment. However, stakeholders are not necessarily limited to people who have a physical presence around the Project site, they can also include local government, NGOs, and local media, among others

By classifying and analysing the influence and support of various levels of stakeholders, it is possible to develop a Plan that is tailored to the needs of different stakeholder groups. It is also important to understand how each stakeholder may be affected by the Project (or perceives they may be affected by the Project) so that engagement can be tailored to address their views and concerns in an appropriate manner.

4.1 ASSUMPTIONS AND LIMITATIONS

The SEP for the Phosphate Fertilizer Project is based on limited initial engagements that did not include women and other vulnerable groups. The initial method of approach was rooted in the assumption that local community leaders could provide the most valuable insight or overview into community interests and dynamics within a shorter time frame.

It was assumed that community leaders could confirm that livelihoods would not be infringed upon as a consequence of the Project's development, due to the fact that it will be implemented in an existing industrial area.

The Project Team recognizes that inclusion of vulnerable groups is key for meaningful stakeholder engagements and will consider this with regard to the need for additional stakeholder engagement efforts during the lifecycle of the Project.

4.2 ESIA AREA OF INFLUENCE (AOI)

The AoI for the Project is used to describe the boundaries of the extent to which Project impacts may extend or be experienced.

For this Project, two AoI's was initially identified as part of the ESIA, one for the construction phase and one for the operational phase. Subsequently, ERM, as part of their review of the project description, have revisited the AoI. The SEP has been developed in line with the following description of the AoI.

IFC Performance Standard (IFC PS) 1 defines the Area of Influence (hereinafter, AoI) as follows:

- *The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.*

- *Associated facilities are facilities that will not have been constructed or expanded if the project did not exist and without which the project will not be viable.*
- *Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.³*

The appropriate level of assessment and management of risks and impacts is determined by the degree of control that a project can exercise over its facilities or activities, and by the importance of the facilities or activities to a project's successful operation. The facilities and activities (the components') that make up this Project are therefore classified in determining the AoI, as illustrated in the following table and figure.

TABLE 4.1 AREA OF INFLUENCE: PROJECT COMPONENTS

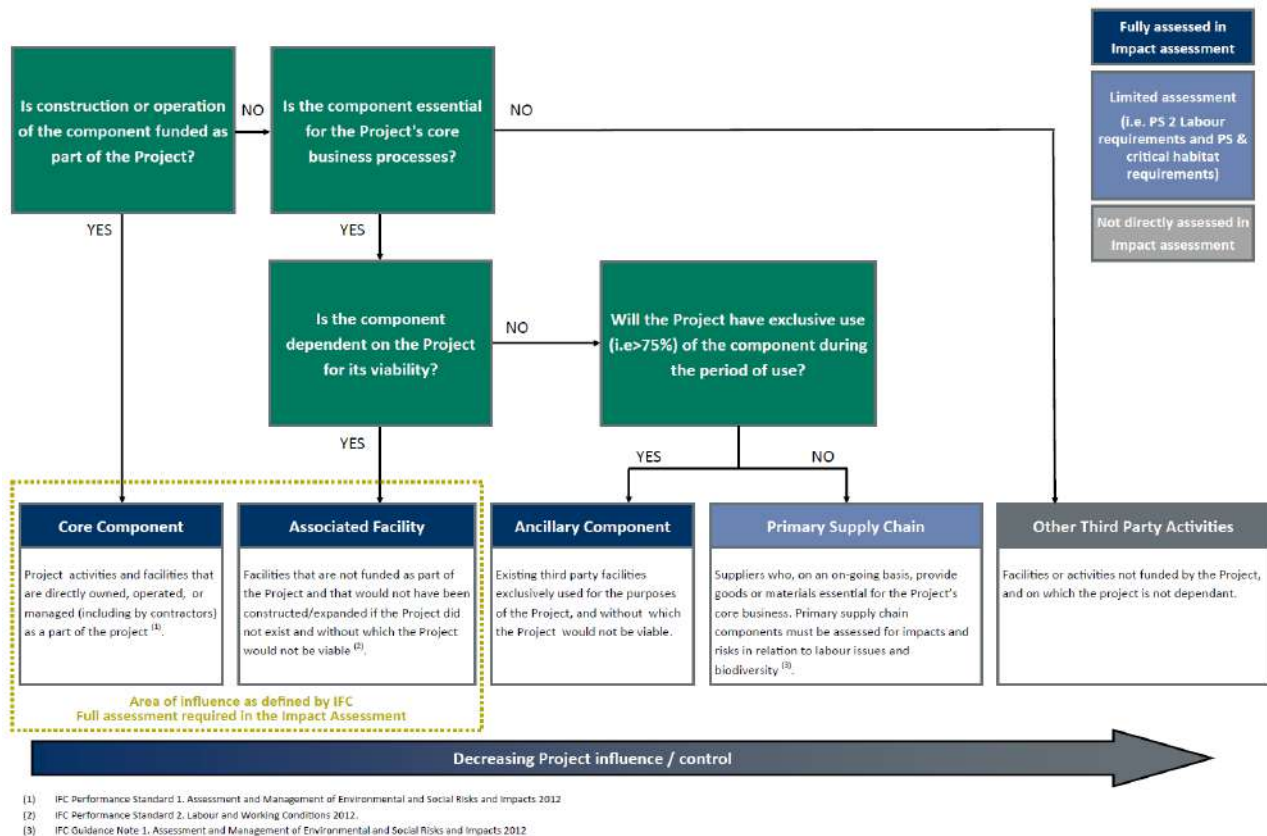
IFC Category	Project Component
Core Components	Construction, operation, and decommissioning of: • Production site • Phosphogypsum storage area • Ammonia pipelines (main and secondary) Ammonia unloading arm at Sokhna Port ⁴ Temporary construction facilities
Associated Facilities	• Electricity connection from site to the nearest tie-in • Natural gas connection from site to the nearest tie-in • Water connection from the site to the nearest tie-in • Sewage connection from the site to the nearest tie-in
Primary Supply Chain	• Road transportation of sulphur from the Sokhna/Adabiya ports to the production site • Road transportation of phosphate rock from the Misr Mine to the production site • Road transportation of ammonia from the local market
Third Party Activities	• Raw material transport • Waste transport and disposal sites • Existing mining activities to extract phosphate rock by the Misr Phosphate Company (public ownership) • Existing ammonia tank at Sonker' Bulk Liquids Terminal (Sokhna Port) • Existing facilities (loading/unloading, terminal and Jetty 1) at the Sokhna Port for import sulfur, loading the new ammonia pipeline and export DAP/NPK fertilizers abroad

Source: Indorama.

³ IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts, January 1, 2012.

⁴ The ammonia unloading arm at Sokhna Port currently falls outside the scope of this study and has not been considered in the defined Area of Influence.

FIGURE 4.1 AREA OF INFLUENCE (AOI): CLASSIFYING PROJECT COMPONENTS



Source: ERM, 2025.

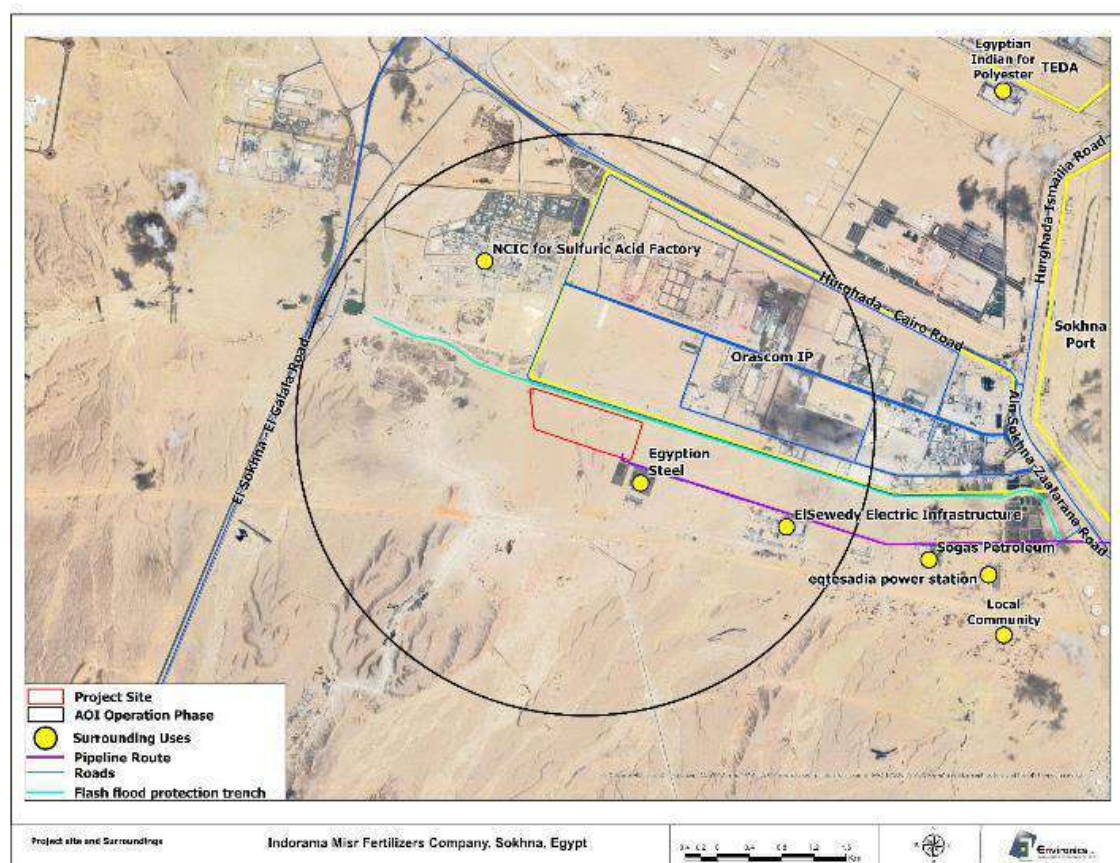
Environmental AoI

- **Construction:** The AoI mainly comprises the Project footprint of the production site and ammonia pipelines where noise and air emissions are expected from the equipment, machinery and vehicles used for the construction.
- **Operation:** The AoI mainly comprises the production plant and the extent of the noise and air emissions expected from its operation. A segment of approx. 1.8 km of the ammonia pipeline will be aboveground. Given the hazardous (toxic) nature of ammonia, a Quantitative Risk Assessment (QRA) was conducted to assess the potential risk of accidental leak from the aboveground segment of the pipeline (see complete document in the EIA 2026 by Environics).

The AoI for noise emissions is conservatively established as 1 km from the production plant, considering that equipment will be installed within enclosed structures/buildings; it is thus unlikely that the noise will disperse significantly beyond the plant boundaries and affect a distant area. Noise is mainly influencing the workplace environment.

Regarding air quality, according to Article 34 of the Executive Regulations for Law 4/1994, the AoI is determined by a circle of a radius 50 times the height of the highest stack of the production site, considering weather variations at the area. Given that the highest point source of air emissions is approximately 65 m, the AoI is accordingly delineated as a circular area of radius 3.25 km, as shown in the following figure.

FIGURE 4.2 ENVIRONMENTAL AOI DURING OPERATION FOR THE PROJECT SITE



Source: Indorama 2026.

Social AoI

The direct social AoI comprises the surrounding users of the Sokhna Industrial Area within the environmental AoI (3.25 km buffer), including the existing labour accommodation within Orascom Industrial Park (approx. 1.6 km northeast of the production site), and the local community located 2.5 km southeast of the production site. On the other hand, the indirect social AoI comprises the Suez Governorate.

4.3 STAKEHOLDER IDENTIFICATION AND MAPPING

4.3.1 PRELIMINARY STAKEHOLDER IDENTIFICATION

The supplementary guidance note to IFC Performance Standard 1 states that all personal data and information should be treated as confidential except where disclosure is required by law. In those instances where disclosure of data on affected stakeholders is required, such data will be disclosed in a manner that cannot be attributed to particular individuals.

A preliminary stakeholder identification was carried out as part of the national ESIA, and the current list builds on that foundation, supplemented by additional desktop research. No field visits or engagement activities were conducted specifically for the preparation of this SEP. The

list of stakeholders will therefore need to be refined and updated as the Project advances, new information becomes available, and new stakeholders are identified.

TABLE 4-2 STAKEHOLDER IDENTIFICATION

Category	Stakeholders	Connection to Project
Environmental regulatory bodies	- Ministry of Environment - Egyptian Environmental Affairs Agency (EEAA) - Environmental Office within the Suez Governorate	- Responsible for establishing policy, granting permits or other approvals for the Project, and monitoring and enforcing compliance with Egyptian law throughout all stages of the Project life cycle. - Responsible for implementing the national environmental policies at a regional level.
Water regulatory body	Ministry of Water Resources and irrigation	Responsible for granting permits for groundwater abstraction and rejection wells. The Ministry requires groundwater studies to be conducted by specific entities. The studies are reviewed by a committee from the Ministry to approve safe abstraction limits.
Cultural Heritage regulatory bodies	- Ministry of Antiquities - Antiquities Directorates	Responsible for conducting Ground Sensing Radar surveys and exploratory sessions for the excavation sites; to ensure that they are free of any archaeological discoveries. Then provide permission to allow construction workers to resume work.
Transport	Ministry of transport - General Authority for Roads and Bridges	Responsible for ensuring developing and managing the country's transportation infrastructure. The General Authority for Roads and Bridges is responsible for planning, constructing, and maintaining the national road and bridge network. It plays a key role in supporting economic development by improving connectivity between industrial, agricultural, and urban areas.
Other national regulatory body	Ministry of interior	Responsible for local security and approving emergency response and firefighting plans for projects.
Other national entities	National Council for Women	It is the leading independent national body responsible for promoting and protecting women's rights and gender equality. Its key responsibilities include advising the government on policies related to women's empowerment, monitoring the implementation of national strategies for gender equality, and proposing legislative reforms
Other local governates and district authorities	Suez Governorate	- Responsible for supporting the project by providing the various permits required, infrastructure maps, and government studies, statistics and reports related to areas of influence - Coordination with SC Zone regarding environmental compliance, enforcement, and economic planning. - Protection and preservation of natural environment and waste management

Category	Stakeholders	Connection to Project
		Investigation of community grievances
	Local units of the Suez Governorate	- Provision of support to the project through mobilizing people to gain information about the project. - Provision of overview of the local context and its specific considerations that could be affected by the Project. - Granting permits for construction should be prepared by the governorate and approved by the Local Government Units.
	Health Directorate in the Suez Governorate	Responsible for providing health care services to workers at construction sites, conducting examinations, instructions, and awareness-raising related to infectious diseases.
	Labour Office in the Suez Governorate	Responsible for monitoring conditions of the workplace and mediating any conflicts between workers and management.
	Water and Sanitation Directorate in Suez Governorate	- Responsible for providing the project with maps of water and sanitation facilities near the construction site, and utilities diversion areas. - Responsible for providing the project with water and wastewater disposal services from excavation sites
	Traffic General Directorate in Suez Governorate	- Responsible for managing the traffic movement. - Setting traffic plans, and making all procedures for traffic diversions, and construction sites at major intersections; to avoid impacts on traffic as much as possible.
	Traffic Department in Sokhna	Is the local level authority. Responsible for day-to-day traffic management, enforcement of traffic laws, vehicle inspections, and issuing local permits within Sokhna.
Main partners	SC Zone	- The board of the SC Zone is the competent authority to issue all licenses required for establishing and running all kind of business and activities inside the zone. - Serving as the main interface for navigating regulatory approvals, environmental compliance, and labor requirements within the zone in coordination with concerned and responsible authorities. - Acting as a key facilitator, coordinating access to land, utilities (especially water, electricity, and gas), and port logistics. - Provision of detailed infrastructure maps (e.g., water pipelines, electrical cables) to prevent accidental damage during excavation works. - Serving as a platform for fostering synergies among industrial players in accessing skilled labor and other essential resources.
	Sokhna Port authority	Managing the facilities and jetties within Sokhna Port

Category	Stakeholders	Connection to Project
		- Allocating and planning of facilities/pipelines within the Port for shipments handling and transfer - Coordinating with SC Zone and companies within the Port on risk management and control - Managing environmental compliance and protection of marine life related to the Port
Neighbouring facilities and projects	- EL-SOKHNA for General Contracting & Construction - Mena plast - Orascom Industrial Park - Egyptian Steel - NCIC for Sulfuric Acid Factory - Elsewedy Electric Infrastructure - Sogas Petroleum - Ceramica Cleopatra Factory - Polyethylene Pipes Factory - El Sewedy Ready Mix - Arabian Steel Industries - Egyptian Indian Company for Polyester Production - Swiss In Hotel - El Wady Resort - Stella De Mare Resort - Other projects that could be developed in the area	- Neighbouring facilities could be affected by increased traffic on access roads, elevated noise levels, and dust emissions. As such, it is important to maintain open lines of communication with these facilities to monitor potential impacts. - The QRA for the ammonia tanks (see Annex 5 of the EIA 2026 by Environics) indicates in the event of an ammonia release from any of the two adjacent tanks, the local community is not expected to be affected. - The Egyptian Steel storage site is located at a "dangerous threat zone" defined for toxic vapor cloud dispersion from the on-site ammonia storage tanks. - Given its proximity, the Ceramic factory falls within the area potentially impacted in the event of an accidental ammonia release. Due to this location, the factory should be formally included in the project's Emergency Preparedness and Response Plan (EPRP). The other nearby facilities are outside the defined "toxic vapor threat zone" but remain in close proximity to the project site; it is therefore recommended to include them in incident-related communications to promote transparency and maintain stakeholder confidence
Tourism players	- Resort ain Sokhna - Local hotels	Tourism is an important economic sector in the area and provides employment to local communities. The tourism sector could be impacted by Project activities.
Potential affected communities	- Residents of the local community (2.5 km southeast of the production site) - Residents of the Kabilat El Amareen village (5-6 km south-east of the Project location) - Community leaders	- Residents are familiar with the Project area and may be positively or negatively impacted by the Project. - Establish the existence of a skills and local small and medium sized enterprises database for the area. Community members are already working in the industrial zone as security guards or contractors for construction suppliers or operators of small local businesses (e.g. food). - Understand local need, as Egyptian law encourages investors to contribute to social development initiatives, including environmental protection, healthcare, education, and research.
Vulnerable groups	Women community members	Women living in neighbouring areas to the site may be differently affected by the Project (e.g. security concerns due to influx

Category	Stakeholders	Connection to Project
		of workers) and are likely of benefit less from the Project. In the local community, women mainly take care of their household and do not have specific livelihood activities. Owing to the nature of traditional and domestic relations, women are reliant on the male members of the family for financial support and participation in public decision-making. Women heads of household are more often vulnerable due to reduced access to financial resources and reduced voice in public decision-making.
Civil society	- CBOs - NGOs	- Organisations with direct interest in the project and which may have useful data or insight into local issues of relevance to the project. These organisations can also influence the views of others regarding the project, nationally and internationally. - Responsible of providing information, education and communication campaigns to workers and communities around relevant issues such as safe sexual practices and transmission of STDs.
Media (optional)	- Canal Television - Print media - Akhbar Al-Youm journal - Al Ahram journal - Al Massa journal	- Disclosure of information about the project. - Publicize awareness raising campaigns.
Academia	Suez Canal University	Promote collaboration between scientific research and industry, particularly in the Canal and Sinai regions
Investors	- Misr Phosphate Company - SONKER - EBIC	Affected by the project.

4.3.2 STAKEHOLDER DATABASE

A database of all Project stakeholders (individuals and groups) will be maintained (and continuously updated) throughout the Project life cycle. The database should include contact information for all identified stakeholders (name, contact number, email address, and stakeholder group).

4.3.3 STAKEHOLDER ANALYSIS AND PRIORITISATION

Not all stakeholders require the same level or frequency of engagement at all times. Effective stakeholder analysis and prioritisation are critical to identifying those stakeholders who are most affected by or influential to the project, and to tailoring engagement strategies accordingly.

Given the evolving nature of the Project contexts and stakeholder dynamics, it is important to recognize that both stakeholders and their interests might change over time, their relevance to the Project as well as the need for active engagement can vary at different stages of the Project lifecycle. As such, stakeholder analysis should be treated as a dynamic process and regularly revisited to ensure engagement efforts remain appropriate and effective.

For each stakeholder category, the criteria in the Table 4-3 below need to be considered.

TABLE 4-3 STAKEHOLDER PRIORITISATION CRITERIA

Criteria	Description	Level
Influence	Refers to the degree of power a stakeholder has in relation to decisions either taken by or affecting the Project. This power may be in the form of stakeholders that have formal control over the decision-making process, or it can be informal in the sense of protesting against, blocking or allowing Project operations to continue.	High – Stakeholder is highly influential and has significant ability to stop or disrupt the Project or cause extensive damage to its reputation.
		Medium – Stakeholder has a moderate influence and considerable capacity to stop or disrupt the project and cause damage to its reputation.
		Low – Stakeholder is considered to have limited influence and little capacity to stop or disrupt the Project or cause damage to its reputation.
Interest	Represents the extent to which a stakeholder is likely to be directly involved with the Project (positively or negatively). This includes stakeholders who might have either something to gain or lose as a result of Project implementation. Understanding the stakeholder's level of interest can help clarify the motivations of different actors and the ways in which they	High – Project is of high interest to stakeholder.
		Medium – Project is of moderate interest to the stakeholder.
		Low – Project is of little or negligible interest to the stakeholder.

Criteria	Description	Level
	might be able to influence the Project.	
Impact	Refers to the degree to which a stakeholder is likely to experience positive or negative consequences as a result of the project; These impacts might relate to an environmental, socio-economic and cultural context. The level of impact often influences affected stakeholder's interest in the Project; the higher the level of impact, the higher the interest in the way impacts are being addressed.	High – Stakeholder is considered to be highly sensitive to potential project impacts and may experience significant changes in their health, wellbeing and livelihoods as a result of the project.
		Medium – Stakeholder is considered to be moderately sensitive to potential project impacts and may experience some changes in their health, wellbeing and livelihoods as a result of the project.
		Low – Stakeholder is not considered to be sensitive to the potential project impacts and is unlikely to experience any changes in their health, wellbeing and livelihood as a result of the project.

Once the above criteria have been decided for each stakeholder category, Table 4-4 support the determination of the appropriate engagement approach. Varying engagement approaches are necessary, depending on the level of interest/impact and influence that each stakeholder has regarding the Project.

The analysis should also identify stakeholders who may face barriers to participating in consultation activities due to their marginalised or vulnerable status.

Effective engagement typically combines approaches - from informing to activities such as consultation or collaboration.

TABLE 4-4 GENERAL APPROACH TO STAKEHOLDER ENGAGEMENT ACTIVITIES

Approach to Engagement	Frequency and Type of Engagement Activities
Engage closely	Communication is two-way and likely to revolve around the conduct of direct, in-person or virtual meetings to discuss the Project, facilitate dialogue and ensure that relevant information and feedback from stakeholders is considered through the lifecycle of the Project.
Keep satisfied	Communication is predominantly one-way and revolves around the distribution of written information (e.g., information leaflets) via email, post or by hand. Stakeholders are encouraged to respond with written or verbal feedback and comments. Where appropriate, and at the stakeholder's request, there may be more direct contact.

Approach to Engagement	Frequency and Type of Engagement Activities
Keep informed	Communication is one-way and revolves around the distribution of written information (e.g., information leaflets) via email, post or by hand. Stakeholders are free to respond with written or verbal feedback or comments if they wish.
Monitor	Their interest in and opinions of the Project are monitored (e.g., through the receipt of correspondence and online, including social media, activities) to identify any change in perceptions and the potential need for engagement, as appropriate.

Using the approach and frequency of engagement activities set out in Table 4-4, and informed by the outcomes of the stakeholder analysis, recommended levels of engagement have been assigned to each stakeholder group. This approach recognises that stakeholder engagement is multi-faceted, and that engagement approaches are not uniform across stakeholders.

Priority should be given to stakeholders that are highly influential including those that are both supportive and unsupportive of the Project.

TABLE 4-5 ENGAGEMENT APPROACH FOR PRELIMINARY IDENTIFIED STAKEHOLDERS

Stakeholders	Level of Impact	Level of Interest	Level of Influence	Engagement Approach
Ministry of Environment -Egyptian Environmental Affairs Agency (EEAA)	Medium	High	High	Engage closely
Environmental Office within the Suez Governorate	Medium	High	High	Engage closely
Ministry of Water Resources and irrigation	Medium	High	High	Engage closely
Ministry of Antiquities	Medium	High	High	Engage closely
Antiquities Directorates	Medium	High	High	Engage closely
Ministry of Interior	Medium	Medium	Medium	Inform and involve
Suez Governorate	High	High	High	Engage closely
Local units of the Suez Governorate	High	High	High	Engage closely
Health Directorate in the Suez Governorate	Medium	High	High	Engage closely
Labour Office in the Suez Governorate	Medium	High	High	Engage closely
Water and Sanitation Directorate in Suez Governorate	Medium	Medium	Medium	Inform and involve
Traffic General Directorate in Suez Governorate	Medium	High	High	Engage closely
SC Zone	High	High	High	Engage closely

Stakeholders	Level of Impact	Level of Interest	Level of Influence	Engagement Approach
Neighbouring facilities and projects	High	High	Medium	Engage closely
Tourism players	Medium	Low	Low	Monitor
Residents of the Kabilat El Amareen village 5-6 km southeast of the Project location	High	High	Medium	Inform and involve
Residents of the local community (2.5 km southeast of the production site)	High	High	Medium	Inform and involve
Women community members	High	High	Low	Inform and involve
Civil society organisations	Low	High	Low	Inform and involve
Workers and their representatives	High	High	High	Engage closely
Television and Print media	Low	Low	High	Satisfy

5. STAKEHOLDER ENGAGEMENT CONDUCTED TO DATE

The Project has progressed through several key stages, including the completion of both a scoping study and a national ESIA. The table below outlines the stakeholder engagement activities carried out to this date.

TABLE 5-1 PREVIOUS ENGAGEMENT ACTIVITIES

Date	Stakeholder	Purpose	Feedback from stakeholder
24 September 2024	SC Zone	Scoping meeting to disclose, present the Project, confirm categorisation and obtain requirements and concerns regarding the ESIA. Topics that were discussed included: • Lining of Phosphogypsum yard • Fluorosilicic Acid disposal • Emission from process units and scrubbing system • Baseline measurements • Limitation of maximum height of stack • Traffic assessment study • QRA for ammonia storage tank & air dispersion modelling of point source emissions • Utility supplied for project • Self-generation of power • Storage bulk materials in open yards • Transportation, handling and storage of Sulphur and phosphate rocks • Sources of raw materials	The general feedback on the project was positive as SC Zone was satisfied with the discussed clarifications and agreed to extend the support for the ESIA study in all aspects.
20 July 2025	SC Zone	Early coordination with SCZone Authority to secure long term water allocation. Indorama has applied for the supply of water from SCZone and submitted the master plan for the requirement of the water and other utilities. Indorama has	Pending

Date	Stakeholder	Purpose	Feedback from stakeholder
		requested SCZone to provide their comments and confirmation (see Annex A in ANNEX – Additional studies and Annex A in ANNEX- Executive summaries, for more detail).	
9 August 2025	SC Zone	Submission of project details for the Project, after the visit to the SC Zone office the 6 th of August 2025. Indorama has requested ZCZone to acknowledge the receipt of the submission and advise them on the next steps to facilitate further progress on the Project (See Annex C).	Pending
15 April 2026	SC Zone	After the change in the plot location inside the SCZone and minor changes in the project description, a meeting was held with SZone.	Pending

6. STAKEHOLDER ENGAGEMENT PROGRAMME

This section summarizes the stakeholder information and consultation activities planned to be carried during the different Project phases. The contents will be updated according to the consultations that will be carried out during the various stages and activities of the Project.

Indorama will carry out consultation and engagement activities in line with the engagement principles outlined in section 3.

6.1 PLANNED ENGAGEMENT DURING THE ESIA DISCLOSURE PROCESS

As per Egyptian EIA guidelines, a public consultation is to be conducted upon issuance of the draft ESIA, aiming to disclose and discuss the ESIA results with project's stakeholders.

Before the public consultation on the draft ESIA report and supplementing documents ("ESIA package"), including the Non-Technical Summary (NTS), Environmental and Social Management Plan (ESMP) and the SEP, will be made widely available to the public as hard copy prior to Public consultation along with Invitation .

The consultation will be widely advertised and interested individuals and organisations will be invited to come along to hear about the Project, review information, discuss with Project members and provide comments on the Project and its anticipated impacts.

Stakeholders must be notified of the consultation activities one week prior to the consultation meetings via invitation letters (e.g. to national and local government or customary authorities), and other relevant media to ensure that all stakeholders are aware of the meetings and how to participate.

The following are some of the messages that will need to be communicated to stakeholders during public consultation meetings when the NTS and ESIA is publicly disclosed:

- Background of the project;
- Project description and location;
- Project activities;

- Potential benefits and negative impacts posed by the Project;
- Proposed measures to manage and mitigate negative impacts and to enhance positive ones;
- Process that will be followed to engage with stakeholders;
- Recording issues and concerns related to the Project;
- Grievance Mechanism; and
- Planning engagement activities related to the compensation and livelihoods restoration processes.

All comments, questions and other input from the public will be logged and then considered by Indorama.

Where feasible and relevant, changes will be made in the Project planning/design/implementation to address concerns raised. These changes will be reflected in revisions to the Project as appropriate, and the revised final ESIA Report.

In addition, a brief consultation report will be prepared that summarises the key comments received during disclosure and explains how these comments are reflected in the Project and the final ESIA Report. This consultation report will be made public on Indorama's website.

6.2 POST ESIA STAKEHOLDER ENGAGEMENT

The SEP is designed to cover all phases of the Project. After the ESIA/EIA Phase, Indorama will be in charge of stakeholder engagement through the construction, operation and closure phases of the Project. Following disclosure of the ESIA, stakeholder engagement will continue to be carried out in line with this SEP, which will be updated at least biannually (every 6 months) throughout construction and at least annually during operations, or more frequently, as required, based on stakeholder feedback and changes to Project planning.

The Site Manager will carry out updates to the SEP, with the following intent:

- To ensure stakeholder lists and mapping remains accurate. Any new stakeholders that may have arrived in the Project area or developed an interest in the Project should be monitored, and strategies should be developed to engage them;
- To review and amend, if necessary, information dissemination and engagement practices in order to continue to meet the needs of stakeholders;
- To review and assess stakeholder participation in order to revise, where necessary, the frequency, methods, and format of engagement to ensure accessibility and meaningful participation for all stakeholder groups.

6.2.1 CONSTRUCTION PHASE

Engagement will be focused on informing and updating community members and stakeholders about the Project's construction activities and schedule, including anticipated delays or changes, and procurement and employment opportunities, as well as the potential impacts that can be expected to occur along with the measures planned to mitigate these.

These engagements may include:

- Targeted face to face information disclosure meetings with environmental permitting authorities and other key regulatory authorities such as local government, if required;

- Community meetings for updates and information sharing on topics of concern such as community health and safety; and
- Focus group discussions (FGDs) for special interest groups with particular concerns

Information dissemination tools will continue to be used to support the above activities. For example, notice boards are an accessible way for communicating changes to stakeholders concerning Project design, progress on meeting social and environmental management commitments, details of upcoming construction activities and or changes to schedule.

During the construction phase, it is also important to monitor contractors' social performance. The Community Liaison Officer (CLO) will liaise with and monitor contractors to ensure that any interaction-taking place between contractors and stakeholders is consistent with the standards, core principles and defined procedures as is outlined in this framework. Unmanaged or poorly handled engagement with communities by contractors can present a risk to the Project. It may result in inconsistent or contradictory messages or conflicting commitments from the contractor and Project representatives, which can give rise to unmet expectations.

6.2.2 OPERATIONAL PHASE

On completion of construction, the Project will move into operation phase. Stakeholder engagement will need to continue throughout the operational phase. As the stakeholders affected during operations may differ from those impacted during construction, engagement activities must be adapted accordingly. These activities should clearly communicate the expected changes resulting from the transition to operations and help manage community expectations regarding the new potential impacts.

Engagement will be aimed primarily at maintaining continuity of relationships, monitoring the effects of Project impacts on stakeholders and particularly on vulnerable groups, and demonstrating long term organisational commitment to delivering on social and environmental mitigations or to resolving outstanding issues and grievances.

Engagement activities may include regular updates on the Project's status, particularly in the event of significant changes or planned maintenance work. Stakeholders will be informed in advance of any service interruptions, such as disruptions to utilities, to allow for adequate preparation and minimize inconvenience. Additionally, any modifications to the Project's planning or design will be communicated in a timely and accessible manner, ensuring that stakeholders remain well-informed and have the opportunity to raise concerns or seek clarification where needed.

The loss of institutional knowledge of long term Project staff can impact on established stakeholder relationships and cause a loss of institutional knowledge and often a breakdown of trust. If the CLO role is passed onto a new CLO or to other management staff, then this needs to be clearly communicated to affected stakeholders.

6.2.3 PRELIMINARY ENGAGEMENT STRATEGY

Table below provides a preliminary engagement strategy that will be updated as the project progresses.

Stakeholder		Communication Method	Information to be Disclosed	Objective	Language	Timeframe	Responsibility
Project affected parties							
Potential Affected stakeholders	- Residents of the Kabilat El Amareen village and commercial activities project area (e.g., tourism actors) - Residents of the local community (2.5 km southeast of the production site)	- Meeting in their location - FGD - Post Mail Email - Construction signs and warnings - Leaflet distribution - Indorama Website - Postal and online questionnaires and feedback forms - Premises of different entities at the central and local levels, as well as in public places and local government units - Media and social media	- Project Non-Technical Summary, Stakeholder Engagement Plan - Schedule of preparation and construction - Outline of construction and operation environmental and social impacts and proposed mitigation measures - Procurement and employment opportunities	- Inform about negative and positive Project impacts (both during construction and operation) - Disclose employment opportunities - Disclose and provide access to grievance mechanism - Project implementation schedule - Construction activities details including utilities and traffic diversions	Arabic	- Prior to and regularly during construction; - Three months before the beginning of operation	- Indorama Project Management - Contractors and Site Manager - Cooperation with NGOs/CBOs

Stakeholder		Communication Method	Information to be Disclosed	Objective	Language	Timeframe	Responsibility
	Neighbouring facilities and projects	- Formal Meetings - Post mail - Fax - Phone	- Schedule of preparation and construction - Outline of construction and operation environmental and social impacts and proposed mitigation measures - Emergency Preparedness and Response Plan	- Inform about negative and positive Project impacts (both during construction and operation) - Ensure effective response in the event of an emergency - Project implementation schedule - Construction activities details including utilities and traffic diversions	Arabic	- Prior to and regularly during construction; - Three months before the beginning of operation - Regular emergency drills	- Indorama Project Management - Contractors and Site Manager
Other interested parties							
Environmental Regulatory bodies	Ministry of Environment -Egyptian Environmental Affairs Agency (EEAA)	- Face-to-face meetings, official communication - Formal Meetings - Post mail - Fax	Environmental parameters as defined in the environmental permit	Obtaining environmental approval complying with Law 4/1994	Arabic	During construction and operation	Indorama E&S corporate team
	Environmental Office within the Governorate	- Formal Meetings - Post mail - Fax	Compliance reports with the national environmental requirements.	Complying with Law 4/1994		Bi-annual	Indorama E&S corporate team

Stakeholder		Communication Method	Information to be Disclosed	Objective	Language	Timeframe	Responsibility
Other ministries	Ministry of Interior	- Fax - Post Mail - Email - Formal meetings, official communication	Schedule of preparation and construction	- Non-technical Summary of ESIA instruments and the full reports of the instruments - Project implementation schedule - Relevant studies (e.g., groundwater studies)	Arabic	- Before project appraisal - Prior to and during construction - During operation	Indorama Project Management
	Ministry of Antiquities						
	Ministry of Water Resources and irrigation						
Local Governmental Entities	Governorates	- Fax - Post Mail - Email - Formal meetings, official communication - Site visits	- Schedule of the project phases - ESMP - Traffic diversions plans (if needed) - Utilities diversions plans (if needed) - Street rehabilitation	- Obtaining required permits - Provide access to grievance mechanism - Project implementation schedule - Reveal the project's progress and updates - Construction activities details including utilities and traffic diversions	Arabic	Prior to and during construction	E&S team and Site Manager
	Local units in the Suez Governorate						
	Water and Sanitation Directorate						
	Traffic General Directorate						

Stakeholder		Communication Method	Information to be Disclosed	Objective	Language	Timeframe	Responsibility
	• Electricity Transmission Company		- n plan (if needed) - A plan to avoid traffic crisis during construction				
	• Health Directorate						
	• Local Labour Office	- Fax - Post Mail - Email - Formal meetings, official communication	- Bi-annual health and safety statistics - Employment needs and opportunities	Complying with Law 12/2003	Arabic	Bi-annual	E&S corporate team
• Contractors / suppliers	• EPC contractor	- Email - Phone - Contracts - Regular meetings - Site visits - Virtual meetings - Video messages - Webinars	- Schedule of the project phases of construction and operation - Human resources documentation - Main project impacts ESMP - Bidding documents - Awarded documents	- Familiarize contractors with HSE requirements - Follow the guidelines of Indorama's ESMP - Avoid violations of Egyptian environmental and social laws and regulations - Address complaints in a transparent and appropriate manner	Arabic and/or English	Prior to and during construction, operation	- Site Manager - E&S corporate team
• Other partners	• SC Zone	- Post mail - Emails - Regular meetings - Fax - Phone	Schedule of the project phases of construction and operation	- Facilitate regulatory approvals and access to land - Facilitate access to workforce and resources (utilities and port	Arabic	Prior to and during construction, operation	- Site Manager - Indorama Project Management
	• Sokhna Port authority						

Stakeholder		Communication Method	Information to be Disclosed	Objective	Language	Timeframe	Responsibility
			• NTS and ESMP • Workforce needs	logistics/facilities/infrastructure)			
• Service Providers/ Local Business Owners	• Private companies	• Formal Meetings • Contracts • Telephone • Brochures • Company's website • Fax • Phone	• The facilities and amenities needed to be provided for Project workforce	• Contracting with different local suppliers/ shop owners for food and potable water to be provided on site during working hours	• Arabic	• Prior to and during construction • During operation	• Site Manager
• Civil Society	• Local NGOs • Associations (CDAs) • Grassroots Community - Based Organizations (CBOs)	• Email • Newsletters • Workshops • Indorama website and social media	• These organizations can also influence the views of others regarding the project, nationally and internationally. • Responsible of sharing information with the community	• Provide access to grievance mechanisms • Project implementation schedule • Employment opportunities	• Arabic	• Prior to and during construction •	• E&S corporate team
• Media	• Local media • Online journalism • TV	• Indorama's Website • Newspapers • Indorama Social Media • Newsletters • Brochures	• Share construction progress and any other updates	• Communicate the different environmental and social impacts and mitigation measures of the project • Reveal the project's progress and updates	• English and/ Arabic	• Prior to and during construction • During operation	• E&S corporate team

Stakeholder		Communication Method	Information to be Disclosed	Objective	Language	Timeframe	Responsibility
		TV/Radio broadcasts	Publish high-level project’s environmental and social impacts and mitigation	Construction activities details including utilities and traffic diversions			

6.3 ENGAGEMENT WITH VULNERABLE GROUPS

Throughout the Project lifecycle, the consultation and engagement process should bring into consideration the existence of vulnerable groups. Ensuring that these groups are adequately considered in the engagement activities and that their views and concerns are considered during the engagement process is critical to ensure these are not further victimized and they are able to benefit from Project opportunities.

Vulnerable groups were not identified during the ESIA. Presents potential vulnerable groups and different strategies to capture their views throughout the Project. Once vulnerable groups have been clearly identified, Indorama will update this SEP.

TABLE 6-1 STRATEGIES TO CAPTURE VULNERABLE GROUPS' VIEWS

Groups	Description
Illiterate groups	Information to be disseminated by community representatives or other means through culturally appropriate methodologies (radio, verbal public announcements, face to face information sharing etc.).
Women (including women headed households) and girls	- Appoint a female CLO or ensure that a female employee can assist during engagement with women and girls. - The CLO should establish robust systems of communication with women and girls in the community and provide safe spaces to voice concerns. This will be done through consultations and focus groups with women and girls or whatever necessary taking into consideration also the high literacy rates in particular in rural areas. Individual interviews will be held if needed. - CLO should consult local women organisations to understand the types of Gender-Based Violence (GBV) that are present in the communities. - The Grievance mechanism should provide a specific channel for investigation and resolution of grievances related to GBV, including anonymous grievances and psychosocial counselling.⁵
Disabled groups	- Information dissemination and public consultation should be adapted to disabled groups (e.g. translation of documents to sign language or braille). - Engagement locations (e.g., public consultations) should be fully accessible to individuals with physical disabilities to ensure inclusive participation. - CLO should liaise with local NGOs working with vulnerable groups and disable people to disseminate information.
Ethnic Minorities	If any marginalization situation of ethnic minorities should be noticed within the AoI, dedicated engagement activities will be conducted in particular with regard to Project negative and positive impacts (i.e. employment opportunities). This will include face to face engagement and communication in the relevant language (in particular with regard to migrant communities).
Elderly	Project information should be disseminated in Arabic language(s) and public consultation meetings should ensure appropriate language for targeted audience.
Households below the poverty line	A specific engagement will be conducted to ensure these households get access to potential labour opportunities which might arise.

⁵ The approach to this group will follow the strategic guidelines of the following report: <http://documents1.worldbank.org/curated/en/399881538336159607/Environment-and-Social-Framework-ESF-Good-Practice-Note-on-Gender-based-Violence-English.pdf>

7. GRIEVANCE MANAGEMENT (GM)

Grievances can be an indication of growing stakeholder concerns (real and or perceived), and therefore their management is a vital aspect of risk management for the Project.

This GM outlines the principles and process for grievance management, and defines the organisational structure and processes required to implement a functional, effective and culturally appropriate grievance mechanism that is responsive to stakeholder needs.

This GM is solely to manage the interface with external stakeholders, and not intended to be used for addressing employee, contractor, or sub-contractor employee grievances.

7.1 PURPOSE

The purpose of this GM is to establish a fair, accessible, effective, and timely mechanism for stakeholder concerns, complaints, and grievances to be raised and resolved without risk of discrimination or retaliation.

It outlines Indorama's approach to accepting, assessing, resolving, and monitoring grievances that stakeholders may have about the Project, its subcontractors' and activities in relation to the Project.

Timely redress or resolution of such grievances is vital to ensure effective stakeholder management and successful implementation of the Project. An effective GM will help avoid the escalation of complaints that could present a risk to operations or the reputation of the company (nationally or internationally). If well-handled, an effective GM can help foster positive relationships and build trust with stakeholders.

Grievances are issues, complaints, comments, questions, concerns, suggestions, or claims (perceived or actual) raised by an individual or group of stakeholders ("complainants") about the way in which a Project is being implemented or a commitment by Indorama (or its subcontractors) that has not been honoured. Grievances can encompass minor concerns as well as serious or long-term issues. They might be felt and expressed by a variety of parties including individuals, groups, communities, entities, or other parties affected or likely to be affected by the Project.

The objectives of the GM are to:

- Guide Indorama in addressing complaints, comments, questions, concerns and suggestions from stakeholders, related to the project and its activities in a fair, transparent and practical manner;
- Provide a predictable, transparent, and credible process to all parties for resolving grievances, resulting in outcomes that are seen as fair, effective, and lasting;
- Identify and manage stakeholder concerns, thereby supporting effective risk management for the project;
- Be inclusive of all stakeholders, thereby creating an enabling environment in which to operate;
- Prevent adverse consequences of failure to adequately address grievances;
- Enable more systematic identification of emerging issues and trends, facilitating corrective action and pre-emptive engagement;

- Provide stakeholders fearing or suffering adverse impacts from the project with the assurance that they will be heard and assisted in a timely manner; and
- Build and maintain trust.

The GM is free, open and accessible throughout all phases of the Project. It will be updated regularly to ensure it remains relevant and appropriate to the scale and phase of the Project.

7.2 PRINCIPLES OF GRIEVANCE MANAGEMENT

Key components of an effective GM are as follows:

- **Simple and Culturally Appropriate Process:** The GM should be fully accessible to all stakeholders affected by the Project, and it should be convenient for them to submit grievances. There should be several appropriate channels through which stakeholders can submit grievances free of charge, and without retribution to the party that originated the issue or concern.
- **Simple Internal Procedure:** A simple and consistent procedure is required to record grievances, identify those responsible for addressing them and ensure that they are resolved.
- **Staff Arrangements:** Roles and responsibilities in the grievance management process are to be defined and agreed.
- **Training:** The launch or modification of the grievance management process should include internal induction and/or training for operational staff and a Community Representative.
- **A Set Timeframe:** The grievance process should set a timeframe within which complainants can expect acknowledgement of grievance and a response and/or resolution of grievance.
- **Sign Off:** Actions planned to resolve grievances considered to be of significant concern by the CLO should be signed-off by a member of the senior management, suitably qualified to assess the effectiveness of the response.
- **System of Response:** A clear system of response is required to identify who should respond to the complainant and how. Response to the complainant should be provided in a timely and transparent manner.
- **Appeal Process:** An appeal process with the involvement of third parties should be in place in case the complaint is not resolved to satisfaction of the party originating the grievance.
- **Disclosure:** The grievance mechanism should be clearly and widely disclosed to affected communities.
- **Access to Legal Remedies:** The mechanism should not impede access to judicial or administrative systems.
- **Monitoring Effectiveness:** Mechanisms should be set in place for monitoring the effectiveness with which complaints are being recorded and resolved.

Indorama will inform the stakeholders about the GM during the course of its engagement activities, and report regularly to the public on its implementation whilst also protecting the privacy of affected individuals.

To maximise the effectiveness of the mechanism, Indorama shall uphold the following values during implementation and operation of the system:

- Commitment to fairness in both process and outcomes;
- Freedom from reprisal for all involved parties – within Indorama and in the external stakeholder group;
- Clear operating rules, and accountability;
- Validity of all complaints submitted;
- Culturally accessible and applicable;
- Accessible to vulnerable groups of stakeholders; and
- Confidentiality and anonymity if requested.

7.3 ELIGIBILITY OF GRIEVANCE

Any stakeholder can file a grievance at any time and at no financial cost, with the ability for complainants to remain anonymous if they choose. However, grievances must meet one or more of the following criteria to be considered eligible for inclusion in the grievance process:

- The grievance is made by a person (or a representative who has the consent of the person to act on their behalf) who resides in – or with a family connection to – the Project area; and/or
- Grievance identifies an impact, complaint, concern, or problem that is directly or indirectly related to one or more activities of Indorama or its subcontractors, such as those related to Project engagements, activities, impacts, responsibility, and scope.

Ineligible grievances include:

- Complaints with respect to actions that are not technically or financially supported by the Project, or about the parties that are not partners or collaborating partners in the project;
- Complaints about issues outside of the Project scope, and/or
- Complaints submitted by the same complainant on matters they submitted previously that have been closed out, unless new evidence is provided or the Project has not responded to this complaint in the required timeframe.

If the grievance is considered out-of-scope or ineligible, the CLO will respond to the complainant with an explanation and will inform the complainant who they should contact to get the issue addressed (if possible). All grievances, whether eligible or ineligible will be recorded in the grievance register.

7.4 GRIEVANCE PROCEDURE

The Project's GM presents a simple process through which stakeholders can submit their complaints free of charge and, if necessary, anonymously or via third parties. Complaints may be submitted in more than one format (e.g., in writing or verbally). The preferable channels for reporting grievances will be confirmed with communities and will be discussed with the community as part of community engagement.

The grievance resolution procedure for the Project is administered in nine steps, as follows:

- Step 1: Publicising the GM;
- Step 2: Receiving a grievance;
- Step 3: Acknowledge receipt of grievance;
- Step 4: Document grievance;

- Step 5: Assess grievance
- Step 6: Investigate grievance;
- Step 7: Respond to grievance;
- Step 8: Close grievance; and
- Step 9: Monitor and report.

7.4.1 STEP 1: PUBLICISING THE GRIEVANCE MECHANISM

To ensure that the GM is accessible, practical and transparent, it will be translated into Arab and other local languages, ensuring that the information is delivered in a culturally appropriate way, reaching all relevant stakeholder groups, including women and other vulnerable groups.

Various methods will be used to raise awareness about the GM and procedures. During all meetings with external stakeholders, they will be notified of the existence of the GM and grievance procedure. In addition, a factsheet outlining the process of registering and resolving grievances will be circulated / presented. During these meetings, Indorama will ensure that stakeholders are made aware that procedures are in place to protect complainants from any retaliatory action.

7.4.2 STEP 2: RECEIVING A GRIEVANCE

Grievances can be submitted in writing, telephonically or presented verbally in any language through the following means:

- In Person: to Indorama's CLO or any authority representing the Project (written or verbally);
- In writing: to the CLO's using a note, a letter or the grievance form available. The written grievance can be dropped in the comment boxes at the Project location;
- By phone calling the GM hotline: +2 02 26014740;
- CLO's Email: Mr .Emad Khalek. email: emad.khalek@indorama.com

TABLE 7-1 TIPS FOR RECEIVING GRIEVANCES

- | |
|---|
| <ul style="list-style-type: none"> • Regardless of who receives the grievance, it needs to be forwarded to Indorama's CLO for attention. • The GM should make it possible to lodge a grievance in any appropriate format (written, verbal, telephonic, email, post, etc.). Consideration should be given to capturing concerns raised informally or indirectly (e.g., through perception studies, media reports, social media, etc.). • It is important that the process is easily accessible and not intimidating to stakeholders. • Regardless of the form of the complaints, all need to be addressed with the same sincerity and seriousness. • The CLO will be required to be in touch with the complainant at least once per month to provide feedback on the grievance. |
|---|

7.4.3 STEP 3: ACKNOWLEDGING RECEIPT OF A GRIEVANCE

Indorama's CLO shall acknowledge receipt of any grievance within three working days from the date it was submitted and shall inform the complainant explaining timelines for the remaining steps and information on how the complaint will be handled and the types of mitigation the Indorama/Project can, or cannot, provide.

Acknowledgement shall be communicated in a culturally appropriate manner, either through a letter, telephone call or providing the signed acknowledgment slip attached to the Grievance Form.

If the grievance is not well understood or if additional information is required, clarification will be sought from the complainant. The CLO should provide a phone number or email that can be used if the complainant has any questions or facilitate a meeting with complainant to discuss any questions.

TABLE 7-2 TIPS FOR ACKNOWLEDGING GRIEVANCES

- Literacy levels should be taken into consideration when providing the complainant with the acknowledgment of receipt, and verbal acknowledgement should accompany a written acknowledgement.
- Where appropriate, acknowledgement should be provided through the CLO.

7.4.4 STEP 4: DOCUMENTING GRIEVANCES

All grievances received (whether eligible or ineligible) will be documented in a grievance register, as will be the project response and the final outcome to the grievance. This should include documentation of how the grievance has been resolved.

Indorama will ensure that any personnel and contractors that could potentially receive claims will be knowledgeable about the grievance management process and ready to accept feedback. Indorama will stress that there will be no costs or retribution associated with lodging grievances.

Indorama's CLO will log, document, and track all grievances received. Grievances shall be assigned a case number and records of communication / consultation shall all be securely stored within the grievance register. The register shall be monitored regularly for recurring grievances so that appropriate mitigation can be developed. As a minimum, the following information shall be recorded and updated as needed:

- Case number;
- Status of the grievance (open or closed);
- Date complaint received;
- Complainant's name and contact details;
- Type of complainant (e.g. business, community member, etc.);
- Subject of complaint (e.g. cracked house);
- Brief description of the complaint;
- Eligibility / ineligibility (if ineligible, explain why);
- Date complaint was acknowledged;
- Complaint acknowledged on time (i.e. within three working days);

- Name of investigator;
- Grievance significance rating (see step 5 below);
- Corrective action proposed;
- Date investigation was completed;
- Date response was provided to complainant;
- Brief description of response;
- Grievance resolved (i.e. yes / no);
- Next steps, if no;
- Date closed (if grievance is resolved);
- Resolution time;
- Actions implemented (including dates);
- Outcome of the actions implemented;
- Signed off by; and
- Cost (if applicable).

7.4.5 STEP 5: ASSESS GRIEVANCES

The following steps shall be undertaken to investigate all grievances:

- Capture as much information as possible from the person who received the complaint, as well as from the complainant;
- Undertake a site visit, if required, to clarify the parties and issues involved. Gather the views of other stakeholders including Indorama employees or contractors, if necessary, and identify initial options for settlement that parties have considered;
- Determine whether the grievance is eligible or ineligible;
- If the grievance is deemed ineligible it can be rejected, however, a full explanation as to the reasons for this must be given to the complainant and it must be recorded in the grievance register;
- If the grievance is eligible, the CLO shall conduct an assessment to verify the nature of the grievance to ascertain:
 - the severity and priority of the grievance
 - whether the grievance is a matter that can be resolved by the Project
 - recommended way for responding to the grievance; and
 - whether further information is needed in order to respond.
- If the grievance concerns physical damage, (e.g. crop, house, community asset, etc.) take a photograph of the damage and record the exact location as accurately as possible;
- Inform the complainant of the expected timeframe for resolution of the grievance; and
- Enter the findings of the investigation in the grievance register

When community grievances cannot be resolved solely by the CLO, Indorama shall assign grievance liaisons to key departments that may be involved in grievance management. The CLO will maintain contact with the respective body to ensure timely management of grievances.

TABLE 7-3 SIGNIFICANCE RATING CRITERIA

Significance Level	Type of Grievance	Responsibility
Level 1	A grievance that is isolated or 'one-off' and essentially local in nature and restricted to one complainant. Note: Some one-off grievances may be significant enough to be assessed as a Level 4 grievance e.g., when a national or international law is broken (see Level 4 below).	CLO
Level 2	A grievance that extends to the local community or region and has occurred more than once, which is judged to have the potential to cause disruption to Project operations or to generate negative comments from local media or other local stakeholders.	CLO with the assistance of the Site Manager
Level 3	A grievance which is widespread and repeated or has resulted in long term damage and/or has led to negative comments from local media or is judged to have the potential to generate negative media and local stakeholder comments.	Site Manager with the assistance of corporate management
Level 4	A one-off complaint, or one which is widespread or repeated and, in addition, has resulted in a serious breach of Indorama's policies, Egyptian or International Law and/or has led to negative national/international media attention, or is judged to have the potential to generate negative comment from the media or other key stakeholders (failure to pay compensation where appropriate).	Corporate management

7.4.6 STEP 6: INVESTIGATE GRIEVANCES

During the dialogue or investigation, the CLO will co-ordinate conflict resolution activities necessary to contain and resolve any actual or potential conflicts arising from the reported grievance. All grievances will be dealt with on a case-by-case basis. The approach adopted will seek to facilitate dialogue with complainants and community members to jointly identify and select measures for grievance settlement. The investigation will examine the circumstances of the case, speaking with the parties involved, and conferring with relevant stakeholders. Any options or resolutions proposed by the complainant will be discussed.

The CLO will examine the context of the complaint, determine its causes and develop corrective actions to minimize or avoid potential recurrence of the causes of the complaint. The department associated with the issue will be informed that a grievance has been filed and the CLO may need to collect basic information about the situation from their perspective.

Once the investigation has been completed, the CLO will document the findings and propose the options for resolving the complaint as appropriate.

For low-level concerns, the investigation will take no longer than five days. For complex concerns, the investigation will be undertaken within 15 days. If the case is complex and the stated resolution timeframe cannot be met or should additional investigation be required the process will be communicated to the stakeholder and an interim response will be provided (oral or written) that informs the stakeholder of the delay, explains the reasons, and offers a revised date for next steps.

Should additional investigation be required, and/or, the complainant has agreed to the involvement of the third party, the process will be communicated to the stakeholder.

7.4.7 STEP 7: RESPOND TO GRIEVANCES

An initial response will be provided within five days following the end of the investigation.

This response must report the findings of the investigation, present the proposed solution and timetable, and solicit feedback from the Complainant. The CLO determines the next steps based on the Complainant's feedback.

The proposed solution must be appropriate and proportionate to the nature and severity of the grievance raised. It should include a substantiating rationale for the decision and any data used in reaching it.

7.4.7.1 RESOLVE SUCCESSFULLY

If the Complainant accepts the proposed resolution, the agreed actions are implemented.

The CLO is responsible for identifying the parties, actions and timeframes for implementing the resolution. These will be recorded in a Grievance Register together with any supporting documentation. Monitoring arrangements may need to be put in place to verify implementation.

The CLO will ask the Complainant to sign a letter of confirmation stating that the Complainant accepts the terms of the grievance resolution. If the Complainant agrees to sign, the Complaint is classified as resolved. If the Complainant refuses to sign, or has not signed by the deadline, the Complaint will be appealed.

7.4.7.2 APPEAL

Indorama commits to work with the Complainant to find a mutually satisfactory solution. If Indorama and the Complainant are unable to agree on a solution, the complaint may be forwarded to an agreed third party for further action. Third parties may be the relevant regulatory authority or a local community organisation. The third party analyses the case and determines whether other solutions are possible.

The CLO and other relevant departments will prepare basic technical information for the third party, such as the proposed resolution, a list of meetings and interviews with the complainant and a description of the exact reason for the dispute / complaint.

As a last resort, complainants have a right to take legal action. Indorama will provide material and financial assistance to enable the complainant to assert his rights before any court to which his complaint has been referred. The final decision will be taken by the arbitrator or courts based on compliance with laws, policies, standards, rules, regulations, procedures, past agreements or common practice. Indorama will continue to document and track the progress of the complaint.

7.4.8 STEP 8: CLOSE GRIEVANCE

Once a resolution has been agreed upon with the stakeholder or a decision made to close out, the Project will close out the resolution and monitor outcomes. The resolution should be the complainant. The CLO will record the agreed resolution in a Grievance Resolution Form and will require the complainant to sign the form.

Before closing out the grievance, the CLO will verify with the complainant that the resolution has been effectively implemented; suggesting adjustments when necessary to ensure that root causes of complaints are addressed and that expected outcomes are effective.

In the event that an agreement is not reached, it is important to close the case, document the results and request the parties' evaluation of the process and its outcome.

7.4.9 STEP 9: MONITOR AND REPORT

The CLO will monitor all grievances (whether eligible or ineligible) routinely as part of the broader management of the Project in order to assess the effectiveness of the complaint's resolution process and to identify any needs for improvement. This entails good record keeping of complaints raised throughout the life of the Project. On receipt of grievances, electronic notification must be distributed to the Site Manager. Grievance records must be made available to management at all times.

The CLO will prepare a monthly Grievances Report. The report will indicate the status of grievances according to the following categories:

- Open: complaint is under examination and the solution has not been communicated to the complainant yet;
- Resolved: complaints where a resolution has been agreed and implemented, and the complainant has signed the Grievance Resolution Form;
- Closed: complaints whose implementation of agreed solutions has been verified;
- Unresolved: complaints where it has not been possible to reach an agreed resolution and the case has been authorized for close out by the other means; and
- Abandoned: complaints where the complainant is not contactable after a certain period following receipt of a complaint and efforts to find the person have been unsuccessful.

These grievance reports will include:

- The number of grievances logged in the proceeding period by level and type;
- Number of grievances acknowledged on time/ not acknowledged on time, including why;
- The number of grievances unresolved after 60 days by level and type;
- The number of stakeholders that have indicated that they are not satisfied with the resolution;
- The number of grievances resolved, without accessing legal or third-party mediators, by level and type;
- The number of grievances of the same or similar issue; and
- The measures taken to incorporate these grievance outcomes into Project design and implementation.
- Grievances will be tracked and numbers of grievances and outcomes will be considered an indicator for community relations activities. The Grievances Register will be used to analyse complaints for frequency and common themes.

On a semi-annual basis, a Grievance Report (removing commercially and personally sensitive information) will be generated to summarize the status of grievances. This Grievance Report will be submitted to the Site Manager and will be made publicly available. A hard copy will be located at the Indorama's offices, and an electronic copy will be made available online.

8. ORGANISATIONAL CAPACITY

This Section sets out Indorama's internal capacity to achieve successful implementation of stakeholder engagement planning and strategy, and to ensure the overall success of stakeholder management.

8.1 COMMUNITY LIAISON OFFICER

The responsibilities of the CLO are the following:

- Maintaining dialogue with the communities and relevant stakeholders as per the stakeholder engagement plan;
- Managing community grievances; and
- Identifying local communities for sourcing of labour and contractors.
- Identifying community needs for social development or engagement requirements and required logistics.
- Provide feedback to the Site Manager on concerns raised by the communities and other key stakeholders;
- Update SEP;
- Facilitate the internal review of quantitative and qualitative community engagement data.
- Facilitate community engagement meetings across the Project area.

8.2 SITE MANAGER

The responsibilities of the site manager regarding Hygiene, Health, Safety and Environment (HHSE) aspects are the following:

- Responsible for the implementation of the health, safety and environment management system and to provide necessary resources for implementation of the system;
- Responsible for implementation of correction plans.
- Reports on HHSE matters to company management and is part of the annual management review process
- Inclusion of HHSE / E&S requirements in contractor contract;
- Build and maintain strong working relationships with key stakeholders;
- Acts as mediator between company and stakeholders (communities, Government structures, Traditional structures, non-governmental organisations, etc.);
- Champion the implementation and monitoring of the GM;
- Monitor and prioritize relevant political and social intelligence in the Project area of operation and report this information in a timely manner through line management.
- Advise management on the outcomes of stakeholder engagement activities and programs.
- Assist during the recruitment process by soliciting community requirements;
- Oversees disclosure of Project information and public consultation activities.
- Responsible for sustaining relationships and communicating with Government entities and the media.

8.3 HHSE TEAM

The responsibilities of the HHSE team are the following/

- Implementation of the health, safety and environment management system.
- Ensures that contractors and subcontractors adhere to the HSE management system
- Provides training, help and support for workers and ensures that contractors and subcontractors provide similar training to their workers;
- Provides the necessary support and determines any deficiency and disparity in the HSE procedures;
- Attends weekly and/or monthly HSE meetings;
- Updates and manages correction plans.
- Audits the implementation of the contractor's HSE plan;
- Analyses reports and corrects potential HSE issues;
- Organizes and completes all relevant HSE introductory training and awareness for workers;
- Reports any accident/incident in site and investigates the reason of accident/incident;
- Records and updates health and safety statistics, and submits monthly reports;
- Prevents and corrects potential safety risk behaviors;
- Update the environmental registers;
- Resolves all environmental issues on site; and
- Plans and supervises all environmental monitoring aspects and proposes potential corrective actions; and
- Responsible for attending and closing worker grievances.

8.4 E&S CORPORATE TEAM

The responsibilities of the E&S corporate team are the following:

- Annual reporting on E&S matters to lenders
- Following up the closure of worker and community grievances
- Auditing the site during operation
- Provide on-site training on E&S matters.

9. MONITORING, EVALUATION AND REPORTING

The Project will implement a data management and monitoring process as part of the overall monitoring of commitments, grievances, and performance to assess the effectiveness of this SEP and associated engagement activities.

9.1 MONITORING AND EVALUATION

The implementation of the SEP will be monitored and evaluated by Indorama regularly.⁶

Suggested monitoring and evaluation activities are outlined below:

- Monitor the grievance register in terms of response times to address complaints logged as well as the recurrence of complaints over time;
- Review whether the stakeholder database is maintained and regularly updated;

⁶ Indorama can use indicators recommended by international good practice (e.g., IFC Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (2007)).

- Monitor whether all engagement activities are recorded and stored (electronic or hard copies) and that the stakeholder engagement log is maintained and up to date;
- Review /audit the implementation of the SEP;
- Develop and assess performance in terms of key performance indicators (KPIs), such as
 - Number of engagement activities facilitated by stakeholder group and engagement type;
 - Number of attendees at stakeholder engagement activities (expected vs actual);
 - Frequency of information disclosure;
 - Number of grievances received per annum;
 - Number of grievances unresolved / outstanding;
 - Time taken to resolve grievances;
 - Number of satisfied responses from complainants;
 - Number of stakeholders with knowledge of the grievance process and whether they use it; and
 - Overall perceptions of the Project and company

9.2 REPORTING

Indorama will create a biannual report to report and assess the ongoing environmental and social performance, which include a description of the engagement activities that took place and the efficiency of the grievance mechanism.

This report will contain:

- Summary of all engagement activities with different stakeholders such as surrounding communities, neighboring businesses and private facilities, government and authorities, NGOs;
- Summary of press statements released, and other statements shared with media outlets regarding the company or the project;
- Number of grievances received their nature, how they were tackled or the progress of their resolution, and whether there are measures that were agreed to be taken.



APPENDIX A

GRIEVANCE LOG



ERM

Contact Information		معلومات الاتصال	
Gender (Male/Female)	الجنس (ذكر/أنثى)	Name:	الاسم:
Email:	البريد الإلكتروني:	Address:	العنوان:
Phone:	تليفون:	Area:	المنطقة:
☐ منظمة مجتمعية ☐ المحافظة ☐ المجتمع المحلي ☐ قطاع خاص ☐ الحكومة المصرية ☐ المجلس المحلي ☐ Affiliation: Community Resident ☐ Local Governorate ☐ Community Based Organization ☐ Private Sector ☐ NGO ☐ National Governorate ☐			
في حالة المنظمات أو المجالس المحلية، أسم المنظمة أو المجلس التابع له: _____			
In case of Organizations, organization Name: _____			
Position/ Title in Organization _____ الوظيفة/ الصفة في المجلس أو المنظمة: _____			
Grievance Description		وصف الشكوى	
وصف تفصيلي لمكان وتاريخ وكيفية حدوث الحادثة Detailed Description for time, place and how the accident occurrence:			
Suggested resolution for the proposed Grievance:		اقتراحكم لحل الشكوى المقدمة:	
Name:		الاسم:	
Signature:		التوقيع:	
Date:		التاريخ:	



APPENDIX B GRIEVANCE REGISTER

[illegible]



ERM HAS OVER 140 OFFICES ACROSS THE FOLLOWING
COUNTRIES AND TERRITORIES WORLDWIDE

Argentina

Australia

Belgium

Brazil

Canada

China

Colombia

Denmark

France

Germany

Hong Kong

India

Indonesia

Ireland

Italy

Japan

Kazakhstan

Kenya

Malaysia

Mexico

Mozambique

Netherlands

New Zealand

Panama

Peru

Poland

Portugal

Romania

Singapore

South Africa

South Korea

Spain

Switzerland

Taiwan

Thailand

UAE

UK

US

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Environmental and Social Management Framework (ESMF)

Updated ESIA Supplementary
Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone,
Sokhna

PREPARED FOR



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Environmental and Social Management Framework (ESMF)

ESIA Supplementary Disclosure Package

0774474



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CONTENTS

1.	INTRODUCTION	1
1.1	TERMS OF REFERENCE	1
1.2	STRUCTURE OF THE ESMF	1
1.3	PURPOSE AND OBJECTIVES OF THE ESMF	2
1.4	DETAILS OF PROPONENT	4
2.	SUMMARY OF PROJECT DESCRIPTION	5
2.1	PROJECT LOCATION	5
2.2	PROJECT DESIGN	5
2.3	CONSTRUCTION PHASE	8
2.4	OPERATIONAL PHASE	8
2.5	DECOMMISSIONING PHASE	12
2.6	EMPLOYMENT AND WORKING HOURS	12
3.	ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM	12
3.1	INTRODUCTION	12
3.2	ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)	13
4.	LEGAL FRAMEWORK AND INTERNATIONAL BEST PRACTICE	15
4.1	INSTITUTIONAL FRAMEWORK	15
4.2	NATIONAL REGULATORY FRAMEWORK	16
4.3	INTERNATIONAL CONVENTIONS, PROTOCOLS AND AGREEMENTS	16
4.4	INTERNATIONAL BEST PRACTICE STANDARDS AND GUIDELINES	17
4.5	COMPANY AND PROJECT SPECIFIC EHS POLICIES AND STANDARDS	19
5.	KEY SENSITIVITIES	19
5.1	KEY PHYSICAL ENVIRONMENTAL SENSITIVITIES	20
5.2	KEY BIOPHYSICAL SENSITIVITIES	21
5.3	KEY SOCIO-ECONOMIC SENSITIVITIES	21
6.	IMPLEMENTATION OF THE ESMF	23
6.1	OVERVIEW OF THE ESMF	23
6.2	INSTITUTIONAL FRAMEWORK	23
6.2.1	Egyptian Environmental Affairs Agency (EEAA)	23
6.2.2	Environmental Office within the Suez Governorate	23
6.2.3	SC Zone	23
6.2.4	Indorama	23
6.2.5	Contractors and Subcontractors	24
6.2.6	Lenders to the Project	24
6.3	CONTINUED STAKEHOLDER ENGAGEMENT	25
6.4	KEY COMPONENTS FOR IMPLEMENTATION OF THE ESMS	26
6.4.1	Training	26
6.4.2	Emergency Response and Incident Reporting	27
6.4.3	Audit and Inspection	27
6.4.4	Reporting	27
6.4.5	Management of Change	28
7.	ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS	29

7.1	INTRODUCTION	29
7.2	PHYSICAL ENVIRONMENTAL MANAGEMENT PLANS	31
7.2.1	Air Quality Management Plan	31
7.2.2	Noise Management Plan	40
7.2.3	Groundwater Management Plans	46
7.3	BIOPHYSICAL ENVIRONMENTAL MANAGEMENT	51
7.4	SOCIAL MANAGEMENT PLANS	51
7.4.1	Socio-economic Management Plan	51
7.4.2	Employment and Procurement Management Plan	57
7.4.3	Community Health and Safety Plan	67
7.4.4	Traffic Management Plan	78
7.5	GENERAL MANAGEMENT PLANS	84
7.5.1	Waste Management Plan	84
7.5.2	Spill Prevention, Control and Containment Management Plan	95
7.5.3	Hazardous material management (during construction)	102
7.6	HEALTH AND SAFETY MANAGEMENT PLANS	102
7.6.1	Emergency Response Plan	102
7.6.2	Firefighting Plan	105
8.	ENVIRONMENTAL AND SOCIAL MONITORING	107
8.1	INTRODUCTION	107
8.2	CONSTRUCTION MONITORING	107
8.3	OPERATIONAL MONITORING	116
ANNEX 1:	INDORAMA CORPORATION GROUP HANDBOOK. JULY 2022	1
ANNEX 2:	EMPLOYEE HANDBOOK (HR POLICIES & PROCEDURES GUIDE). 2021	2
ANNEX 3:	GENDER BASED VIOLENCE AND HARASSMENT POLICY. 2021	3
ANNEX 4:	GUIDELINES FOR PREVENTION AND ADDRESSING ISSUES OF RETALIATION. 2021	4
ANNEX 5:	PROCEDURAL MANUAL SOCIAL MATERIAL TOPICS. JULY 2022	5
ANNEX 6:	INDORAMA COMPASS HANDBOOK	6

LIST OF TABLES

TABLE 7.1	MANAGEMENT PLAN STRUCTURE	30
TABLE 7.2	PROJECT SPECIFIC GUIDELINES: MAXIMUM LIMITS OF EMISSIONS FROM PHOSPHATE FERTILIZER PRODUCTION.	32
TABLE 7.3	PROJECT SPECIFIC GUIDELINES: MAXIMUM LIMITS OF EMISSIONS FROM PHOSPHORIC ACID PRODUCTION.	33
TABLE 7.4	PROJECT SPECIFIC GUIDELINES: MAXIMUM LIMITS OF EMISSIONS FROM SULPHURIC ACID PRODUCTION.	33
TABLE 7.5	AIR QUALITY MANAGEMENT	35
TABLE 7.6	PROJECT NOISE CRITERIA FOR OPERATIONAL PHASE (EGYPTIAN LAW): MAXIMUM LIMITS OF BACKGROUND NOISE.	41

TABLE 7.7	PROJECT NOISE CRITERIA FOR OPERATIONAL PHASE (INTERNATIONAL, IFC): MAXIMUM LIMITS OF BACKGROUND NOISE.	41
TABLE 7.8	NOISE MANAGEMENT	42
TABLE 7.9	GROUNDWATER MANAGEMENT	48
TABLE 7.10	SOCIO-ECONOMIC MANAGEMENT	53
TABLE 7.11	MANAGEMENT OF EMPLOYMENT AND PROCUREMENT	59
TABLE 7.12	COMMUNITY HEALTH SAFETY AND SECURITY	69
TABLE 7.13	TRAFFIC MANAGEMENT.	80
TABLE 7.14	WASTE TYPES AND ESTIMATED QUANTITIES DURING THE CONSTRUCTION PHASE	85
TABLE 7.15	WASTE TYPES AND ESTIMATED QUANTITIES DURING THE OPERATION PHASE	86
TABLE 7.16	WASTE MANAGEMENT.	89
TABLE 7.17	SPILL PREVENTION, CONTROL AND CONTAINMENT MANAGEMENT.	97
TABLE 7.18	EMERGENCY RESPONSE MANAGEMENT	104
TABLE 7.19	FIREFIGHTING MANAGEMENT.	106
TABLE 8.1	CONSTRUCTION MONITORING	109
TABLE 8.2	OPERATION MONITORING	117

LIST OF FIGURES

FIGURE 2.1	OVERALL BLOCK DIAGRAM OF INDORAMA PHOSPHATE FERTILIZER PROJECT	6
FIGURE 2.2	BLOCK DIAGRAM OF SULPHURIC ACID PRODUCTION.	10
FIGURE 2.3	BLOCK FLOW DIAGRAM OF PHOSPHORIC ACID PRODUCTION.	10
FIGURE 2.4	BLOCK FLOW DIAGRAM OF DAP/NPK FERTILIZERS PRODUCTION.	11
FIGURE 3.1	THE MAIN ELEMENTS OF AN ESMS	14

ACRONYMS AND ABBREVIATIONS

Acronym	Description
AIDS	Acquired Immunodeficiency Syndrome
CAA	Competent Administrative Authority
CDC	Centre for Disease Control
CO	Carbon Monoxide
CSI	Corporate Social Investment
DAP	Di-Ammonium Phosphate
DCDA	Double Contact Double Absorption
EBRD	European Bank for Reconstruction and Development
EEAA	Egyptian Environmental Affairs Agency
EIA	Environmental Impact Assessment
ERM	Environmental Resources Management
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework

Acronym	Description
ESMS	Environmental and Social Management System
FPO	Fire Protection Officer
FSA	Fluorosilicic Acid
GPS	Global Positioning System
HDD	Horizontal Directional Drilling
HF	Hydrogen Fluoride
HIV	Human Immunodeficiency Virus
HR	Human Resources
HSE	Health, Safety and Environment
IEC	Information, Education and Communication
IEFCL	Indorama Eleme Fertilizer & Chemicals Limited
IFC	International Finance Corporation
ILO	International Labor Organization
LTI	Lost Time Injury
MOU	Memorandum Of Understanding
MTPD	Metric Tones Per Day
MTPY	Metric Tons Per Year
MWRI	Ministry of Water Resources
NOx	Nitrogen Oxides
NPK	Nitrogen, Phosphorus, and Potassium
OHS	Occupational Health and Safety
PAC	Project-Affected Communities
PAP	Phosphoric Acid Plant
PM10	Particulate Matter 10
PPE	Personal Protective Equipment
PS	Performance Standard
PVC	Polyvinyl Chloride
SAP	Sulphuric Acid Plant
SCZone	Suez Canal Economic Zone

Acronym	Description
SDS	Safety Data Sheets
SED	Socio-Economic Development
SEP	Stakeholder Engagement Plan
SO ₂	Sulphur Dioxide
TB	Tuberculosis
TBD	To Be Determined
TSP	Total Suspended Particulates
UNFCCC	United Nations Framework Convention on Climate Change
VPSHR	Voluntary Principles on Security and Human Rights
WB	World Bank
WBG	World Bank Group
WHO	World Health Organization
WMRA	Waste Management Regulatory Authority
ZLD	Zero Liquid Discharge

1. INTRODUCTION

1.1 TERMS OF REFERENCE

Indorama Investments Limited (hereinafter, Indorama) is one of the subsidiaries of Indorama Group, Ltd., which has several phosphate fertilizer plants in different countries (Senegal, Brazil, Uzbekistan and India). Indorama plans to establish a Phosphate fertilizer complex in Sokhna, Egypt (hereinafter, the Project).

The Project will produce Di-Ammonium phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers, as a main product. Sulphuric acid and phosphoric acid will be produced as intermediate products. In addition, phosphogypsum will be a byproduct of the industrial process.

In Egypt, the Project is categorized as high risk (Category C), therefore, a full Environmental Impact Assessment (EIA) study is required. Internationally, the Project is categorized as follows: (A) according to Appendix of European Bank for Reconstruction and Development (EBRD) E&S Policy (2019), and (B) according to International Finance Corporation (IFC) categorization (Sustainability Framework, 2012) and feedback received by IFC in the context of the Project.

Where national regulations differ from the levels and measures included in the IFC and EBRD guidelines, the Project will comply with the more stringent of the two options, to ensure best practices.

This document represents the Environmental and Social Management Framework (hereinafter, ESMF) of the ESIA and has been developed to support the process of disclosing the results of the impact assessment process and the mitigation measures defined for the Project within an international context. The ESMF is a standalone report included in the ESIA Supplementary Disclosure Package.

1.2 STRUCTURE OF THE ESMF

The structure of this ESMF is as follows:

- **Chapter 1 (Introduction)** – presents the terms of reference for the ESMF, purpose and objectives of the ESMF and details of the Project proponent.
- **Chapter 2 (Summary of Project Description)** – presents an overview of the proposed Project, specifications, and activities.
- **Chapter 3 (Environmental and Social Management System)** – presents a framework for the system necessary for the integrated management of the Project by the developer.
- **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 Project to contextualise the key areas for environmental management interventions.

- **Chapter 6 (Implementation of the ESMF)** – summarises the institutional arrangements required for governance, implementation, and monitoring of the ESMF.
- **Chapter 7 (High level 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.). In particular, it will outline the content of each management plan to be developed (the management plans will be identified based on the impacts identified in the ESIA and international best practice), namely:
 - Objective
 - Timing and Frequency
 - 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)
- **Chapter 8 (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 ESMF

Note:

This ESMF has been compiled to address the Environmental and Social impacts that are anticipated to occur because of the proposed Project, as identified in the ESIA. This ESMF 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 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 ESMF; 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 Project's ESMF.

This ESMF has been prepared to cover the activities associated with the proposed Project during all phases (pre-construction, construction, and post construction / operation). The ESMF covers the management measures for implementation by the Contractor and

associated subcontractors during construction and operation of the proposed Project; and measures that fall under the responsibility of Indorama. Monitoring measures to be undertaken by the Contractor and Indorama are covered in Section 7.

The purpose of this ESMF is to outline appropriate management strategies and actions to mitigate negative impacts and enhance beneficial impacts of the proposed 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 Project. The ESMF 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 Project (about 25 years), an ESMF for decommissioning is not warranted, as the proposed 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 Project reaches the end of life and should decommissioning be required then this would need to be assessed under a separate ESIA process and a separate ESMF should be developed in this regard.

The objective of this ESMF 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 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 Project can reduce negative impacts and optimize or enhance positive impacts.

NOTE:

As the proponent, Indorama will have ultimate responsibility for implementing the ESMF.

1.4 DETAILS OF PROPONENT

The Project proponent is Indorama. It is the proponent's intent to establish the proposed 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:



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Balachandar Thavamani

Indorama

Address:

Indorama Investments Limited,
15 Retirement Road, P O Box N –
7777, Nassau, Bahamas

2. SUMMARY OF PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Project is located within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone (hereinafter, SC Zone), in Sokhna, Suez Governorate, Egypt.

The Project is located within the Suez Canal Economic Zone, in Sokhna, Suez Governorate, Egypt.

The complex includes a production site, a phosphogypsum storage area, and ammonia pipelines.

The Project site covers a total area of 56 ha, separated into two parts of approximately 28 ha each. One part will be used as a phosphogypsum storage area, and the other part will be for the production site.

The Project site is located approximately 4.5 km west of Sokhna Port and about 43 km south of Suez City..

On the other hand, the ammonia pipelines (main and secondary) are routed for 13 km starting from the Sokhna Port (specifically the Sonker' Bulk Liquids Terminal) and ending at the production site. Most of the pipelines' route will pass inside Sokhna Port, and the remaining (smaller part) will be outside the port crossing Hurghada-Ismailia Road and then routed to the Indorama production site, all within the Sokhna Industrial Zone. The elevation of the Project site ranges from 20 m to 40 m above sea level.

In addition to the abovementioned elements (i.e.: production site, phosphogypsum storage, ammonia pipelines), Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. The unloading arm will be connected to the ammonia pipeline addressed in the current ESIA.

At the time of preparation of this Supplementary ESIA, the unloading arm has not yet reached a level of design definition that would allow for a meaningful environmental and social impact assessment, and no site-specific baseline information for the port area is available. Consequently, this component does not form part of the scope of the ESIA prepared by Environics, nor of the present Supplementary ESIA.

For clarity, the proposed port facilities are considered a **separate future development** and are therefore **excluded from the scope of this ESIA**. Once the design of port facilities is finalised, **it is anticipated that a dedicated ESIA will be undertaken to assess its potential environmental and social risks and impacts in line with applicable international lender standards**.

2.2 PROJECT DESIGN

The Project comprises the construction and operation of a Phosphate fertilizer complex. The activity will generate the following **products**:

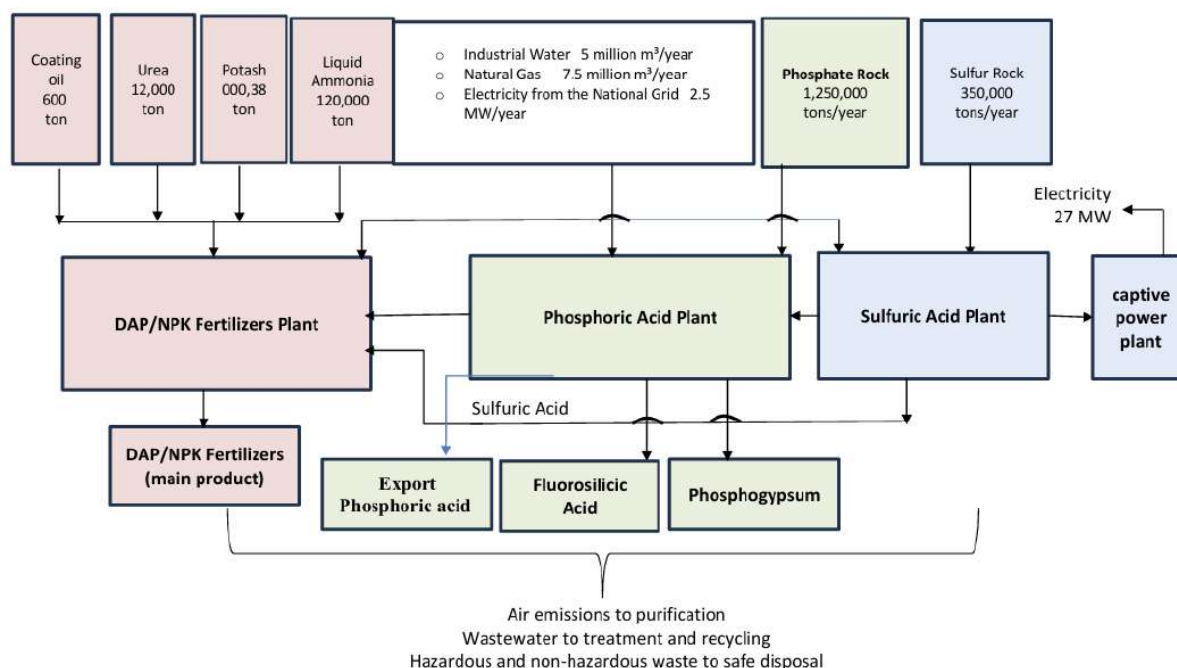
- **Main Products:** granulated Di-Ammonium Phosphate (DAP) and NPK fertilizers. Production capacity: 1,935 metric ton/day (hereinafter, MTPD). The final products

will be delivered to the market by trucks to the Sokhna/Adabiya/Damietta/Alexandria ports for exportation.

- **Intermediate Products:** For producing the main products, two intermediate products will be produced:
 - Sulphuric acid (98.5 %). Production capacity: 3,100 MTPD.
 - Phosphoric acid (52%). Production capacity: 1,000 MTPD.
- **Byproduct:** Phosphogypsum will be generated from phosphoric acid filtration at an annual rate of 1.98 million metric ton/year (hereinafter, MTPY). Indorama will study the possibility of selling it to Cement companies. The Project site will include a designated area (280,000 m²) for gypsum storage/stacking. The storage area is capable of a storage capacity for about 20 - 25 years.

In summary, the overall block diagram of the phosphate fertilizer complex is shown in the following figure.

FIGURE 2.1 OVERALL BLOCK DIAGRAM OF INDORAMA PHOSPHATE FERTILIZER PROJECT



Source: Environics EIA 2026.

The Project will consist in the following key elements:

- **Sulfuric acid plant (SAP):** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of double contact double absorption (DCDA). It will be operated continuously for 24 h/day over 7 days a week. This plant is part of the **production site**.

- **Phosphoric acid plant (PAP):** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of Dihydrate technology. It will be operated continuously for 24 h/day over 7 days a week. This plant is part of the **production site**.
- **DAP/ NPK fertilizer plant:** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of Dihydrate technology. It will be operated for 22 h/day and cleaning activities will be done for approximately 2 h/day. This plant is part of the **production site**. **Utilities and service units:** comprising a series of equipment to conduct the activity, such as water treatment unit, industrial wastewater treatment unit, waste heat recovery boiler, storage tanks, etc. These are part of the **production site**.
- **Phosphogypsum storage area:** phosphogypsum will be stored within the Project site, in an open yard of a total area of 280,000 m². It is planned to stockpile the phosphogypsum throughout 20-25 years. Indorama is currently exploring the possible options for sales of gypsum through other industries, such as cement, gypsum board, brick, etc. The phosphogypsum from the plant will be conveyed to the phosphogypsum storage area by an enclosed conveying system, for proper stacking by the help of gypsum thrower and loaders.
- **Ammonia pipelines:** A main pipeline for ammonia supply (12" diameter) and another secondary pipeline (4" diameter) for precooling the main pipeline. The whole pipelines will be constructed underground (except for a segment of approx.. 1.8 km of the ammonia pipeline which will be aboveground). **Temporary construction facilities:** Only for the construction phase, the project will count with temporary facilities (accommodation, warehouses, laydown area, etc), which will be dismantled and restored post-construction.

In addition, the following associated facilities¹ are considered for the Project:

- Electricity connection from site to the nearest tie-in.
- Natural gas connection from site to the nearest tie-in.
- Water connection from site to the nearest tie-in.
- Sewage connection from the site to the nearest tie-in site.
- **Primary supply chain elements:** Transportation of sulphur from the Sokhna/Adabiya ports to the production site, which are located within the Sokhna industrial/port area and 28 km northeast from the production site, respectively.

Finally, as mentioned, Indorama plans to secure a plot within the Sokhna Port to develop and operate dedicated storage and handling facilities, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. The future port facilities **(out of the scope of this study)** are the following:

- **One unloading arm for ammonia import.** To further ensure the uninterrupted supply of ammonia (the main raw material for DAP/NPK fertilizer), the company will also install one unloading arm for ammonia ships. This will be constructed on

¹ Associated Facilities (AFs) to the Project are facilities (i.e. infrastructure developments) that are not funded by the Project and that would not have been constructed or expanded if the Project did not exist, and without which the Project would not be viable.

the Terminal of the Jetty within Sokhna Port, to directly feed the ammonia pipelines. The unloading arm will be connected to the ammonia pipeline referred in the current ESIA.

- **Two storage tanks of phosphoric acid** (52% concentration). Those will be considered as an ancillary facility intended for storage and opportunistic export of excess product. Each tank will have a capacity of 15,000 metric tons (MT). The operation will be based on tanker unloading system and Ship loading system for export of phosphoric acid.

Details of the project components are presented in the ESIA supplementary package: Project description and Alternative Analysis.

2.3 CONSTRUCTION PHASE

The construction phase will not commence until the Local ESIA report is approved by the Egyptian authorities and the corresponding permits are obtained. The construction phase will take 15 to 18 months.

In summary, the construction and commissioning phase will comprise of the following activities:

- Site preparation, including clearing and levelling to create flat land.
- Construction of temporary construction facilities. No additional land outside the production site plot and Phosphogypsum storage area plot will be used as laydown area.
- Vehicle movement, including road transportation of labour, materials, equipment and waste.
- Influx of workers.
- Excavations, foundations, civil and electromechanical works, including building erection, equipment installation and piping construction, for the production site.
- Horizontal Directional Drilling (HDD) technique for the ammonia pipeline segment crossing the road. See detailed description below for horizontal directional drilling.
- Construction of the storage and handling facilities at the Sokhna Port, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. These are **out of the scope of this study**. Testing and commissioning of equipment (ammonia tanks, ammonia pipeline). See detailed description below.
- Resource consumption (water, energy, etc.).
- Waste and wastewater management.
- Removal of construction equipment and temporary facilities and reinstatement.

2.4 OPERATIONAL PHASE

The Project will be operated continuously for 24 h/day over 7 days a week, except for the DAP/NPK plant, which will be operated 22 h/day and cleaning activities will be done for approximately 2 h/day. The Project's operation lifespan will be about 25 years.

The operation of the Project will require the following activities:

- Vehicle movement, including road transportation of phosphate rock from the Red Sea mine of the Misr Phosphate company to the site (primary supply chain).
- Vehicle movement, including road transportation of Sulphur from the Sokhna port and Adabiya port to the site.
- Transportation of ammonia through pipelines from the tanks of the Sokhna Port to the site.
- Workers management.
- Resource consumption (water, energy, etc.).
- Waste and wastewater management.
- Air emissions management.
- Remote monitoring of the plant/pipelines performance.
- Routine inspections and site maintenance and security.
- Operation of the storage and handling facilities at the Sokhna Port, comprising two storage tanks of phosphoric acid and one unloading arm for ammonia import. These are **out of the scope of this study**. Utilization of the existing Port facilities (import of sulphur and use of stored ammonia).

The production of sulfuric acid, phosphoric acid and DAP/DPK fertilizer is presented below:

FIGURE 2.2 BLOCK DIAGRAM OF SULPHURIC ACID PRODUCTION.

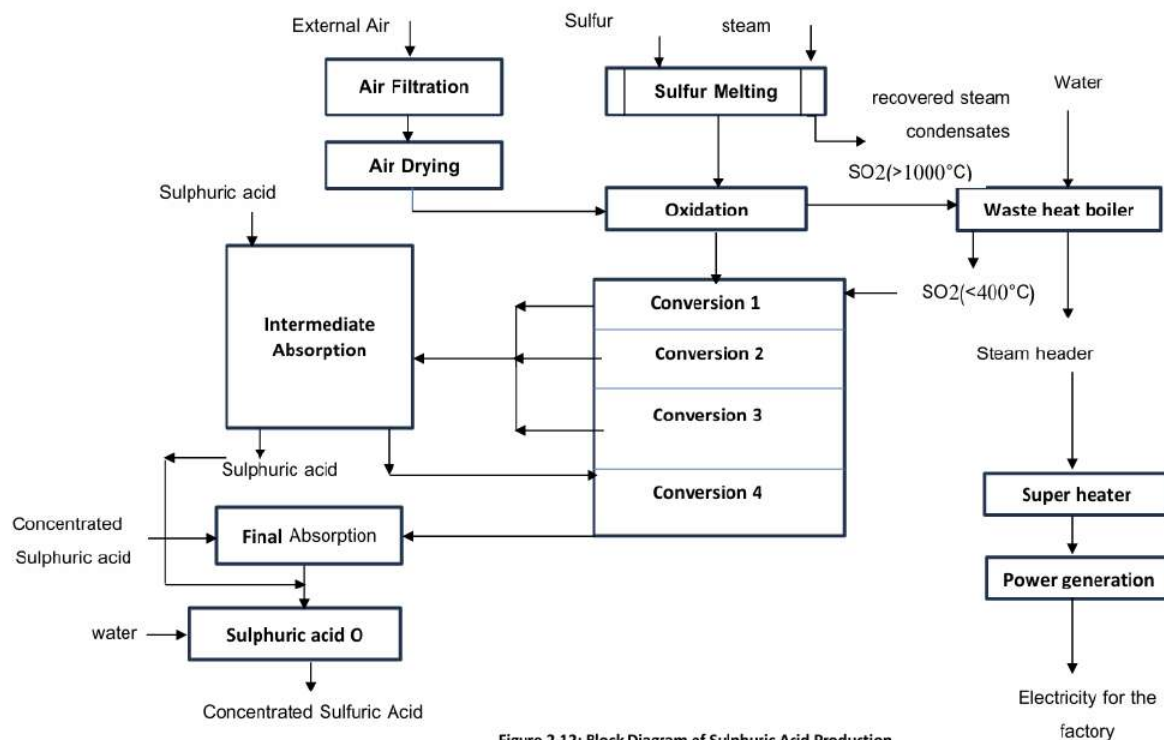
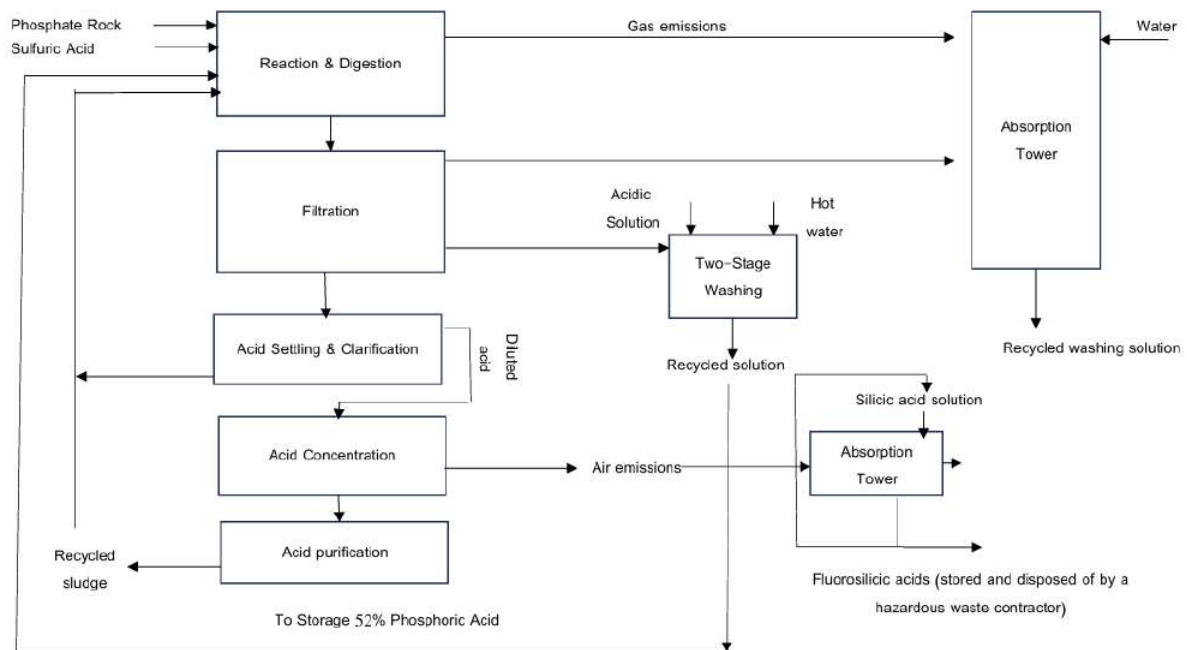


Figure 2-12: Block Diagram of Sulphuric Acid Production

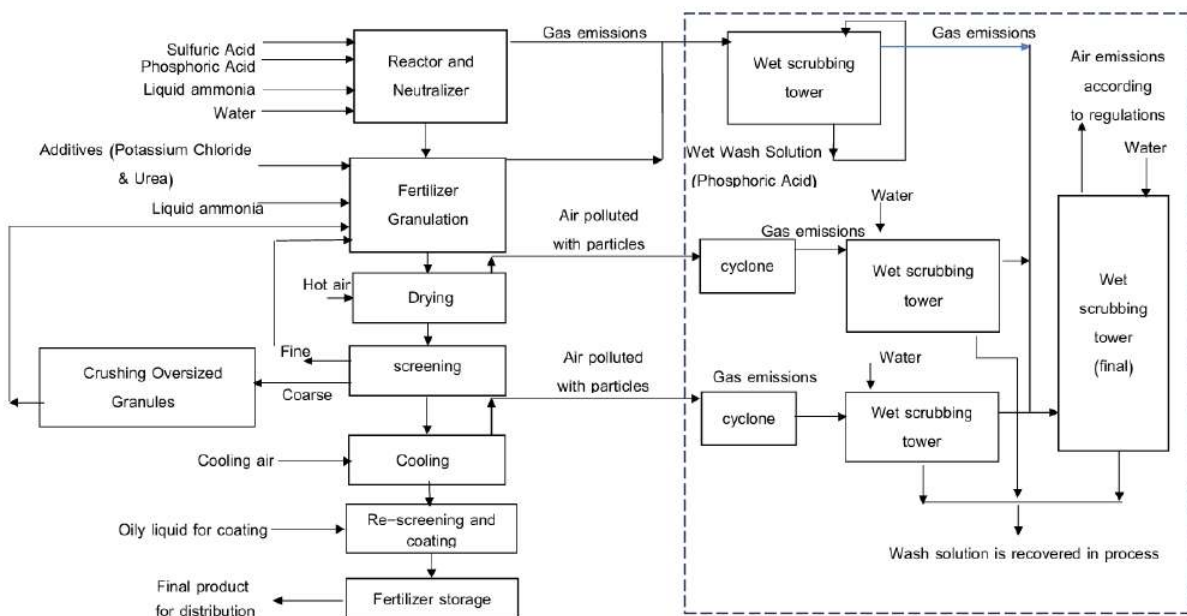
Source: EIA 2026 by Environics.

FIGURE 2.3 BLOCK FLOW DIAGRAM OF PHOSPHORIC ACID PRODUCTION.



Source: EIA 2026 by Environics.

FIGURE 2.4 BLOCK FLOW DIAGRAM OF DAP/NPK FERTILIZERS PRODUCTION.



Source: EIA 2026 by Environics.

The ammonia arm operation is as follows: the new unloading system will feed ammonia to the pipeline, as follows:

- Each loading bay includes specialized infrastructure such as loading arms or cryogenic hoses, flow control valves, mass flow meters, and vapor return lines. The

vapor return system ensures that displaced vapors from the truck are safely returned to the storage tank, preventing environmental release. The flowrate is approx. 25–50 m³/hr (depending on system design).

- The pumps will be housed in a ventilated room with spill containment. The entire process is automated and monitored through a centralized SCADA system that controls flow rate, tank levels, pressure, and safety interlocks.
- The loading will be carried out under safe conditions including the provision of dry-break couplings, grounding devices, pressure and temperature sensors.
- The control System includes Local control panel integrated with central PLC-SCADA.

2.5 DECOMMISSIONING PHASE

Activities during the decommissioning phase will involve demolition and site clean-up, disposal of waste, demobilization of the workers, and a final site review. The activities during the decommissioning phase will be very similar to those during construction.

Decommissioning will take place years from now, and the baseline conditions associated with the Project and surrounds are likely to be different to what it is today. When the Project reaches the end of life and should decommissioning be required then this would need to be assessed under a separate ESIA process.

Long-term decommissioning and lifecycle management for critical infrastructure will be evaluated following industry's best practices.

2.6 EMPLOYMENT AND WORKING HOURS

A peak workforce of approximately 1,500-2,000 persons will be required during the construction phase.

During the operational phase, the Project is anticipated to require 260 direct workers including technical staff, operators and administrative staff. During operation phase, the project will operate for around 330 -340 days annually for 3 shifts daily, with 8 hr per shift. About 25 days/year will be left for maintenance of the plants.

The company will encourage contractors to hire most workers from nearby sites and Suez governorate.

The labour and working conditions to be implemented by all contractors will be according to international standards, International Labor Organization's (ILO) requirements and Egyptian legislation.

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) will be prepared in the future, and are listed and highly described in this ESMF under Section 7.

3.2 ENVIRONMENTAL AND SOCIAL MANAGEMENT SYSTEM (ESMS)

The vehicle for the **integrated** management and **implementation** of the 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 are 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 ESMF 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 Egyptian 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, Indorama has a number of environmental, social, occupational health and safety and human resource plans, policies and procedures. These plans, policies and procedures relate to Indorama company and Indorama operations at the Egypt site. Over the life of all of Indorama operations, the vehicle by which the commitments set out in this ESMF and other plans, policies and procedures should be developed into specific actions which can be implemented through an overarching ESMS. See detail in section 4.5.

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

- **Policy Statement** – which described the environmental and social objectives, which will guide Indorama 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 Indorama operations.
- **Management Programs** – for environmental and social performance execution which are, in part, detailed for the Project.
- **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 Indorama operations.
- **Monitoring and Review System** – which will detail the process by which Indorama 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 Project.

4.1 INSTITUTIONAL FRAMEWORK

The Egyptian Environmental Affairs Agency (EEAA) is the principal authority for the regulation and enforcement of environmental laws in Egypt. Also, the EEAA is charged with the responsibility of enforcing the environmental laws, guidelines, standards, and regulations in Egypt, specifically during the operational phase of development Project.

The Law No. 4/1994 on Environment (amended in 2009 and 2015), established by the Minister for Environmental Affairs, requires that some 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 Egypt.

The Local EIA is to be submitted to the competent administrative authority (CAA) for submission to the Egyptian Environmental Affairs Agency (EEAA) for review and opinion within 30 days of official receipt. In this case, Suez Canal Economic Zone (SCZone) is the CAA for the proposed project. The board of the SCZone is the competent authority to issue all licenses required for establishing and running all kind of business and activities inside the SCZone.

4.2 NATIONAL REGULATORY FRAMEWORK

This section presents a list of key legislation of the Arab Republic of Egypt relevant within the context of the ESIA:

- Law No. 4/1994 on Environment;
- Environmental Law No.9/2009 (amending some provisions of Law No.4 of 1994 on Environment);
- Presidential Decree Law No.105/2015 (amending some provisions of Law No.4 of 1994 on Environment);
- Law No 93/1962 for Discharge of Waste waters;
- Law No.38/1967 General Public Cleaning;
- Law No. 117/983 promulgating the Antiquities' Protection Law;
- Law No. 83/2002 On Economic Zones of a Special Nature;
- Law No. 12/2003 Labour Code;
- Law No. 501/ 2005 for the reuse of wastewater in agriculture;
- Waste Management Law No. 202/2020;
- Law No. 147/2021 for promulgating the Water Resources and Irrigation;
- Minister Decree No. 134/1968 on the collection, transport and disposal of non-hazardous solid waste;
- Minister Decree No. 44/2000 of the wastewaters discharged to the public sewer system;
- Minister Decree No. 134/2003 determining the establishments committed to institute functional agencies, committees for vocational safety and health and ensuring labour environment security, and the quarters assuming the training and the rules to be followed in this respect;
- Minister Decree No. 211/2003 on safety levels, precautions, and terms to prevent detrimental physical, chemical, biological and mechanical hazards and securing the work environment;
- Minister Decree No. 1741/2005 amending Minister Decree No. 338/1995 issuing the Implementing Regulation of Environment Law;
- Minister Decree No. 458/2007 defining maximum limits for criteria and requirements necessary for drinking water and domestic use;
- Minister Decree No. 2282/2015 on establishing the General Authority for Suez Canal Economic Zone;
- Minister Decree No. 722/2022 issuing the Executive Regulations of the Waste Management Law no. 202 of 2020.

4.3 INTERNATIONAL CONVENTIONS, PROTOCOLS AND AGREEMENTS

- International Labor Organisation (ILO) conventions including:
- Core ILO conventions:
- Freedom of Association and Protection of the Right to Organize Convention; 1948 (No. 87); ratified on 6 November 1957;

- Right to Organize and Collective Bargaining Agreement; 1949 (No. 98); ratified on 3 July 1949;
- ILO Forced Labor Conventions; 1930 (No. 29); ratified on 29 November 1955;
- Abolition of Forced Labor Convention; 1957 (No. 105); ratified on 23 October 1958;
- Minimum Age Convention 1973 (No. 138); ratified on 9 June 1999;
- Worst Forms of Child Labor Convention 1999 (No. 182); ratified on 6 May 2002;
- Equal Remuneration Convention 1951 (No. 100); ratified on 26 July 1960;
- Discrimination regarding employment and occupation Convention; 1958 (No. 111) ratified on 10 May 1960.
- Governing conventions:
- Labor Inspection Convention 1947 (No. 81); ratified on 11 October 1956;
- Employment Policy Convention, 1964 (No. 122); not ratified;
- Labor Inspection in Agriculture Convention; 1969 (No. 129); ratified on 20 June 2003; and
- Tripartite Consultation (International Labor Standards) Convention, 1976 (No. 144), ratified on 25 March 1982.
- Other relevant conventions and treaties:
- United Nations Framework Convention on Climate Change (UNFCCC) ratified on 12 May 1994;
- Stockholm convention ratified on 02 May 2003;
- Kyoto Protocol ratified on 12 January 2005;
- Paris Agreement ratified on 12 December 2015;
- Stockholm convention ratified on 02 May 2003.
- Standards of international financial institutions

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 ESMF:

- **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.
- **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 ESMF.
- **European Bank for Reconstruction and Development (EBRD) Environmental and Social Policy**, including its Performance Requirements (PRs), which set out specific criteria for environmental and social assessment, stakeholder engagement, pollution prevention, and biodiversity conservation, among others. These PRs have guided the identification and management of potential impacts and risks associated with the Project.
- **European Union Best Available Techniques (EU BAT) Reference Documents**, particularly those relevant to industrial emissions and environmental protection.

These documents provide sector-specific guidance on technologies and practices that achieve a high level of environmental performance, and have been used to inform the design, operation, and mitigation measures of the Project.

- **Industry Specific EHS Guidelines: Phosphate Fertilizer Manufacturing-** In addition to the above General EHS Guidelines, the Guideline for Phosphate Fertilizer Manufacturing is also relevant to the Project, the ESIA process and associated ESMF (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 phosphoric acid and compound fertilizers (NPK), among others. The Guideline has identified potential environmental issues associated with phosphate fertilizer manufacturing and provides good practice mitigation.

4.5 COMPANY AND PROJECT SPECIFIC EHS POLICIES AND STANDARDS

The following Indorama EHS Policies and Standards have been considered in the ESIA process and this ESMF:

Indorama Company

- Indorama Corporation Group Handbook. February 2025 – See Annex 1
- Employee Handbook (HR Policies & procedures guide). 2021 – See Annex 2
- Gender Based Violence and Harassment Policy. 2021 – See Annex 3
- Guidelines for prevention and addressing issues of Retaliation. 2021 – See Annex 4
- Procedural Manual Social Material Topics. July 2022 – See Annex 5
- Indorama Compass Handbook – See Annex 6

Project specific

- Employee Grievance Management Procedure – Indorama is committed to prepare and provide this.
- Stakeholder Community Grievance Management Procedure - Indorama is committed to prepare and provide this.
- Guidelines for incoming public security personnel - Indorama is committed to prepare and provide this.
- Rules of engagement for public security agencies – Indorama is committed to prepare and provide this.
- Environment and Climate Change Policy – Indorama is committed to prepare and provide this.
- Occupational Health, Safety & Wellbeing Policy – Indorama is committed to prepare and provide this.
- Product Stewardship Policy – Indorama is committed to prepare and provide this.

5. KEY SENSITIVITIES

Key environmental and social sensitivities associated with the proposed 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 ESMF.

5.1 KEY PHYSICAL ENVIRONMENTAL SENSITIVITIES

- In terms of climatic hazards, the broader Project Area is susceptible to extreme heat.
- Hot dust-laden wind (Khamaseen) often blows, especially during April and May, from the southeastern direction. During this storm, the air temperature increases, and the visibility substantially decreases.
- The nearest earthquake is in Wadi Hagul, which represents an active seismic area with a small number of local micro earthquakes. The project design will take into account the Egyptian Code of Buildings considering the above low risk of earthquakes.
- The site is located within a zone which is highly influenced by several Wadis originating from the high mountains of the eastern desert. In particular, the site is included the delta of a small tributary of Wadi Ghweiba leading to Suez Gulf. Regarding flash flood hazards, the Ministry of Water Resources and Irrigation (MWRI) created constructed 9 retardation structures (dykes) have at the lower reaches across the narrow parts of the trunks of a number of Wadis including Wadi Ghweiba.
- Based on a flash flood risk assessment conducted by Environics (May 2026), the risk of flash flood risk on the the Project site is assessed as being subject to a low flood risk from the local wadis, while the Ammonia pipeline is subject to predominantly low flood risk, with isolated sections of medium risk if left unprotected.

The assessment also recognises that the main Wadi Ghweiba flow is conveyed through the existing artificial channel located north of the Project site. While this channel experiences high flow velocities and hydraulic energy during extreme events, it is intended to manage and safely convey floodwaters away from the Project area.

The study concludes that adequate design considerations and flood protection measures are required. It identifies the most suitable engineering solution as the construction of a diversion barrier around the Project site to channel floodwaters away from the site into the existing artificial channel. In addition, specific protection works are proposed at the intersections of the Ammonia pipeline with the main wadis and selected tributary wadis. For more information see Annex 7 of the EIA 2026 by Environics.

- Sensitivity of the soil is low, as it is not used by agricultural activities. Sensitivity of groundwater is also low, as it is brackish and does not exist at the site before 20 m in depth.
- According to the geotechnical investigation report (A&A Consultants, July 2024) conducted at Indorama's previous site (located at approx. 4.5 km north of the current Project's site), there is no groundwater occurrence in the boreholes with depths up to 15-20 meters. Considering the short distance and similar physical/geological setting, soil and groundwater conditions are expected to be broadly comparable. Therefore, the study results are considered representative and acceptable as baseline conditions for the Project site. This assumption will be verified

during the construction phase through appropriate site-specific monitoring, in order to confirm local groundwater conditions and identify any potential deviations from the baseline assumptions.

5.2 KEY BIOPHYSICAL SENSITIVITIES

The production site lies in SCZone industrial area, which is part of a developed area including several industrial parks. Therefore, the site and surrounding area are very low sensitivity with no ecological value. Specific field studies were conducted in this regard.

5.3 KEY SOCIO-ECONOMIC SENSITIVITIES

■ Sensitive receptors:

- Existing labour accommodation within Orascom Industrial park (approx. 1.6 km northeast of the production site).
- Residents of the local community (approx. 2.5 km southeast of the production site).
- Residents of the Kabilat El Amareen village southeast of the Project location (approx. 5-6 km southeast of the production site).

■ Employment:

- Working conditions: all workers must be employed under fair and safe working conditions consistent with IFC PS2 and national law.
- Gender and Vulnerable Groups: Employment opportunities should promote gender equality and avoid discrimination.

■ Labour:

- Although the majority of the Project's workforce (80% - 90%) are expected to be sourced locally, the proposed development is likely to create expectations around employment and economic benefits. Indorama will encourage contractors to hire most workers from nearby sites and Suez governorate. Egyptian regulations regarding local quota will be followed. If the project attracts a significant number of non-local workers, risks must be assessed in relation housing, social services and community conflict.

This must be proactively managed through transparent communication and ongoing stakeholder engagement, targeting both directly affected communities and the wider public.

An Influx Management Plan has been developed. See complete document in Annex F in ANNEX – Additional studies, and an executive summary in Annex F in ANNEX - Executive Summaries.

- Sourcing of labour for both construction and operation must follow open, fair, and transparent procedures. Recruitment should be conducted via reputable firms or community-endorsed structures to minimize risks of nepotism, corruption, or exploitation. Indorama needs to outline the anticipated workforce needs, both skilled and unskilled, across construction and operation phases. This shall include estimated numbers, skills profiles, and recruitment mechanisms. As these details

are not yet finalized, Indorama commits to communicate such information transparently prior to or during stakeholder consultations.

■ **Health, safety and security:**

- For both construction and operation phase, internationally recognized standards for worker Health Safety and Environment will be applied. In addition, Indorama corporate standards will be applied.
- With regard to operations, there are potential emergency situations associated with the facilities. In particular:
 - Worker's safety from fumes and fugitives and inspection and management of Safety Critical Equipment (SCE) principles.
- Noise is expected from different sources of the proposed project including boiler, turbines, air compressors, materials loading and unloading systems, pumps and evaporator.
- Heat stress is expected at the processes involving exothermic reactions and heating (such as sulphur melting, oxidation, gas converter, steam turbine, auxiliary boiler, fertilizer' granulation and drying).
- Fugitive emissions and particulates are expected from fittings, reaction vessels and material and product handling system (conveyors and elevators). These may include ammonia, HF, PM10, TSP, SOx and acid mist.
- Physical hazards from material handling, machinery, working at height, accidental fire, incidents and accidents are other sources of occupational risk.
- Chemical hazards are mainly due to handling of chemicals at the process and utilities (wastewater treatment and demineralization unit) and exposure to chemicals spills (such as acids product and process chemicals).
 - Potential ammonia leaks from storage tank or the closed loop ammonia cooling system are another source of hazard.
- Radon (Ra 226) in the phosphogypsum.

■ **Traffic:**

- For both construction and operation phase, an increase in traffic is expected due to the activities. During construction, the roads' capacity in Sokhna (especially in SCZone) is high and designed for industrial activities.
- During operation phase, road traffic will be incremented due to:
 - Phosphate rock will be transported by road from the Red Sea mine of Misr Phosphate company (located between Safaga and Quseir) to the production site. It is expected 65-75 trucks every day, with a truck capacity of 60 Ton and a daily amount of material of 4,500 t/day. The route will be approximately 475 km.

Sulphur will be transported by road from the Sokhna Port and the Adabiya Port to the production site, using trucks from the loading system at the Port to the conveying system at the production site. It is expected 50 trucks every 10 days, with a truck capacity of 60 Ton and a daily amount of material of 1,060 Mt/day.

6. IMPLEMENTATION OF THE ESMF

The ESMF will be implemented across both land plots designated for the Project, ensuring consistent application of environmental and social safeguards throughout the entire project area.

6.1 OVERVIEW OF THE ESMF

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 7) and act as the main vehicle for converting the findings of the ESIA into action.

6.2 INSTITUTIONAL FRAMEWORK

6.2.1 EGYPTIAN ENVIRONMENTAL AFFAIRS AGENCY (EEAA)

The principal authority for the regulation and enforcement of environmental laws in Egypt is the Egyptian Environmental Affairs Agency (EEAA). The EEAA operates under the Ministry of Environment and is responsible for ensuring compliance with environmental regulations, conducting inspections, and imposing penalties for violations.

6.2.2 ENVIRONMENTAL OFFICE WITHIN THE SUEZ GOVERNORATE

The Environmental office within the Suez Governorate is responsible for implementing the national environmental policies at the local level.

6.2.3 SC ZONE

The Local EIA is to be submitted to the competent administrative authority (CAA) for submission to the Egyptian Environmental Affairs Agency (EEAA) for review and opinion within 30 days of official receipt. In this case, Suez Canal Economic Zone (SCZone) is the CAA for the proposed project. The board of the SCZone is the competent authority to issue all licenses required for establishing and running all kind of business and activities inside the SCZone.

6.2.4 INDORAMA

Indorama, as the Project proponent, have placed contractual obligations on the Contractor (with flow down requirements in relation to subcontractors), which will be

considered in all Management Plans, and which need to be adhered to, and reported on, through the implementation of the ESMS.

6.2.5 CONTRACTORS AND SUBCONTRACTORS

Indorama has already appointed 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). Indorama will ensure that any the EPC Contractor prepares and implements environmental and social (E&S) management plans to address construction-related impacts. To support this, Indorama has already shared the ESMS (see Annex B in ANNEX– Additional Studies) with the EPC Contractor and will actively follow up to ensure compliance.

6.2.6 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)
- European Bank for Reconstruction and Development Performance Requirements (EBRD PRs)
- World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines
- Industry Specific EHS Guidelines – Phosphate Fertilizer Manufacturing

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

Indorama 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.
- Establish a functional grievance mechanism accessible to all stakeholder groups, and to ensure concerns are tracked, addressed, and closed out transparently and in a timely manner.
- Monitor stakeholder engagement outcomes and adapt the SEP periodically to reflect evolving stakeholder priorities, project phases, and external changes.
- Ensure vulnerable or marginalized groups (e.g., women, youth, persons with disabilities, informal settlers) are actively identified, consulted, and meaningfully included in the engagement process.
- Tailor engagement activities and messaging to the specific needs and concerns arising during construction, operations, and decommissioning/closure phases of the Project.

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 ESMS

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 program 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 Indorama;
- 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

Health and Safety Management Plans, such as an Emergency Response Plan (ERP) and a Firefighting Plan must be in place for the Project, as described in section 7.6. ERP will cover all incidents such as, but not limited to:

- Work Place accidents;
- Traffic accidents;
- Natural risks (heat stress, hot dust-laden wind, floods, etc)
- Hazardous materials spills and containment; and
- Community and/or Employee uprisings or strikes etc.

In addition, a dedicated Spill Prevention, Control and Containment Management Plan must be in place for the Project, as described in section 7.5.2.

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 Indorama. **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 ESMF 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 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 ESMF; 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 ESMF. 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 operational phases of the proposed Project. The construction phase measures are primarily the responsibility of the Contractor and Indorama, although other parties, such as the Engineer, will also assume certain responsibilities in this regard. During the operation, the responsibility lies with Indorama.

As explained in section 3.1, Environmental and Social Management Plans (Management Plans) will be prepared in the future. **The plans may be combined or included in an overall environmental and social plan as appropriate to streamline the execution of the Project.**

This section highly describes the following Management Plans:

- Physical Environmental Management Plans:
 - Air Quality Management Plan (refer to Section 7.2.1). Includes Radon Monitoring Plan.
 - Noise Management Plan (Section 7.2.2)
 - Groundwater Management Plan (refer to Section 7.2.3)
- Social Management Plans:
 - Socio-economic Management Plan (refer to Section 7.4.1)
 - Employment and Procurement Management Plan (refer to Section 7.4.2)
 - Community Health and Safety Management Plan (refer to Section 7.4.3)
 - Traffic Management Plan (refer to Section 7.4.4)
- General Management Plans:
 - Waste Management Plan (refer to Section 7.5.1)
 - Spill Prevention, Control and Containment Management Plan (refer to Section 7.5.2).
 - Hazardous material management (during construction) (refer to Section 7.5.3).
- Health and Safety Management Plans:
 - Emergency Response Plan (refer to Section 7.6.1)
 - Firefighting Plan (refer to section 7.6.2)

A Biological management plan is not needed for this Project (refer to Section 7.3).

Each Management Plan listed 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 Egyptian legal requirements, the IFC performance standards, EBRD, EU BAT requirements or applicable good practice), that is relevant to each Plan;
- Mitigation measures (actions) required during various Project phases, that were identified and described in the ESIA; and

The management plan structure is included below:

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, construction or operation 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 ESMF has been developed as a framework, which aims to address the specific impacts that are anticipated to occur as a result of the proposed 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 ESMF should be considered a “living” document and should be amended in light of the learning experienced during the implementation thereof.

7.2 PHYSICAL ENVIRONMENTAL MANAGEMENT PLANS

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 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 Egyptian legislative, IFC requirements, EBRD and EU BAT requirements.

7.2.1.2 PROJECT ACTIVITIES RESULTING IN AIR QUALITY IMPACTS

With regard to the construction phase, emissions will arise predominantly from the use of vehicles.

Dust will be generated from vehicles traffic on un-paved roads, earth clearance, site constructions and ammonia pipeline excavation and connection.

Vehicles and other construction and excavation machinery are other sources of gaseous emissions, including NO_x, CO, SO₂ and PM₁₀.

The potential impacts associated with emissions arising from:

- Exposure of soils during site clearance and construction;
- Batching and mixing of cement, sand and aggregates;
- Vehicle movement over unpaved surfaces;
- Vehicle exhaust emissions;
- Exhaust emissions from diesel powered generators used during construction (emergency cases); 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:

- Emissions from the production plants SAP, PAP, DAP/NPK:
 - SO_x are the main pollutants generated from Sulphuric acid production. They will be directed to one main stack. Double Contact- Double Absorption (DCDA) technology guarantees low emissions from the process.
 - HF and particulates are the main emissions from Phosphoric acid plant. They are directed to bagfilters and cyclones and then a wet scrubber for removal.
 - Particulates and ammonia are the main pollutants from DAP/NPK manufacturing (rock milling and crushing, Phosphogypsum stockpiling and belt conveyors). Multi-cyclones and multiple stage scrubbing are integrated in the project' design and thus Acceptable level of pollutants will be released to the atmosphere.

- Particulates are expected from unloading and handling of the bulk raw material (mainly Sulphur).
- Radon emissions from phosphogypsum storage.
- CO and NOx pollutants are also generated from natural gas.

7.2.1.3 RESPONSIBILITY

Indorama, 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 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.
- Meet the Egyptian air emissions limits according to the Table 17 of Annex (6) of the amended executive regulations no. 1963 of 2017, which sets the maximum limits of emissions from point sources of Phosphate fertilizer, Phosphoric acid and, Sulphuric acid projects.
- Meet the IFC Environmental, Health and Safety Guidelines for Phosphate Fertilizer Manufacturing (IFC, 2007).
- Meet the OSHA Permissible Exposure Limit (PEL) for Radon, as an 8-hour time-weighted average (TWA), which is 100 pCi/L (picocuries per liter) in workplace atmospheres. This is the limit that a worker (over 18 years of age) can be exposed to in 40 hours in a consecutive 7-day period.

As such, the Project specific guidelines are presented in the following tables:

TABLE 7.2 PROJECT SPECIFIC GUIDELINES: MAXIMUM LIMITS OF EMISSIONS FROM PHOSPHATE FERTILIZER PRODUCTION.

Pollutant	IFC guidelines limit (mg/m ³)	Max Egyptian Limit (mg/m ³)
PM	50	-
TPS (Total suspended particles)	-	50
Ammonia	50	50
NOx	500 (for phosphate unit) 70 (for mix acid unit)	500
Fluoride	5	5

Pollutant	IFC guidelines limit (mg/m ³)	Max Egyptian Limit (mg/m ³)
HF	5	5

Source: Indorama.

TABLE 7.3 PROJECT SPECIFIC GUIDELINES: MAXIMUM LIMITS OF EMISSIONS FROM PHOSPHORIC ACID PRODUCTION.

Pollutant	IFC guidelines limit (mg/m ³)	Max Egyptian Limit (mg/m ³)
PM	50	-
TPS (Total suspended particles)	-	50
HF	5	5

Source: Indorama.

TABLE 7.4 PROJECT SPECIFIC GUIDELINES: MAXIMUM LIMITS OF EMISSIONS FROM SULPHURIC ACID PRODUCTION.

Pollutant	IFC (kg/ton acid)	Egyptian Limit (mg/m ³)	Notes
SO ₂	2	450	Maximum of 2 Kg/ton Sulphuric acid
SO ₃	0.15	60	Maximum load of 0.075 Kg/ton Sulphuric acid

Source: Indorama.

7.2.1.5 MANAGEMENT MEASURES

The construction of the Project is expected to result in Moderate impacts (before mitigation). In terms of construction dust and emissions from construction equipment, with the correct implementation of the appropriate mitigation and management measures, residual impacts are expected to be Minor.

The operation of the proposed Project is predicted to result in Moderate impacts (before mitigation). With the correct implementation of the appropriate mitigation and management, residual impacts are expected to be Minor.

Based on the air modelling results for the operation phase, all ground level concentrations in ambient air are well below the maximum limits of air quality in industrial areas, as stipulated in Annex 5 of the executive regulations (ERs) issued by Decree 710/2012 for Law 4/1994 modified by Law 105/2015.

Regarding mitigation measures during operation phase, Indorama will be connected to the national Continuous Monitoring System, which will provide real-time concentrations

of the emission sources of the project. This will ensure continuous compliance and insignificant impact of the project' emissions.

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

TABLE 7.5 AIR QUALITY MANAGEMENT

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Construction Management				
1	Grievances	The Project will develop and implement a grievance procedure in the event of any dust/air emissions complaints being received.	Start of construction	Grievance Procedure
2		All potentially impacted receptors (the closest receptor is labour accommodation within Orascom Industrial park -approx. 1.6 km northeast of the production site) 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	
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 using water) 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	

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
8		Vehicles will be regularly serviced (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
9		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
10		Establish exclusion zones where the offloading of Project equipment / materials from trucks is not permitted.	Throughout construction	Visual observations
11		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
12	Site Clearing and Earthworks	Where practical and feasible, surface binding agents will be used on exposed open earthworks (e.g. laydown yards).	Throughout construction	Visual observations and dust complaints
13		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	
14	Diesel Type	Diesel fuel will be used as emergency fuel for the emergency power generators.	Throughout construction	Records
15	General	Drop heights of material will be minimised.	Throughout construction	

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
16		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	Visual observations and dust complaints
17	Radon emissions	Indorama will Establish baseline radon levels during the construction phase.	During the construction phase	N.A.
Operation Management				
18	Grievances	The Project will develop and implement a grievance procedure in the event of any dust/air emissions complaints being received.	Throughout operation	Grievance Procedure
19		All potentially impacted receptors will be informed of the 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 operation	Engagement records and grievance procedure
20		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 operation	
21	Vehicle Management	Relatively high load on the roads is expected mainly during transporting raw materials, in particular rock phosphate to the production site. Impacts associated with road traffic during the operational phase will be mitigated by treating (dust suppression using water) unpaved road, to prevent or minimise dust emission from transport vehicles.	Throughout operation	Maintenance records Visual observations and dust complaints

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
22		Speed limits will be reasonably set on unpaved roads to minimise dust generation.	Throughout operation	
23		Work vehicles will be kept sufficiently clean to avoid tracking dirt around and off the site.	Throughout operation	
24		Work vehicles transporting friable materials will be kept adequately covered to prevent materials being spread around and off the site.	Throughout operation	
25		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 operation	Maintenance records
26		When not in use, vehicles will be switched off, unless impractical for health and safety reasons (for example maintenance of air conditioning)	Throughout operation	Visual observations
27		Establish exclusion zones where the offloading of Project equipment / materials from trucks is not permitted.	Throughout operation	
28		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 operation	Vehicle inventory
29	Emissions from stacks (SAP, PAP, DAP/NPK)	The project design included the following mitigation measures: - All process equipment in DAP/NPK plant will be operated under a slight negative pressure to prevent the fugitive emissions. - PAP and SAP are equipped with cyclones and wet gas scrubber.	Throughout operation	Air emission concentrations compliant with local law and international standards.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		- Sulphur and phosphate rock conveying systems will be operated at low speed to reduce dust emissions. - Phosphate rock grinder will be provided by a bag filter. - Optimizing the amount of air used in the combustion process in the boiler and ensuring complete combustion. Monitoring of the emissions from the stacks will be needed.		
30	General	Drop heights of material will be minimised.	Throughout operation	Visual observations and dust complaints
31		Where practical and feasible, materials for use in production will be stored in an enclosed location. The use of surface binding agents or localized dampening will be employed to reduce localized emissions of dust from stockpiles of stored material.	Throughout operation	
32	Emissions from radon	In order to control the Radon gas emissions in the workplace at the Phosphogypsum storage site, Indorama will follow the Monitoring plan of Radon emissions Plan (see Annex 10 of the EIA 2026 by Environics). Monitor Rn-222 once annually over consecutive 7-day period. This frequency will be more verified and adjusted, as needed, based on the baseline and subsequent monitoring to be conducted before the project.	During the operation	Compliance with OSHA2 Permissible Exposure Limit (PEL) for Radon: PEL is 100 pCi/L (picocuries per liter).

7.2.2 NOISE MANAGEMENT PLAN

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. 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

With regard to the construction phase, there are potential impacts associated with noise emissions arising from construction machinery and equipment.

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

- Belt conveyors and elevators,
- Crusher and mill,
- Fertilizer granulator,
- Air compressors. Blowers, fans and pumps,
- Turbines of the captive power plant,
- Heat recovery boiler, and
- Materials loading and unloading.

Most of the sources will be operated 24 h/day and 7 days a week. Taking into consideration that the equipment will be installed within enclosed structures/buildings, it is thus unlikely that the noise will disperse significantly beyond the project boundaries and affect a distant area. Noise is mainly affecting the workplace environment.

7.2.2.3 RESPONSIBILITY

Indorama, 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.

During operation, noise controls will be managed and executed by Indorama.

7.2.2.4 PERFORMANCE CRITERIA

The primary performance criteria associated with noise management for the proposed 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 Egyptian and IFC standards and guidelines have been used. As such, the Project specific guidelines are presented in Table 7.6.

TABLE 7.6 PROJECT NOISE CRITERIA FOR OPERATIONAL PHASE (EGYPTIAN LAW): MAXIMUM LIMITS OF BACKGROUND NOISE.

Receptor	Maximum Allowable Equivalent Noise Level, L_{Aeq} (dB)	
	Daytime (07:00 – 22:00)	Night (22:00 – 07:00)
Industrial area (heavy industries)	70	70

Source: ERM.

TABLE 7.7 PROJECT NOISE CRITERIA FOR OPERATIONAL PHASE (INTERNATIONAL, IFC): MAXIMUM LIMITS OF BACKGROUND NOISE.

Receptor	One Hour L_{Aeq} (dB)	
	Daytime (07:00 – 22:00)	Night (22:00 – 07:00)
Industrial, commercial	70	70

Source: ERM.

7.2.2.5 MANAGEMENT MEASURES

The construction of the Project is expected to result in Moderate impacts (before mitigation). In terms of construction dust and emissions from construction equipment, with the correct implementation of the appropriate mitigation and management measures, residual impacts are expected to be Minor.

The operation of the proposed Project is expected to result in Minor impacts (before mitigation). With the correct implementation of the appropriate mitigation and management, residual impacts are expected to be Negligible.

The management measures required for general **construction and operation** related activities are included in Table 7.8.

TABLE 7.8 NOISE MANAGEMENT

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Construction management				
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 (the closest receptor is labour accommodation within Orascom Industrial park (approx. 1.6 km northeast of the production site)) 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 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	

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
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 they are 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
Operation management				

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
18.	Equipment management	The equipment will be regularly maintained.	Throughout operations	Maintenance records
19.	General	Regular compliance noise measurements will be taken at the boundaries of the Project or at the nearest sensitive receptors.	Throughout operations	Noise levels compliant with local regulation and international standards.

7.2.3 GROUNDWATER MANAGEMENT PLANS

7.2.3.1 OBJECTIVES

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

- To verify the model results regarding infiltration rates (vadose zone) and validate the leachate rate.
- Provide baseline data for subsoil and groundwater quality (soil water content, soil quality parameters...).
- Regular monitor for the groundwater levels and groundwater and soil quality parameters.
- Undertake activities during the operational phases in a manner that minimises impacts on the groundwater, and specifically, determine the impact of the possible leachate of the phosphogypsum storage on the surrounding areas.
- To ensure alignment with the requirements set out in the International Finance Corporation (IFC) Performance Standards, IFC Environmental, Health and Safety Guidelines, EBRD and EU BAT requirements.

7.2.3.2 PROJECT ACTIVITIES RESULTING IN GROUNDWATER IMPACTS

With regard to the construction phase, there are potential impacts associated with emissions of pollutants arising from hazardous wastes and domestic wastewater during construction.

With regard to operations, there is a potential to introduce pollutants to the groundwater associated with emissions of pollutants arising from different sources. The main source is the **Phosphogypsum storage (storage lifetime of 20-25 years)**.

A phosphogypsum hydrodynamic study was conducted at Indorama's previous site location (approx. 4.5 km north of the Project's site). Considering the short distance and similar physical/geological setting, soil and groundwater conditions are expected to be broadly comparable. Therefore, the study results are considered representative and acceptable as baseline conditions for the Project site. This assumption will be verified during the construction phase through appropriate site-specific monitoring, in order to confirm local groundwater conditions and identify any potential deviations from the baseline assumptions. Based on the conclusions of the mentioned study :

- Insoluble pollutants (mainly CaSO_4 , Al and Fe) will precipitate on the top layer of ground surface and will not penetrate through the unsaturated zone.
- Soluble pollutants (mainly P_2O_5) will leach through the unsaturated zone of the soil to a maximum depth of 9.5 meters below ground level. However, they will not reach the groundwater aquifer (assumed at more than 30 m below ground level) due to the predominant adsorption processes in the vadose zone.
- Only water (without the pollutants) may slightly reach the groundwater aquifer (30 m below the ground level) beyond 25 years of storing the modelled Phosphogypsum quantity. This prediction is based on the worst case scenario.

Finally, to verify the modeling results, the company will monitor the gypsum characteristics and baseline quality of groundwater at the site.

For more detail, see the Annex 4 of the EIA 2026 by Environics.

In addition, other sources of potential contamination of the soil and groundwater are liquid spills, storage of hazardous waste, etc.

7.2.3.3 RESPONSIBILITY

Indorama, as Project owner, shall assume responsibility for ensuring the groundwater management system throughout life of the Project during operation phase.

7.2.3.4 PERFORMANCE CRITERIA

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

- Record of the infiltration rates (vadose zone) at several locations within the boundaries of the designated area for the Phosphogypsum storage – to verify the model results.
- Record of the infiltration tests on a sample – to validate the leachate rate from the model.
- Monitoring/recording the levels of groundwater in Project boreholes;
- The quality of the soil and groundwater – as measured in Project boreholes – aligned with the legislation.

7.2.3.5 MANAGEMENT MEASURES

The construction of the Project is predicted to result in Minor impacts (before mitigation). In terms of construction, with the correct implementation of the appropriate mitigation and management measures (refer to Table 7.5), residual impacts are expected to be Insignificant.

The operation of the Project is predicted to result in Moderate impacts in the phosphogypsum storage and Minor in the rest of the site (before mitigation). In terms of operation, with the correct implementation of the appropriate mitigation and management measures (refer to Table 7.5), residual impacts are expected to be Minor in the phosphogypsum storage and Insignificant in the rest of the area.

The management measures included in Table 7.9 will be implemented to reduce groundwater related impacts from the Project during **construction and operation**.

TABLE 7.9 GROUNDWATER MANAGEMENT

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
Construction management				
1	Grievances	The Project will develop and implement a grievance procedure in the event of any soil and/or groundwater complaints being received.	Start of construction.	Grievance Procedure
2	Spillages of Chemicals and Contaminants	- All areas and associated facilities will be maintained in a good and tidy condition. - 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. - Maintenance of the vehicles, trucks and construction equipment will be carried out off site. - Diesel will not be stored onsite, as all vehicles and machineries will be fuelled before entering the site. Diesel will be stored on site only for Diesel Generators. - Implementation of the Spill Prevention, Control and Containment Management Plan (refer to 7.5.2).	Ongoing throughout the construction.	Waste records and traceability No presence of spills on the soil
4	Water generated from hydrostatic testing of ammonia pipeline	It will be collected and managed by a licensed contractor.	Once- During testing	Waste records and traceability
5	Domestic wastewater	It will be collected in PVC tanks (aboveground) of sufficient capacity to be positioned on lined concrete basins. These will be regularly emptied through seepage trucks to the nearest approved wastewater treatment facility.	Ongoing throughout the construction.	Waste records and traceability

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
6	Phosphogypsum storage area drainage system and impermeabilization	Implement an appropriate lining option and leachate collection system, based on the conclusions of the additional field investigations to be conducted in the future, as suggested in the hydrodynamic modelling.	Once-before operation phase.	Operation and maintenance checklist to be in place. Ensure groundwater qualities remain compliant with regards to legislation
Operation management				
7	Phosphogypsum storage	Implementation of the groundwater management plan.	Before operation. The monitoring frequency will be defined after the additional field investigations (anticipated Quarterly/ Semmiannual) The groundwater management plan will be reviewed and updated (if needed) annually	Compliance with soil and groundwater parameters criteria

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
8	Spillages of Chemicals and Contaminants	■ Impermeable layers will be used in storage areas, loading/ unloading areas, etc to protect the soil. ■ All areas and associated facilities will be maintained in a good and tidy condition. ■ 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. ■ Implementation of the Spill Prevention, Control and Containment Management Plan (refer to 7.5.2).	Ongoing throughout the operation.	Ensure groundwater qualities remain compliant with regards to legislation Waste records and traceability

7.3 BIOPHYSICAL ENVIRONMENTAL MANAGEMENT

No impacts are expected neither in the construction phase nor in the operation phase. Therefore, no biophysical environmental management plan is needed.

7.4 SOCIAL MANAGEMENT PLANS

7.4.1 SOCIO-ECONOMIC MANAGEMENT PLAN

7.4.1.1 OBJECTIVES

To manage the socio-economic aspects of the proposed 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.
- Indorama procurement of goods and services from international, national, regional, and local service providers and suppliers.
- Indorama programmes with respect to local business development as part of their Community Development Plans.
- Influx of migrant workers and job seekers.
- Indorama use of state and private security forces to secure their operations.

7.4.1.3 RESPONSIBILITY

Indorama, 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.
- Registration of local (appropriately qualified) contractors from Host communities.
- Records of training and recruitment processes that reflect 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 Indorama.
- 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.
- Reporting and disclosure on influx.
- Workplace policies related to gender-based violence in place.

7.4.1.5 MANAGEMENT MEASURES

The management measures included in Table 7.10 will be implemented to reduce socio-economic impacts from the Project.

TABLE 7.10 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	■ Appoint local contractors (where reasonable and practical) and implement a Local Content / Procurement Plan. All appointments (direct or through contractors) must abide by international labour laws. ■ Meeting with representatives from the Project-affected communities to establish the existence of a skills and local small and medium sized enterprises database for the area. ■ 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. ■ 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 ■ 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	■ A proactive community engagement campaign must be initiated.	At least six months before construction commences	■ Stakeholder engagement schedule. ■ Monitoring, evaluation, and disclosure on progress against stakeholder engagement plan.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
3	Socioeconomic Development Benefits Influx of Migrant Workers and Job Seekers into Adjacent Communities	■ Implementation of Hiring Plan for Construction & Operation. ■ 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.	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 Indorama. ■ Monitoring, evaluation, and disclosure of local business development activities.
4	Community dissatisfaction over Unmet Expectations	■ Indorama will ensure transparent and continued communication with all stakeholders to ensure that community expectations are aligned to what the Project can realistically deliver. ■ Indorama must ensure that a Grievance procedure is in place. ■ A Commitment Register should be regularly updated to track all commitments made to stakeholders and progress in delivering on these.	At least six months before construction commences. Stakeholder Engagement Plan and Commitment Register should be updated annually.	■ Stakeholder Engagement Schedule (including proposed dates of engagement, key 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 Commitment Register and tracking of all commitments made to stakeholders.
5	Public and Worker Health, Safety, and Human Rights Impacts	■ Develop a Community Health and Safety Plan and an Emergency Response Plan (see sections 7.4.3 and 7.6.1, respectively). ■ Recording of community incidents, emergency events and responses.	At least two months before construction commences.	■ Community Health and Safety Plan and Emergency Response Plan in place and effective. ■ Recruitment and appointment process in place to meet resourcing

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
			Management plans should be revised annually and comprehensively updated every 5 years.	requirements for implementation of Health and Safety Plans.
6	Security and Humans Rights	■ 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. ■	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	■ Indorama will recruit locally and appoint local contractors (where reasonable and practical) and implement a Local Content / Procurement Plan. ■ An Influx Management Plan has been developed. See complete document in Annex F in ANNEX – Additional studies, and an executive summary in Annex F in ANNEX - Executive Summaries. ■ Where possible, Indorama will partner with government and other industries in the area	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.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		to undertaken interventions which alleviate the impact of direct and cumulative influx. ■ Ongoing engagement with local authorities in terms of influx perceptions.		

7.4.2 EMPLOYMENT AND PROCUREMENT MANAGEMENT PLAN

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 Egyptian 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/EBRD 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 labor and safety standards increases the risk of accidents, injuries, and unfair treatment of workers. This not only affects worker wellbeing but also creates broader risks for the project, including workforce retention challenges—especially in a competitive labor market—reputational damage, decreased productivity, potential legal liabilities, and disruptions to project timelines.

7.4.2.3 RESPONSIBILITY

Indorama, 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 Egyptian law and international labour laws, 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, right to organise and collective bargaining, 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 Egyptian Law and IFC PS2 outlining the terms and conditions of employment.
- Accommodation for workers (direct employees and subcontractors) is provided in line with Egyptian Building Code and IFC / WB/EBRD 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 Egyptian law, and international labour laws- whichever offers the highest level of protection for workers.
- 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 7.11 will be implemented to manage impacts associated with employment and procurement during **construction and operation**.

TABLE 7.11 MANAGEMENT OF EMPLOYMENT AND PROCUREMENT

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
<u>Recruitment and Procurement</u>				
1.	Recruitment of Workers and Procurement of Goods and Services	The Project will prioritise the recruitment of workers and procurement of local goods and services, 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, 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). The Project will further engage both local and state Government, 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	- Meet the established percentage 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.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
				■ Zero workers hired at the gate.
4.		■ Notification will be given to the local leaders 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, youth forums (if relevant in Egypt), 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 for the up-skilling, training and development of 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	Prior to and throughout	■ Number of workers or companies who have received training.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		Project to ensure that local businesses have the opportunity to benefit.	construction and operations	
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
<u>Management System</u>				
10.	Management of Labour and Working Conditions	A Worker Grievance Mechanism will be implemented. These requirements will also be passed on to any subcontractors. Key issues to be covered 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	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 - Contracts in place for all workers in line with Egyptian Law and IFC PS2 - Monitoring and audit of implementation of employment contracts - Maintain grievance register - Monitoring negotiation, signing of bargaining agreement, number of meetings with worker representatives, etc.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		equal opportunity and fair treatment, avoiding discrimination. ■ Provision of adequate welfare facilities (such as toilets, showers, canteens, rest areas, smoking areas, prayer areas etc.) on site. ■ Implementation of a grievance mechanism for the Project workers. ■ Adoption and implementation of a sexual harassment policy. ■ Respect the freedom of association and right to collective bargaining The Human Resources Plans and Procedures is found in Annex E in ANNEX – Additional studies and its executive summary is in Annex E in ANNEX – Executive summaries.		
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 ■ All incidents to be reported, investigated, corrective actions identified and implemented in agreed timeframes ■ 100% of workers receiving induction and training related to their position

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
12.		The Project will seek to assist workers in finding subsequent employment post construction activities by providing useful documents.	Prior to and throughout construction and operations	- Certificate of Service given to employees upon assignment complete - Documents showing qualifications earned
<u>Subcontractor and Supplier Management</u>				
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, workers' rights, health and safety as outlined in Egyptian 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. - Bidder can demonstrate compliance with requirements. - 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 Egyptian 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	- Audit reports of all subcontractors and suppliers - Corrective actions identified and closed out in the time required

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
construction and operations				
<u>Workers' Rights</u>				
17.	Protection of Workers' Rights	A Project Policy prohibiting discrimination based on all grounds in the ILO convention (gender, nationality, ethnicity, age, religion or sexual orientation, etc).	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 Egyptian 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 Egyptian labour law, the ILO core conventions and the requirements of IFC PS2. Contracts will be verbally explained to all workers in a language understood by the workers where this is necessary to ensure that workers understand their rights. - Subcontractors and suppliers will be required to cascade working conditions and labour rights in the contracts with their workers.	Prior to and throughout construction and operations	100% of workers having contracts in line with Egyptian Law, IFC PS2 and the ILO conventions. 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

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
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 direct employer. The Contractor would then seek to resolve this grievance. - All Project workers will receive a training on the functioning of the grievance mechanism. Regular reminders will be implemented.	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 - Percentage of grievances received on a theme 100% of workers having attended training on grievance mechanism
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 /EBRD standards to prevent transmission of diseases associated with poor living conditions or commensurate/compensatory allowances to be paid for housing. If a temporary workers camp is established, a Workers Accommodation Management Plan will be developed by the EPC Contractor.	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 implement recruitment and management practices to ensure that no cases of child or forced labor occur as part of the Project, and to the extent possible by third parties related	Prior to and throughout construction	Zero cases of forced or child labour found in direct employees, subcontractors or suppliers

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		to the Project and primary suppliers where such risk may exist. ■ For suppliers and subcontractors: The Project will implement due diligence measures as part of the selection process and throughout the business relationship to prevent and mitigate risks of child and forced labor.		

7.4.3 COMMUNITY HEALTH AND SAFETY PLAN

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 mitigate 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 Egyptian legislation and is consistent with the Voluntary Principles on Security and Human Rights (VPs).
- Avoid or minimise 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 and operation.
- H&S hazards during operation related to the management, storage and shipping of hazardous materials and products, with potential for accidental leaks/releases of toxic and flammable gases, and the storage of phosphogypsum.

7.4.3.3 RESPONSIBILITY

Indorama, 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 7.12 will be implemented to reduce community health safety and security related impacts from the Project during **construction and operation**.

TABLE 7.12 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.	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 /EBRD 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

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
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. ■ 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.	Throughout construction	■ Construction design and operation to standards, confirmed in site inspection reports and periodic audits
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

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
7.		Pre-employment screening will take place prior to mobilisation. The screening protocols will consider health 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
9.		Project will ensure adequate health facility for diagnosis, referrals, and treatment of Polio, Hepatitis B, other.	Prior to and throughout construction and operations	Compliance with measures in plan
10.		The Project will monitor the emergence of major pandemics through 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

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
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 Egypt and/ or the relevant area, 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 site.	■ 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. A Supply chain management policy, a Supply chain monitoring procedure, and a Supplier Code of Conduct have been elaborated for this project. The complete documents are found in Annex J, K and I; respectively, in ANNEX – Additional studies and their executive summaries are in Annex J, K and I; respectively, in ANNEX – Executive summaries.	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 (see section 7.4.4) 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)	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
		■ 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.		
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 Indorama in place for wide load permits, etc.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
19.		The Project will undertake transport of workers by bus in the safest way possible (20 buses average per day during peak manpower leading to a deployment of about 1,000 people maximum). Therefore, a Transport Plan will be implemented.	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.
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				

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
23.	Protection of Community Safety and Security	Project security will comply with Egyptian 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.	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. The Security Management Plan & Policy is found in Annex G in ANNEX – Additional studies and an executive summary is in Annex G in ANNEX – Executive summaries. In addition, a Security Risk Assessment is found in Annex H in ANNEX – Additional studies and an executive summary is in Annex H in ANNEX – Executive summaries.	Prior to and throughout construction and operations	100% compliance with measures in plan
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	Throughout construction	Fencing and signage in place

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		where appropriate to advise community members of the risk of site trespass in multiple languages		All site trespass and theft will be investigated, and corrective actions implemented
26.		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
27.		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 TRAFFIC MANAGEMENT PLAN

A traffic assessment (conducted by local subcontractor) has been developed and included in the ESIA (see Annex M in ANNEX - Additional studies). An executive summary can be found in Annex L in ANNEX – Executive summaries.). .

Indorama will prepare a management plan addressing the main routes to be used, traffic capacity/load, suitable scheduling and management of the project traffic. The plan will also identify the main stakeholders to be involved in coordination during heavy traffic load. 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 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 the construction phase and the operations phase. 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.

7.4.4.1 PROJECT ACTIVITIES RESULTING IN TRAFFIC IMPACTS

With regard to the construction phase, there are potential impacts associated with traffic impact arising from:

- labour influx.
- transportation of construction materials also causes traffic increase.
- Excavation activities of ammonia pipeline.

The Project is located in the SC Zone industrial area, that counts with consolidated roads.

The project is expected to affect the main access roads during transportation of the construction materials, equipment and wastes. However, significant impact is expected during peak times when several types of work (civil and electromechanical) are overlapped and many logistics (labor, materials and equipment) need to be transported. However, the roads' capacity in Sokhna (especially in SCZone) is high and designed for industrial activities.

With regard to operations, there are potential impacts associated with traffic impact arising from relatively high load on the roads is expected mainly during transporting raw materials. These periods will include vehicles and trucks delivering the main raw materials:

- Phosphate rock. Phosphate rock will be transported by road from the Red Sea mine of Misr Phosphate company (located between Safaga and Quseir) to the production site. It is expected 65-75 trucks every day, with a truck capacity of 60 Ton and a daily amount of material of 4,500 t/day. The route will be approximately 475 km.

- Sulphur. Sulphur will be transported by road from the Sokhna Port and the Adabiya Port to the production site, using trucks from the loading system at the Port to the conveying system at the production site. It is expected 50 trucks every 10 days, with a truck capacity of 60 Ton and a daily amount of material of 1,060 Mt/day.

7.4.4.2 RESPONSIBILITY

Indorama 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.

This plan recognizes that Indorama has no direct authority or ability to direct or provide road maintenance and improvements but can advocate and provide guidance for such improvements.

7.4.4.3 PERFORMANCE CRITERIA

Performance criteria are listed in Table 7.13 and include the number of accidents or grievances and volume of spills.

7.4.4.4 MANAGEMENT MEASURES

The construction of the Project is predicted to result in Minor in general and Moderate during peak times impacts (before mitigation). In terms of construction, with the correct implementation of the appropriate mitigation and management measures, residual impacts are expected to be Insignificant in general and Minor during peak times.

The operation of the proposed Project is predicted to result in Major impacts (before mitigation). With the correct implementation of the appropriate mitigation and management, residual impacts are expected to be Moderate.

The management measures included in Table 7.13 will be implemented during **construction and operation.**

TABLE 7.13 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 access road to the production site in good condition	As needed	■ Project access road is 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.	Maintain schedules daily for ongoing construction or operations; update in response to grievances or other need.	■ Traffic management plan and schedule maintained by Indorama and available for review.
4	Enhanced Safety through Stakeholder Engagement and Education	■ Provide a grievance mechanism that is easy to access, transparent, and responsive. Accept grievances related to Indorama 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. ■ Indorama maintains records of grievances, initial response, and final resolution or disposition.
5	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.	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.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		- 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. - IN the trainings, cover risks to GBVH (safety during transportation).		- Indorama and contractors retain relevant records of licenses and driver training program materials and record of completion for all drivers. - Number of Indorama-related road crashes or other incidents.
6	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	- Indorama 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. - Indorama 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 Indorama-related road crashes or other incidents.
7	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. - Indorama and contractor managers require completion of vehicle safety

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
				checklist by each driver daily prior to vehicle operation. ■ Indorama retains completed checklists for one year.
8	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	■ Indorama and contractors provide (or require, for independent truck operators) and ensure proper operation of in-vehicle communication systems.
9	Noise Impact Reduction	■ Require that noise-control devices be in good operating condition.	Continual during construction and operations	■ Indorama and contractors provide (or require, for independent truck operators) and ensure proper operation of noise-controlling devices.
10	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	■ Indorama or contractors provide wash station at construction site; require truck washing prior to leaving Project site.
11	Prevention of Hazard and Nuisance from Truck Spills	■ Securely cover loads on trucks to minimise spillage and dust.	Throughout construction and operations	■ Indorama and contractors develop and enforce policies requiring truckload covers. ■ Record of all spill incidents from Indorama and contractor vehicles.
12		■ Do not overload trucks	Throughout construction and operations	■ Indorama and contractors develop and enforce policies prohibiting truck overloading. ■ Record of all spill incidents from Indorama and contractor vehicles.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
13	Transportation of sulphur and phosphate rock	■ Implementation of the traffic management plan	Throughout operations	Records of the implementation

7.5 GENERAL MANAGEMENT PLANS

7.5.1 WASTE MANAGEMENT PLAN

7.5.1.1 OBJECTIVES

The objectives for waste management are:

- To ensure that the waste strategy for the proposed Project complies with the Egyptian legislative requirements.
- To ensure alignment with the good practice requirements set out in the IFC Performance Standards and IFC Environmental, Health and Safety Guidelines and EBRD.
- Identify high level waste streams associated with the construction and operation phase of the proposed 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 during construction) spills.
- To prevent and protect 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

Both during construction and operation phase, wastes generated from Project activities can be categorized 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.

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 (estimated at about 15-18 months) and operation phase are presented below:

It is expected that a total amount of waste is 2-3 tons/day will be generated during construction phase. Non-recyclable waste will be managed and collected regularly by a licensed contractor for safe disposal. Recyclable waste will be sold to accredited agencies / licensed contractor for proper recycling.

TABLE 7.14 WASTE TYPES AND ESTIMATED QUANTITIES DURING THE CONSTRUCTION PHASE

Activity	Description	Waste Category	Quantity (ton/year)	Destination
Site preparation, foundations and civil works	Construction debris	Non-hazardous	1,500-2,000	Approved landfill or reuse in road base
	Wood	Non-hazardous	100-120	Reuse or approved wood recycling facility
	Packaging (paper, cardboard, plastics)	Non-hazardous	15-20	Recyclable through municipal or private contractor
Building erection, underground constructions, utilities erection, piping construction	Pipe cuttings	Non-hazardous	10-15	Scrap resale or approved disposal site
	Plastic drums and containers (empty)	Non-hazardous	10	Recyclable plastics facility or approved handler
	Metal drums and containers (empty)	Non-hazardous	50	Metal recycling facility or authorized scrap yard
Maintenance operations	Batteries	Hazardous	5	Authorized hazardous waste disposal facility
	Filters	Hazardous	4	Authorized hazardous waste incinerator
	Fabrics contaminated with oil	Hazardous	12	Approved hazardous textile waste handler
	Empty oil, chemical, insulators or paint containers	Hazardous	15	Hazardous waste treatment and disposal center
	Spent oils lubricants, fuels, solvents	Hazardous	1.3-1.8	Authorized used oil and solvent recycler

Activity	Description	Waste Category	Quantity (ton/year)	Destination
	Paint	Hazardous	0.3-0.5	Paint-specific hazardous waste disposal
	Thinners	Hazardous	2	Authorized hazardous waste disposal
	Hydraulic fluid	Hazardous	3	Authorized hazardous waste disposal/recycler
	Spent electrical equipment	Hazardous	4	E-waste handler or recycler
Performance tests for ammonia tanks and ammonia pipeline (commissioning)	Chemicals (nitrogen and ammonia) used for the Acoustic Emission test method for ammonia tanks	Hazardous	1	Specialized hazardous chemical waste handler
Accommodation, offices operations	Municipal waste	Non-hazardous	80-100	Municipal or approved dump site
	Wastewaters (drinking, washing, shower, sanitary)	Non-hazardous	150 l/day per worker	Sewage treatment plant or municipal system

TABLE 7.15 WASTE TYPES AND ESTIMATED QUANTITIES DURING THE OPERATION PHASE

Description	Waste Category	Quantity (ton/year)	Destination
Spent catalyst. Generated in the industrial process.	Hazardous	15-20	Returned to the supplier
Spent candles of molten sulphur filters. Generated in the industrial process.	Hazardous	10	To licensed contractors approved by

Description	Waste Category	Quantity (ton/year)	Destination
Spent filters. Generated in the industrial process.	Hazardous	0.5	Egyptian Environmental Affairs Agency (EEAA) and Waste Management Regulatory Authority (WMRA)
Fluorosilicic acid (FSA). Generated in the industrial process.	Hazardous	10,000-12,000	
Sludge from wastewater treatment unit. Generated in the industrial process	Hazardous	200	
Empty containers of the used chemicals. Generated in the industrial process.	Hazardous	200	
Spent oils. Generated in the industrial process maintenance	Hazardous	20	Delivered to Petrotrade company
Sulphur cake. Generated in the industrial process. ^a	Non-hazardous	800	Site. It will be crushed and used in DAP Plant as filler.
Packaging waste (plastic bags)	Non-hazardous	10	To licensed contractors approved by EEAA and WMRA
Spent filters from demineralization unit	Non-hazardous	5	Returned to the supplier

Note: as long as its physical-chemical characteristics do not present hazardous properties.

7.5.1.3 RESPONSIBILITY

Indorama, as Project owner, shall assume responsibility for ensuring the waste management systems are implemented and aligned with the requirements under Egyptian 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. During operation, waste management is the responsibility of Indorama.

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.
- Waste disposal will be, either: returned to the supplier, give it to licensed contractors approved by Egyptian Environmental Affairs Agency (EEAA) and Waste Management Regulatory Authority (WMRA) or delivered to Petrotrade company

7.5.1.5 MANAGEMENT MEASURES

The management measures included in the Table 7.16 will be implemented to reduce waste related impacts from the Project during **construction and operation**.

TABLE 7.16 WASTE MANAGEMENT.

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 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 Throughout operation	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 Throughout operation	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 Throughout operation	Appropriately labelled waste containers

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
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 Throughout operation	Provision of adequate waste containers
6.		Only one class or type of waste will be stored in each container.	Throughout construction Throughout operation	Waste separation
7.		All waste containers will be closed with a lid and kept at designated area.	Throughout construction Throughout operation	Enclosed waste containers in accessed controlled area
8.	Mixing of Wastes	Solid and liquid wastes will not be mixed.	Throughout construction Throughout operation	Segregation of solid and liquid wastes
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 Throughout operation	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

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
			Throughout operation	
11.	Wastewater (including sewage)	■ All wastewater (including sewage) will be treated offsite, by a licensed waste management contractors.	Throughout construction	Waste records and traceability
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
Waste Transport				
13.	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 Throughout operation	■ Designated waste transport vehicles
14.	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 Throughout operation	
15.		■ All transport vehicles will be equipped with suitable materials or equipment to contain, manage, and remove accidental spillages.	Throughout construction Throughout operation	
16.		■ Vehicles carrying hazardous wastes shall be labelled appropriately.	Throughout construction Throughout operation	■ Labelling of waste trucks

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
17.	Waste Loading and Unloading	■ Loading and unloading as per waste management procedure to avoid waste loss will be followed.	Throughout construction Throughout operation	■ Training records, site inspection
18.	Training	■ Employees associated with transport of waste will be trained in the correct procedure to address accidents and emergencies.	Throughout construction Throughout operation	■ Training records
Waste Storage and Segregation for Non-hazardous Waste				
19.	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 Throughout operation	■ Waste segregation
20.	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 Throughout operation	■ Waste segregation
21.	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 Throughout operation	■ Operating procedure and waste management records
Waste Storage and Segregation for Hazardous Waste				
22.	Waste Storage Areas	■ Temporary hazardous waste storage facilities at the main waste handling facility will be appropriately designed to prevent any	Prior to construction Throughout operation	■ Provision of adequate hazardous waste storage facilities

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		contamination of the physical, biological, and social environments.		
23.		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 Throughout operation	
24.	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 Throughout operation	Record of up-to-date tracking documents
Disposal / Treatment / Recycling / Reclamation				
25.	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 Project are suitable and in line with the Egypt National policy on Waste Management 2020 and IFC EHS General Guideline for Waste management (1.6). Waste contractors will need to keep detailed records	Prior to construction Prior to operation	Audit records

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		on how waste from the Project has been disposed, or a facility as approved by respective authority.		
26.	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 Project	Audit records

7.5.2 SPILL PREVENTION, CONTROL AND CONTAINMENT MANAGEMENT PLAN

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 and operation activities.
- Categorise potential spill hazards.
- Plan for rapid and efficient response to manage hazardous material spills during construction and operation.
- Identify and document management measures to prevent, control and mitigate spill events during construction and operation.

7.5.2.2 PROJECT ACTIVITIES RESULTING IN SPILLAGE IMPACTS

During the construction phase of the proposed Project, dangerous or hazardous chemicals may accidentally be released into the environment in the form of small spills or a major unplanned event (e.g., oil tanker or cement truck accident). Spillage may occur because 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.

With regard to operations, there are potential impacts associated with this aspect, such as:

- potential spill/leaks of liquid materials (acids, alkalis and aqueous solutions) can occur.
- The sludge separated from wastewater treatment is considered another source of impacts on the soil.

7.5.2.3 RESPONSIBILITY

Indorama, 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. During operation, spill prevention and management controls will be implemented on the production plant by Indorama.

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 7.17 will be for spill prevention, control, and containment management during the **construction and operation phase**.

TABLE 7.17 SPILL PREVENTION, CONTROL AND CONTAINMENT MANAGEMENT.

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 Throughout operation	■ Training records
2.		■ Train personnel with responsibility for hazardous substances. No untrained staff shall be allowed to handle hazardous substances.	Throughout construction Throughout operation	■ 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 Throughout operation	■ Suitably designed areas for loading and offloading

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
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 Throughout operation	Inventory, SDS, training records and suitable PPE
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 Throughout operation	Records of all deliveries
9.		- Drivers should be aware of the goods and materials they are transporting and are expected to know what is being carried in their vehicles. - Drivers will be trained in spill and emergency response and will have a means of communicating with the site, their administrative	Throughout construction Throughout operation	Provision of training records for drivers

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
		offices and emergency personnel for the entire transportation route.		
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 Throughout operation	Suitable segregation of goods, SDS
11.		Fuel, lubricants / oils, chemicals, hazardous waste and hazardous material stores and handling areas will be provided with secondary containment capable of holding 110% of the largest stored container. The containment will be checked daily, and debris removed.	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 process equipment for fuel, lubricants / oils, chemicals, hazardous waste, and hazardous materials.	Throughout construction	Evidence of maintenance records/inspection reports
14.		Hazardous and dangerous material storage areas will be equipped with emergency spill response and fire prevention equipment.	Throughout construction Throughout operation	Well maintained spill response kits in place at all

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
				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 Throughout operation	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 procedures will be tested regularly to ensure rapid response to, containment of, and neutralisation of any spillages.	Start of construction Start of operation	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 Throughout operation	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 Throughout operation	Inspection reports showing well maintained spill response kits in place

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
19.		Designated and qualified staff designated for responsibility to respond to emergencies.	Throughout construction Throughout operation	Training records
20.		A maintained emergency contact list will be placed at all spill response kit locations.	Throughout construction Throughout operation	Emergency contact list at spill response kit locations
21.		Development, implementation and regular training and testing of a Project wide Spill Response Plan will be implemented.	Throughout construction Throughout operation	Training records

7.5.3 HAZARODUS MATERIAL MANAGEMENT (DURING CONSTRUCITON)

This plan provides a comprehensive framework for managing hazardous materials during construction of the Project. This plan integrates international standards, regulatory compliance, and practical mitigation strategies to ensure the safety of workers, the community, and the environment. Detailed risk assessments and SOPs (Standard operating procedures) will be finalized in coordination with the EPC contractor during the engineering phase.

An executive summary of the plan can be found in the Annex C in ANNEX – Executive summaries. The complete version of the document can be found in the Annex C in ANNEX – Additional studies.

7.6 HEALTH AND SAFETY MANAGEMENT PLANS

In general, the Health and Safety Management Plans (HSMP) include Plans that will address H&S related impacts during construction and operation, impose H&S requirements on contractors and subcontractors and minimize incidents and impacts on employees, community and environment.

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 HSMP.

In addition, a Hazard Identification (HAZID) process safety assessment and mitigation measures to inform the Project design has been conducted for the Project (see Annex D in ANNEX - Additional studies). An executive summary can be found in Annex D in ANNEX – Executive summaries.

The Emergency Response Plan and Firefighting Plan are described below:

7.6.1 EMERGENCY RESPONSE PLAN

7.6.1.1 OBJECTIVES

To manage the potential emergencies and occupational hazards of the proposed Project during the construction and operations phases. The plan aims to respond and mitigate any incident and minimize its impact on employees, community and environment.

ERP will cover all incidents such as, but not limited to:

- Work Place accidents;
- Traffic accidents;
- Natural risks (heat stress, hot dust-laden wind, floods, etc)
- Hazardous materials spills and containment; and

- Community and/or Employee uprisings or strikes etc.

7.6.1.2 PROJECT ACTIVITIES RESULTING IN EMERGENCIES

With regard to the construction phase, there are potential emergency situations associated with activities, machinery and heavy vehicles transport.

With regard to operations, there are potential emergency situations associated with the ammonia tanks, chemical storage and handle, equipment, process emissions, etc.

7.6.1.3 RESPONSIBILITY

Indorama, as Project owner, shall assume responsibility for ensuring the emergency management system throughout the life of the Project. During construction, Indorama will ensure that the contractors have developed preparedness programs to respond to and mitigate any emergency situation to minimize the impact on employees, community, and environment according to national laws and the international EHS guidelines.

During operation, Indorama will provide a qualified emergency team for emergency response and firefighting, e.g.: nominating qualified emergency response team (ERT).

7.6.1.4 PERFORMANCE CRITERIA

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

- Preparedness: the activities that are communicated for rescuing and minimizing damage.
- Response: the actions necessary to minimize loss of life and property damage and provide emergency assistance.
- Recovery: short- and long-term activities which restore the construction activities and help return it to normal state.
- Mitigation: the activities which eliminate or reduce the probability of disaster.

7.6.1.5 MANAGEMENT MEASURES

The management measures included in Table 7.18 will be implemented to reduce incidents related impacts from the Project during **construction and operation**.

TABLE 7.18 EMERGENCY RESPONSE MANAGEMENT

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Potential emergencies and occupational hazards	- Develop an Emergency Response Plan (ERP) - Nominate qualified emergency response team (ERT)	Start of construction and operation phases	- Documentation. - ERT contacts posted
2	Safety devices (such as water showers and eye wash)	Provide and maintain safety devices.	Start of construction and operation phases	They exist and are in good functioning conditions.
3	Training	Give training to all personnel in safety procedures, for emergency preparedness and response.	Start of construction and operation phases When new staff is hired Refreshment training annually during operation	Training records.
4	Inspection and maintenance	To ensure that safety equipment and leaks detection system is efficiently functioning.	Periodically, throughout the operation phase e.g. quarterly	Inspections and maintenance records.
5	Evacuation drills	Implementation and updating of drills according to the Emergency Response plan ERP project wide.	Throughout construction on a semiannual basis Throughout operation on an annual basis	- Documentation of evacuation procedures - Evacuation drills reports

7.6.2 FIREFIGHTING PLAN

7.6.2.1 OBJECTIVES

To manage the fire events of the proposed Project during the construction and operations phases. The plan aims to respond and mitigate fire events and minimize their impact on employees, community and environment.

The Plan will be developed prior to the project operation and will be approved by the Civil Defense of Egypt.

7.6.2.2 PROJECT ACTIVITIES RESULTING IN FIRE

With regard to the construction phase, there are high risk activities that are potential fire risk e.g. hot work activities, open flame activities, and even smoking near fuel areas or combustible materials.

With regard to operations, there are potential emergency situations associated with the ammonia tanks, chemical storage, equipment, etc.

7.6.2.3 RESPONSIBILITY

Indorama, as Project owner, shall assume responsibility for ensuring the firefighting management throughout life of the Project. During construction, Indorama will ensure that the contractors have developed preparedness programs to respond to and mitigate a fire situation to minimize the impact on employees, community, and environment according to national laws and the international EHS guidelines.

During operation, Indorama will provide a qualified emergency team for emergency response and firefighting, e.g. nominating fire protection officer.

7.6.2.4 PERFORMANCE CRITERIA

Health, safety and environmental (HSE) audits, the firefighting drills and simulated emergency management rehearsals will be carried out regularly in a planned manner and drills record shall be documented.

7.6.2.5 MANAGEMENT MEASURES

The management measures included in Table 7.19 will be implemented to reduce fire related impacts from the Project during **construction and operation**.

TABLE 7.19 FIREFIGHTING MANAGEMENT.

Ref No.	Aspect Activity	Management Measure	Timing and Frequency	Target / Performance Indicator
1	Potential fires	- Develop a Fire prevention and protection systems - Nominate a fire protection officer (FPO)	Start of construction and operation phases	- Fire detection system - Sprinkler systems - Documentation. - FPO contacts posted
2	Firefighting devices (such as sprinkler system, fire extinguishers)	Provide and maintain firefighting devices.	Start of construction and operation phases	- They exist and are in good functioning conditions. - Inspection records
3	Training	Give training to all personnel in safety procedures, for emergency preparedness and response, specifically in firefighting.	Start of construction and operation phases When new staff is hired Refreshment training annually during operation	Training records.
4	Inspection and maintenance	To ensure that firefighting system is efficiently functioning.	Throughout operation e.g. visual inspection monthly and certified professional inspection annually.	Inspections and maintenance records.
5	Evacuation drills	Implementation and updating of drills according to the Emergency Response plan ERP project wide.	Throughout construction on a semiannual basis Throughout operation on a semiannual basis	- Documentation of evacuation procedures - Evacuation drills reports

8. ENVIRONMENTAL AND SOCIAL MONITORING

8.1 INTRODUCTION

The purpose of the environmental and social monitoring program is to ensure that management measures, identified and described in Section 7 are implemented and are effective at achieving an acceptable level of compliance with the ESMF.

Monitoring results will inform the decision-making process, triggering corrective actions to maintain compliance with environmental laws and regulations, ensure environmental protection and workplace safety, and ensure the effective operation of mitigation measures and management plans.

The monitoring will be implemented across both land plots designated for the project, ensuring consistent application of environmental and social safeguards throughout the entire project area.

Both construction and operational activities will be monitored by Indorama on site, with regular audits against the requirements of this ESMF. The ultimate target is to achieve 100% compliance with the ESMF.

The results from the monitoring will be reviewed by Indorama. **Annual reporting** should be undertaken to review performance over the previous year and to set targets and objectives for subsequent years.

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).

Contractor work sites must be monitored during construction, under the guidance of key Indorama environmental and social (E&S) resource persons who will be responsible for reporting the monitoring of the E&S issues. Indorama 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 ESMF and construction contract for the Project.

The Local EIA is to be submitted to the competent administrative authority (CAA) for submission to the Egyptian Environmental Affairs Agency (EEAA) for review and opinion within 30 days of official receipt. In this case, Suez Canal Economic Zone (SCZone) is the CAA for the proposed project. The board of the SCZone is the competent authority to issue all licenses required for establishing and running all kind of business and activities inside the SCZone. Therefore, the role of EEAA 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.

Key aspects to monitor during the **construction** phase include:

- Air Quality;
- Noise emissions;

- Social aspects;
- Waste management;
- Spill prevention, control and containment;
- Hazardous materials management;
- Health and Safety.

Finally, in accordance with PS/PR 8, Prior construction, Indorama needs to develop and implement a Chance-Find Procedure (CFP) during the construction phase of the Project.

TABLE 8.1 CONSTRUCTION MONITORING

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
PHYSICAL ENVIRONMENT MONITORING			
Air Quality Monitoring			
1.	- Undertake regular on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust and record inspection results. - Air quality measurements will be taken using a combination of active (using powered equipment to continuously draw air through sensors or filters, providing real-time or high-frequency data) or passive (using diffusion tubes for ambient pollutants) sampling methods at strategic locations around the site. At minimum, monitoring locations will be installed upwind and downwind of the Site aligned with the predominant wind direction for the local area. - 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. - Take radon gas baseline measures during construction.	Monthly throughout construction, for construction dust Continuously (if active monitoring is selected) or Monthly (if passive monitoring is selected) Radon gas measures timing and frequency will be defined in a later stage of the Project.	- Recommendations and corrective actions taken when dust generation or combustion sources are noted. - Complaints arising from air quality emissions managed through the grievance procedure.
Noise emissions Monitoring			
2.	Undertake regular on-site and off-site inspections, where receptors (including roads) are nearby, to monitor noise emissions.	Monthly Throughout construction.	Compliance with local and international (IFC/EBRD) criteria.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
	Noise measurements will be taken at the boundaries of the Project or at the nearest sensitive receptors: labour accommodation within Orascom Industrial Park (approx. 1.6 km northeast of the production site), residents of the local community (approx. 2.5 km southeast of the production site)..		
Groundwater monitoring			
3.	- A soil and groundwater baseline study will be conducted to confirm the quality of soil and groundwater (at least at the phosphogypsum area). - Groundwater measurements will be taken at the phosphogypsum area.	Before and during, at least annually, construction phase	Compliance with soil and groundwater quality parameters established in local and international regulations.
SOCIAL MONITORING			
Socio-economic monitoring			
4.	Undertake regular on-site inspections, to monitor employment data, socioeconomic aspects	Monthly throughout construction	Records of training and recruitment processes that reflect host communities.
5.	Conduct monitoring, evaluation, and disclosure of local business development activities.	Monthly throughout construction	Records of disclosure and outcomes of the Stakeholder Engagement Plan.
Employment and procurement monitoring			
6.	Monitor the commitments in relation to the Local recruitment procedure.	Quarterly throughout construction	Targets established in the Local recruitment procedure are met (e.g.: percentage of the skilled, semi-skilled and unskilled workforce hired from within the relevant affected Location and Egypt).

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
7.	Monitoring and audit of implementation of employment contracts	Quarterly throughout construction	Management measures included in the Employment and procurement Plan are met.
8.	Regarding subcontractors and supplier management, the Project needs to ensure that third party providers and suppliers are complying to standards set out by Indorama, and 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. Therefore, regular checks / audits by the Project will be undertaken to ensure the relevant labour laws are adhered to at all times.	Annual throughout construction (depending on size of the contract)	Audit reports of all subcontractors and suppliers
9.	Monitor implementation and compliance to demonstrate workers have been provided with assistance to find alternative incomes following construction such that their livelihoods are improved (in relation with retrenchment).	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 contract.
10.	Monitor that workers' rights are being respected in line with the requirements of Egyptian Law and IFC PS2 related to: working conditions, discrimination, equal remuneration, freedom of association, forced labour, child labour, grievance mechanism and worker accommodation.	Quarterly throughout construction	Targets (percentages, average number hours/days worked, etc) included in the Employment and Procurement Management plan are met.

Community Health and Safety

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
11.	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, vector borne diseases in total and by disease, STIs in total and by disease, etc. ■ Percentage of workers that have received pre-employment health screening.
12.	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.
13.	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.
14.	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.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
15.	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.
Traffic monitoring			
16.	- Undertake regular on-site and off-site inspections, where receptors (including roads) are nearby, to monitor traffic and road infrastructure status. - Measurements will be taken in the project routes from the construction areas to the Sokhna port).	Throughout construction	- Recommendations and corrective actions taken when needed, according to the Traffic Management Plan. - Complaints arising from traffic managed through the grievance procedure.
GENERAL MANAGEMENT			
Waste Monitoring			
17.	Waste contractors will be audited to ensure that facilities and waste disposal/treatment/recycling / reclamation processes are suitable and in line with national Egyptian 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.
18.	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 a <i>regular</i> basis	Well-maintained and clean active work areas that are free of litter and other wastes.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
19.	■ Regular Inspections of waste disposal areas at active work areas and waste storage facilities will be undertaken to ensure compliance with the Waste Management Plan, Environmental Licence conditions and relevant legislation.	Visual inspections on a <i>regular</i> basis	
20.	■ A complaints register will be maintained detailing complaints about waste management.	Throughout construction	■ Up to date complaints register.
21.	■ 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			
22.	■ Periodic 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.
23.	■ Periodic reporting to identify any upcoming required preventative maintenance required, as well as what preventative maintenance was performed the previous period.	Quarterly throughout construction	■ Well implemented preventative maintenance programme.
24.	■ Spill response drill to provide information regarding required revisions to training or the ESMMP.	Throughout construction on a semiannual basis	■ Documentation of spill response procedures ■ Spill response drills reports

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
25.	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.
26.	See Hazardous Material management (during construction). An executive summary of the plan can be found in the Annex C in ANNEX – Executive summaries. The complete version of the document can be found in the Annex C in ANNEX – Additional studies.		
HEALTH AND SAFETY			
Emergency monitoring			
27.	Emergency response drill to provide information regarding required revisions to training or the ESMMP.	Throughout construction on a semiannual basis	- Documentation of evacuation procedures - Evacuation drills reports
Firefighting monitoring			
28.	Firefighting drill to provide information regarding required revisions to training or the ESMMP.	Throughout construction on a semiannual basis	- Documentation of evacuation procedures - Evacuation drills reports

8.3 OPERATIONAL MONITORING

Environmental monitoring is a dynamic process. Consequently, regular updates and modifications, as needed, shall be carried out based on the results of the first monitoring round.

In accordance with the requirements of Annex 3 of the Executive Regulations of Law 4/1994 and its amendments, during the operation phase, an **Environmental Register** will be developed for the project activities and the compliance status. The Environmental Register, will be updated periodically. Indorama will make registries available for inspection by competent authorities.

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

Key aspects to monitor during the **operation** phase include:

- Air Quality (including radon emissions);
- Noise emissions;
- Soil and groundwater monitoring;
- Social Monitoring;
- Waste management;
- Spill prevention, control and containment;
- Health and Safety.

Table 8.2 presents the monitoring specifics / requirements that will be monitored during the operation.

TABLE 8.2 OPERATION MONITORING

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
PHYSICAL ENVIRONEMEN MONITORING			
Air Quality Monitoring			
1.	- There are four main point sources of air emissions during operation of the project: wet scrubber and rock grinding (Phosphoric acid production plant), main stack (SO₂) and wet scrubber (DAP plant). Stack emission measurements will be taken continuously in each point source abovementioned. Measurements will mainly include SO₂, NH₃, HF and TSP. - Air emissions from the phosphogypsum storage are expected. Measurements will be taken using active monitoring or passive methods such as diffusion tubes or disamenity dust sampling. - Radon gas emissions from the phosphogypsum storage are expected. OSHA Standard Method (Reference ID-208) will be used for monitoring Rn-222. An Electret-Passive Environmental Radon Monitor (E-PERM) is used to collect and measure the ionized particles produced by Radon gas.	Throughout operation. Continuously (point sources) and monthly (phosphogypsum storage). Rn-222 will be monitored once annually over consecutive 7-day period. This frequency will be more verified and adjusted, as needed, based on the baseline and subsequent monitoring to be conducted before the project	Compliance with local and international (IFC/EBRD/EU BAT) criteria. Compliance with OSHA2 Permissible Exposure Limit (PEL) for Radon: PEL is 100 pCi/L (picocuries per liter).
Noise emissions Monitoring			
2.	Noise measurements will be taken at the boundaries of the Project or at the nearest sensitive receptors: labour accommodation within Orascom Industrial Park (approx. 1.6 km northeast of the production site), residents of the local community (approx. 2.5 km southeast of the production site).	Throughout operation. Once annually.	Compliance with local and international (IFC/EBRD) criteria.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
Soil and groundwater monitoring			
3.	Measurements will be taken in the phosphogypsum area, for groundwater levels and groundwater and soil quality parameters. The following parameters will be monitored for the groundwater and soil samples: Ca, PO ₄ , SO ₄ and total heavy metals.	Before operation. The monitoring frequency will be defined after the additional field investigations. Before and after major changes may have an impact.	Compliance with soil and groundwater parameters criteria
SOCIAL MONITORING			
Socio-economic monitoring			
4.	■ The Stakeholder Engagement Plan will be updated for the operation phase. Regular, open and transparent communication with all stakeholders will be ensured (e.g.: to provide clear information on the number and time framework of employment opportunities). ■ A grievance mechanism will be implemented for the Project's workers including subcontractor workforce (accessible to all workers, whether permanent or temporary, directly or indirectly employed including contractor workers).	Before the operation phase.	■ Records of outcomes of the Stakeholder Engagement Plan. ■ 100 % of workers (direct employees and subcontractors) trained on the worker grievance mechanism.
Employment and procurement monitoring			
5.	■ The Socio-Economic Plan will be updated, regarding the recruitment and employment prior to operations specifying the exact needs for operations.	Before the operation phase.	■ Targets established in the Local recruitment procedure are met (e.g.: percentage of the skilled, semi-skilled and unskilled workforce

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
			hired from within the relevant affected Location and Egypt).
6.	Regarding subcontractors and supplier management, the Project needs to ensure that third party providers and suppliers are complying to standards set out by Indorama, and 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. Therefore, regular checks / audits by the Project will be undertaken to ensure the relevant labour laws are adhered to at all times.	Annual throughout operation (depending on size of the contract)	Audit reports of all subcontractors and suppliers
7.	Monitor that workers' rights are being respected in line with the requirements of Egyptian Law and IFC PS2 related to: working conditions, discrimination, equal remuneration, freedom of association, forced labour, child labour, grievance mechanism and worker accommodation.	Annual throughout operation	Targets (percentages, average number hours/days worked, etc) included in the Employment and Procurement Management plan are met.
Community Health and Safety			
8.	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 operation Data should be reviewed quarterly	- Number of cases of communicable diseases in total and by disease, vector borne diseases in total and by disease, STIs in total and by disease, etc. - Percentage of workers that have received pre-employment health screening.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
9.	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.	Annually Throughout operation	- Records of training topics delivered. - Records of attendees by grade and location with aim of 100% of workers receiving training.
Traffic management			
10.	- Undertake regular on-site and off-site inspections, where receptors (including roads) are nearby, to monitor traffic and road infrastructure status. - Measurements will be taken in the project routes from the production site to the Sokhna port and the Adabiya port).	Throughout operation	- Recommendations and corrective actions taken when needed. - Complaints arising from traffic managed through the grievance procedure.
GENERAL MANAGEMENT			
Waste Monitoring			
11.	Waste contractors will be audited to ensure that facilities and waste disposal/treatment/recycling / reclamation processes are suitable and in line with national Egyptian and international good practice standards.	At the start of operation	Waste contractor facilities and process fully licensed and performance is in line with local and international requirements.
12.	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 <i>regular</i> basis	Well-maintained and clean active work areas that are free of litter and other wastes.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
13.	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 <i>regular</i> basis	
14.	A complaints register will be maintained detailing complaints about waste management.	Throughout operation	Up to date complaints register.
15.	- A record will be maintained of all impacts to health that are potentially attributable to waste management. - Non-hazardous solid wastes will be recorded in the Environmental register and Industrial waste register of the facility.	Throughout operation	Up to date record.
16.	Wastewater. Domestic wastewater will be deraigned to the public sewer network of SC Zone and the rate of effluent will be recorded from the invoices to follow up.	Throughout operation	Up to date record.
17.	Wastewater. Effluent Industrial wastewater will be treated in the installed Industrial Waste Water Treatment Unit, then treated water will be recovered for process requirement and the overall process is a Zero Liquid Discharge (ZLD). Inlet and effluent wastewater analysis will be only carried out by the in-site laboratory to ensure the quality of water to	Throughout operation	Quality of inlet and effluent wastewater analysis in line with operation activities requirements.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
	be recovered at cooling towers and others operation activities.		
Spill Monitoring			
18.	■ Periodic inspections where any missing response equipment, personal protection equipment, or documentation will be replaced or improved as necessary.	Weekly throughout operation	■ No missing response equipment, personal protection equipment or documentation.
19.	■ Periodic reporting to identify any upcoming required preventative maintenance required, as well as what preventative maintenance was performed the previous period.	Quarterly throughout operation	■ Well implemented preventative maintenance programme.
20.	■ Spill response drill to provide information regarding required revisions to training or the ESMMP.	Throughout operation on a semiannual basis	■ Documentation of spill response procedures ■ Spill response drills reports
21.	■ All spills and associated control and containment measures taken will be recorded and the effectiveness of response will be audited.	Throughout operation	■ Spill log maintained and up to date with corrective actions closed out.
HEALTH AND SAFETY			
Emergency monitoring			
22.	Training (including first aid, evacuation procedures, specific environmental risks) sessions for emergency and firefighting events.	Throughout operation. Periodically.	■ Training records.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
23.	An emergency response drill to provide information regarding required revisions to training or the ESMMP.	Throughout operation on an annual basis.	■ Documentation of evacuation procedures ■ Evacuation drills reports
24.	Workplace heat stress will be monitored at the following locations: • Sulphur melting • Oxidation furnace • SO₂/SO₃ Converter • Turbine of the captive power plant • Heat Recovery Boiler	Throughout operation. When extreme conditions.	■ Compliance with aspect-specific standards.
25.	Workplace emissions will be monitored at the following locations: • Sulphuric acid plant • Phosphoric acid plant • Di-ammonium Phosphate Plant • Phosphate rock storage • Sulphur storage area • Phosphogypsum storage area • Phosphate rock conveyer	Throughout operation. Once annually.	■ Compliance with aspect-specific standards.
26.	Workplace noise will be monitored at the following locations: • Heat Recovery Boiler • Turbines of the captive power plant	Throughout operation. Once annually.	■ Compliance with aspect-specific standards.

Ref No.	Monitoring Measure	Timing and Frequency	Target / Performance Indicator
	• Air compressors • Pumps • Materials loading and unloading systems • Machines areas		
Firefighting monitoring			
27.	Training (including first aid, firefighting and evacuation procedures, electrical isolations and mitigation practices) sessions for fire events).	Throughout operation. Periodically.	■ Training records.
28.	A firefighting drill to provide information regarding required revisions to training or the ESMMP.	Throughout operation on a semiannual basis.	■ Documentation of evacuation procedures ■ Evacuation drills reports



ANNEX 1: INDORAMA CORPORATION GROUP
HANDBOOK. JULY 2022



ANNEX 2: EMPLOYEE HANDBOOK (HR POLICIES & PROCEDURES GUIDE). 2021



ANNEX 3: GENDER BASED VIOLENCE AND HARASSMENT POLICY. 2021



ANNEX 4: GUIDELINES FOR PREVENTION AND ADDRESSING ISSUES OF RETALIATION. 2021



ANNEX 5: PROCEDURAL MANUAL SOCIAL MATERIAL
TOPICS. JULY 2022



ANNEX 6: INDORAMA COMPASS HANDBOOK



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COUNTRIES AND TERRITORIES WORLDWIDE

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China

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Denmark

France

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Hong Kong

India

Indonesia

Ireland

Italy

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Kenya

Malaysia

Mexico

Mozambique

Netherlands

New Zealand

Panama

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Poland

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ANNEXES - UPDATED ESIA SUPPLEMENTARY PACKAGE V2



TABLE OF CONTENTS

Updated Annex Project Description and Alternative Analysis (PD&AA) V2.....	299
Annex 1: Radioactive study of Egyptian Phosphate rocks.....	300
Annex 2: Energy Efficiency Management Policy.....	305
Annex 3: Phosphogypsum Generation study and optimization.....	311
Updated Annex Stakeholder Engagement Plan (SEP) V2.....	318
Annex A: Grievance log.....	319
Annex B: Grievance register.....	321
Annex C: Letter of submission of the project description to the SCZone.....	323
Updated Annex Environmental and Social Management Framework (ESMF) V2...	326
Annex 1: Indorama Corporation Group Handbook. February 2025.....	327
Annex 2: Employee Handbook (HR policies & Procedures guide). 2021	356
Annex 3: Gender Based Violence and Harassment policy. 2021	424
Annex 4: Guidelines for prevention and addressing issues of retaliation. 2021	432
Annex 5: Procedural manual social material topics. July 2022	444
Annex 6: Indorama Compass Handbook. 2022.....	477



ANNEX PROJECT DESCRIPTION AND ALTERNATIVE
ANALYSIS (PD&AA) V2

ANNEX 1 RADIOACTIVITY ASSESSMENT OF PHOSPHATE ROCK FROM THE MISR PHOSPHATE COMPANY



Misr Phosphate Company

Assessment of Natural Radioactivity in Phosphate Rocks from El-Sebaiya and the Red Sea region, Egypt.

Introduction

Phosphate rocks are widely utilized, primarily as a source of phosphorus for fertilizers, as well as for the production of phosphoric acid and various specialized chemicals. These phosphates are often enriched with uranium, making them a source of technologically enhanced natural radiation (TE-NORM), which may elevate human exposure to natural radio-nuclides. Typically, phosphate ores exist in the form of calcium phosphates, specifically $\text{Ca}_3(\text{PO}_4)_2$ (phosphorites), which are ancient marine deposits linked to fossil remains. This particular form accounts for 85% of global production.

The identification of phosphate rocks in Egypt can be traced to the late 19th century, with their extraction commencing in 1908 to 1911 by foreign companies in areas adjacent to the Nile Valley, the Red Sea coastline, and the Western Desert (Hermina, 1972). Subsequently, Egyptian phosphorites have been the focus of extensive research conducted by numerous investigators.

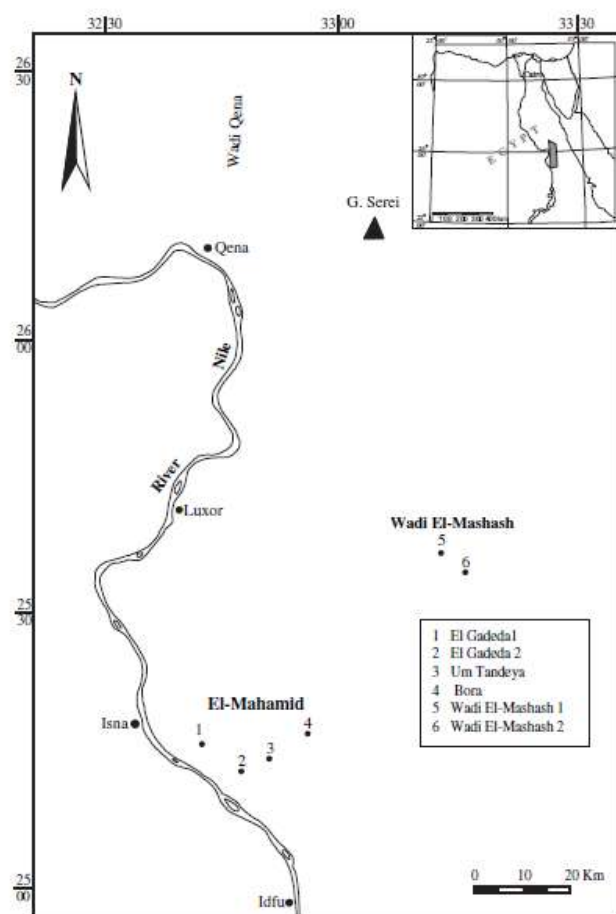
The primary potential environmental radiation problem associated with phosphate rock mining and processing is related to mining debris and processing waste products. While these materials do not present a direct radiation hazard, problems may be created by their use. Occupational exposures mainly occur during mining, processing and transportation of phosphate rock, as well as during transportation and utilization of phosphate fertilizers (UNSCEAR, 1988).



Misr Phosphate Company

Study Areas:

Because of the increasing use of phosphate in industry worldwide, it is interesting to investigate the potential radioactivity exposures of phosphate ores. In this report, natural radioactivity of two areas of Egyptian phosphate ores containing different amounts of P_2O_5 has been investigated from Wadi El-Mashash represent Red Sea Area which is (central Eastern desert) and El-Mahamid mines Represent El-Sebaiya region (Nile valley). ^{226}Ra , ^{232}Th and ^{40}K activity concentrations of phosphate samples were analysed using gamma spectrometry. The potential radiation exposure to the occupational workers and public were estimated. The study areas are located between latitudes $24^{\circ}30'$ to $27^{\circ}00'$ and longitudes $32^{\circ}30'$ to $33^{\circ}30'$



Study Location



Results and Conclusion:

High detection efficiency gamma ray spectrometry was applied to determine activity concentrations and the associated dose rates due to naturally occurring ^{226}Ra , ^{232}Th and ^{40}K radioisotopes in 37 phosphate and shale rocks collected from El-Mahamid, represents the El-Sebaiya and Nile valley phosphorite ore and Wadi El-Mashash, represents the El-Bainy License which dedicated to Indorama Misr project and central eastern desert phosphorite ore in Egypt. The mean activities of the ^{226}Ra , ^{232}Th and ^{40}K in phosphate rocks from El-Mahamid are 566.8 ± 28.6 , 217.3 ± 11.8 and 560.1 ± 28 Bq kg^{-1} , respectively, the corresponding values from Wadi El-Mashash are 665.8 ± 33.4 , 329.4 ± 17 and 587.6 ± 29.4 Bq Kg^{-1} , respectively. The absorbed dose rates due to ^{226}Ra , ^{232}Th and ^{40}K in phosphate rocks from El-Mahamid and Wadi El-Mashash areas varied in the range 52.7 ± 3.3 - 738.4 ± 37 , 321.9 ± 16.2 - 828.5 ± 41.5 nGy/h with average values 410.1 ± 21.2 and 527.8 ± 26.8 nGy/h, respectively. For shale samples the minimum value is 18.3 ± 3.5 in Dakhla shale and the maximum value is 234.7 ± 11.9 nGy/h in Quseir shale with an average value of 111.2 ± 6.8 nGy/h. The calculated external γ -radiation dose received by the workers of the phosphate mines are estimated to be 0.418 and 0.538 mSv/y which is far below the international agreed dose limit of 20 mSv/y (ICRP-60, 1990) for workers.

From the results, it can be concluded that El-Mahamid and Wadi El-Mashash phosphate rocks have low activity levels of exploited phosphate rocks of sedimentary origin resulting in minor radiation dose and environmental impacts through processing. Also, we can conclude that the radiation dose to a member of the public resulting from the use of El-Mahamid and Wadi El-Mashash's phosphate rocks and fertilizers is negligible compared to the average annual effective dose from natural sources (2.4 mSv/y), even under a worst case scenario assuming the complete accumulation of radio-nuclides in soil over many years.



Reference:

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ANNEX 2 ENERGY EFFICIENCY MANAGEMENT POLICY

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 28th Aug.2025

Energy Efficiency Policy for Road Transport of Raw Materials and Products

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 28 th Aug.2025

1. Purpose

This policy establishes requirements and performance expectations to reduce energy use, fuel costs, and greenhouse gas emissions associated with road transport of raw materials and finished products to and from the Project site. The measures herein are designed to improve efficiency while maintaining safety, reliability, and commercial viability.

The following table summarizes the annual transport volumes, routes, distances, and modes of transport for key raw materials and products handled by the Project

Material	Quantity (t/year)	Route	Distance (one-way) in KM	Round Trip in KM	Mode
Rock Phosphate	1,250,000	Red Sea Mines → Plant	~700	1,400	Link Trucks
Elemental Sulphur	350,000	Port → Plant	50	100	Trucks
DAP (Export) India	300,000	Plant → Port	15	30	Trucks
DAP (Export) Brazil	200,000	Plant → Port	200	400	Trucks
Other Raw Material	500,000	Port → Plant	50	100	Trucks
Ammonia	120,000	Port → Plant	13	-	Pipeline
Gypsum	1,980,000	Plant → Yard	1	-	Conveyor

2. Scope

This policy applies to all road transport operations related to:

- **Rock Phosphate** (Red Sea mines → Plant, ~700 km one-way).
- **Elemental Sulphur** (Port → Plant, 50 km).
- **DAP exports** (Plant → Port — India: 15 km; Brazil: 200 km).
- **Other Raw Materials** (Port → Plant, 50 km).

Excluded from this policy are:

- **Ammonia** (transported via pipeline).
- **Gypsum** (transported via conveyor).

3. Baseline Transport Performance

The following data form the baseline for monitoring and improvement:

- **Total transport demand:** 962 million ton-km/year.
- **Baseline diesel consumption:** ~192.4 million litres/year (based on 0.20 L/ton-km).
- **Baseline CO₂ emissions:** ~515,632 t CO₂/year (using 2.68 kg CO₂/L).

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 2 of 5

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 28 th Aug.2025

Key finding: Rock Phosphate haulage dominates transport energy use ($\approx 87\%$ of ton-km, 91% of fuel, 91% of emissions).

4. Calculations (Summary)

Material	Ton-km/year	Fuel (L/year)	CO ₂ Emissions (t/year)
Rock Phosphate	875,000,000	175,000,000	469,000
Elemental Sulphur	17,500,000	3,500,000	9,380
DAP – India	4,500,000	900,000	2,412
DAP – Brazil	40,000,000	8,000,000	21,440
Other Raw Materials	25,000,000	5,000,000	13,400
Total	962,000,000	192,400,000	515,632

Reduction Scenarios:

- **10% reduction:** ~19.2 million L fuel saved (~51,600 t CO₂ avoided).
- **25% reduction:** ~48.1 million L fuel saved (~128,900 t CO₂ avoided).
- **40% reduction:** ~76.9 million L fuel saved (~206,250 t CO₂ avoided).

Comparative analysis Truck Fuel & Carbon Efficiency

Parameter	Normal Truck (~30 t)	Link Truck (~50 t)	Advantage of Link Truck
Payload Capacity (MT)	30	50	67%
Fuel Consumption (L/ton-km)	0.27	0.2	~26% lower
CO ₂ Emission (kg/ton-km) CO ₂ Emission (kg/ton-km)	0.73	0.54	~26% lower
Fuel for 1,250,000 t Rock (700 km one way, 1,400 km round trip) In Million Liters	472.5	350	26%
CO ₂ for Rock Transport (same route) million t CO ₂	1.27	0.94	26%
Trips Required (Nos)	41,700	25,000	40%

- Link trucks consume **26% less fuel per ton-km**.
- Annual savings just for **rock transport** = ~122 million litres diesel & ~330,000 tons CO₂ avoided.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 28th Aug.2025

5. Policy Commitments

5.1 Fleet Standards and Procurement

- Require all contracted truck fleets to progressively comply with Euro V or better standards.
- Mandate use of high-capacity link trucks (≥ 40 t payload) for bulk Rock Phosphate.
- Include fleet age and fuel efficiency criteria in contracts and tenders.

5.2 Operations and Logistics Management

- Centralize transport scheduling to minimize waiting and idling at ports and plant gates.
- Implement **backhaul programs** (e.g., inbound Sulphur $\leftrightarrow$ outbound DAP) to reduce empty returns.
- Deploy **GPS/telematics systems** for route optimisation, speed control, and fuel tracking.

5.3 Driver Training and Behavioural Measures

- Conduct mandatory **eco-driving training** for all drivers.
- Enforce **anti-idling policies** during loading/unloading.
- Introduce **driver incentive schemes** linked to fuel performance.

5.4 Maintenance and Equipment Optimisation

- Enforce **preventive maintenance programs** (engines, filters, tires, wheel alignment).
- Promote use of **low rolling-resistance tires** and aerodynamic retrofits.
- On line pressure monitoring system to monitor air pressure and avoid higher diesel consumption due to under Inflation
- On line Diesel consumption monitoring system.

5.5 Strategic/Alternative Transport Solutions

- Study possible **rail feasibility** (If Viable) for Rock Phosphate transport (Red Sea mines $\rightarrow$ Plant).
- Pilot **low-carbon truck technologies** (LNG, biodiesel blends, electric) for short-haul port $\leftrightarrow$ plant routes.
- Possibility of RO -RO truck transportation through ship (If viable)

6. Monitoring and Reporting

- The **Transport Manager** shall report annually:
 - Ton-km transported.
 - Fuel consumed (litres).
 - CO₂ emissions (tons).
- Annual reports will benchmark results against reduction targets (short, medium, long-term).
- Underperformance will trigger corrective actions.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 4 of 5

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 28th Aug.2025

7. Responsibilities

- **Project Management:** Approve policy, allocate resources.
- **Logistics/Transport Manager:** Implement requirements, manage contracts, compile annual reports.
- **Contractors:** Comply with fleet and operational standards, provide verified fuel data.
- **Environmental & Social Team:** Validate reporting and support feasibility studies.

8. Implementation Timeline

- **Short term (0–2 years):** Telematics rollout, eco-driving training, anti-idling enforcement, contract updates to require Euro V fleet.
- **Medium term (2–5 years):** Scale high-capacity link trucks, backhaul programs, complete rail feasibility study.
- **Long term (>5 years):** Implement rail (if viable), expand alternative fuels/electric fleet for short-haul.

9. Review

This policy will be reviewed annually and updated as required based on performance outcomes, changes in transport demand, regulations, or technological development



ANNEX 3 PHOSPHOGYPSUM GENERATION STUDY AND OPTIMIZATION

Phosphogypsum Generation study and optimization

Contents

Executive Summary	3
Phosphogypsum Generation in Process	3
Original Material Balance	3
Design Improvement Study	4
Conclusion.....	6

Executive Summary

As part of efforts to enhance operational efficiency and optimize resource utilization, Indorama engaged with the technology provider **Prayon** to conduct a study aimed at reducing the specific consumption of rock phosphate. The goal was to achieve higher phosphoric acid production with lower phosphate rock usage and reduced generation of phosphogypsum per ton of phosphoric acid. The improvements identified during this study will be incorporated into the design of the Indorama plant

Phosphogypsum Generation in Process

In Indorama's wet-process phosphoric acid plant, gypsum is produced as a by-product when phosphate rock reacts with sulfuric acid. During this reaction, the calcium content of the rock is converted into calcium sulfate (gypsum), while phosphoric acid is released into solution. At lower operating temperatures, the gypsum predominantly forms as **dihydrate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$)**. The gypsum crystals are separated from phosphoric acid using vacuum filters, washed to recover entrained acid, and then discharged. The amount of gypsum generated largely depends on the chemical composition of the phosphate rock, particularly its CaO content.

Original Material Balance

Prayon developed the process specifically for Egyptian rock phosphate. The initial specific consumption of phosphate rock was approximately **4.454 tons per metric ton (MT) of phosphoric acid produced**.

- The sludge cake loss was around **85 TPD (tons per day)**.
- The overall efficiency of the process was **86%**.
- The phosphogypsum generation was about **6.57 MT per MT of phosphoric acid (PA)**

The following figure depicts the Initial Material Balance

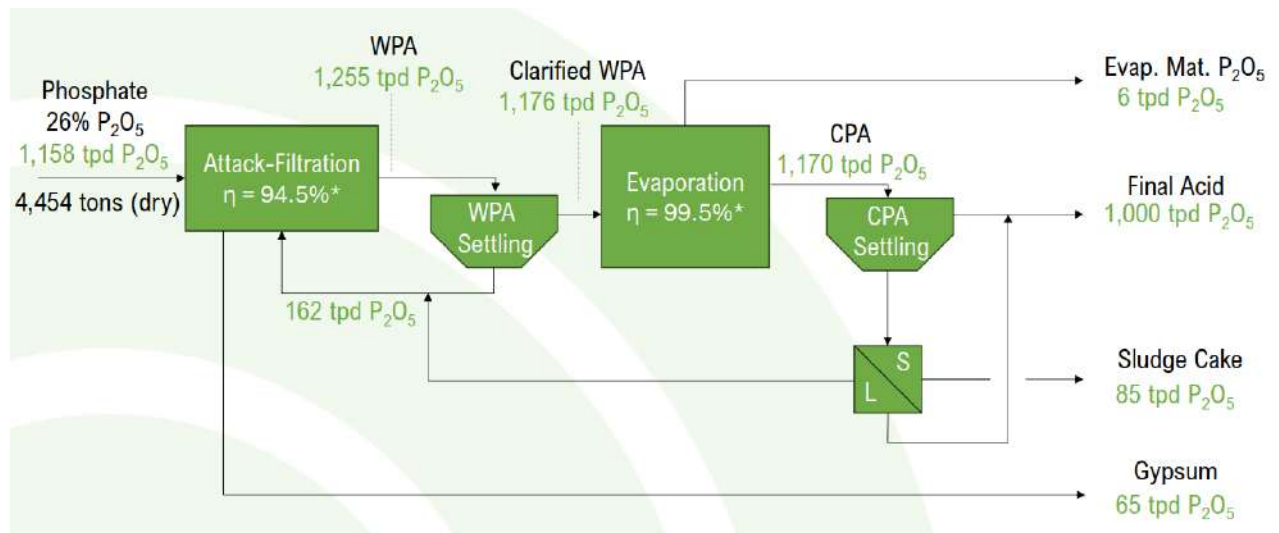


Fig 1 – Initial Proposal

Design Improvement Study

To improve process efficiency, Prayon carried out a detailed study focusing on minimizing phosphoric acid losses, primarily through sludge and gypsum streams (approximately 85 TPD and 65 TPD, respectively). Process parameters were optimized, and the revised material balance is shown in the updated design.

It is evident from the revision that the specific consumption of phosphate rock has been reduced from **4.454 to 4.203 MT/MT of PA**, resulting in an overall process efficiency increase from **86% to 92%**.

With the reduced rock feed, phosphogypsum generation also decreased by approximately **5–6%**.

The design parameter were optimised and the material balance has been revised as in the following figure

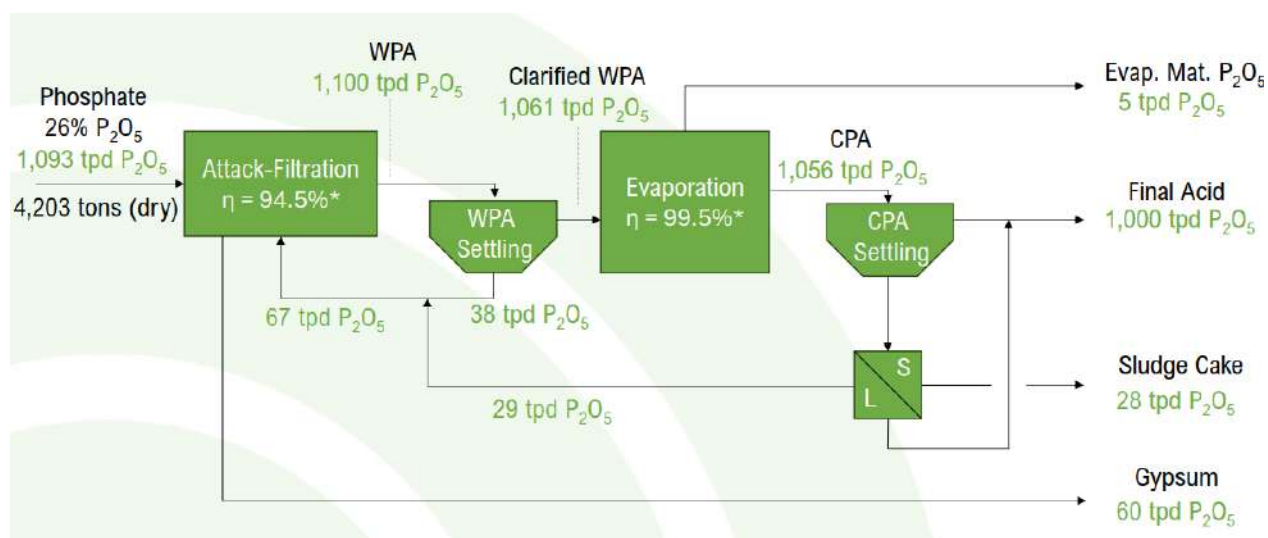


Fig 2 – Revised Optimised Proposal

The summary of the improvement is shown below:

Parameter	UOM	Initial Proposal	After Optimisation
P2O5 in Rock phosphate	%	26%	26%
Cao in Rock Phosphate	%	48%	48%
Specific Consumption of rock phosphate	MT/MT	4.454	4.203
Efficiency	%	86%	92%
Gypsum Formed	MT /MT of Rock	1.47	1.47
PA Formed /MT of Rock	MT /MT of Rock	0.22	0.24
Gypsum/MT of PA	MT /MT of PA	6.57	6.20
Reduction in Gypsum Generation	MT /MT of PA	(0.37)	
Reduction in Gypsum generation /Day	MT /Day	(370.05)	
% Reduction	%	-6%	

It is expected that a reduction of 6 % of gypsum generation in the process

Conclusion

The study by Prayon has resulted in following improvement

1. Reduced specific consumption of rock phosphate per ton of PA
2. Improved Efficiency of overall process
3. Reduction in Phosphogypsum generation

This study supports the IFC requirement of reduction of the generation of Phosphogypsum in the Indorama Egypt fertiliser project.



ANNEX STAKEHOLDER ENGAGEMENT PLAN (SEP) V2



APPENDIX A GRIEVANCE LOG



ERM

Contact Information		معلومات الاتصال	
Gender (Male/Female)	الجنس (ذكر/أنثى)	Name:	الاسم:
Email:	البريد الإلكتروني:	Address:	العنوان:
Phone:	تليفون:	Area:	المنطقة:
☐ منظمة مجتمعية ☐ المحافظة ☐ المجتمع المحلي ☐ قطاع خاص ☐ الحكومة المصرية ☐ المجلس المحلي ☐ Affiliation: Community Resident ☐ Local Governorate ☐ Community Based Organization ☐ Private Sector ☐ NGO ☐ National Governorate ☐			
في حالة المنظمات أو المجالس المحلية، أسم المنظمة أو المجلس التابع له: _____			
In case of Organizations, organization Name: _____			
Position/ Title in Organization _____ الوظيفة/ الصفة في المجلس أو المنظمة: _____			
Grievance Description		وصف الشكوى	
وصف تفصيلي لمكان وتاريخ وكيفية حدوث الحادثة Detailed Description for time, place and how the accident occurrence:			
Suggested resolution for the proposed Grievance:		اقتراحكم لحل الشكوى المقدمة:	
Name:		الاسم:	
Signature:		التوقيع:	
Date:		التاريخ:	



APPENDIX B

GRIEVANCE REGISTER

[illegible]



APPENDIX C LETTER OF SUBMISSION OF THE PROJECT DESCRIPTION TO THE SCZONE

Date: 09th August 2025

From:

Mukul Agrawal

Executive Director

Indorama Holdings B.V

Cairo Representative Office

Arab Administrative Development Organization Building, 3rd Floor

2 El-Hegaz Street, Heliopolis

Cairo, Egypt - 11361

To:

Captain Ahmed Gamal Motwally

Vice Chairman - South Region

Suez Canal Economic Zone (SC Zone)

Ain Sokhna

Subject: Submission of Project Details -- Indorama Greenfield Fertilizer Plant at Ain Sokhna

Dear Sir

Greetings,

On behalf of Indorama Corporation, we would like to express our sincere gratitude for the warm welcome and valuable discussions during our visit to your office on 06th August 2025. Your guidance provided us with a clear understanding of the development process within the SC Zone.

As discussed, we are planning to establish a Greenfield Fertilizer Project with a production capacity of 600 KTA of DAP/NPK at Ain Sokhna. In line with this, please find attached the *Project Description & Requirements* document for your kind review.

We kindly request you to acknowledge the receipt of this submission and advise us on the next steps to facilitate further progress on the project.

Thank you once again for your support and cooperation.

Warm regards,

Mukul Agrawal

Executive Director

Indorama Holdings B.V - Cairo Representative Office



Date: 09th August 2025

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Mukul Agrawal

Executive Director

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To:

Captain Ahmed Gamal Metwally

Vice Chairman – South Region

Suez Canal Economic Zone (SC Zone)

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Thank you once again for your support and cooperation.

Warm regards,



Mukul Agrawal

Executive Director

Indorama Holdings B.V – Cairo Representative Office



ANNEX ENVIRONMENTAL AND SOCIAL MANAGEMENT
FRAMEWORK (ESMF) V2



ANNEX 1: INDORAMA CORPORATION GROUP
HANDBOOK. FEBRUARY 2025

Indorama Corporation Group Handbook

Version: 4

Effective: 19 February 2025

Table of Contents

INTRODUCTION	3
ABOUT INDORAMA CORPORATION	4
THE INDORAMA COMPASS	5
WHY WORK AT INDORAMA CORPORATION ?	8
CODE OF CONDUCT	9
GUIDING PRINCIPLES	9
SUPERVISION	9
DISCIPLINARY ACTIONS FOR VIOLATIONS	9
HOW TO RAISE A CONCERN	9
HONESTY & INTEGRITY	10
CONFLICT OF INTEREST AND MISUSE OF AUTHORITY	10
CULTURAL SENSITIVITY AND COMMUNITY SERVICE	10
GIFTS AND GRATITUDE	11
CONFIDENTIAL INFORMATION	11
TRADE SECRETS	12
INSIDER TRADING	12
SAFEGUARDING OF ASSETS	12
MEDIA STATEMENTS	13
MUTUAL RESPECT	13
NO DISCRIMINATION	13
HARASSMENT AND INAPPROPRIATE PHYSICAL CONDUCT	13
IMMIGRATION	14
FRATERNIZATION	14
ALCOHOL AND CONTROLLED SUBSTANCE ABUSE	14
SUPPLIERS, TRADING PARTNERS AND BUSINESS PARTNERS	15
ENVIRONMENT, HEALTH AND SAFETY	15
GOVERNMENTAL DEALINGS AND POLITICAL ACTIVITIES	16
INTERNATIONAL TRADE	16
DATA SECURITY	17
PLAGIARISM	17
COMMUNITY AND STAKEHOLDER POLICY	18
ENVIRONMENT AND CLIMATE CHANGE POLICY	19
HEALTH AND SAFETY POLICY	20
HUMAN RIGHTS AND LABOUR POLICY	21
INTELLECTUAL PROPERTY POLICY	22
PRODUCT STEWARDSHIP AND TREATMENT OF CUSTOMERS POLICY	24
RESPONSIBLE BUSINESS POLICY	25
SOCIAL MEDIA POLICY	26
CONFIDENTIAL REPORTING	28

Introduction

We are pleased to welcome you to the Indorama Corporation Group (IRC Group). The IRC Group comprises Indorama Corporation Pte. Ltd., Singapore (Indorama Corporation) and its direct and indirect subsidiaries. As a valued member of the IRC Group, we would like to provide you with important information about the organization and certain key guidelines and policies. Compliance with all policies issued by the IRC Group (including those not referenced in this Handbook) is mandatory.

This Handbook is applicable to all directors, commissioners, officers and employees of the IRC Group. References in this Handbook to “Indorama” or “Our” or “We” mean the entities of the IRC Group.

In the event that any provision contained in this Handbook is in conflict with the local laws, rules or regulations applicable to any Indorama entity, such local laws, rules or regulations shall prevail. If any Indorama entity has adopted stronger practices than contained in this Handbook or prevailing laws, rules or regulations, such stronger practices shall apply.

In this Handbook, you will find the following information:

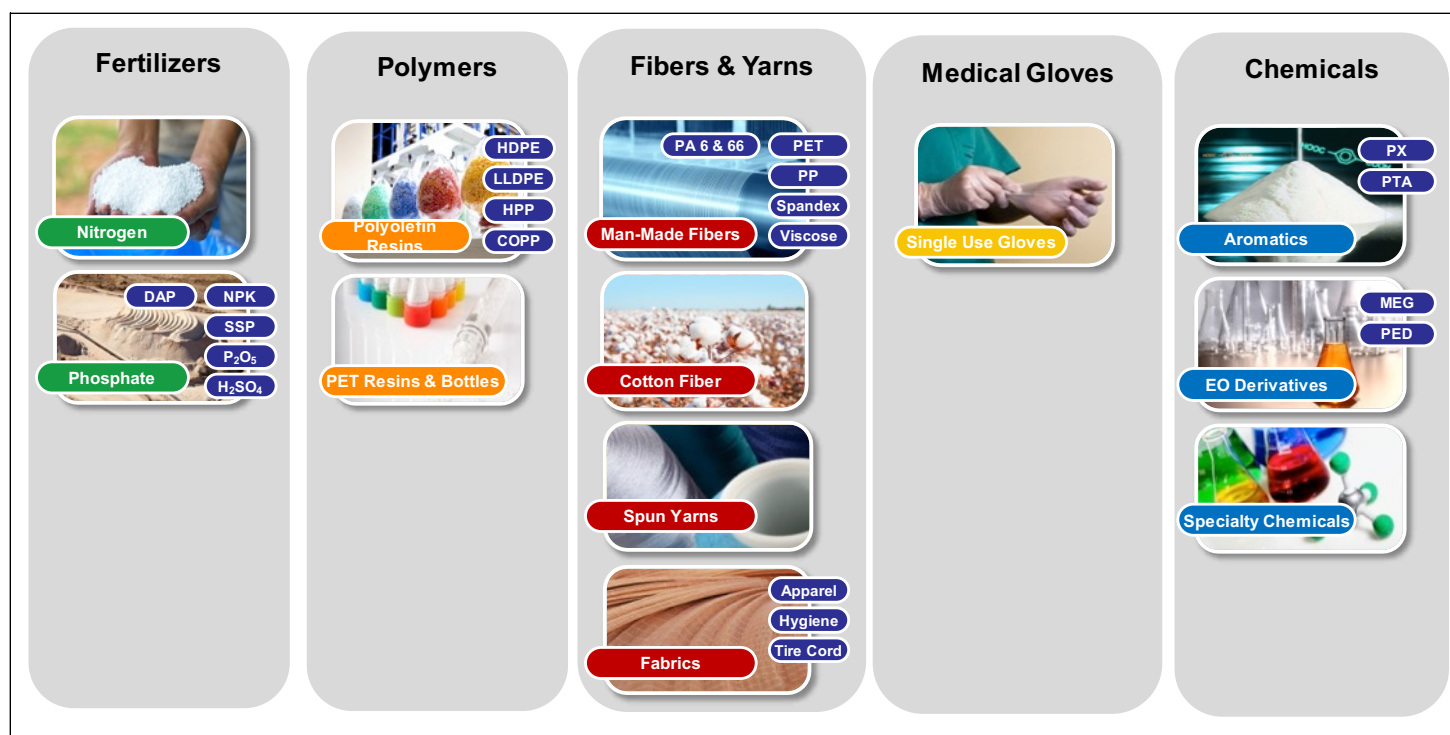
1. A brief history and description of the IRC Group.
2. A glimpse into our principles and values that is called the Indorama Compass.
3. Our Human Resource philosophy.
4. Our Code of Conduct, which outlines specific principles and policies covering key ethical topics which you are required to comply with.
5. Our Community and Stakeholder Policy, which describes our commitment to communities affected by our activities and our stakeholders.
6. Our Environment and Climate Change Policy, which describes our commitment to effective environmental management.
7. Our Health and Safety Policy, which describes our commitment to developing safe and healthy workplaces.
8. Our Human Rights and Labour Policy, which describes our commitment to respecting human and labour rights.
9. Our Intellectual Property Policy, which describes our commitment to the protection of the intellectual property rights of others and also our own.
10. Our Product Stewardship Policy, which describes our commitment to providing the highest standards of product safety and quality to achieve customer delight.
11. Our Responsible Business Policy, which describes our commitment to acting transparently and ethically.
12. Our Social Media Policy, which describes our expectations on the responsible use of social media.
13. Our Confidential Reporting Policy, which encourages the reporting of acts that, among other things, violate the Code of Conduct.

About Indorama Corporation

Indorama Corporation is one of Asia's leading chemical companies. Its origins trace back to 1975 with the start of Indorama Synthetics in Indonesia by its founder, M.L. Lohia, and his son, S.P. Lohia. Indorama Synthetics started as a cotton yarn spinning company. In 1991, the company diversified into the production of polyester fibres from petchem derivatives, and subsequently into the production of PET resins.

Today, Indorama Corporation, which is headquartered in Singapore, manufactures a multitude of products including nitrogen fertilizers, phosphate fertilizers, polyethylene, polypropylene, polyester, textiles, cotton fibre, and medical gloves. We are the largest producer of urea and phosphate fertilizers in Sub-Saharan Africa, the largest producer of polyolefins in West Africa, and the third largest producer of synthetic gloves in the world. We are also an integrated producer of cotton and synthetic spun yarns. We employ over 20,000 people worldwide (www.indorama.com).

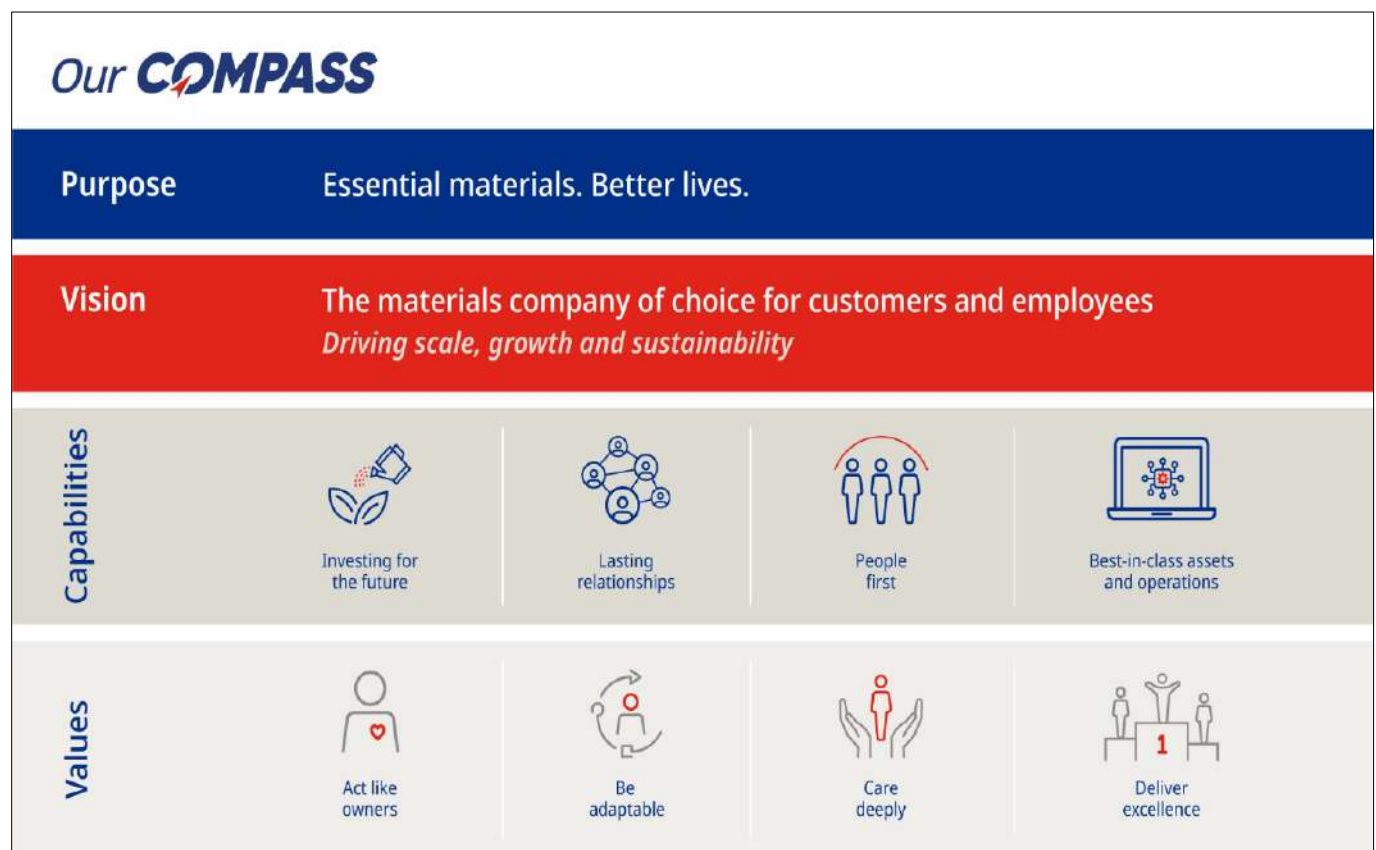
Our associate, Indorama Ventures Public Company Limited (IVL), is the largest producer of PET Resin in the world and also one of the biggest producers of polyester feedstock (www.indoramaventures.com).



The Indorama Compass

The Indorama refreshed Compass consists of four key elements:-

- a) Purpose (Why we exist?)
- b) Vision (Where we want to go?)
- c) Capabilities (How we differentiate ourselves?)
- d) Values (Who we are?)



1

Our Purpose: Why we exist



Essential materials.

We produce materials that are **essential for our world** - fertilizers, medical gloves, textile and packaging materials.



Better lives.

We strive to **improve lives** and develop a better world: for our **customers, employees**, and other stakeholders.

2

Our Vision: Where we want to go

The materials company of choice for customers and employees *Driving scale, growth, and sustainability.*



Materials company of choice

We aim to be one of the most distinctive and competitive materials companies in the world...



Customers and employees

...for our key stakeholders, our customers and employees without whom we wouldn't exist



Driving scale and growth

We invest in creating scale in existing businesses and new growth platforms for future prosperity



Driving sustainability

We aim to operate our business across markets and geographies in a responsible and sustainable manner

3 Our Capabilities: How we differentiate ourselves

Investing for the future



Value creation.

We create value with prudence, patience, and a long-term outlook

Lasting relationships



Committed partners.

We work collaboratively and foster long-term relationships

People first



Inspired employees.

We have a high-performance culture and treat our employees like family

Best-in-class assets & operations



Technology and cost.

We use state-of-the-art technology to achieve cost competitiveness

Growth platforms.

We invest in new ideas today to drive value tomorrow

Across stakeholders.

We serve our customers and strategic partners with respect and excellence

Empowered talent.

We trust and empower individuals so that they contribute their best

Quality and safety.

We maintain the highest standards for quality & safety

4 Our Values: Who we are

Act like owners



passionate, courageous, responsible, and strategic

Be adaptable



to opportunities, challenges, and ideas

Care deeply



for people and our planet with trust, respect, and humility

Deliver excellence



through knowledge, agility, innovation, and execution

Why work at Indorama Corporation?

a) Family:

We are more than a company - we are a family that believes in treating everyone with respect, trust, and compassion. We deeply care about the wellbeing of our employees. And because we care deeply, our employees also feel a strong sense of commitment, loyalty, and belonging to the organization.

b) People First:

We are People First, which simply means, people factor in all our decisions. Rules and policies are important, but we never lose sight of the importance of the human touch.

c) Growth:

Growth is our way of life. And because we are always growing, there are ample opportunities and challenges for professional development and career progression.

d) Excellence:

When you work with Indorama, you are part of a legacy of excellence that spans across generations and borders. We are never content with the status quo. We value curiosity and innovation. Whether it's improving processes, developing products, or implementing new technologies or projects, we are always thinking about how to do things better.

e) Empowerment:

We believe empowerment unlocks peoples' true talents and potential, which is why we empower and delegate more than other organizations.

f) Continuous Learning:

We value continuous learning and are deeply passionate about personal development. We have many digital tools, programs, and initiatives to support that.

g) Culture of collaboration:

Our success comes from collaboration and teamwork. We help and support each other so that everyone can achieve their personal and organizational goals.

Code of Conduct

Article 1 Guiding Principles

- a) This document outlines specific principles and policies covering key ethical issues. It identifies risk areas that employees may encounter in their job and provides guidelines on how employees should conduct themselves. In the event of any doubt, suitable guidance should be taken from superiors and/or the respective HR department.
- b) All employees must demonstrate their commitment to the Code by setting the right example, maintaining a workplace environment that adheres to the Code, and acting affirmatively to prevent violations of the Code.

Article 2 Supervision

Supervision of conduct is as important as supervision of performance. Managers are expected to lead by example and support their team members to be ethical in all dealings and to avoid even the appearance of unethical conduct. Open communication should be encouraged, particularly with regard to questions concerning ethical matters. Self-reporting of ethical violations should be encouraged, and voluntary self-reporting will be considered positively when determining disciplinary action. Also, employees who raise ethical issues should be recognized and appreciated.

Article 3 Disciplinary Actions for Violations

Appropriate disciplinary action, up to and including termination, may be taken against anyone who violates the Code. Self-reporting of ethical violations is encouraged and will be considered positively when determining the appropriate disciplinary action.

Article 4 How to Raise a Concern

Concerns or possible violations of these guidelines (or other Indorama policies) may be reported by any of the following methods:

- a) **Open Door:** The Open Door is the most direct way to voice any concerns to a superior. If you believe your supervisor(s) is involved in misconduct, then the misconduct should be reported to the next level of management or a member of the Board of Directors of your respective Indorama entity. It is

the responsibility of the receiving member to promptly escalate the matter to his/her superiors.

- b) **Confidential Reporting:** Each Indorama entity will have specific guidelines for reporting concerns or possible violations confidentially by email, phone and/or mail to specified third parties appointed for this purpose, the Board of Directors of the respective Indorama entity and/or the Corporate Office.

Article 5

Honesty & Integrity

All employees and business associates are required to act in accordance with the highest standards of personal and professional integrity and honesty. Employees must not take or receive any benefit in cash or kind from any supplier, customer, agent, service provider, business partner, or affiliate. Should an employee be offered cash or other benefits from any third party in connection with the performance or intended performance of their duties, the matter must be immediately reported to their superior. If an employee has received anything in the form of a gift or cash from any third party in connection with the performance or intended performance of their duties, they should immediately hand over the same to their superior. If any employee witnesses another employee receiving any form of corruption or bribery, the matter must be reported promptly. All employees must ensure that they do not, inadvertently or otherwise, “tip-off” or disclose to the concerned employee and/or third party any information which may prejudice future investigations.

Article 6

Conflict of Interest and Misuse of Authority

- a) A conflict of interest exists where the interests or benefits of an employee or business associate conflicts directly or indirectly with the interests or benefits of Indorama. Situations and relationships must be avoided that involve actual or possible conflicts of interest. The appearance of a conflict may be just as damaging as an actual conflict. A conflicting situation arises if an employee takes actions or has interests that are inconsistent with the interests of Indorama, or that may interfere with their ability to perform their job impartially and to the best of their ability on behalf of Indorama.
- b) Employees are responsible for advancing Indorama’s business interests when the opportunity to do so arises. They may not take any opportunity or use any confidential information for their personal gain or benefit, or for the gain or benefit of their friends, family members, or third parties.
- c) Employees may also not use their position in Indorama or any of Indorama’s resources, property or information for their personal gain or benefit, or for the gain or benefit of their friends, family members, or third parties.

Article 7

Cultural Sensitivity and Community Service

- a) We operate in many different countries and amidst diverse cultures. Foreign employees are expected to learn, understand, and respect local customs and culture and not cause offense to local sentiments in any way.
- b) All employees are encouraged to participate in community services. Except with prior approval from management, any community activities must be planned outside of normal working hours.

Article 8

Gifts and Gratitude

- a) Employees may not request, encourage, or accept any gift or gratitude from an existing or potential supplier, service provider, customer, or any other business partner.
- b) Corporate compliments of nominal value that are given on special occasions (such as New Year) or corporate gifts (such as annual diaries, pens, calendars, etc.) which are under the value of US\$100 are exempt.
- c) Any other gift or gratitude received must be returned on the pretext of company policy. If return is impractical, any gift that is not returned should be reported to the employee's supervisor and should be deposited with the HR or commercial department for re-use or for other purposes.
- d) Any offer of a gift or gratitude must be reported to the employee's supervisor.

Article 9

Confidential Information

- a) All employees should be fully aware of and strictly keep Indorama's information and documents confidential and shall not divulge or disclose the same to any unrelated persons. Confidential Information includes but is not limited to trade secrets, know-how, methods or processes, non-public company information, customer information, supplier information, or information about other organizations with whom we have association or do business with. Employees must not share any passwords (email, banking and internal/external systems), tokens or similar credentials with anybody else. We aim to maintain the highest level of confidentiality for information belonging to our customers, channel partners, suppliers and other business partners.
- b) Employees must return all Confidential Information along with any other Indorama property in their possession at the end of their employment.
- c) Confidential Information must not be divulged to anyone outside Indorama without the written approval of the disclosing employee's supervisor. Before any exchange of material information, a "Confidentiality Agreement" must be signed with the other party (available with the Commercial or Finance Department). Disclose Confidential Information only for legitimate business purposes.

Handle all Confidential Information with care to avoid inadvertent or careless disclosure.

Article 10 **Trade Secrets**

- a) Indorama has invested greatly in the development of its systems, processes, products, know-how and technologies. This information is regarded as our trade secrets. All trade secrets must be kept confidential and secure. In addition to protecting our own trade secrets, we must respect the trade secrets of others also.
- b) Any creation or invention that any employee make as an Indorama employee is the rightful property and trade secret of Indorama.

Article 11 **Insider Trading**

- a) It is illegal to buy/sell stock or other securities on the basis of insider information. It is also illegal to communicate (or “tip”) insider information to others so that they may buy/sell stock or other securities. All employees who are aware of material non-public information about Indorama or any other company, including our suppliers, customers, or business partners, are prohibited from trading (directly or indirectly) or tipping others to trade in the stock or other securities of those companies. The same restrictions apply to any person who lives in your home or who is financially dependent on you.
- b) Insider information is any non-public information that a reasonable investor is likely to consider important in making an investment decision. Common examples of insider information include:
 - (i) Earning projections,
 - (ii) News of a significant or pending merger, acquisition, or tender offer,
 - (iii) News of a significant sale or disposition of assets,
 - (iv) Changes in dividend policy, the declaration of a stock split, or the offering of additional securities,
 - (v) Changes in management,
 - (vi) Significant new products or discoveries,
 - (vii) Impending bankruptcy or financial liquidity problems,
 - (viii) Gain or loss of a significant supplier or customer, and
 - (ix) Possible award or cancellation of a significant contract.

Article 12 **Safeguarding of Assets**

- a) Indorama’s property should be used for business purposes only and should not be used for any personal gain or benefit. Employees are responsible for safeguarding Indorama’s property under their care and should take reasonable steps to protect it from theft, misuse, loss, damage or sabotage.

- b) The Indorama letterhead may not be used for personal or non-business purposes.

Article 13 **Media Statements**

Employees may not make any statement (written or verbal) on behalf of or pertaining to Indorama to the media, news publications, trade publications or any other public channel of communication without prior approval from Corporate Office. Also, employees may not respond to any inquiry from outside media concerning Indorama without prior approval from Corporate Office.

Article 14 **Mutual Respect**

- a) All employees must treat each other with dignity and respect. They should be fair and courteous in all of their interactions in the workplace. By demonstrating our commitment to fairness and equal opportunity, we build relationships of mutual respect and trust.
- b) Indorama will not tolerate any form of racism, including vilification or any behavior that encourages others to hate, disrespect, or abuse a person or group of people because of their race, color, culture or religion. This includes verbal, written, online communications, or physical behavior towards any employee, business associates, or other stakeholders.

Article 15 **No Discrimination**

Indorama will not tolerate discrimination in employment or organizational decisions on the basis of ideological views, race, color, ethnicity, religion, gender, sexual orientation, national origin, regional origin, marital status, age, disability, or any status regarded as a human right. Also, any such discrimination against a customer, supplier, service provider or business partner is strictly disallowed.

Article 16 **Harassment and Inappropriate Physical Conduct**

- a) Harassment of any type, whether directed at an Indorama employee, supplier, customer or anyone doing business with Indorama, will not be tolerated and Indorama shall have the right to take appropriate disciplinary action, up to and including termination, against any employee who it considers to be guilty of harassment. Harassment is broadly defined and includes any conduct which negatively interferes with work performance, diminishes the dignity of any person or which creates an intimidating, hostile or otherwise offensive work environment.
- b) Verbal, visual, or physical conduct of a sexual nature is unacceptable in the workplace. Examples

include:

- (i) Sexual advances, requests for sexual favors, foul language, inappropriate jokes, remarks about a person's body or sexual activities,
 - (ii) Displaying sexually suggestive pictures or objects, suggestive looks, or leering, and
 - (iii) Inappropriate texts, emails, or other communications that cause discomfort.
- c) Indorama will also not tolerate violent acts or threats of violence on Indorama property, in the course of employment or while doing business with Indorama.

Article 17 **Immigration**

- a) Indorama is committed to following all local immigration rules pertaining to the recruitment and employment of foreign workers.
- b) Indorama requires that all employment agencies, contractors, and others doing business with Indorama fully comply with local immigration laws.

Article 18 **Fraternization**

- a) Employees are expected to conduct themselves in a manner that promotes respect, trust, safety, and efficiency in the workplace. Employees should not become romantically involved with another employee if either person can influence the other person's terms or conditions of employment, or if it has the potential to hurt local customs.
- b) In case of romantic involvement, the HR department or a senior supervisor should be informed so that any conflicts may be avoided and transfers may be made in case there is a reporting relationship.

Article 19 **Alcohol and Controlled Substance Abuse**

- a) Indorama is committed to a controlled substance and alcohol-free work environment. If any employee is found to be under the influence of controlled substances or alcohol during work, Indorama shall have the right to terminate that employee's employment contract immediately.
- b) Disciplinary action up to and including termination may be taken against any employee who violates the Code as a result of or while being under the influence of controlled substances or alcohol. For the avoidance of doubt, being under the influence of controlled substances or alcohol shall not be an excuse for any violation of the Code.
- c) Indorama requires job applicants to be controlled substance screened as part of the hiring process.

Any applicant who tests positive for illegal controlled substance use will not be hired. Where permitted by law, employees may also be subject to random testing or specific testing if there is a reasonable basis to suspect they are under the influence of controlled substances or alcohol.

Article 20

Suppliers, Trading Partners and Business Partners

Indorama bases its relationships with suppliers, trading partners, and business partners on lawful, efficient and fair business practices. The selection of suppliers must be made on the basis of objective criteria, including quality, price, delivery, adherence to schedules, product suitability, adequate source of supply, and Indorama's purchasing practices and procedures. Suppliers must be treated with respect, fairness and honesty keeping Indorama's business objectives in view. We also expect our suppliers and partners to follow all applicable legal requirements in their business practices and to operate ethically.

Guidelines

- (i) Current or potential suppliers and/or partners should not be approached about providing employment for one's family members or friends,
- (ii) Indorama will not do business with former employees if a conflict of interest exists between his/her former position at Indorama and his/her new position,
- (iii) Do not direct business to a supplier/partner owned or managed by a relative or friend,
- (iv) Employees who are involved in proposals, bid preparations, or contract negotiations must be certain that all statements, communications and representations are accurate and truthful,
- (v) Do not have social or other relationships with suppliers/partners if such relationship may create the appearance of impropriety or give the perception that undue business influence is being exerted, and
- (vi) Be watchful for suppliers/partners who violate worker safety, environmental, human rights, or other legal requirements and promptly report any such activities to your supervisor.

Article 21

Environment, Health and Safety

Indorama is committed to employee health, safety, protection of the environment, and to conducting business in compliance with all applicable laws. Employees must always comply with all relevant environmental, health and safety laws, rules and regulations. Any policies pertaining to these matters must be displayed at all strategic locations at all sites.

Guidelines

- (i) Reduce waste,
- (ii) Dispose of toxic or hazardous materials responsibly and as per applicable laws,
- (iii) Respect the environmental rights and interests of our neighbors and local communities,
- (iv) Create and maintain a safe working environment,
- (v) Prevent accidents and injuries,

- (vi) Avoid unsafe activities and conditions, including blocking fire exits, improper storage of inventory, and obstructing aisles, and
- (vii) Follow all Indorama policies and directives, including relating to the environment, health and safety.

Article 22

Governmental Dealings and Political Activities

- a) Except as required by law or allowed by local management, employees may not use their work time or other employees' work time for political activities. Employees may not use their job title or Indorama affiliation in connection with the support, endorsement, or testimonial of a political candidate or organization without prior approval from the Board of Directors of their respective Indorama entity.
- b) Inquiries from government investigators must be answered accurately and in accordance with any guidance issued by the competent authority.

Article 23

International Trade

- a) International trade is regulated through means of various international, bilateral and multi-lateral treaties, and local economic policies and regulations.
- b) Federal agencies at times administer a variety of embargoes and sanctions programs against a number of countries, as well as against nationals of those countries or other individuals, because of activities deemed contrary to the interests of their country and the interests of their allies. Transactions with designated individuals and criminal organizations, such as terrorist organizations, narcotics traffickers and weapons proliferators, are strictly prohibited. Severe civil and/or criminal penalties may be levied against companies or individuals that violate these regulations. Always consult with your supervisor prior to entering into international trade negotiations or transactions with any organizations/countries/individuals that you suspect might be the subject of sanctions.

Guidelines

- (i) Follow all relevant international trade control regulations, including licensing, shipping documentation, duty requirements, import/export documentation, and reporting and record retention requirements, of all countries in which you conduct business,
- (ii) Understand which party in an international trade transaction is responsible for the accuracy of trade documentation and ensure that Indorama has properly discharged its obligations in the transaction, and
- (iii) Employees are responsible for knowing with whom they are dealing with.

Article 24

Data Security

Data security is crucial for the continuity of our business. In order to protect information, systems, and data, security measures are necessary. All employees must take responsibility to protect their information systems and data and comply fully with internal IT security rules.

Article 25

Plagiarism

Plagiarism is the act of copying or using in substantially the same form the work of others, including words, images, ideas or other content, and passing it off as one's own work without acknowledging the source of the material. Employees should always act with honesty and integrity, including in producing any work product. In referencing the work of others, employees must properly cite sources, especially for external publications. The act of plagiarism could infringe laws and lead to legal proceedings against you and Indorama.

Community and Stakeholder Policy

At the core of our business philosophy is ensuring social well-being, adding value to communities, and respecting human dignity. We are committed to respecting the rights, cultures, customs, and values of employees and communities affected by our activities and will manage our businesses in a fair and equitable manner to meet our social responsibilities.

We will:

- proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner;
- comply with the regulatory requirements in the jurisdictions in which we operate;
- develop systems to identify, manage, and mitigate risks and adverse impacts on communities and stakeholders;
- foster leadership, learning and growth to deliver value to the organization and to society in a responsible manner, including training people and providing resources to meet social responsibility objectives and targets;
- respect the social, economic, and cultural rights of communities and seek broad-based support for our operations by consulting and informing stakeholders in matters that affect them;
- ensure that effective grievance management systems are in place;
- avoid involuntary resettlement and consider displacement only when business requirements make it unavoidable. When unavoidable, work with regulators to improve or restore quality of lives and standards of living of displaced persons;
- adopt sustainable development as an integral part of the business plan and put in place appropriate structures to plan and implement community development initiatives, prioritizing local needs and long-term sustainable benefits to communities.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Environment and Climate Change Policy

We are committed to effective environmental management as an integral part of our business with the aim of minimizing impact on the environment and reducing our impact on climate change.

We will:

- comply with applicable national, regional, and local environmental regulations, and good international practice;
- develop, implement, and maintain environmental management systems aligned with our commitments and beliefs, and consistent with good international practice;
- establish and review targets to continuously drive environmental improvement;
- avoid, reduce, or mitigate impacts to the environment and neighboring communities, and where feasible improve and enhance environmental conditions;
- minimise the consumption of water, energy, materials, and other resources;
- recover, recycle, reuse, and reduce waste to minimise environmental discharge;
- design, construct, operate, and close storage facilities and other assets in compliance with applicable laws and regulations and in alignment with good international practice;
- conserve natural resources through process improvements, and by adopting environmentally friendly and energy-efficient technologies;
- minimise and mitigate biodiversity risks throughout our businesses and integrate biodiversity conservation with business needs throughout the project lifecycle
- assess our climate-related risks and implement mitigation and adaptation measures;
- establish programs to reduce our greenhouse gas emissions and achieve regional carbon abatement norms through renewable energy use, process improvements, innovative technologies, improved energy efficiency, and other measures;
- incorporate environmental principles in procurement processes, and through a life cycle approach where applicable;
- enhance awareness among our employees, service providers, and suppliers to act in an environmentally responsible manner.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Health and Safety Policy

We are committed to the goal of zero harm and safe and healthy workplaces. The health and safety of our employees, service providers, and any other person who may be impacted by our operations is of paramount importance.

We will:

- comply with applicable national, regional, and local health and safety regulations, and good international practice;
- provide safe systems of work;
- maintain plant and equipment in a safe condition;
- incorporate health and safety criteria in the selection of service providers, technology, plant, and equipment;
- provide all employees and service providers with appropriate health and safety training;
- ensure reporting and investigation of incidents with a view to preventing recurrence;
- implement regular health surveillance and risk-based exposure monitoring to ensure the protection of employee and service provider's health;
- develop, implement, and maintain health and safety management systems aligned with our commitments and beliefs and consistent with world-class standards;
- monitor and prepare for health pandemics to protect our people and our business;
- drive continuous health and safety improvement through setting and reviewing targets using good international practices;
- promote a positive health and safety culture through effective communication, participation and consultation with employees and service providers;
- influence our service providers and suppliers to adopt principles and practices in alignment with our policies;

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Human Rights and Labour Policy

We are committed to protecting and respecting human dignity. We will conduct our business in a fair and equitable manner to meeting our social responsibilities, and we will respect the human rights of all our stakeholders in alignment with the United Nations Declaration on Human Rights.

We will:

- uphold human and labour rights aligned with national and international regulations as applicable;
- be compliant with labour laws of the countries in which we operate and promote fair working conditions as guided by international conventions;
- ensure employees are fairly and reasonably paid and remuneration structures are compliant with regulatory obligations of the jurisdictions in which we operate;
- have zero tolerance for any form of forced, compulsory, or child labour either directly or through contracted labour;
- recognise and respect employee rights to associate freely in accordance with applicable laws and regulations, and to collective bargaining;
- be an equal opportunity employer and treat all employees with respect and dignity, judging solely on their performance irrespective of race, religion, caste, gender, age or disability;
- implement policies and practices to respect the rights and interests of women and support diversity and inclusion in the workplace;
- eliminate harassment and discrimination and provide a mechanism to address worker grievances;
- respect and preserve the culture and heritage of local communities and socially vulnerable groups that may be impacted by our operations and work towards developing constructive relationships that seek broad-based support for our operations, including free, prior and informed consent of Indigenous Peoples if applicable;
- where appropriate, implement a human rights and security approach consistent with the Voluntary Principles on Security and Human Rights;
- work with government agencies to develop a common understanding and agreement to protect human rights in the event of any unforeseen situations and to protect our people and assets;
- regularly communicate social performance in an accurate, transparent, and timely manner.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Intellectual Property Policy

Guidelines

We will protect the Intellectual Property Rights (IPR) of others, as we would like them to respect ours. Intellectual property may typically take the form of copyrights, patents, trademarks or trade secrets. The formal definition, according to the World Intellectual Property Organization, is "creations of the mind." Intellectual property includes information such as inventions, creations, innovations, discoveries, and improvements generated, obtained or gathered by companies, including their patents, copyrights, trademarks, trade secrets and related confidential business information.

Our policy on IPR is to observe laws and regulations associated with them, to protect the results of intellectual activities with such rights and make extensive use of those rights, and to respect the legitimate IPR of third parties. We have a system with which to register trademarks and brands in order to protect them for our own use. We will not knowingly infringe upon the IPR of a third party, whether through the use of hardware or software which we have acquired through purchase or hire.

Software Use

It is Indorama's policy to use only licensed software in accordance with the terms of their license agreement. Violating a license agreement is illegal and may subject the relevant Indorama entity to prosecution and substantial monetary penalties. Voluntary self-reporting will be considered positively when determining disciplinary action. Also, employees who raise ethical issues should be recognized and appreciated.

Indorama Intellectual Property and Trade Secrets

The general policy of Indorama is that a person who creates a work privately is the author of that work, unless the work is "work made for hire." A "work made for hire" is a work prepared by an employee within the scope of his / her employment or a work specially ordered or commissioned for use as a contribution to a collective work.

Indorama pays its employees for work, some of which includes creating or improving products or systems whether implemented or not.

Therefore, Indorama shall remain the owner of all intellectual property created by its employees as employees and this will remain as Indorama's property even after those employees have left Indorama. Trade secrets are a part of our intellectual property and may be tangible or intangible, for example a strategy to increase work efficiency. We expect current and former employees to maintain our trade secrets.

Unless a written agreement is entered into specifying ownership or assignment of rights, Indorama does not own the IPR of a commissioned work that is performed by a consultant or independent contractor.

Confidentiality

All parties are to respect the confidentiality of our intellectual property including trade secrets. We reserve the right to take legal action to enforce our rights if we believe anyone has abused information or sought to gain from our property or trade secrets.

Product Stewardship and Treatment of Customers Policy

Indorama is committed to the highest standards of product safety, quality and business integrity to meet customer expectations and achieve customer delight. Our Product Stewardship approach is designed to minimise health, safety, environment, and social impacts of products and is monitored for continual improvement.

Indorama wins and maintains long-term customer relationships based on the quality, safety, and value of its products and services, and we market our products responsibly and on their legitimate features and benefits. Our customers trust our word because we demonstrate integrity and honesty in our activities. We create value for our customers because we provide the information and service that they need to make the best purchasing decisions and ensure safe use of products.

We are committed to:

- developing and providing quality and safe products for our customers;
- assessing and managing potential health, safety, environmental, and social risks associated with our products;
- innovating to develop and provide new products for our customers;
- providing accurate information to customers and supply chain partners without misrepresentation;
- respecting the individual rights of customers, including maintaining the confidentiality of customer information;
- providing channels for customers to file complaints relating to the quality and safety of products and services, and promptly addressing any complaints;
- providing support for activities that strengthen and maintain a good, long-term relationship with our customers and supply chain partners.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Responsible Business Policy

We believe in business practices that provide benefits to society, ensure we act transparently and ethically, and address potential negative impacts associated with our operations. Our objective is to make positive contributions to the economic, environmental, and social progress at the locations in which we operate.

In addition to commitments detailed in our policies, we will:

- implement an Indorama Code of Conduct, including controls that cover conflict of interest, data privacy, cyber security, and addressing grievances;
- ensure suppliers act responsibly and achieve the commitments outlined in this policy and in the Indorama Group policies on human rights and labour, communities and stakeholders, and environment and climate change;
- implement a tax strategy that ensures taxes paid to respective governments are equitable;
- implement anti-bribery & corruption controls, including the prevention of facilitation payments;
- ensure a ban on price fixing activities or other anticompetitive agreements;
- ensure honesty, transparency, and integrity in dealings with governments, and maintaining proper conduct, responsiveness, impartiality, accountability, and respect;
- maintain the independence of Board members from Indorama or a subsidiary, through employment, business dealings, or as its auditor;
- implement a whistleblowing process to encourage and protect a person who exposes information or activity(s) that may be illegal, illicit, unsafe, or fraudulent.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Social Media Policy

Article 1 Guiding Principles

This policy provides a framework for using social media. Social media is a place where people exchange information, opinions and experiences to learn and develop, and also for recreation. Whether you are handling a corporate account or using one of your own, you must not cause damage to our organization in any way. This policy provides practical advice to avoid issues that might arise by improper use of social media.

By “social media”, we refer to a variety of online communities like blogs, social networks, chat rooms and forums – including but not limited to Facebook, LinkedIn, Twitter, Instagram, etc.

This policy is built around two different elements: first, using personal social media at work and second, representing Indorama through social media.

Article 2 Using Personal Social Media

We allow our employees to access their personal accounts at work, but we expect you to act responsibly and ensure that your productivity is not affected.

Whether you are using your accounts for business or personal purposes, you may easily get sidetracked by the vast amount of content available. Accordingly, please restrict your use to a few minutes per workday.

We also ask you to be careful when posting on social media and expect you to adhere strictly to all applicable Indorama policies and confidentiality obligations at all times. We also caution you not to violate any applicable anti-harassment regulations, or post content that might make your collaboration and teamwork with your colleagues more difficult (such as hate speech against groups which your colleagues belong to).

In general, you are expected to:

- (a) Ensure that others know that your personal account and statements do not represent Indorama. You should not state or imply that your personal opinions and content are authorized or endorsed by Indorama. We advise using a disclaimer such as “these opinions are my own” to not cause misunderstandings.
- (b) Avoid sharing intellectual property like trademarks on a personal account without approval.

Confidentiality policies and laws always apply.

- (c) Avoid any defamatory, offensive or derogatory content. Such content may be considered a violation of Indorama policies, particularly if directed towards colleagues, clients, partners, or other stakeholders.

The list above is illustrative only and not intended to be exhaustive. You should always exercise professional and responsible judgment before posting content to your personal social media account.

Article 3 **Representing Indorama**

Some employees may be asked to represent Indorama by handling corporate social media accounts or speaking on Indorama's behalf. When doing so, we expect you to act carefully and responsibly to protect Indorama's image and reputation. You should:

- (a) Be respectful, polite and patient when engaging in conversations on Indorama's behalf. You should be extra careful when making declarations or promises towards customers and stakeholders.
- (b) Avoid speaking on matters outside your field of expertise. Everyone should be careful not to answer questions or make statements that fall under somebody else's responsibility.
- (c) Comply with Indorama policies and observe all applicable laws, including without limitation relating to copyright, trademarks, plagiarism and fair use.
- (d) Consult with your manager or Indorama management (as applicable) before sharing any major-impact content.
- (e) Avoid deleting or ignoring comments for no reason. We should listen and reply to criticism.
- (f) Never post or re-post discriminatory, offensive or libelous content or commentary.
- (g) Correct or remove any misleading or false content as quickly as possible.

Article 4 **Disciplinary Consequences**

We may take disciplinary action leading up to and including termination if employees do not follow this policy's guidelines. Examples of non-conformity with this policy include but are not limited to:

- (a) Disregarding job responsibilities and deadlines to use social media at work.
- (b) Disclosing confidential information through personal or corporate accounts.
- (c) Making offensive comments.

Please consult with your manager or Indorama management (as applicable) if you are unsure whether any specific content can be shared on social media.

Confidential Reporting

Guidelines

Indorama is committed to high ethical standards and encourages reporting of any of the acts listed below by any employee of Indorama irrespective of their seniority. For the avoidance of doubt, reports can be made by any employee or stakeholder of Indorama (including our business and supply chain partners). All such reports shall be maintained in strict confidentiality ("Confidential Reporting").

Confidential Reporting applies to:

- (a) Any violation of Indorama's Code of Conduct.
- (b) Any act that adversely affects the business interest of Indorama.
- (c) Any act that is illegal under local or international law.
- (d) Any abuse of authority.

Indorama prohibits anyone from retaliating against anyone who in good faith raises or helps to resolve any of the acts above or any other ethical concern.

Indorama strongly prohibits any misuse of this facility.

A written disclosure, including any supporting evidence, may be sent:

- a) **by postal mail to:** The Managing Director, Indorama Corporation Pte. Ltd., 143 Cecil Street, #14-00 GB Building, Singapore 069542; or
- b) **by email to:** ethics@indorama.com



ANNEX 2: EMPLOYEE HANDBOOK (HR POLICIES & PROCEDURES GUIDE). 2021

INDORAMA ELEME FERTILIZER & CHEMICALS LIMITED

**EMPLOYEE HANDBOOK
(HR Policies & Procedures Guide)**

**Indorama Complex, East-West
Expressway, Eleme, Port Harcourt,
Rivers State, Nigeria | TIN 11615947-0001
www.indoramafertilizers.com**

Table of Contents

SECTION – I	6
Message from Managing Director, IFL	6
SECTION II	17
2. The Objective:.....	17
2.1 Quality, Health, Safety and Environment (QHSE) Policy	18
2.2 Company Ethics Policy	19
SECTION – III	20
3. General Principals of Employment	20
3.1 Basic Policy	20
3.1.1 Non-Discriminatory Policy.....	20
3.1.2 Child Labour Prohibition Policy	20
3.1.3 Human Rights Policy	20
3.1.4 Violation of the Human Rights Policy.....	21
3.1.5 Consequences of the Human Rights Violation	21
3.1.6 Independent Contractors' Policy	21
3.1.7 Gender Based Violence and Harassment Policy	22
3.1.7.1 Scope of this Policy.....	22
3.1.7.2 Business Case for GBVH	22
3.1.7.3 Classification of GBVH	22
3.1.7.4 Risk Identification, Risk Management and Accountabilities	23
3.1.7.5 Capacity building and Resources	24
3.1.7.6 General Principles	24
3.1.7.8 Grievance Management System	24
3.1.7.9 Monitoring and Reporting	24
3.1.7.10 Confidentiality and Management of Outcome	25
3.1.8 Retaliation and Reprisal Policy	25
3.1.8.1 Indorama Policy against Retaliation	25
3.1.8.2 Scope of guidelines against Retaliation	26
3.1.8.3 Definition of Retaliation	26
3.1.8.4 Risk Identification and Assessment of Risks at different stages of projects / operations and processes to prevent retaliation or Retaliations	26
3.1.8.5 Types of Retaliation	28
3.1.8.6 Need for addressing the risk of retaliation:.....	28
3.1.8.7 Capacity building:.....	28
3.1.8.8 Management Structure	29

3.1.8.9	Grievance Management System	31
3.1.8.10	Monitoring	31
3.2	Employment Status	32
3.3	Trainee (SIWES)	32
3.4	Employee on Probation	32
3.5	Employment Medical Examination.....	33
3.6	Orientation & Induction	33
3.7	Employee Identity Card	33
3.8	Statutory Holidays	33
3.9	Hours of Work.....	34
3.10	Shift Work.....	34
3.11	Overtime	34
3.12	Confidential Report from Previous Employer/Reference Check	35
SECTION - IV		36
4.	Standard Conduct and Work Ethics.....	36
4.1	Loyalty	36
4.2	Work Attendance/Absenteeism/Late Coming	36
4.3	Mobile/Telephone Usage.....	37
4.4	Grooming & Dress Code.....	37
4.5	Smoking	37
4.6	Drug and Substance Abuse.....	37
4.7	Safety & Security	37
4.7.1	Security.....	38
4.7.2	Access to Company Premises	38
4.7.3	Theft	39
4.8	Information Technology (IT Policy)	39
4.9	Notice Board / Information Bulletin	39
4.10	Public Statement	40
4.11	Government Relations.....	40
4.12	Accurate Records.....	40
SECTION - V		41
5.	Salary Administration	41
5.1	Salary	41
5.2	Pay Period.....	41
5.3	Employee Taxation.....	41
5.4	Other Deductions	41
SECTION - VI		42

6. Training Policy	42
6.1 Performance Management System	43
SECTION – VII.....	44
7. Grievance Procedure and Management in Indorama Eleme Fertilizer and Chemicals Limited (IFL)	44
7.1 Aims and Objectives of Grievance Management in IFL	45
7.2 Process and Practice of Grievance in IFL.....	45
7.3 Main Steps of Grievance Procedure and Management	46
7.5 Role of the Human Resources Department in the Procedure	48
SECTION - VIII	49
8. Industrial & Employee Relations	49
8.1 Employee Relations Policy	49
8.2 Discipline and Disciplinary Procedures	49
8.2.1 Initial Query and Report.....	50
8.2.2 Investigation	50
8.2.3 Disciplinary Measures.....	50
8.3 Exit Management	52
SECTION - IX	53
9. Employee Welfare.....	53
9.1 Staff Canteen	53
9.2 Staff Transportation Facility.....	53
9.3 Parking	53
9.4 Staff Club.....	53
9.5 Marriage Gift.....	54
SECTION - X	55
10. Leave Types and Administration.....	55
10.1 Annual Leave	55
10.2 Leave Period	55
10.3 Leave Roaster.....	55
10.4 Timings.....	55
10.5 Split Leave.....	56
10.6 Leave for Staff on Probation.....	56
10.7 Accumulation of Leave	56
10.8 Sick Leave.....	56
10.9. Medical Board	56
10.10. Release on Medical Ground	57
10.11. Maternity Leave	57
10.12. Examination Leave	58

10.13. Casual and Compassionate Leave	58
SECTION - XI	59
11. Loans and Advances	59
11.01. Loans and Advances.....	59
SECTION - XII	60
12. Benefits and Allowances	60
12.1. Medical Health insurance Scheme.....	60
12.2. Child Education Assistance.....	60
12.3. Death Benefits	60
12.4. Allowances for Employees	61
12.4.1. Transfer Grant / Relocation Allowance.....	61
12.4.2. Out of Station / Outstation Duty Allowance.....	61
12.4.3. Leave Allowance	62
12.4.4. Rent Subsidy / Upfront	62
12.4.5. Mileage / Kilo-meter Allowance	62
12.4.8. Acting Allowance	63
12.4.9. Shift Allowance.....	63
SECTION - XIII	64
13. Bonus, Grants and Awards	64
13.1. TAM Bonus	64
13.2. Gift Voucher	64
13.3. Furniture Grant.....	64
13.4. End of Year Bonus.....	64
13.5. Long Service Award.....	64
SECTION - XIIV	66
14. End of Service Benefits.....	66
14.1. Gratuity	66
14.2. Group Life Insurance	66
14.3. Pension Fund.....	66
SECTION - XIV	67
15. Conclusion.....	67

SECTION – I

Message from Managing Director, IFL

Welcome to Indorama Eleme Fertilizer and Chemicals Limited

I am delighted that you are joining Indorama Eleme Fertilizer and Chemicals Limited. Beginning today, you are a part of a corporation which is one of the fastest growing business conglomerates with presence in diverse fields.

We offer a corporate culture that values teamwork, creativity and innovation. We recognize employees as our most valuable assets, ensuring that our employees achieve their personal and professional goals.

The objective of this handbook is to help you understand our corporate policies. However, the opportunities are many, the challenges are multiple and the excitement is intense.

I am sure your commitment will enable us to chart an aggressive growth / carrier path and contribute in achieving our common goals.

I Wish you great success here at Indorama Eleme Fertilizer and Chemicals Limited!

Managing Director

Disclaimer:

The contents of this handbook are presented as matter of information only. This handbook is not an employment contract. The policies described in this handbook are meant as broad internal guidelines that the company may change or update from time to time as it deems appropriate and without any prior notice.

HR Mission:

Our employees are the most valued assets of our organisation, essential participants with a shared responsibility in fulfilling our mission:

- To attract, nurture and retain the best talent by inculcating a culture of learning, performing, developing creativity and team work.
- To build excellence focused, development oriented, value driven and people sensitive organisation
- To enrich quality of life of employees and develop their potential
- To develop employee engagement, mutual trust, co-operation and openness through empowerment, recognition and reward

Group Overview:

Indorama Eleme Fertilizer & Chemicals Limited is part of the Indorama Group. Indorama Group is a multinational operating out of 5 continents with interests in Petrochemicals, Polyester, PET, Fertilizer, Spinning and Textiles.

Indorama is known for its impeccable Corporate Governance standards and highly ethical business practices. The Company places very high importance for proactive and good HR practices. Human Resources of Indorama Group worldwide is known for their commitment, discipline, dedication and devotion to work and work ethics.

Indorama Eleme Fertilizer & Chemicals Limited is a private Company registered in Nigeria, situated at Eleme Port Harcourt in Rivers State. The Company produces Fertilizer products which contribute to general positive growth of the economy of Nigeria including generating meaningful vocation in the country. In pursuit of these objectives, the company recruits the best human resources who could contribute to the realization, sustenance and furtherance of these goals with total commitment, dedication, discipline and devotion.

Indorama Eleme Fertilizer & Chemicals Limited is located inside Indorama Eleme Petrochemicals Limited Plant Complex at Eleme near Port Harcourt in Rivers State, Nigeria. Indorama Eleme Fertilizer & Chemicals Limited produce Fertilizer products such as ammonia and urea.



Indorama in Nigeria

Indorama Eleme Petrochemicals Limited (IEPL), located in the outskirts of Port Harcourt City, Rivers state, Nigeria, operates a state of the art Petrochemical Complex which produces a range of Poly Ethylene (PE) and Poly Propylene products. The PE and PP plants are licensed by Nova Chemicals, Canada and Lyondell Bassell of Italy, respectively, and the Olefins plant is licensed by M/s Kellogg Brown & Root of USA. The company has employee strength of around 1200 Nigerian and other Nationalities. The manufacturing plants are well supported by a captive power plant, technical and management support services.

The Company was established in the year 1990 under the name Eleme Petrochemicals Company Limited (EPCL) as wholly owned subsidiary of the Nigerian National Petroleum Corporation (NNPC), for meeting the raising demands for plastic resins in Africa. When the National Council for Privatization, the Agency under the Federal Government of Nigeria, declared the privatization of EPCL, Indorama emerged as the core investor and acquired EPCL in the year 2006. The company name was changed to Indorama Eleme Petrochemicals Limited in June 2012.

Indorama Eleme Fertilizer & Chemicals Limited (IFL) is a private Company registered in Nigeria, situated at Eleme Port Harcourt in Rivers State. The Company produces **Fertilizer products which contribute** to general positive growth of the economy of Nigeria including generating meaningful vocation in the country. In pursuit of these objectives, the company recruits the best human **resources who** could contribute to the realization, sustenance and furtherance of these goals with total **commitment**, dedication, discipline and devotion.

Indorama Eleme Fertilizer & Chemicals Limited is located in Indorama Eleme Petrochemicals Limited Plant Complex at Eleme near Port Harcourt in Rivers State, Nigeria. IFL produces Fertilizer products such as ammonia and urea.

Indorama Eleme fertilizer Plant/office Location

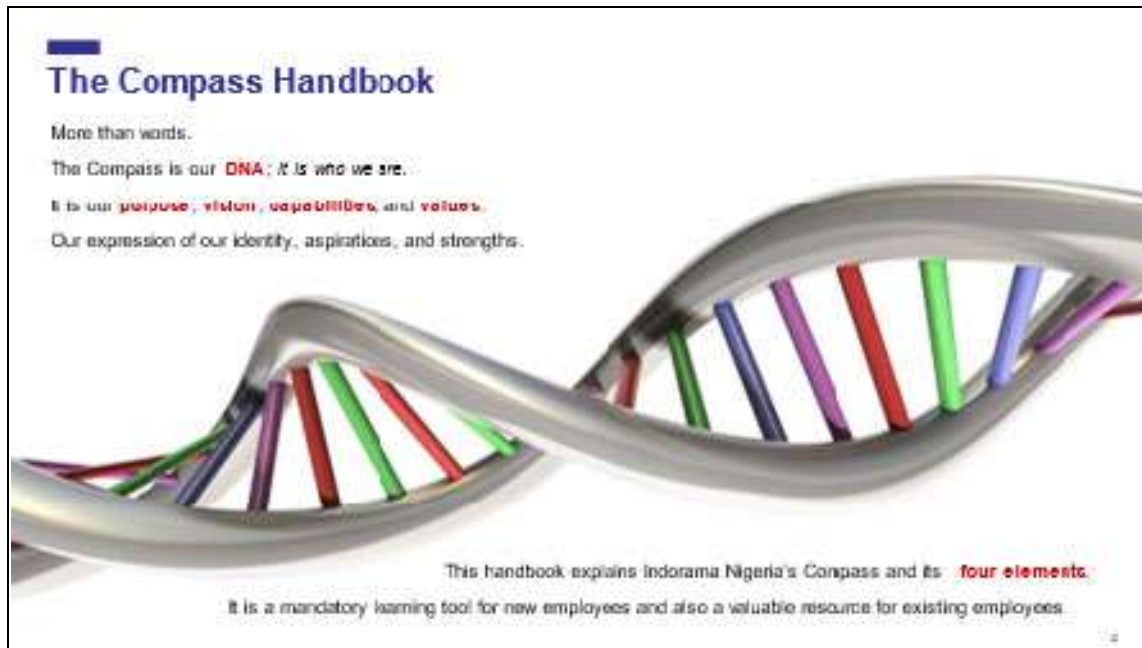
Indorama Complex, East-West Expressway

Eleme, Port Harcourt

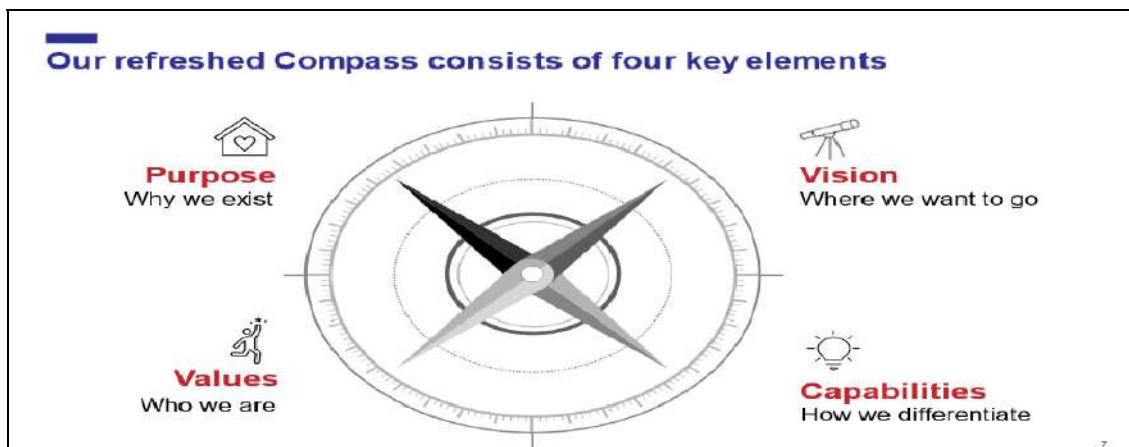
Rivers State, Nigeria | TIN 11615947-0001 | www.indoramafertilizers.com

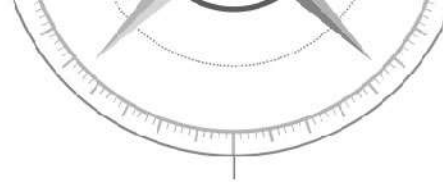
Core Values

Our Corporate vision is to attain Business Leadership. In line with the Group's vision, the Indorama Eleme Fertilizer and Chemical Limited have set its vision as "to build the largest fertilizer hub in Africa"! And help to build an economy that would provide better life for Nigerians today and future generations. Our management, our employees and indeed all our stakeholders are investing their time, efforts, and energies to achieve this goal.



In Indorama as a Group, has four key elements upon which the company's compass and growth are built upon. Four pillars namely Purpose, Values, Vision, Capabilities are pivotal to attain this Business Leadership.





Compass Element: Descriptions	Compass elements	Purpose	Vision	Capabilities	Values
		"Why we exist" 1	"Where we want to go" 2	"How we differentiate" 3	"Who we are" 4
	Description	Simple, inspirational, easy-to-remember, which resonates deeply with the entire organization	Strategic statement of intent – applicable across the entire organization	Our capabilities for that give us our competitive advantage: today and in the future	Aspirations for how we behave and interact with one another and our external stakeholders

Our Refreshed Compass

1 Purpose	Essential Materials. Better Lives.			
2 Vision	The materials company of choice for customers and employees <i>Driving scale, growth, and sustainability</i>			
3 Capabilities	Investing for the future	Lasting relationships	People first	Best-in-class assets & operations
4 Values	Act like owners	Be adaptable	Care deeply	Deliver excellence

1

Our Purpose: Why we exist



Essential materials.

We produce materials that are **essential for our world** - fertilizers, medical gloves, textile and packaging materials.



Better lives.

We strive to **improve lives** and develop a better world: for our **customers, employees**, and other stakeholders.

1

2

Our Vision: Where we want to go

The materials company of choice for customers and employees

Driving scale, growth, and sustainability.



Materials company of choice

We aim to be one of the most distinctive and competitive materials companies in the world...



Customers and employees

...for our key stakeholders, our customers and employees without whom we wouldn't exist



Driving scale and growth

We invest in creating scale in existing businesses and new growth platforms for future prosperity



Driving sustainability

We aim to operate our business across markets and geographies in a responsible and sustainable manner

1

3 Our Capabilities: How we differentiate

Investing for the future 	Lasting relationships 	People first 	Best-in-class assets & operations 
Value creation. <i>We create value with prudence, patience, and a long-term outlook</i>	Committed partners. <i>We work collaboratively and foster long-term relationships</i>	Inspired employees. <i>We have a high-performance culture and treat our employees like family</i>	Technology and cost. <i>We use state-of-the-art technology to achieve cost competitiveness</i>
Growth platforms. <i>We invest in new ideas today to drive value tomorrow</i>	Across stakeholders. <i>We serve our customers and strategic partners with respect and excellence</i>	Empowered talent. <i>We trust and empower individuals so that they contribute their best</i>	Quality and safety. <i>We maintain the highest standards for quality & safety</i>

12

4 Our Values: Who we are

Act like owners 	Be adaptable 	Care deeply 	Deliver excellence 
<i>passionate, courageous, responsible, and strategic</i>	<i>to opportunities, challenges, and ideas</i>	<i>for people and our planet with trust, respect, and humility</i>	<i>through knowledge, agility, innovation, and execution</i>

13



Act like owners

DO's	DONT's
Be passionate and courageous. <i>Be daring. Keep trying till you succeed. Act with confidence. Go the extra distance. Put your heart and soul into it.</i> ✓	Half-hearted behavior. <i>Being passive. Doing just the minimum amount to get by. Not showing interest.</i> ✗
Be responsible. <i>Act with honesty and integrity. Show commitment to our values and Code of Conduct. Report irresponsible behavior. Take responsibility for your actions and behavior.</i> ✓	Irresponsible behavior. <i>Dishonest behavior. Disregarding our values and Code of Conduct. Overlooking irresponsible actions of others.</i> ✗
Be strategic. <i>Always look at the big picture. Take proactive and informed actions that ensure Indorama's future success.</i> ✓	Being short-sighted. <i>Not looking at the details. Getting lost in the details. Not thinking about future implications.</i> ✗



Be adaptable

DO's	DONT's
Foster new opportunities. <i>Have a growth mindset. Plan for the best. Be ready for the worst.</i> ✓	Avoiding new opportunities. <i>Staying in your comfort zone. Focusing too much on the negatives rather than the positives.</i> ✗
Adapt to challenges. <i>Try different approaches depending on the situation. Keep reviewing and improving your strategy. Be ready for changes.</i> ✓	There is no solution. <i>Difficulties in your path stop you from achieving the desired results. There is no other way.</i> ✗
Keep improving yourself. <i>Keep learning and updating your skills and knowledge. Keep taking feedback and learning from others.</i> ✓	I know everything. <i>I am always right. Others don't know anything.</i> ✗



Care deeply

DO's	DONT's
Care for people and our planet. <i>Show empathy. Care deeply for the wellbeing of others and our environment. Help others achieve their full potential.</i> ✓	Not caring. <i>Not feeling the pain of others. Showing indifference. Not thinking about the implications of your actions on people and the environment.</i> ✗
Trust and Respect. <i>Build relationships based on trust and respect. Treat everyone with respect. Carry everyone with you.</i> ✓	Disrespectful behavior. <i>Acting rudely or insensitively. Putting people down.</i> ✗
Humility. <i>Stay down-to-earth. No task is too small. The organization comes first.</i> ✓	Ego. <i>The task is beneath me. My feelings are more important. I know important people.</i> ✗



Deliver excellence

DO's	DONT's
Drive knowledge and innovation. <i>Challenge the status quo with your expertise. Keep upgrading and expanding your knowledge.</i> ✓	Avoiding change. <i>Not trying new things. Resistance to change. I already know more than enough to do my job.</i> ✗
Be agile. <i>Make quick and timely decisions with data. Do it today.</i> ✓	Moving slowly. <i>Delaying decisions. Not looking at the right data. Overcomplicating things.</i> ✗
Focus on execution. <i>Plan meticulously and keep reviewing frequently. Pay attention to details. Talk 10%, Act 90%</i> ✓	More talk, less action. <i>Theoretical approach. Excessive discussion about unactionable things. Long and unproductive meetings.</i> ✗

Competency Framework

Our 12 Competencies



22

SECTION II

2. The Objective:

Employee Handbook is a compendium of basic policies, procedures and principles. The objective of this handbook is to set out policies, rules and regulations and practices of the company as well as duties and responsibilities of the employees. These rules and regulations are applicable to all employees in the company and form an integral part of the terms and conditions of their employment contract.

This employee Handbook is a confidential document of Indorama Eleme Fertilizer and Chemicals Limited (IFL) and its contents shall not be disclosed to non-staff and neither shall the hand book nor its contents be shared nor propagated with those who are not on the rolls of Indorama Eleme Fertilizer & Chemicals Limited. In event of separation from the rolls of Indorama Eleme Fertilizer & Chemicals Limited, this Handbook shall be returned to the Human Resources Department.

The Management of Indorama Eleme Fertilizer & Chemicals Limited reserves the right to review the provisions of the contents of this Handbook from time to time as it deems fit to accommodate evolutionary trends, however, such changes will be adequately communicated to the employees.

2.1 Quality, Health, Safety and Environment (QHSE) Policy

We at Indorama Eleme Fertilizer & Chemicals Limited are committed to the total customer satisfaction and continual improvement in Quality, Health, Safety and Environment practices through: -

- Improving the business processes by adopting innovative approach and best practices.
- Implementing effective quality management system across the entire supply chain ensuring highest standards of quality.
- A commitment to prevention of injury and ill health by ensuring safe operational occupational health practices in all facilities involving all employees and associates.
- Protecting and preserving the environment by effective control of pollution, waste and emission.
- Continual review of quality, health, safety and environment objectives, procedures and practices for attaining highest level of operational efficiency and plant performance.
- Commitment to comply with all applicable QHSE statutory, regulatory and legal requirements and positions as a responsible corporate entity.
- Creating lasting partnership with customers and associates through offering quality products and services at all times.

2.2 Company Ethics Policy

All employees are expected to maintain confidentiality in line with the ethics policy of the Company.

The employees are also expected to devote the whole of their time and ability to the Company's service and will not engage in any other form of employment, trade or business whatsoever during working hours.

Employees will have to indicate in the Conflict of Interest form, the potential as well as the actual conflict of interest with Indorama Eleme Fertilizer & Chemicals Limited or its shareholders, thus preventing any adverse effect on the Company's operations.

All employees are expected to inculcate a culture of honesty and integrity that has to be nurtured, practiced and maintained.

Conflict of interest shall include, but shall not be limited to the following instances:

- Working for any other company or carrying out personal trading or any other business activity.
- Involvement with Suppliers, Contractors or Customers for doing unethical favours.
- Irresponsible behaviour thus hampering Company's operations.
- Canvassing against Company or Company's management in any forum, medium or network whether on electronic media or tabloid.
- Family membership and spouse's relationship with a Supplier, Contractor or Customer having business relationship with IFL.
- Occupying any position in companies, which may have any form of business dealing with IFL.
- Acceptance, directly or indirectly of payments, gratification, services or loans from a supplier, Contractor or other third parties who are dealing with IFL.
- Divulging secret information or Company's confidential information to which the employee has access by the virtue of his/her position in the Company.
- Ignorance or purported ignorance of this policy shall not be an excuse for such acts.

Employees will be required to declare:

- Their interest in any situation that would reduce their commitment to their duties.
- Any gifts or services rendered by any of the Suppliers/Contractors or other Stakeholders.

In any such cases, where an employee fails to declare his/her interest in a particular situation and it is later discovered by the Company, then such employee would be liable for disciplinary action that may even lead to dismissal of the employee from the Company.

SECTION – III

3. General Principals of Employment

The business of managing the Company and its operations, the authority to execute the responsibilities and functions thereof, including engagement, discipline, termination of appointment, transfer of personnel, determination of time, method and manner of working, introduction of technical improvement and the decision to modify, extend or cease operation are vested on the company.

3.1 Basic Policy

Motivated employees are paramount to the success of the Company. Employees are expected to carry on a good working and harmonious relationship between peers, subordinates and superiors. This should be based on mutual trust, respect and seamless understanding, which is vital for the promotion of peace and harmony not only within the plant but amongst the people of different religion, colour, nationality, ethnicity and cultural backgrounds.

3.1.1 Non-Discriminatory Policy

Indorama Eleme Fertilizer & Chemicals Limited (IFL) is an equal opportunity employer. IFL does not and shall not discriminate against any employee or any applicant for employment on the basis of race, colour, religion (creed), gender expression, age, disability, military status, sexual orientation, and national origin in any of its activities or operations. These activities include but not limited to employment – recruitment, selection, hiring, compensation, termination, upgrading, promotions, and other conditions of employment.

3.1.2 Child Labour Prohibition Policy

Indorama Eleme Fertilizer & Chemicals Limited (IFL) does not and shall not offer employment nor employ any person below the age of eighteen (18) years at its place of work. The company maintains zero tolerance towards the breach of this policy.

IFL shall maintain appropriate documents of all relevant details of employees including age which documents shall be open for verification by authorized personnel or relevant statutory body. The Human Resources Department is responsible for the implementation of this policy.

3.1.3 Human Rights Policy

The IFL's Human Right Policy is guided by the International Human Rights Principles as enshrined in the Universal Declaration of Human Rights, the International Labour Organization's Declaration on fundamental Principles of Rights at work, the African charter on Human Rights on the

constitution of the Federal Republic of Nigeria 1999, as amended. Specifically, the IFL employee shall have the following rights:

- i. Freedom of association ii.
Freedom of express
- iii. Healthy work environment iv.
Safety at work place
- v. Non-discrimination vi.
Freedom of worship
- vii. Freedom from bullying, sexual harassment viii.
Right to fair hearing
- ix. Any other such rights as necessary and recognized by the law of the Federal Republic of Nigeria.

3.1.4 Violation of the Human Rights Policy

It is incumbent upon an employee to ensure that standards of conduct or rights are implemented and maintained and to seek remedies when such standards or rights are violated using first the established channels within IFL.

3.1.5 Consequences of the Human Rights Violation

Violation of these standards or rights may result in disciplinary sanction including termination of employment of the affected employee if indicted after due process of investigation.

3.1.6 Independent Contractors' Policy

For the purpose of this policy, independent contractors are workers working for Indorama Eleme Fertilizer & Chemicals Limited (the company) but the company does not manage how they work, except to accept or reject their final results. Independent contractors are separate business entities, with opportunity to experience profit or loss, deliver the same type of service to multiple organizations, and responsible for the payment of their own business expenses, general liability insurance and employees' compensation insurance. IFL recognizes that independent contractors definitely elevate the level of risks to a business. They are not well known to the company or other employees, they may introduce risk accidentally, simply as a result of poor work habits. They may cause changes in the way infrastructure is used and configured, opening up risks that mistakes could lead to a breach or introduce weakness that did not exist before. IFL has no control over independent contractors and their employees.

IFL directs all independent contractors working with it to strictly comply with the company's guidelines on the following: - employee hand book, Grievance handling and management policy Anonymous Grievance handling mechanism, Child labour prohibition policy, Human Rights policy, Non-discriminatory policy, Retrenchment planning (Redundancy) as stipulated in the labour law, work place discipline policy, security and safety policy, Employee compensation policy and any other policy necessary for the wellbeing of the independent contractors and their employees.

3.1.7 Gender Based Violence and Harassment Policy

Indorama is committed to promote gender diversity in the organization and also recognizes the potential risk of Gender Based Violence and Harassment (GBVH). IPL has zero tolerance for GBVH and on continual basis endeavor to identify the risk areas, upgrade preventive measures; create awareness amongst both internal & external stakeholders, enhance capability building and increase effectiveness of grievance management system. The objective this policy is to define a policy framework and define strategies for addressing the issue of GBVH. This document also aims to provide an integrated framework for stakeholder engagement and grievance management system with a focus on GBVH at all states of business cycle.

3.1.7.1 Scope of this Policy

This policy applies to Indorama applicants and employees, agency workers, visitors, local business partners and both internal / external stakeholders. This policy applies to new projects as well as existing operations. In the event of a new project the policy applies to pre-construction phase, construction phase and post construction phase. During the project phase emphasis shall on the alignment with Environment and Social Impact Assessment, Stakeholder Engagement Programme and Grievance Management System. During the operation phase emphasis will on the alignment with the HR Policies and Employee Grievance Management System. Local Business Partners are very critical stakeholders. IFL shall expect an undertaking by all its local business partners to GBVH policy of the company. With reference to local business partners emphasis shall be given to training and capacity building for stakeholder engagement and grievance management.

3.1.7.2 Business Case for GBVH

GBVH is a life-threatening, global health issue that violates international human rights laws and principles of gender equality. This policy, therefore, is aimed at addressing this social malaise which could lead to mental, physical and psychological problems. These problems have potential for far reaching organizational setback in form of low morale, low trust, lack of teamwork, fear full work environment, absenteeism, industrial actions, litigations, loss of productivity and above all loss of reputation for the company.

3.1.7.3 Classification of GBVH

Situations classified as such include but not limited to the following violent conduct and harassment:

- a) Sexual battery, verbal, physical assault and abuse including rape, molestation, unwanted touching, pinching, kissing, caressing, grabbing, poking another employee's body.

- b) Unwanted conduct or sexual advances such as remarks, jokes, or comments about an employee's sexuality or appearance.
- c) Any act, display or show of offensive objects either in hardcopy or in electronic form capable of causing sexual excitement or suggestive of unwelcome sexual conducts or advances.
- d) Emotional and psychological abuse such as deprivation, threats or coercion or any conduct that consist of unwanted requests and persistent proposals.
- e) Any form of inducement, intimidation, preferential treatment or promises of preferential treatment to an employee with a view to submitting to sexual conduct or engaging in sexual activity.
- f) Any intention to make the performance of an employee's job more difficult either in retaliation of or subjecting to threats to unwelcome sexual conducts or advances.
- g) Discrimination, victimization, or punishment for sexual harassment complaints

3.1.7.4 Risk Identification, Risk Management and Accountabilities

Stages	Action to Address the Risk	Risk Management & Monitoring	General Principles	Accountability
Project Phase:				
a. Pre-construction Phase	Social and Environment Impact Assessment (ESIA)	a. Stakeholder Engagement Programme. B. Stakeholder Grievance Management System	Inclusion of women representatives in Management Committees	Head - Human Resources
b. Construction Phase	Development of Policies & Procedure	Grievance Management Committee	Participation of women in the Grievance Management Committee	Manager - Human Resources
c. Post Construction Phase	Development of demobilization policy	Grievance Management Committee	Participation of women in the Grievance Management Committee	Manager - Human Resources
Operation Phase:				
a Internal	Development of Policies & Procedures	Employee Handbook Grievance Management Committee Formation Women Committee	Inclusion & empowerment of Women in the Committee	Manager - Human Resources
b. External	Development of ESMP / ESAP / MOUs	a. Stakeholder Engagement Programme. B. Stakeholder Grievance Management System	Women member in Project Advisory Committee and decision-making process	Head - Community Relations

3.1.7.5 Capacity building and Resources

Training & Awareness building - Management strongly believes that training and development is fundamental to the inculcation of culture of respect for human rights at the workplace.

Women Working Committee – self managed women committee is vital in addressing the issue of GBVH. Management shall constitute a special women cell to oversee the GBVH aspects.

Indorama shall deploy all relevant resources to address such incidences whenever they occur, through her internal mechanism and facilities such as the Indorama Industrial Clinic, the Health Management Organization system, and the Closed-circuit television system (CCTV) for monitoring sensitive and remote places in the Complex.

The Human Resources Manager and the Industrial Relations Manager are the Ombudsman for this process that coordinates the operations of the Committee. All HODs, Safety Ambassadors and Security officers/Journey Managers are to be on high alert with special focus on areas such as locker rooms, wash rooms, remote office/plant areas, night duty shift, recreation club.

There shall also, be briefing for official travelers or commuters by Security/Journey Managers, to prevent any incident or act that breaches this policy. Other support agencies are a detachment of the Nigeria Police and the Special Mobile Police deployed to the Indorama Complex.

3.1.7.6 General Principles

Indorama shall continue to uphold an equal opportunity employer tenets and views GBVH with utmost seriousness and will not be permitted or condoned.

Company shall promote the policy of inclusiveness and collaboration.

The company shall also ensure to continuous efforts to create and maintain an enabling environment for all stakeholders including the in-house labor Unions representation to promote fair hearing, the spirit of team work and collaboration as well as a Special Disciplinary Committee for this purpose, with a compulsory female member.

3.1.7.8 Grievance Management System

Grievance management will be integrated with the existing process as enshrined in Employee Handbook. However, GBVH will require special supervision by the Ombudsman, who will activate a Special Disciplinary Committee with a female gender representation to investigate and make recommendations for Management at any time an incidence of sexual harassment or violence is reported.

The system shall also accommodate an abridged process where an alleged incidence of sexual harassment or violence, the person offended or harassed shall have the responsibility to report the incidence of harassment to the Human Resources Manager. Such report should either be in person or through an anonymous communication via email/letter or phone (0805-757-5709), as and when such situation occurs thus:

3.1.7.9 Monitoring and Reporting

Indorama commits to follow-up after the conclusion or closure of any incidence under focus. Consequently, the Ombudsman shall ensure periodic review of the process and monitor the situation for assurance of the desired change or whether it has progressed from harassing to

victimization to enable further action or advise as appropriate.

The outcome of this follow-up action may lead to a fresh complaint of victimization as the case may be and ultimately, a more severe disciplinary action on such offender. It may also lead to subjecting such person(s) to appropriate training to address the situation.

In extreme cases, the victim may be advised and/or supported to take further action such as civil legal action for damages.

3.1.7.10 Confidentiality and Management of Outcome

All reported cases of sexual harassment shall be investigated as prescribed in this policy and treated with the strictest of confidentiality. Subsequently, Management shall take appropriate disciplinary measures for established violation of this policy in accordance with the recommendation of the Special Disciplinary Committee which shall include but not limited to verbal or written warning, suspension from work, termination of employment or dismissal from service.

3.1.8 Retaliation and Reprisal Policy

Indorama recognizes the possibilities of intimidations or victimization in the life cycle of operations or projects in the organization. Indorama also recognizes the importance or the need for well laid down policy framework for prevention of any kind of intimidation or victimization as it has the potential to violate the basic human rights and can have negative impact on the individual or group or organization. The objective of this document is to provide policy framework, establish organizational commitment, assessment of risk, build organization capabilities for prevention and mitigation measures and proffer effective grievance management system for safeguarding the human rights values.

The key objective of this policy is to

- a) Develop and implement a more comprehensive system to prevent and address intimidation and Retaliations
- b) Development management system and capability building to prevent Retaliation.
- c) Develop collaboration with stakeholders for prevention and addressing the issues of Retaliation
- d) Integration of guidelines on retaliation with existing stakeholder engagement programmes, grievance management systems and disciplinary management procedure.

This policy also aims to provide guidelines for developing policies for preventing retaliations during different stages of project / operation / business life cycle in the organization.

3.1.8.1 Indorama Policy against Retaliation

Indorama is committed to principle of human rights by providing access to effective grievance management systems for its employees, stakeholders, and local business partners. Further, Indorama also expects from its local business partners working with the company to provide access effective grievance management systems for its employees and stakeholders for freedom of expression and grievance redressal without any fear of Retaliation or victimization. Indorama would like to state that it does not tolerate any form of retaliation against individuals or group or organization who has lodged a complaint or voiced criticism or concerns about the company.

Indorama believes in strict adherence to applicable due process in addressing the grievances received from individual or group or organization.

3.1.8.2 Scope of guidelines against Retaliation

Guideline is applicable to both internal and external stakeholders. Indorama expects all its local business partners connected with its projects and operations to undertake the commitment to abide by the policy framework against retaliation and Retaliation.

3.1.8.3 Definition of Retaliation

Retaliation can include any form of threat, harassment, violence, or punitive action taken against an individual, group, or organization. The victims of retaliation can be internal to the company or project (for example, direct and contract employees, or project personnel) or they can be external (for example community members, youth group, women group etc).

Indorama also takes cognizance of possibilities of anonymous threats for raising concerns about project impacts; workers who are dismissed from their jobs for attempting to form a union; or violence used by security forces against stakeholders who oppose a development project. Accordingly, Indorama has well established procedure for management of Anonymous grievance with objective to protect the interest of aggrieved.

3.1.8.4 Risk Identification and Assessment of Risks at different stages of projects / operations and processes to prevent retaliation or Retaliations

Holistic approach is fundamental in the prevention and management of retaliation in the organization. An overview of identification of risk and assessment of impacts, management systems and key collaborating stakeholders are given below:

Stages	Concerns / Impacts	Stakeholder Potential to be affected	Management Processes and System	Moderating / Mediating Agencies
Project Phase:				
a. Pre construction Phase	Social and Environment Impact	Community Stakeholders Vulnerable Groups NGOs	1. Social & Environment Impact Assessment (ESIA) 2. Project Scope Workshop with Stakeholders 3. Public Forums with stakeholders ESMP 4. Technical Panel Review - review of impacts and mitigation measure 5. ESAP 6. Stakeholder Engagement Programme	1. Government Regulatory Authorities 2. LIESA
b. Construction Phase	Condition of service / working condition /Formation of Unions / condition of services	employees / union executives / contractors	Employment Handbook / Condition of Service / Grievance Management System /Formation of union and election of officials	Regulatory Authorities National Unions Branch Unions
c. Post Construction Phase	demobilization / payment of terminal benefits / disengagement of contractors	employees / Contractors	Collective Bargaining Agreements / Contract Terms and conditions	National Unions / Arbitrations
Operation Phase				
a Internal	Condition of service / working condition /Formation of Unions / condition of services	employees / union executives / contractors	Employment Handbook / Condition of Service / Grievance Management System /Formation of union and election of officials	Regulatory Authorities National Unions Branch Unions Contractors' Association Arbitration
b. External	ESMP / Employment / Contracts	Community Stakeholders / contractors	Memorandum of Understanding (MOU) / Stakeholder Engagement Programme / Regulatory Audit on Environment & Social Impact	Project Advisory Committee / Government / LIESA / Contractors Association

3.1.8.5 Types of Retaliation

This section aims to illustrate few examples of retaliation during stakeholder engagement processes as well as at workplace:

Type of Retaliation	Example of Retaliation	Potential stakeholders may be affected	Possible sources of Retaliation
Verbal intimidation	Threatening phone calls or visits	Family members of local community leaders	Company representatives involved in the project. Other community members or local stakeholders in favor of the project
Physical violence	Beatings during gatherings at project site to demonstrate against the project	Community members	Staff of private security forces contracted for the project
Physical surveillance	Project proponents attending public meetings about the project to take note of who is expressing opposition to it	Community members	Local business owners
Discrimination in relation to employment	Allocation of undesirable, "dirty" jobs to workers active in trade unions	Workers active in trade unions	Contract company representatives involved in the project
Disciplinary action and dismissal	Targeted disciplinary action and firing of workers who have reported concerns about working conditions at the site	Workers	Company representatives

3.1.8.6 Need for addressing the risk of retaliation:

Indorama strongly believes that an atmosphere of fear, mistrust, and silence created by Retaliations does not create a healthy environment for business to succeed and grow in. It is not conducive to building good relationships with workers, local communities, customers, investors, or the public, and it may jeopardize the company's reputation and social license to operate.

Creating a safe and open environment for workers and communities to raise E&S concerns can help a company manage risks by proactively identifying potential problems and working with affected stakeholders to address issues before they escalate. Having open and ongoing dialogue with communities and workers builds trust, can improve worker productivity, and enhance the company's social license to operate. When project stakeholders do not feel that their concerns are being heard or taken seriously, it can lead to an escalation of tensions, increased public opposition, and polarized relations within communities. Early and upstream engagement is key to both preventing Retaliations and enabling sustainable business practices.

3.1.8.7 Capacity building:

Indorama recognizes the importance creating and maintaining a culture of openness at the company; communicating clear policies and procedures on anti-retaliation to workers, contractors, partners, government, security forces, and communities; assessing the risks; strengthening systems; and being ready to address allegations of Retaliations against project stakeholders.

Indorama believes in holistic approach for addressing the issue of retaliation. Company has developed working documents and management system. Company committed to follow the due as stated in the working documents and management for addressing the concern raised against the new project or during construction phase of new project or operations phase of the business. Summary table below gives an overview of stakeholders who may be affected and the corresponding documents or management system put in place which establishes the due process for prevention and management of retaliation

Capacity building involves systematic approach to identification of stakeholders who would be affected, putting in place management system that is going to be accessible to affected personnel and integration these management system with existing grievance management system.

Capacity building also involves communication of policy framework, creating awareness amongst internal & external stakeholders, training and development of personnel responsible for driving the processes.

Capacity building extends to local business partners through training towards stakeholder engagement and grievance management system.

Stakeholder Potential to be affected	Management System
Community Stakeholders / Vulnerable Groups / NGOs	Stakeholder Engagement Programme Stakeholder Grievance Management System LIESA Supervision Audit – biannually Regulatory Audits Quarterly Monitoring Report to IFC
employees / union executives	Employment Handbook Condition of Service Employee Grievance Management System Collective Bargaining Agreement LIESA Supervision Audit – biannually Regulatory Audits Quarterly Monitoring Report to IFC
Contractors / Vendors	Contract Terms and conditions Undertaking by contractors to follow the guidelines against retaliation

3.1.8.8 Management Structure

Organization structure with clear roles and responsibilities is fundamental to effective implementation of the guidelines against Retaliation.

The summary overview of management structure is given below:

Functional team	Scope of Work	Responsibility
Board and Management	Sets the tone for the company culture by encouraging an open culture that encourages communities and workers to share their concerns, and reinforcing an anti-retaliatory message to both internal and external stakeholders.	Managing Director / CEO
Environmental and Social Management	Responsible for identification, avoidance, and mitigation for E&S risks and impacts, including risks of retaliation against project stakeholders.	Head - Environment for environmental aspects Head - Human Resources for social aspects
Corporate Social Responsibility & Government Relations	Responsible for defining and developing CSR objectives, and may also have an important role in establishing collaborative relationships with organizations that could provide support for training, and for targeted risk assessments.	Head Community Relations & Development
Human Resources (HR)	Manages employee concerns and often acts as a focal point for worker grievances. HR can monitor potential signs of employees being placed under increased scrutiny by supervisors or coworkers ostracizing or excluding them; inconsistent or increased performance expectations; or a sudden increase in negative documentation about an employee's performance.	Manager - Human Resources
Communications and External Liaisoning	Directs messaging to media, financiers, government agencies, and other external stakeholders, and can be mobilized to respond to risks and incidents.	Head - Corporate Communication
Community Relations	Has direct engagement with project-affected communities and is often a first point of contact for communities at risk of or subject to retaliation. May also have a role in operational- level grievance mechanisms.	Head Community Relations
Procurement	Sets bidding criteria and contractual requirements that can reflect zero-tolerance statements, as appropriate.	Head Commercial
Workers' Representatives (Worker Organizations)	Manages the relationship between senior management and project workers, and can communicate any concerns about retaliation. This includes playing a role in engaging frontline- level workers and helping to address issues early to avoid escalation.	Union
Project Site Management	Site management, and their staff, are often a first point of contact for stakeholders at the project gates, and may therefore be informed about retaliation risks or incidents.	Project Manager

Contractors and Suppliers	Local business partners typically have direct engagement with project stakeholders and can share information about risks or incidents. (They may also be a potential source of retaliation, and for that reason, providing effective staff training can be an important preventative measure.)	Head Commercial
Security	Often interfacing with community members and workers, security management is responsible for ensuring training, vetting, and monitoring of the conduct of personnel and setting the use of force protocols. This includes reflecting anti-retaliation policies in codes of conduct.	Head Security
Designated Individual/Team: Investigating Retaliation allegations	Whether it is designated individuals in HR, community relations, management, or a third-party entity, this role is critical for receiving and responding to allegations quickly and sensitively, and putting appropriate systems in place for the protection of complainant confidentiality.	Manager - Human Resources
Designated Individual/Team: Owns implementation of anti-retaliation commitments	One individual, or a team, should be assigned responsibility for monitoring implementation of the anti-retaliation statement made by the company.	Manager - Human Resources

3.1.8.9 Grievance Management System

The grievance management shall be integrated with existing procedure which is enshrined in the Employee Handbook. The grievance management procedure is also aligned with disciplinary mechanism/ investigating procedures which is outlined and enshrined in the Collective Bargaining Agreements with the in-house labor Unions.

3.1.8.10 Monitoring

Indorama commits to follow-up after the conclusion or closure of any incidence under focus. Consequently, the Human Resources Department shall ensure periodic review of the process and monitor the situation for assurance of the desired change to enable further action or advise as appropriate.

3.2 Employment Status

The Company respects the law of Federal Republic of Nigeria on employment. All appointment shall be done on merit basis while taking into consideration the relevant educational qualification, professional experience and other requisite skills and competency of the job profile keeping in view the interests of stakeholders.

Accordingly, the employees of the company are categorized as follows:

- Junior Staff
- Senior Staff
- Management Staff

3.3 Trainee (SIWES)

The Company accepts persons on Students Industrial Work Experience Scheme (SIWES) under applicable rules. These categories of persons (students) are engaged on the conditions stated by the higher institutions from where they are sent or deployed. However, the Company is not under any obligation to employ such trainees during and/or after they have completed their term with the company

3.4 Employee on Probation

Applicants selected for employment shall undergo a probationary period of six (6) months. Appointment may be either confirmed or terminated depending on the circumstances, the probationary period could be extended by a maximum of three (3) months. Thereafter, the employee shall either be terminated for unsatisfactory performance or receive a letter of confirmation for successful completion of the probation period, based on the probation report of the concerned Head of Department.

3.5 Employment Medical Examination

All prospective employees must undergo a medical examination as a condition of their offer of employment, and cannot join the Company in the proper sense of it until their medical fitness has been confirmed

3.6 Orientation & Induction

All new employees shall receive a letter of appointment stating among others, the name of the employer, employee, the job description and place of primary assignment.

All new employees will undergo an orientation and induction program, to enable them settle into new work environment and quickly understand the duties required of his/her position.

3.7 Employee Identity Card

All employees shall be provided with Identification Card (ID card) which shall be worn by them at all time.

It is the prerogative of the Human Resources Department to supervise issuance and replacement of identity cards for employees when the need arises.

Employees are required to submit two (2) most recent passport photographs on reporting for duty.

ID card is the property of the Company. Employees are expected to safeguard the id card from theft, damage and misplacement.

Where an identification card is lost, it must be reported to the employee's immediate Supervisor and HRD for a replacement card to be issued. Other changes which make a card incorrect or out-dated should also be reported to HRD and will determine if a new card need be issued

3.8 Statutory Holidays

All public holidays approved by either the Federal or State Government will be observed by the Company

3.9 Hours of Work

Normal working hour shall be five (5) days a week, of eight (8) working hours per day and forty (40) hours per week as enshrined in the Nigeria Labour Laws and the International Labour Organization (ILO). The timing is as shown below:

Monday to Friday	0800 hours	- 1230 hours
Lunch Break	1230 hours	- 1330 hours
	1330 hours	- 1700 hours

- One may be required to work on Saturdays, Sundays and Gazetted Public Holidays depending on exigency of work.
- The break period can be varied as a result of the exigencies of work.
- Swapping of individual stall schedule is prohibited.

3.10 Shift Work

Shift workers are those employees who work a shift system of twenty-four (24) hours broken into two (0700 hours – 1900 hours) and (1900 hours – 0700 hours) or three (0700 hours – 1400 hours,) (1400 hours – 2200 hours) (2200 hours – 0700 hours) shift.

3.11 Overtime

The expression “Overtime” is used in this Handbook to refer to the hours which an employee is required to work in excess of the normal hours of work.

- Junior Staff required to work extra time shall receive overtime as follows:
 - (a) Normal Working Days (Monday – Friday) – 100% of the hourly rate based on Basic Salary.
 - (b) Saturdays, Sundays, Rest Days and Gazetted Public Holidays – 125% of the hourly rates based on the Basic Salary.
- Senior Staff/Non- Unionized senior Staff/Management Staff required to work extra time shall cover as under:
 - (a) Inconvenience/Excess Hours allowance in lieu of normal working day, week offs or public holidays as per the policy.

Overtime claims not authorized and approved by the immediate Supervisor and Head of Department and not as per provisions laid down herein, shall not be paid.

3.12 Confidential Report from Previous Employer/Reference Check

Confidential report(s) shall be obtained on every staff at any time deemed fit by the Company so far as the staff is in the employment of the Company.

On receipt of an adverse report, appropriate disciplinary action will be taken based on the gravity of the report.

Certificate verification exercise shall also be carried out by the Management. The exercise will cover those institutions attended by the employees in line with the certificate submitted prior to engagement and during employment of employees by the Company. All details contained in the employee's personal record with Human Resources (HR) Department shall be taken into consideration for the purpose of this exercise. In case of any false/forged certificate having been submitted, the employee will be liable to be terminated forthwith without any notice/compensation thereof.

At the time of engagement, the employee shall submit the following documents:

- CV;
- Letter of application;
- Academic credentials;
- Birth certificate;
- Marriage certificate (if married);
- NYSC discharge certificate (for graduate employees); and
- Any other document as may be required by Management.

SECTION - IV

4. Standard Conduct and Work Ethics

4.1 Loyalty

Employees are expected to perform their assigned tasks diligently having the best interests and undivided loyalty to the company. Employees are therefore not permitted to accept employment from other organisations while in the employment of Indorama fertilizer and Chemical Limited

4.2 Work Attendance/Absenteeism/Late Coming

Lateness, absenteeism and tardiness place an extra burden on other employees. Therefore, the Company expects that every employee will report to work regularly and punctually, the violation of which will be subject to discipline

- No employee shall be absent from work on any day without obtaining the prior permission of his immediate supervisor and sanctioned by the Head of Department.
- The Company will maintain strict control by keeping proper documents on Time-in and Time-Out at its offices, plants, work locations or any other designated location in the complex.
- All employees are required to be punctual to work and ensure that the clocking in/clocking out is done within the stipulated time as per the policy.
- It is strictly forbidden to sign, register another employee's attendance/log book or alter his/her own attendance/log book in any manner or form. Any such act will be regarded as fraud and a breach of discipline.
- No explanation for failure to register one's attendance will be accepted and shall be treated as absence from duty unless such an explanation is endorsed by the Head of Department.
- It is the responsibility of the employees to justify his/her absence from work. Any unjustified absence will be considered a breach of discipline.
- Missing from workplace without permission or approval letter is subject to disciplinary action.

Staff having clocked in and want to go outside the complex, shall be required to obtain Exit Permit from their respective Head of Department.

4.3 Mobile/Telephone Usage

The Company shall allocate mobile phone sim cards to certain category of employees by virtue of the nature of their job to facilitate communication flow. The company will also provide call credits or recharge cards as appropriate up to an approved limit

The Company telephones are intended for use to serve Company customers and in conducting the Company's business. The Company does not allow trunk calls and international calls on personal matters.

4.4 Grooming & Dress Code

The Company encourages employees to be properly dressed and groomed and ensure that their mode of dressing conforms to their work situation and environment.

4.5 Smoking

Employees shall observe 'NO SMOKING' environment rules and regulations and those Company Health, Safety, Environment, and Fire (HSEF) rules and regulations concerning this subject matter.

4.6 Drug and Substance Abuse

The Company is committed to providing a safe and productive workplace for all employees. In line with this commitment, the following rules regarding alcohol and drugs abuse have been established for all employees, regardless of grade level or position. It is therefore a gross misconduct for an employee to engage in the under- listed practice during working hours while in Company premises or elsewhere on Company business:

- The use, manufacture, distribution, storing, possession, sale, or purchase of controlled substances of abuse on Company property is prohibited.
- Being under the influence of illegal drugs, alcohol, or substances of abuse on Company property is prohibited.

For the purpose of this Handbook, Drugs abuse is defined as any chemical substance that produces physical, emotional, mental or behavioural change in the user

4.7 Safety & Security

All applications for work/safety from employees must be channelled through and approved by the respective Heads of Department or unit in accordance with the approved Management guidelines.

All employees in the work areas shall be provided with adequate safety protective wears e.g. work overalls, safety boots/shoes, safety helmets, safety goggles, as determined by the HSE Policy of the Company.

The following regulations shall apply in the use of work/safety equipment: -

- Work clothes and overalls shall be worn only in the plant or work station premises.
- Employees are responsible for the safe custody of work/safety equipment issued to them. The cost of any equipment lost due to carelessness or negligence on the part of employees will be recovered from the salary of the concerned employee.
- Failure to use the safety equipment or any form of non-compliance with the Safety Regulations in force in the plant or workstation shall be regarded as a breach of discipline.
- Every employee is expected to take care of his/her work and endeavour to prevent accidents. Accidents can be avoided if instructions, safety measures and regulations are adhered to strictly.
- Use of mobile phones is prohibited in the control rooms.

4.7.1 Security

It is the policy of the Company to ensure that the security of life and property in the complex is secured.

- Employees are to note that the Security men are under instructions to conduct random checks on them at anytime and anywhere within the Company's premises.
- Any resistance to security check on the part of the employee constitutes a serious breach of discipline and a gross misconduct.
- Unofficial visitors shall not be allowed into the plants under any circumstances.

Employees shall endeavour to restrict personal or private visitors except in cases of serious emergencies. Employees may, however, be allowed to receive private visitors in a designated office space after seeking special permission from appropriate authority.

4.7.2 Access to Company Premises

- In order to protect employee and company property, procedures shall be established from time to time to limit access to the Company before and after business hours, and on non-working days.
- Only employee or properly identified authorized persons may be allowed into the company premises.
- Employees are expected to always wear their Identity Cards (Id)

4.7.3 Theft

In case of theft incident: -

Theft of Company property or employee's personal belongings shall be reported.

The Head of Unit/Department where the incident occurred shall supply background information in a memo to the Human Resources (HR) Department.

Where an employee loses a personal effect, he/she shall report to the Human Resources (HR) Department directly.

4.8 Information Technology (IT Policy)

The Company recognizes that the ultimate responsibility for ensuring correct use of e- mail, internet access, and on-line systems lies with every user. Supervisors/Managers in conjunction with IT, and the Human Resources Departments are formally responsible for ensuring that users understand and respect the Company's systems and communications practices.

Inappropriate Use:

- Users shall not use official e-mail, internet access, or on-line services for personal financial gains, political, religious campaigning, creating/contributing to/forwarding any disruptive or potentially offensive messages (including pictures) which may contain any comment that may insult a person's political belief, religious belief, national origin, ethnicity or disability.
- Users shall not use the systems to copy or transmit trade secrets of the Company or other companies to unauthorized addresses, proprietary financial or business operations information.

System's messages should be treated as confidential by all employees. Employees who attempt to access other persons' system without prior approval of employer will be considered to have violated this practice.

4.9 Notice Board / Information Bulletin

A bulletin board is located within the Company premises essentially for disseminating information to staff, and also for employees to announce various activities of mutual interest to their colleagues.

All notice intended for posting on the bulletin board must receive prior approval of the Human Resources Department.

4.10 Public Statement

Employees shall not make representations to any individual or to the general public on matters concerning politics or government policies on behalf of the Company or communicate their personal views as representing the views or positions of the company.

The Company's introduction, representation or dissemination of any sort of information on social networking websites or in any print and electronic media is prohibited and subject to disciplinary action.

4.11 Government Relations

All dealings with Government and official authorities must be approved by the management of the company, transparent and above board and employee must not exceed the limits of their actual or ostensible authority.

4.12 Accurate Records

- There shall be a recording of all business dealings.
- All books and records of the Company are to be kept in a complete and accurate manner.
- Business transactions must be recorded in such a manner as to reflect true and fair values of that transaction.

SECTION - V

5. Salary Administration

5.1 Salary

The Salary is exclusive and confidential information to the employee and officials of the Human Resources (HR) Department are responsible for its administration

5.2 Pay Period

The working month shall begin on the first day of the month and end on the last day of the month. However, salaries shall be paid on the 26th of each month into the individual bank account. Where this date falls on a weekend or public holiday, salaries shall be paid on the Friday preceding it or the working day after the 26th. In the month of December, all efforts shall be made for salaries to be paid on the 18th

5.3 Employee Taxation

The Company will observe the highest level of corporate ethics and will abide to the payment of taxes. Employees are solely liable for taxes on their compensation, which will be deducted by the Company from the employees' salary at source and deposited to the concerned tax authority as per the provision of the Pay-As-You-Earn (PAYE) guidelines under the Personal Income Tax Act.

Management shall facilitate the issuance of tax receipts/clearance certificates, through the Finance/Accounts Department, to all employees for the tax deducted from their salaries at the end of the year

5.4 Other Deductions

Where applicable, the company shall in addition to personal income tax deductions, also deduct from employee's salaries, the following:

- Loans and advances due;
- Pension scheme contributions;
- Thrift and Credit contributions;
- Association dues (for unionized employees); and
- Any other deduction(s) made according to law

SECTION - VI

6. Training Policy

The Company's Training Policy is to provide a conducive learning environment and development opportunities to the employees for building their capacity to innovate and deliver quality performance for meeting the employee's career progression and company's business objectives.

Training is an integral part of developing manpower capabilities. Individual training will be based on training need identification.

The Company has a well-equipped training and development centre. Company conducts the following training programmes as per business requirement and training need identification: -

- **Workshops:** These involve employees participation and brainstorming on a particular theme for the purpose of disseminating knowledge.
- **Seminars:** These are similar to workshops but are more formal with organized lectures within the Company.
- **On-the Job in-house training:** This is a mentorship arrangement where supervisor coaches his/her subordinate as a part of his/her job. A lot of experience is gained in this process.
- **Know Your Company Course:** New comers or the established employees are made to attend an in-house 'Know Your Company Course' where senior Management in each Department are able to explain functions/roles in the organization. The Managing Director usually opens this course.
- **Awareness Programme:** Safety at work and daily life, health and environment related.
- **Supervisory Course:** This course is for the employees that have supervisory potentials.
- **Advanced Courses:** These courses are for the employees that can follow such courses and who possess excellent potentials.
- **Middle Management Courses:** These are for employees who have been identified and whose potentials are at least those of middle managers.
- **Management Development Courses:** For employees who have been clearly identified as possessing senior management potentials.
- **Pre-Retirement Seminars/End of Service Seminars:** These are for employees who are retiring from the service of the Company.
- **External and Overseas Training:** This is a specialized training and attendees are selected based on needs and is strictly at Management discretion.

Nomination shall be initiated by the immediate supervisor, recommended by respective Head of Departments, approved by the Head of Operations and forwarded

to the Training Section and such recommendation must be forwarded to the Human Resources (HR) Department for action.

Employee shall be required to sign service bond in case of specialised training programmes.

It is the policy of the Company that participants in any External/Overseas training programmes shall submit a copy of the course material to the Training Department for central repository.

On the training and staff development programmes the company believes that staff development among other things is a dynamic process and that such process is better carried out through continuous rethinking and re-examining the staff development requirements.

Implementation of training programmes shall be the responsibility of the training Unit in coordination with the respective Head of Department (HOD).

6.1 Performance Management System

The Company has established a scientific and objective performance assessment system and it endeavours to continually improve and adapt advanced tools towards fostering a performance-based culture. The evaluation of performance will be done as per the laid down policy of the Company.

SECTION – VII

7. Grievance Procedure and Management in Indorama Eleme Fertilizer and Chemicals Limited (IFL)

In Indorama Eleme Fertilizer & Chemicals Limited (IFL) Management recognizes that grievances fact of life. We also recognize the fact that how we respond (or perceived to be responding) when such grievances surface is important and can have significant implications for business performance.

IFL Management reasons that grievance mechanism should flow from a company's broader process of employee engagement and business integrity principles and integrate the various elements of the engagement.

More specifically, IFL recognizes the following facts:

- i. That grievance is a sign of an employee's discontent with his/her job or his/her relationship with colleagues and may arise out of day to day working relationship in the organization.
- ii. That grievance is a difference, complaint or a dispute regarding the interpretation or application of established policies and/or procedures governing terms of employment, working condition, hours of work or compensation.
- iii. That grievance is one of the factors that affects employees and their work environment.
- iv. That Grievance management or handling is an essential part of cultivating good employee relations and running a fair, successful, and productive workplace.
- v. That Grievances are natural in any organization and should not be swept under the carpet.
- vi. That all grievances should be solved as early as possible otherwise they could create serious problems for the organization, the industry and of course the society.
- vii. There may be ground too for anonymous complaints or grievances from parties not known to the organization.

- viii. The company does not allow victimization of grievant who follow this procedure.

7.1 Aims and Objectives of Grievance Management in IFL

The main aim of grievance management in Indorama Eleme Fertilizer & Chemicals Limited (IFL) is to spell out the policy on handling grievances for employees of the company and the approach to dealing with them, and to facilitate communication in the workplace.

The following are the specific objectives of grievance management in IFL.

- i. To have good employee/manager working relations
- ii. For employees to be satisfied that they are being fairly treated
- iii. Have a fair hearing by their immediate supervisor concerning any grievance that the employee may wish to raise.
- iv. Have the right of appeal to a more senior officer against a decision made by their immediate supervisor.
- v. Have the right to be accompanied by a fellow employee of their choice when raising a grievance or appealing against a decision.
- vi. Understand what is happening to their cases and who is involved and what their role in the matter is.

7.2 Process and Practice of Grievance in IFL

IFL has a well-established process and practice of grievance in the workplace.

This is believed to be one of the proactive way to encouraging basic interaction between the employee and his/her supervisor or Manager. This process and practice are as follow:

- i. Grievances Boxes have placed at strategic places in the plant. It is multipurpose box wherein employees can also register their suggestions and near miss observations.
- ii. Process coordinator for grievance management shall ensure regular screening of submitted grievances, recording all grievances received in the

- iii. central register thereafter assigning to respective department for necessary action.
- iv. Head of the department shall take necessary action to resolve the grievance within his / her scope and authority and communicates the same to the Individual Employees. Head of the department shall escalate all grievances which are beyond the departmental scope / authority to Human Resources Department for necessary actions.
- v. Human Resources Department shall record the grievances escalated from Departments, resolve grievances and communicate the same to the employee(s) who had initiated the grievance.
- vi. All Head of Departments and Human Resources Department shall review status of all grievances every month.

7.3 Main Steps of Grievance Procedure and Management

Indorama Eleme Fertilizer & Chemicals Limited (IFL) advocates settling of a grievance as quickly as possible to its point of origin and encourages employees and their superiors/managers to resolve grievances informally. However, the following six (6) steps are set to address the situation where issues are not settled immediately. IFL has designed a YELLOW FORM specifically to ease application of the procedure.

Step I Statement of Grievance

An aggrieved employee shall register such grievance in writing first with his/her immediate Supervisor, who shall attend to the grievance and come back to the employee, in writing, with a solution within two (2) working days.

Step II First Appeal Level

If the employee is not satisfied with the reply of his/her immediate Supervisor, he/she shall first refer the matter to his/her Head of Section (HOS) and then followed by that of the Head of Department (HOD) within the next two (2) working days. The Head of Department shall investigate and communicate his/her solution to the aggrieved employee in writing within the next three (3) working days.

Step III Second Appeal Level

If the employee still remains unsatisfied with the answer, he/she shall present the matter to the Manager, Human Resources. The Manager Human Resources shall answer the grievance within a period of seven (7) working days.

Step IV Third Appeal Level

In the event that no agreement is reached at the completion of stage III above, the aggrieved employee shall petition the Managing Director who shall resolve the issue within 15 days

Step V Fourth Appeal Level

If no solution is reached, the aggrieved party may consult the Federal Ministry of Labour for the purpose of conciliation

Step VI Fifth Appeal Level

If the Federal Ministry of Labour and Productivity could not resolve the grievance /conflict the same should be recorded and both the company and aggrieved party may have the option of appropriate legal course.

7.4 Procedure for Managing Anonymous Grievances

The Management recognizes anonymous grievances and complaints as an important source of alert for the organization. Steps in managing anonymous grievances/complaints are as under.

Stage 1. Human Resources Department records and screens all anonymous grievances/complaints received based on its intent – i.e. if the contents are genuine or malicious.

Stage 2. – Human Resources Department further treats Grievances and complaints with genuine contents for severity. Grievances/complaints with less severity are handled by Human Resources Department through follow ups and fact finding.

Stage 3: - Human Resources Department initiates “Normal Investigation Process” for grievances/complaints with high severity such as sexual harassment, financial frauds, thefts etc. Normal Investigation Process – important steps followed for investigation into anonymous grievances are as under:

- Step I - Formation of Panel
- Step II - Determination of Terms of Reference for the investigating panel
- Step III – Investigation and Recommendation by the Panel
- Step IV – Management Action.

7.5 Role of the Human Resources Department in the Procedure

The Human Resources Department is responsible for advising the concerned parties on the handling of employee matters including grievances and may be directly involved at all stages. It is also responsible for monitoring the effectiveness of the grievance procedure and ensuring sufficient supply of Grievance Forms for use by employees when need arises, in addition the department will be the designated contact point for receiving the grievance forms at the conclusion of the grievance procedures, for record and future reference if need arises.

IFL EMPLOYEE GRIEVANCE YELLOW FORM

Name	Employee Id	Dept	Date

(option)

Grievance information		
Date	Time	Location
Proposed corrective action		
FOR OFFICIAL USE ONLY		
Action/comment by Dept	Please tick in the appropriate box below	
Name	Signature	Date
		Please tick in the appropriate box below
Name	Signature	Date

SECTION - VIII

8. Industrial & Employee Relations

It is the desire of Indorama Eleme Fertilizer & Chemicals Limited (IFL) to put a mechanism for liaising with parties who have dealings with the Company on employee related matters. These parties are the government, employers, employees and organized labour.

Further, in order to promote and enhance good working and harmonious relationship between peers, subordinates and superiors, the Company have put in place the following policies in the work place.

Employee relations policy, Grievance policy, Disciplinary policy, Non-discriminatory policy, Human rights policy, child labour prohibition policy, Sexual harassment policy, policies on bullying, smoking, substance abuse and AIDS policy.

8.1 Employee Relations Policy

Employee relations is a critical element of people management policies that has a positive impact on performance. In IFL, employee relations is a philosophy rather than as a management function or a well-defined activity. Its emphasis is on relationships and pro-activeness.

Management recognizes the fact that company needed to be capable of dealing with employees on both an individual and a representative basis. We understand too, that the emphasis is not so much on pay but issues such as recruitment, need to respond to labours. It is also about seeing the big picture and helping the company to take appropriate action. Specifically, it focuses on the following:

- i. Every employee shall have the right to have his/her interest represented to management of the company through their trade unions/association.
- ii. The relationship between the Management and the Trade unions/or association shall be built on mutual respect.
- iii. Both Management and Trade unions/or association will maintain a relationship of partnership.

8.2 Discipline and Disciplinary Procedures

The Company places high value on discipline. The Management and the employees have vital roles to play in maintaining discipline by ensuring that all relevant provisions of the Company policy are complied with.

The Management shall have the discretion to reprimand or issue query/or advisory note to an employee wanting in the discharge of his/her official duties in the Company.

There shall be a Company Disciplinary Committee (CDC) with representation of both Management and the employee for the purpose of fairness, equity and justice for all employees and protecting the interest of the Company.

8.2.1 Initial Query and Report

When it is alleged that a Staff has committed an offence, the Supervisor/Head of Section/Head of Department/or the Human Resources Department at the first instance shall issue a query to the offending staff. Such query should request the offending staff's written statement of defence and should stipulate a deadline of not more than forty-eight (48) hours.

8.2.2 Investigation

The Company Disciplinary Committee (CDC) within five (5) working days of receiving the initial report from the offending employee's Head of Department (HOD) or Human Resources Department shall carry out necessary investigation. The Company Disciplinary Committee (CDC) shall then produce a written summary of the case, relevant evidence and recommendations of the appropriate disciplinary action to the Head, Human Resources Department for further action(s). The final decision of the Management of the Company in line with the Collective Bargaining Agreement (CBA) and Condition of Service shall then be communicated to the offending employee through his/her Head of Department.

8.2.3 Disciplinary Measures

Depending on the gravity of the offence, the Human Resources Department shall issue to the offending employee: -

- Oral Warning
- Written Warning

An employee issued with more than one written warning letter within one calendar year, shall be deprived of any incentive in the form of bonus, promotion or annual increment.

- Suspension from Duty on Half:
 - a) An employee whose conduct is under investigation or conduct warranting summary dismissal may be suspended from duty for not more than three (3) month.
 - b) The employee being investigated and who has been placed on suspension shall be paid half of his/her monthly salary (CMS) for the period the suspension shall last.

- c) If the offending employee is not indicted in the report of the Company Disciplinary Committee (CDC), all amount withheld shall be paid back to him/her in full.

However, if at the end of the investigation, the employee is indicted, appropriate disciplinary measure shall be taken against such indicted employee.

- Termination of Appointment

Before the termination of the appointment of an employee, it must be proved to the satisfaction of the impartial investigating internal Company Disciplinary Committee (CDC) that the employee committed such alleged offence or misconduct such as:

- a) Alteration of official documents relating to finance, asset, commercial and security documents.
- b) Gross negligence of duty that causes serious harm to person(s) or damage to Company property/facilities
- c) Being under the influence of alcohol or drugs during his/her working hours after series of oral and written warnings.
- d) Serious safety and security violation that actually endanger or is likely to endanger the safety of personnel and or Company property.
- e) Bring arms and ammunitions into the Company premises
- f) Conviction of criminal charges by a court of competent jurisdiction
- g) Falsification or forgery of academic certificates/job related documents/credentials
- h) Wilful or malicious damage to the Company property
- i) Abandonment of place of work or duty for more than seventy-two (72) hours. j) Alteration of official documents relating to work attendance and Company log book
- k) Use of abusive language and or threatening superior(s), co-employee(s) and subordinate(s)
- l) Abuse of Company's IT facilities for pornography and violation of IT security.
- m) Repeated and cumulative absence from duty without permission n) Careless and poor attitude to work after several oral warnings
- o) Sleeping on duty after previous oral warnings
- p) Insubordination after investigation and confirmation by the CDC
- q) Unsatisfactory performance
- r) Failure to obey safety and security rules
- s) Failure to follow lawful and safe instructions t) Habitual lateness to work

In the termination of appointment of an employee, except in the case of summary dismissal, the following conditions shall apply:

- a) Two (2) week notice for employee on probation b) One (1) month notice for a confirmed employee.

Any party who fails to comply with the afore-mentioned conditions shall be liable to make payment in lieu of notice.

- Summary Dismissal

Any employee that engages in any act or conduct listed below shall be liable to summary dismissal after investigation and confirmation by the Company Disciplinary Committee (CDC).

Examples of such misconducts are:

- a) Theft/fraud
- b) Disloyalty to the Company, e.g. divulging of official secret or classified document to the competitor(s) of the Company that would be detrimental to the Company.

If an employee whose conduct is under investigation resigns, such resignation shall be kept on hold until the conclusion of the disciplinary process.

Any offence of criminal nature committed by any employee shall be referred to the law enforcement agencies for further investigation and prosecution as per the due process of the law

8.3 Exit Management

It is recognized that there may be instances where an employee may require exiting the premises to conduct some urgent personal or official business. In such circumstances, employees are enjoined to comply with the following procedures:

- Employees who wish to exit the Complex are required to obtain permission from his/her immediate Supervisor or HOD.
- After obtaining the above approval, concerned employee shall record the details of his or her movement in a Register kept in the department; and
- Employees whilst going out shall clock out and clock in through the biometric/access control system in addition to above.

SECTION - IX

9. Employee Welfare

Employee Welfare is an integral part of business objective of the company. We believe Employee Welfare is of utmost importance which creates a sense of belongingness towards organization and job satisfaction.

9.1 Staff Canteen

- Every employee on duty will be provided one meal per working day at the Canteen
- Where canteen facility is available, no substitute will be made for the meal.
- Non-employees are prohibited from the use of the Company's canteen facilities except as authorized by the Heads of Department.
- Employees are required to keep strictly to the time schedule for meals at the canteen except as authorized by the Heads of Department. Any abuse of canteen facilities shall be regarded as a breach of discipline.
- Any breakage or loss of canteen equipment occurring as a result of the action of an employee shall be reported immediately by him/her to the Catering Officer. Failure to report the incident or concealment of it shall be regarded as a breach of discipline. **(In view of covid, this service has been monetized)**

9.2 Staff Transportation Facility

Company shall operate transport facility in the designated route to facilitate staff members to come to work and go back home.

The Human Resources Department shall notify the employees of the designated routes and timing for transport services from time to time.

9.3 Parking

For parking purpose, the Company shall provide and maintain parking lots/facility for employees to park their personal car when at work on temporary/daily basis at no risk to the Company.

9.4 Staff Club

As part of the Company's commitment to work/life, a Staff Recreational Club facility has been established within the complex. The administration of the club is vested in the Club's Executive Management Committee which will be elected by members of the club. It is operated on a

voluntary membership basis and registration is by application through the Club Manager or HRD. Employees are encouraged to register to become members. A membership subscription fee is applicable and shall be determined from time to time by the Executive Committee.

9.5 Marriage Gift

All confirmed employees shall be presented with a marriage gift on the occasion of their marriage in line with company policy on the subject.

SECTION - X

10. Leave Types and Administration

The reason for the grant of Leave is to provide employees with sufficient time away from the workplace and rest, at least once after 12 months of continuous service. It also affords employees the opportunity to attend to family needs without disrupting their work. There are other forms of leave that may be granted to enable employees to attend to their personal needs.

Leave is taken at the discretion of Management at any time during the calendar year in which it is earned.

10.1 Annual Leave

A confirmed employee becomes eligible for annual leave and leave allowance on completion of twelve (12) months of continuous service.

Leave is taken at the discretion of Management at any time during the calendar year in which it is earned.

Leave allowance shall be paid when an employee is actually proceeding on leave.

10.2 Leave Period

The Human Resources Department will communicate the number of leave days to the concern employee and shall be as per the policy.

Leave allowance shall be paid once a year along with salary in the month prior to that in which the employee proceeds on leave.

10.3 Leave Roaster

At the beginning of each year, a leave roster from all Units/Departments is prepared. Every staff

in each respective Department shall fill their preferred leave period on this form. The form shall be countersigned by the Head of Department/Unit and the original copy shall be forwarded to the Human Resources Department.

10.4 Timings

Subject to operational requirements leave may be taken at any time of the same year, following the Departments overall leave programme.

10.5 Split Leave

Employee may be allowed to take leave more than once in a year if properly planned.

Split leave should be planned well in advance so that it may fit in with department's overall leave programme. Provided the amount (in total) of split leave does not exceed the amount of leave entitlement for a whole year.

10.6 Leave for Staff on Probation

Employees on probation shall be eligible for annual leave only after completion of 12 months. However, Head of Department may allow probationers casual leave which shall be deducted from their annual leave entitlements.

10.7 Accumulation of Leave

It is the Company's policy that leave should be taken during the calendar year when it is due, and should not be accumulated. Employees are required to avail their annual leave latest by 30th of March in the succeeding year.

10.8 Sick Leave

Sick leave is to be certified by the Company's appointed Medical Officer. For extended period of illness:

- All medical certificates of unfitness issued by a Medical Practitioner in favour of the employee must be duly certified /revalidated by the Company's Chief Medical Officer.
- An employee on prolonged medical leave shall be entitled to full consolidated monthly salary (CMS) payment for the first six (6) months and 50% consolidated monthly salary (CMS) payment for the second six (6) months during the period of illness. The Company shall upon medical advice decide the employment status of the staff.

10.9 . Medical Board

There may be occasions when assessment of cases has to be undertaken by a panel of top Management staff and Doctors/Company's Medical Officer appointed on an ad- hoc basis by the Human Resources (HR) Department.

Circumstances that require a Medical Board include but are not limited to the following:

- When a decision is required whether or not to release an employee on medical grounds from the Company.

- When contemplating compensation (in compliance with Employees' Compensation Act) for an employee who has been engaged in a serious industrial accident.

The purpose of such a panel is to assess the nature and type of the illness or accident/injury with a view to:

- Determining the degree of temporary or permanent disability resulting from the illness or injury sustained; and
- Making recommendations to management as to whether or not employee can remain in service and if so, in what capacity.

If recommendation is that the employee be released, Human Resources (HR) Department together with the relevant offices will make recommendations on the level of compensation to be paid to the employee concerned.

10.10. Release on Medical Ground

When an employee is absent from work through illness continuously for twelve(12) months , the Human Resources Department and Medical Officer of the Company are consulted for deciding the employment status of the concerned employee.

10.11. Maternity Leave

Maternity leave with pay shall be granted to confirmed female employees as follows:

- A confirmed female employee, after twelve (12) months of continuous service to the company, shall be entitled to maternity leave for a period of twelve (12) weeks provided that a Register Medical Practitioner has certified the pregnancy and the same has been confirmed by the Company's Medical Officer.
- The first six (6) weeks shall be granted to her prior to her expected date of delivery (EDD) and the next six (6) weeks after confinement, as advised by the Company's Medical Officer.
- Maternity leave and annual leave are to run concurrently, if annual leave is not yet taken, but in cases where it has been taken, such number of days shall be deducted from subsequent annual leave.
- A confirmed female employee on maternity leave shall be entitled to leave of absence with full monthly salary.
- The female employee nursing her child shall be allowed two (2) hours on a working day for a period of three (3) months for the purposes of breast feeding her baby child.
- Notification of birth shall be supported by a birth certificate.

10.12. Examination Leave

The Company shall allow staff to take leave for the purpose of attending examination. Confirmed employees who are desirous of attending an examination shall be required to submit the examination programme/time table through their Head of Department to Human Resources Department. Concerned staff shall be granted examination leave according to the time- table.

Examination leave shall be deducted from the Annual Leave entitlement.

10.13. Casual and Compassionate Leave

It is the policy of the Company to grant casual leave to confirmed employees only. The casual leave so granted and taken is deductible from his/her annual leave.

All confirmed employees are granted seven (7) days of casual leave to attend urgent personal matters which shall be deducted from his/her annual leave.

Compassionate leave is not deductible and a maximum of seven(7) days in a year but not exceeding two (2) days at a time is granted, in the case of bereavement of his/her father, moth, spouse and or child only.

SECTION - XI

11. Loans and Advances

11.01. Loans and Advances

Employees are paid salaries on a monthly basis and are expected to meet all foreseeable financial commitments from this income. Nonetheless, there may be certain major terms of necessary personal expenditure that goes beyond the immediate case resources of most employees.

In recognition of this, therefore, the company provides assistance in arranging loans for certain clearly defined purposes.

Type of loans that may be granted:

- Compassionate Loan
- Salary Advance
- Rent Advance
- Car loan

Granting of loans/advances is subject to careful review to ensure that the funds are used for the purpose intended, and each loan application is considered in its individual merits.

Also, granting of any loan is discretionary and the basic criterion governing such is the individual's capacity to repay his/her debt from his/her salary. Therefore, monthly deductions from salary for repayment of all loans/advances shall not exceed 33% of employee's Monthly Gross Salary.

SECTION - XII

12. Benefits and Allowances

12.1. Medical Health insurance Scheme

The Company has put in place, a Medical Insurance Scheme which covers employees, their spouses and a maximum of four children between the ages of 1 – 21 years.

In addition to the medical insurance scheme under the HMO system, the Company also operates a fully equipped medical clinic within the IEPL complex, which provides occupational health services, accident and emergency treatment for staff. Any employee who feels unwell during office hours can go to the clinic where treatment, referral or advice will be given

12.2. Child Education Assistance

It is the policy of the Company to assist employees in providing education for their wards at various levels of education in Nigeria. A sum of money shall be given out as assistance for this purpose and as per the arrangement stated below:

- Every child of school age (limited to a maximum of four (4) children) of concerned staff registered with Human Resources Department as contained in the staff records(Age of School child under reference is between 1 – 21 years).
- A form shall be completed by the staff and the form shall include details such as:-
Names
- Date and Place of birth, Name of School, Address and telephone number, /school fees paid per term, present class.
- It shall be a Government Approved School.
- The sum approved for the purpose shall be released during the month of September each year.

12.3. Death Benefits

In the case of death of an employee:

- **Condolence Visit:** A condolence letter and visit comprising of a five (5) member team will be sent from the company to the family, signed by an officer designated by the Managing Director.
- **Condolence Meeting:** The Company shall also organize a condolence meeting at the office premises in honour of the deceased employee.

- **Obituary Announcement:** On release or announcement of the funeral date of the deceased employee, the company shall put up an obituary announcement.
- **Funeral Ceremony:** On release or announcement of the funeral date, the company shall send its representative(s) to participate at the burial ceremony.
- **Burial Assistance:** The immediate beneficiary (ies) of an employee, who dies while in the course of service, shall be entitled to cash grant as per the company policy. This is to assist with the burial expenses.
- **Death of a Spouse:** In the event of death of a spouse, the employee shall be entitled to burial assistance as per the company policy.

12.4. Allowances for Employees

At present the following allowances are paid to employees.

12.4.1. Transfer Grant / Relocation Allowance

Where an employee is required to transfer permanently from one work location to another, the employee is entitled to a 'lump sum grant'.

Employee who is on permanent transfer from one location to another at the instance of the company shall be entitled to the following:

- Transfer allowance in lieu of Hotel Accommodation and Boarding expenses as per the policy.
- Disturbance allowance on the resumption of duty at the new location as per the policy.
- Cost of transportation to the new location for self, spouse and a maximum of four (4) children and household items at prevailing rate.

If while at the new location the Company terminates the appointment of the employee or retires him/her, the company shall transport him/her, the family and household effects to his original location or to his hometown, whichever the employee elects.

An employee who resigns his appointment with the Company does not enjoy this benefit.

If the transfer is at the instance of the employee concerned and management accedes to the request, none of the relocation benefits will apply to the employee so transferred.

12.4.2. Out of Station / Outstation Duty Allowance

This is also known as lodging and subsistence allowance. The allowance is paid to an employee who is required to perform duties away from his normal place of work to take care of lodging and meals where these are not directly provided by the company.

However, when the company provides for lodging and boarding, concerned employee shall be entitled for out of pocket allowance per night all inclusive as per the policy.

12.4.3. Leave Allowance

Eligible employee is qualified for leave allowance when he/she takes his/her annual leave and it will be paid along with the salary of corresponding month.

In case an employee is not able to take his/her annual leave due to work exigencies or any other work related matter, the leave allowance due to him/her shall be paid on the due date.

12.4.4. Rent Subsidy / Upfront

- The company shall continue to maintain the policy of assistance to confirmed employee to enable them live in suitable housing accommodation during the service period of the Company.
- In the event of an employee being confirmed during the year he/she will be paid monthly on pro-rata basis as applicable.
- In the event of an employee resigning from the services of the Company during the year, the allowance thus paid shall be recovered on monthly pro-rata basis as applicable

Staff living in Company rented accommodation is not eligible for the allowance. However, a

special amount shall be paid as Utility/Service Grant to be determined annually by Management based on status.

12.4.5. Mileage / Kilo-meter Allowance

Employees using their personal vehicles for Company business are entitled to kilometre allowance at rates determined from time to time by Management.

12.4.6. Hazard Allowance

Employees, working in the Fertilizer plant and who are not directly exposed to or handle hazardous substances shall be paid a General Hazard Allowance as per the policy.

12.4.7. Special Hazard Allowance

Employees working inside the Fertilizer plant and directly exposed to or directly handle hazardous substance shall be entitled to Special Hazard Allowance as per the policy.

12.4.8. Acting Allowance

An employee who is required to act by an official order on higher responsibility in absence of his/her senior for more than fifteen (15) days in a month shall be entitled to acting allowance as per the policy.

Official Order for acting on higher responsibility shall be approved by the Head of Function.

12.4.9. Shift Allowance

Employees who work in 24 hour rotating shift system shall be entitled to shift allowance as per the policy.

Shift Allowance will be pro-rated based on the actual number of days worked in 24 hour rotating shift system in a month.

SECTION - XIII

13. Bonus, Grants and Awards

13.1. TAM Bonus

Whenever, a major overhaul of the plant is carried out, which requires whole plant to be shut down for an extended period, staff who are directly involved in achieving a successful scheduled shutdown, inspection, maintenance and re-commission of the plant shall be paid one -time bonus per the policy. For the purpose of this clause, the management shall declare the schedule of TAM in advance.

13.2. Gift Voucher

The company shall present Gift Vouchers to all confirmed employees each year as per the policy.

13.3. Furniture Grant

Employees who have completed three (3) years of continuous service shall become eligible for furniture grant and subsequently every three (3) years from the date of the last grant.

13.4. End of Year Bonus

Confirmed employees who have worked for twelve (12) consecutive months shall be eligible for end of year bonus as per the policy, which shall be paid on 30th of November every year.

Employees having less than twelve (12) months service during the year shall be paid end of year bonus on pro-rata basis.

An employee who has served suspension from the duties as a punishment on the recommendation of Company Disciplinary Committee shall not be eligible for End of Year Bonus for the year.

13.5. Long Service Award

The Company's long service award program is designed to recognize and appreciate the valuable contributions and services of long serving employees. The award ceremony

holds annually during the end of year party for employees who have served in increments of 5 years irrespective of their status

SECTION - XIIV

14. End of Service Benefits

All the employees shall retire from the services on completion of sixty (60) years of age

End-of-service benefits refer to payments made by company to employees at the time of their final departure from service, and is paid in line with company policy on each of the heads listed below.

For this purpose, end-of-service shall include, Resignation, Retirement whether compulsory or otherwise, Termination, Redundancy or Death

The below mentioned benefits covers the post retirement aspects:

14.1. Gratuity

All employees who have faithfully served the company for a period of five (5) continuous years and whose service has come to an end under any of the above circumstances shall be entitled to gratuity in line with company policy on the subject.

14.2. Group Life Insurance

All employees are covered by the Group Life Insurance policy of the company in line with the provisions of the Pensions Reform Act 2004. In the event of death during the course of employment, the next-of-kin of such employee shall be entitled to the applicable benefit(s)

14.3. Pension Fund

The company shall contribute to the staff contributory pension fund in line with the Pensions Reform Act 2004. The pension fund is established to provide lump sum benefits at the end of service and is managed by a licensed Pension fund Administrator (PFA).

It is the responsibility of individual employees to liaise with the PFA on the process of accessing this benefit.

SECTION - XIV

15. Conclusion

The Company retains the right to review this Handbook from time to time without recourse or prior notice to the employees. The company shall however, endeavour to inform the employees of any change made in the handbook.



ANNEX 3: GENDER BASED VIOLENCE AND HARASSMENT POLICY. 2021

Eleme Fertilizer & Chemicals Limited

[Document title]

Human Resources Department
10-2-2021

Contents

1. Introduction	2
2. Policy Statement.....	2
3. Definitions	2
4. Scope of this document	3
5. Business Case for GBVH.....	3
6. Classification of GBVH	3
7. Risk Identification, Risk Management and Accountabilities.....	4
8. Capacity building and Resources	5
9. General Principles	5
10. Grievance Management System	5
11. Monitoring and Reporting	6
12. Confidentiality and Management of Outcome	6

1. Introduction

Indorama Eleme Fertilizer and Chemicals Limited (IFL) shares a common objective with IFC and other Developmental Financial Institutions (DFIs) for a systematic approach to addressing Gender Based Violence and Harassment (GBVH). Indorama recognizes that today private sector has to play an important role in addressing GBVH in every sphere of business life cycle. There is need for an alignment between companies objectives on prevention and management of GBVH with its sustainability performance commitments of in the area of – Assessment and Management of Environmental and Social Risks and Impacts; Labour and Working Conditions; Community Health and Safety and Stakeholder Engagement and Information Disclosure.

2. Objective

The objective this document is to define a policy framework and define strategies for addressing the issue of GBVH. This document also aims to provide an integrated framework for stakeholder engagement and grievance management system with a focus on GBVH at all states of business cycle.

3. Policy Statement

Indorama is committed to promote gender diversity in the organization and also recognizes the potential risk of Gender Based Violence and Harassment (GBVH). IFL has zero tolerance for GBVH and on continual basis endeavour to identify the risk areas, upgrade preventive measures; create awareness amongst both internal & external stakeholders, enhance capability building and increase effectiveness of grievance management system.

4. Definitions

Gender-based violence (GBV) is an umbrella term for any harmful act that is perpetrated against a person's will and that is based on socially-ascribed (i.e., gender) differences between males and females. It includes acts that inflict physical, sexual or mental harm or suffering, threats of such acts, coercion, and other deprivations of liberty. These acts can occur in public or in private (2015 Inter-Agency Standing Committee Gender-based Violence Guidelines, pg. 5).

Sexual exploitation: any actual or attempted abuse of a position of vulnerability, differential power or trust for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another (UN Glossary on Sexual Exploitation and Abuse 2017, pg. 6)).

Sexual abuse: actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions (UN Glossary on Sexual Exploitation and Abuse 2017, pg. 5).

Sexual harassment (SH): Any unwelcome sexual advances, request for sexual favors, and other verbal or physical conduct of a sexual nature.

5. Scope of this document

This policy applies to Indorama applicants and employees, agency workers, visitors, local business partners and both internal / external stakeholders. This policy applies to new projects as well as existing operations. In the event of a new project the policy applies to pre-construction phase, construction phase and post construction phase. During the project phase emphasis shall on the alignment with Environment and Social Impact Assessment, Stakeholder Engagement Programme and Grievance Management System. During the operation phase emphasis will on the alignment with the HR Policies and Employee Grievance Management System. Local Business Partners are very critical stakeholders. IFL shall expect an undertaking by all its local business partners to GBVH policy of the company. With reference to local business partners emphasis shall be given to training and capacity building for stakeholder engagement and grievance management.

6. Business Case for GBVH

GBVH is a life-threatening, global health issue that violates international human rights laws and principles of gender equality. This policy, therefore, is aimed at addressing this social malaise which could lead to mental, physical and psychological problems. These problems have potential for far reaching organizational setback in form of low morale, low trust, lack of teamwork, fear full work environment, absenteeism, industrial actions, litigations, loss of productivity and above all loss of reputation for the company.

7. Classification of GBVH

Situations classified as such include but not limited to the following violent conduct and harassment:

- a) Sexual battery, verbal, physical assault and abuse including rape, molestation, unwanted touching, pinching, kissing, caressing, grabbing, poking another employee's body.
- b) Unwanted conduct or sexual advances such as remarks, jokes, or comments about an employee's sexuality or appearance.
- c) Any act, display or show of offensive objects either in hardcopy or in electronic form capable of causing sexual excitement or suggestive of unwelcome sexual conducts or advances.
- d) Emotional and psychological abuse such as deprivation, threats or coercion or any conduct that consist of unwanted requests and persistent proposals.
- e) Any form of inducement, intimidation, preferential treatment or promises of preferential treatment to an employee with a view to submitting to sexual conduct or engaging in sexual activity.
- f) Any intention to make the performance of an employee's job more difficult either in retaliation of or subjecting to threats to unwelcome sexual conducts or advances.
- g) Discrimination, victimization, or punishment for sexual harassment complaints

8. Risk Identification, Risk Management and Accountabilities

Stages	Action to Address the Risk	Risk Management & Monitoring	General Principles	Accountability
Project Phase:				
a. Pre-construction Phase	Social and Environment Impact Assessment (ESIA)	a. Stakeholder Engagement Programme. B. Stakeholder Grievance Management System	Inclusion of women representatives in Management Committees	Head - Human Resources
b. Construction Phase	Development of Policies & Procedure	Grievance Management Committee	Participation of women in the Grievance Management Committee	Manager - Human Resources
c. Post Construction Phase	Development of demobilization policy	Grievance Management Committee	Participation of women in the Grievance Management Committee	Manager - Human Resources
Operation Phase:				
a Internal	Development of Policies & Procedures	Employee Handbook Grievance Management Committee Formation Women Committee	Inclusion & empowerment of Women in the Committee	Manager - Human Resources
b. External	Development of ESMP / ESAP / MOUs	a. Stakeholder Engagement Programme. B. Stakeholder Grievance Management System	Women member in Project Advisory Committee and decision-making process	Head - Community Relations

9. Capacity building and Resources

Training & Awareness building - Management strongly believes that training and development is fundamental to the inculcation of culture of respect for human rights at the workplace.

Women Working Committee – self managed women committee is vital in addressing the issue of GBVH. Management shall constitute a special women cell to oversee the GBVH aspects.

Indorama shall deploy all relevant resources to address such incidences whenever they occur, through her internal mechanism and facilities such as the Indorama Industrial Clinic, the Health Management Organization system, and the Closed-circuit television system (CCTV) for monitoring sensitive and remote places in the Complex.

The Human Resources Manager and the Industrial Relations Manager are the Ombudsman for this process that coordinates the operations of the Committee. All HODs, Safety Ambassadors and Security officers/Journey Managers are to be on high alert with special focus on areas such as locker rooms, wash rooms, remote office/plant areas, night duty shift, recreation club.

There shall also, be briefing for official travelers or commuters by Security/Journey Managers, to prevent any incident or act that breaches this policy. Other support agencies are a detachment of the Nigeria Police and the Special Mobile Police deployed to the Indorama Complex.

10. General Principles

Indorama shall continue to uphold an equal opportunity employer tenets and views GBVH with utmost seriousness and will not be permitted or condoned.

Company shall promote the policy of inclusiveness and collaboration.

The company shall also ensure to continuous efforts to create and maintain an enabling environment for all stakeholders including the in-house labor Unions representation to promote fair hearing, the spirit of team work and collaboration as well as a Special Disciplinary Committee for this purpose, with a compulsory female member.

11. Grievance Management System

Grievance management will be integrated with the existing process as enshrined in Employee Handbook. However, GBVH will require special supervision by the Ombudsman, who will activate a Special Disciplinary Committee with a female gender representation to investigate and make recommendations for Management at any time an incidence of sexual harassment or violence is reported.

The system shall also accommodate an abridged process where an alleged incidence of sexual harassment or violence, the person offended or harassed shall have the responsibility to report the incidence of harassment to the Human Resources Manager. Such report should either be in person or through an anonymous communication via email/letter or phone (0805-757-5709), as and when such situation occurs thus:

12. Monitoring and Reporting

Indorama commits to follow-up after the conclusion or closure of any incidence under focus. Consequently, the Ombudsman shall ensure periodic review of the process and monitor the situation for assurance of the desired change or whether it has progressed from harassing to victimization to enable further action or advise as appropriate.

The outcome of this follow-up action may leads to a fresh complaint of victimization as the case may be and ultimately, a more severe disciplinary action on such offender. It may also lead to subjecting such person(s) to appropriate training to address the situation.

In extreme cases, the victim may be advised and/or supported to take further action such as civil legal action for damages.

13. Confidentiality and Management of Outcome

All reported cases of sexual harassment shall be investigated as prescribed in this policy and treated with the strictest of confidentiality. Subsequently, Management shall take appropriate disciplinary measures for established violation of this policy in accordance with the recommendation of the Special Disciplinary Committee which shall include but not limited to verbal or written warning, suspension from work, termination of employment or dismissal from service.



ANNEX 4: GUIDELINES FOR PREVENTION AND ADDRESSING ISSUES OF RETALIATION. 2021

Indorama Eleme Fertilizer & Chemicals Limited

Guidelines for prevention and addressing issues of Retaliation

Human Resources Department
10-1-2021

Contents

1. Introduction	2
2. Objective	3
3. Indorama Policy against Retaliation	3
4. Scope of guidelines against Retaliation	4
5. Definition of retaliation:	4
6. Risk Identification and Assessment of Risks at different stages of projects / operations and processes to prevent retaliation or Retaliations.....	4
7. Types of Retaliation	6
8. Need for addressing the risk of retaliation:	7
9. Capacity building:	7
10. Management Structure	8
11. Grievance Management System	10
12. Monitoring.....	10

1. Introduction

In recognition of the risks of retaliation against project stakeholders, a growing number of Development Finance Institutions (DFIs) have adopted public position statements, or included zero-tolerance for retaliation in their safeguard standards.

- In 2018, the **International Finance Corporation (IFC)** issued a position statement expressing zero-tolerance for any action by an IFC client that amounts to retaliation including threats, intimidation, harassment, or violence against those who voice their opinion regarding the activities of IFC or its clients.
- Through its Sustainability Policy (2020), **IDB Invest** expresses zero-tolerance for retaliation against those who voice their opinion or opposition to IDB Invest-financed projects.
- The **Finnish Development Bank (FINNFUND)**, in its human rights position statement, emphasizes that it does not tolerate threats or other forms of pressure or retaliation against whistleblowers, human rights defenders, or other stakeholders.
- The human rights position statement of the **Dutch Development Bank (FMO)** affirms that FMO does not tolerate any activity by its clients that amount to the oppression of or violence toward those who voice their opinion in relation to FMO activities and the activities of its clients, and that it will take seriously credible allegations that a client has acted inappropriately, examine the veracity, and instigate further action as and where appropriate.
- The **European Bank for Reconstruction and Development (EBRD)** 2019 statement on Retaliation Against Civil Society and Project Stakeholders stresses that they do not tolerate actions by EBRD clients or other project counterparties that amount to retaliation. They emphasize that impairing or harming (or threatening to impair or harm) any party, or the property of any party, directly or indirectly, with the intent to improperly influence the actions of that party in connection with an EBRD project constitutes a Coercive Practice under their Enforcement Policy and Procedures, and can be subject to Enforcement Proceedings.

2. Objective

Indorama recognizes the possibilities of intimidations or victimization in the life cycle of operations or projects in the organization. Indorama also recognizes the importance or the need for well laid down policy framework for prevention of any kind of intimidation or victimization as it has the potential to violate the basic human rights and can have negative impact on the individual or group or organization. The objective of this document is to provide policy framework, establish organizational commitment, assessment of risk, build organization capabilities for prevention and mitigation measures and proffer effective grievance management system for safeguarding the human rights values.

The key objective of this document is to

- Develop and implement a more comprehensive system to prevent and address intimidation and Retaliations
- Development management system and capability building to prevent Retaliation;
- Develop collaboration with stakeholders for prevention and addressing the issues of Retaliation
- Integration of guidelines on retaliation with existing stakeholder engagement programmes, grievance management systems and disciplinary management procedure

This document also aims to provide guidelines for developing policies for preventing retaliations during different stages of project / operation / business life cycle in the organization.

3. Indorama Policy against Retaliation

Indorama is committed to principle of human rights by providing access to effective grievance management systems for its employees, stakeholders, and local business partners. Further, Indorama also expects from its local business partners working with the company to provide access effective grievance management systems for its employees and stakeholders for freedom of expression and grievance redressal without any fear of Retaliation or victimization. Indorama would like to state that it does not tolerate any for form of retaliation against individuals or group or organization who has lodged a complaint or voiced criticism or concerns about the company.

Indorama believes in strict adherence to applicable due process in addressing the grievances received from individual or group or organization.

4. Scope of guidelines against Retaliation

Guideline is applicable to both internal and external stakeholders. Indorama expects all its local business partners connected with its projects and operations to undertake the commitment to abide by the policy framework against retaliation and Retaliation.

5. Definition of retaliation:

Retaliation can include any form of threat, harassment, violence, or punitive action taken against an individual, group, or organization. The victims of retaliation can be internal to the company or project (for example, direct and contract employees, or project personnel) or they can be external (for example community members, youth group, women group etc).

Indorama also takes cognizance of possibilities of anonymous threats for raising concerns about project impacts; workers who are dismissed from their jobs for attempting to form a union; or violence used by security forces against stakeholders who oppose a development project. Accordingly, Indorama has well established procedure for management of Anonymous grievance with objective to protect the interest of aggrieved.

6. Risk Identification and Assessment of Risks at different stages of projects / operations and processes to prevent retaliation or Retaliations

Holistic approach is fundamental in the prevention and management of retaliation in the organization. An overview of identification of risk and assessment of impacts, management systems and key collaborating stakeholders are given below:

Stages	Concerns / Impacts	Stakeholder Potential to be affected	Management Processes and System	Moderating / Mediating Agencies
Project Phase:				
a. Pre construction Phase	Social and Environment Impact	Community Stakeholders Vulnerable Groups NGOs	1. Social & Environment Impact Assessment (ESIA) 2. Project Scope	1. Government Regulatory Authorities 2. LIESA

			Workshop with Stakeholders 3. Public Forums with stakeholders ESMP 4. Technical Panel Review - review of impacts and mitigation measure 5. ESAP 6. Stakeholder Engagement Programme	
b. Construction Phase	Condition of service / working condition / Formation of Unions / condition of services	employees / union executives / contractors	Employment Handbook / Condition of Service / Grievance Management System / Formation of union and election of officials	Regulatory Authorities National Unions Branch Unions
c. Post Construction Phase	demobilization / payment of terminal benefits / disengagement of contractors	employees / Contractors	Collective Bargaining Agreements / Contract Terms and conditions	National Unions / Arbitrations
Operation Phase				
a Internal	Condition of service / working condition / Formation of Unions / condition of services	employees / union executives / contractors	Employment Handbook / Condition of Service / Grievance Management System / Formation of union and election of officials	Regulatory Authorities National Unions Branch Unions Contractors' Association Arbitration
b. External	ESMP / Employment / Contracts	Community Stakeholders / contractors	Memorandum of Understanding (MOU) / Stakeholder	Project Advisory Committee / Government / LIESA /

			Engagement Programme / Regulatory Audit on Environment & Social Impact	Contractors Association

7. Types of Retaliation

This section aims to illustrate few examples of retaliation during stakeholder engagement processes as well as at work place:

Type of Retaliation	Example of Retaliation	Potential stakeholders may be affected	Possible sources of Retaliation
Verbal intimidation	Threatening phone calls or visits	Family members of local community leaders	Company representatives involved in the project. Other community members or local stakeholders in favor of the project
Physical violence	Beatings during gatherings at project site to demonstrate against the project	Community members	Staff of private security forces contracted for the project
Physical surveillance	Project proponents attending public meetings about the project to take note of who is expressing opposition to it	Community members	Local business owners
Discrimination in relation to employment	Allocation of undesirable, “dirty” jobs to workers active in trade unions	Workers active in trade unions	Contract company representatives involved in the project
Disciplinary action and dismissal	Targeted disciplinary action and firing of workers who have reported concerns about working conditions at the site	Workers	Company representatives

8. Need for addressing the risk of retaliation:

Indorama strongly believes that an atmosphere of fear, mistrust, and silence created by Retaliations does not create a healthy environment for business to succeed and grow in. It is not conducive to building good relationships with workers, local communities, customers, investors, or the public, and it may jeopardize the company's reputation and social license to operate.

Creating a safe and open environment for workers and communities to raise E&S concerns can help a company manage risks by proactively identifying potential problems and working with affected stakeholders to address issues before they escalate. Having open and ongoing dialogue with communities and workers builds trust, can improve worker productivity, and enhance the company's social license to operate. When project stakeholders do not feel that their concerns are being heard or taken seriously, it can lead to an escalation of tensions, increased public opposition, and polarized relations within communities. Early and upstream engagement is key to both preventing Retaliations and enabling sustainable business practices.

9. Capacity building:

Indorama recognizes the importance creating and maintaining a culture of openness at the company; communicating clear policies and procedures on anti-retaliation to workers, contractors, partners, government, security forces, and communities; assessing the risks; strengthening systems; and being ready to address allegations of Retaliations against project stakeholders.

Indorama believes in holistic approach for addressing the issue of retaliation. Company has developed working documents and management system. Company committed to follow the due as stated in the working documents and management for addressing the concern raised against the new project or during construction phase of new project or operations phase of the business. Summary table below gives an overview of stakeholders who may be affected and the corresponding documents or management system put in place which establishes the due process for prevention and management of retaliation

Capacity building involves systematic approach to identification of stakeholders who would be affected, putting in place management system that is going to be accessible to affected personnel and integration these management system with existing grievance management system.

Capacity building also involves communication of policy framework, creating awareness amongst internal & external stakeholders, training and development of personnel responsible for driving the processes.

Capacity building extends to local business partners through training towards stakeholder engagement and grievance management system.

Stakeholder Potential to be affected	Management System
Community Stakeholders / Vulnerable Groups / NGOs	Stakeholder Engagement Programme Stakeholder Grievance Management System LIESA Supervision Audit – biannually Regulatory Audits Quarterly Monitoring Report to IFC
employees / union executives	Employment Handbook Condition of Service Employee Grievance Management System Collective Bargaining Agreement LIESA Supervision Audit – biannually Regulatory Audits Quarterly Monitoring Report to IFC
Contractors / Vendors	Contract Terms and conditions Undertaking by contractors to follow the guidelines against retaliation

10. Management Structure

Organization structure with clear roles and responsibilities is fundamental to effective implementation of the guidelines against Retaliation.

The summary overview of management structure is given below:

Functional team	Scope of Work	Responsibility
Board and Management	Sets the tone for the company culture by encouraging an open culture that encourages communities and workers to share their concerns, and reinforcing an anti-retaliatory message to both internal and external stakeholders.	Managing Director / CEO

Environmental and Social Management	Responsible for identification, avoidance, and mitigation for E&S risks and impacts, including risks of retaliation against project stakeholders.	Head - Environment for environmental aspects Head - Human Resources for social aspects
Corporate Social Responsibility & Government Relations	Responsible for defining and developing CSR objectives, and may also have an important role in establishing collaborative relationships with organizations that could provide support for training, and for targeted risk assessments.	Head Community Relations & Development
Human Resources (HR)	Manages employee concerns and often acts as a focal point for worker grievances. HR can monitor potential signs of employees being placed under increased scrutiny by supervisors or coworkers ostracizing or excluding them; inconsistent or increased performance expectations; or a sudden increase in negative documentation about an employee's performance.	Manager - Human Resources
Communications and External Liaisoning	Directs messaging to media, financiers, government agencies, and other external stakeholders, and can be mobilized to respond to risks and incidents.	Head - Corporate Communication
Community Relations	Has direct engagement with project-affected communities and is often a first point of contact for communities at risk of or subject to retaliation. May also have a role in operational-level grievance mechanisms.	Head Community Relations
Procurement	Sets bidding criteria and contractual requirements that can reflect zero-tolerance statements, as appropriate.	Head Commercial
Workers' Representatives (Worker Organizations)	Manages the relationship between senior management and project workers, and can communicate any concerns about retaliation. This includes playing a role in engaging frontline-level workers and helping to address issues early to avoid escalation.	Union
Project Site Management	Site management, and their staff, are often a first point of contact for stakeholders at the project gates, and may therefore be informed about retaliation risks or incidents.	Project Manager
Contractors and Suppliers	Local business partners typically have direct engagement with project stakeholders and can share information about risks or incidents. (They may also be a potential source of retaliation, and for that reason, providing effective staff training can be an important preventative measure.)	Head Commercial

Security	Often interfacing with community members and workers, security management is responsible for ensuring training, vetting, and monitoring of the conduct of personnel and setting the use of force protocols. This includes reflecting anti-retaliation policies in codes of conduct.	Head Security
Designated Individual/Team: Investigating Retaliation allegations	Whether it is designated individuals in HR, community relations, management, or a third-party entity, this role is critical for receiving and responding to allegations quickly and sensitively, and putting appropriate systems in place for the protection of complainant confidentiality.	Manager - Human Resources
Designated Individual/Team: Owns implementation of anti-retaliation commitments	One individual, or a team, should be assigned responsibility for monitoring implementation of the anti-retaliation statement made by the company.	Manager - Human Resources

11. Grievance Management System

The grievance management shall be integrated with existing procedure which is enshrined in the Employee Handbook. The grievance management procedure is also aligned with disciplinary mechanism/ investigating procedures which is outlined and enshrined in the Collective Bargaining Agreements with the in-house labor Unions.

12. Monitoring

Indorama commits to follow-up after the conclusion or closure of any incidence under focus. Consequently, the Human Resources Department shall ensure periodic review of the process and monitor the situation for assurance of the desired change to enable further action or advise as appropriate.



ANNEX 5: PROCEDURAL MANUAL SOCIAL MATERIAL
TOPICS. JULY 2022

INDORAMA ELEME FERTILIZER & CHEMICALS LIMITED

Procedural Manual Social Material Topics

July 31st, 2022

Contents

Introduction	4
Background	5
General Disclosures	6
Governance Structure	6
Engagement of Stakeholder & Materiality Analysis	6
Development of Policies	8
Community and Stakeholder Policy	9
Environment and Climate Change Policy	10
Health and Safety Policy	11
Human Rights and Labour Policy	12
Product Stewardship Policy	13
Responsible Business Policy	14
Social Material Topic	15
Employment	15
Preface:	15
Policy Statement:	15
Legal Framework:	15
Qualitative Information	15
Management Approach:	16
Reporting Requirements:	17
Reference documents:	18
Human Rights	18
Preface:	18
Policy Statement:	18
Legal Framework:	18
Qualitative Information	18
Management Approach:	19
Reporting Requirements:	20
Reference documents:	20
Ethics and Integrity	21
Preface:	21
Policy Statement:	21
Legal Framework:	21
Qualitative Information	21
Management Approach:	22
Reporting Requirements:	23

ESG On Social Material Topics

Reference documents:	23
Diversity and Inclusion	24
Preface:	24
Policy Statement:	24
Legal Framework:	24
Qualitative Information	24
Management Approach:	25
Reporting Requirements:	26
Reference documents:	26
Training	27
Preface:	27
Policy Statement:	27
Legal Framework:	27
Qualitative Information	27
Management Approach:	28
Reporting Requirements:	29
Reference documents:	29
Community Development	30
Preface:	30
Policy Statement:	30
Legal Framework:	30
Qualitative Information	30
Management Approach:	31
Reporting Requirements:	31
Reference documents:	32

Introduction

Procedural manual contains commitments of Indorama Nigeria to adopt the philosophy of sustainable development as per the requirements of Global Sustainability Standard Board (GSSB) in every aspects its business operations. IFL shall comply with the due process protocol to develop management system to determine social, environmental, and economic responsibilities in its multistakeholder business environment.

This procedural manual sets out the purposes and systems for Social Material Topics in Indorama Eleme Fertilizer & Chemicals Limited.

Indorama Eleme Fertilizer and Chemical Limited is part of the Indorama Group. Indorama Group is a multinational operating out of 5 continents with interests in Petrochemicals, Polyester, PET, Fertilizer, Spinning and Textiles.

Indorama is known for its impeccable Corporate Governance standards and highly ethical business practices. The Company places very high importance for proactive and good HR practices. Human Resources of Indorama Group worldwide is known for their commitment, discipline, dedication and devotion to work and work ethics.

Indorama Eleme Fertilizer and Chemical Limited is a private Company registered in Nigeria, situated at Eleme Port Harcourt in Rivers State. The Company produces Fertilizer products which contribute to general positive growth of the economy of Nigeria including generating meaningful vocation in the country. In pursuit of these objectives, the company recruits the best human resources who could contribute to the realization, sustenance and furtherance of these goals with total commitment, dedication, discipline and devotion.

Indorama Eleme Fertilizer and Chemical Limited is located inside Indorama Eleme Petrochemicals Limited Plant Complex at Eleme near Port Harcourt in Rivers State, Nigeria. Indorama Eleme Fertilizer and Chemical Limited produce Fertilizer products such as ammonia and urea.

Background

Indorama complex, located in Eleme Local Government area, Rivers state, Nigeria, have Polyolefin Resins manufacturing facility (through Indorama Eleme Petrochemicals Limited, IEPL) and Granular Urea manufacturing facility (through Indorama Eleme Fertilizer & Chemicals Limited, IEFCL).

Erstwhile Eleme Petrochemicals Company Limited ("EPCL") was built by a consortium, comprising of Chiyoda Corporation, JGC and Kobe Steel Japan, Tecnimont Italy and SpieBatignolles France. EPCL was a 100% subsidiary of Nigerian National Petroleum Corporation (NNPC) until it was privatized in 2006 under the Privatization Program of Federal Govt. of Nigeria. Indorama Corporation is holding 65% shares in EPCL while remaining 35% shares are held by Nigerian Shareholders namely 10% by NNPC, 5% by Federal Govt. of Nigeria through Bureau of Public Enterprises, 10% by Rivers State Government, where EPCL is located, 2.5% by National Staff through National Staff Society namely Indorama Eleme Petrochemicals Company Staff Cooperative Society Limited and 7.5% by Host Communities, managed by Elano Investments Limited. Indorama has been able to incorporate the interests of all the stakeholders into IEPL ownership structure, which underpins secure, safe, sustainable operations and continuing the partnership with Indorama.

After acquisition and post major turn-around maintenance, IEPL has been seamlessly operating the assets and supplying the much-needed polymer to the Nigerian Polymer conversion industry. IEPL has won several global awards & certifications including but not limited to Five-star rating in Health and Safety management systems audit, Sword of Honour and International Safety Awards from British Safety Council (BSC), UK; The Green Label and Excellence awards from Nigerian Environmental Society; Local Raw Material Content Award from Raw Materials Research and Development Council (RMRDC), Nigeria. Uninterrupted and sustainable operation of the assets in Niger Delta region and the addition of new manufacturing facilities in the complex has become a model for the successful private – public partnerships in Nigeria.

Indorama Fertilizer & Chemicals Limited (IEFCL) is one of the newly added facilities within the Indorama complex. IEFCL consisting of Feed Conditioning Unit, Ammonia Plant, Urea plant and associated utilities to produce Granular urea. IEFCL is now in the process of commissioning the 2nd train of Fertilizer doubling the production capacities. The efficient management of the Petrochemical and Fertilizer operations of the Indorama Complex is the stimulus for the proposed project.

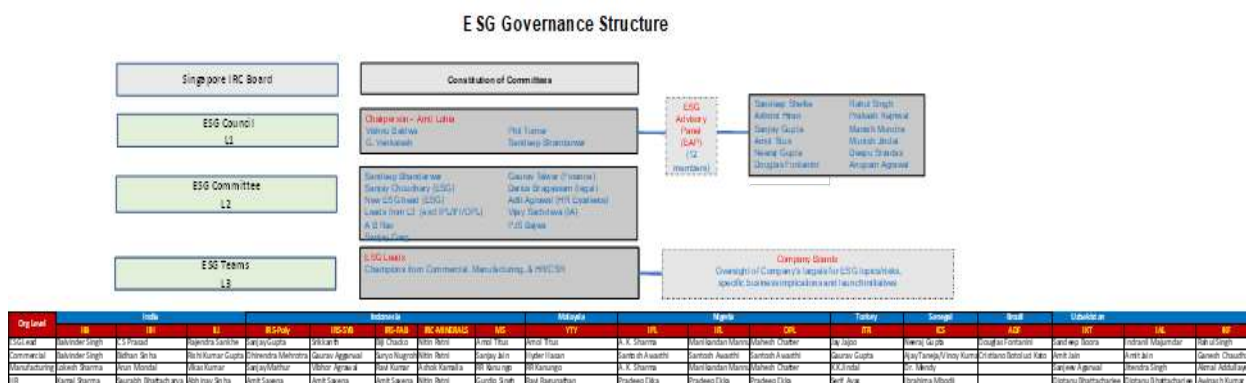
IEPL has Captive power plant consisting of five (5) gas turbines, each of 33.8 MW capacity under ISO conditions to meet the power demand of the complex. The two proposed HRSGs shall be installed in downstream of existing GTs. HRSG1 shall be installed downstream of GT1 & 2 and HRSG2 shall be in downstream of GT4 & 5. Waste heat recovery from hot exhaust gas is well established process. IEPL intends to adopt this best practice to recover waste heat as its commitment for continual improvement to reduce its carbon footprint.

Presently Indorama Nigeria has taken up DBN project to include the addition of one furnace in Olefins, and few minor modifications/upgradations of some of the equipment in the Olefins and Polyethylene (PE) Plants. The Olefins DBN is aimed to increase production capacity of Ethylene from 300 KTA to 338 KTA on 8400 operating hours. New Furnace shall be identical to existing furnaces. The new furnace and other proprietary equipment shall be supplied by Process Licensor KBR. Though furnace design production capacity is identical, KBR shall implement the latest suites of technology improvements based on their rich operational experience worldwide.

Original name plate capacity of PE Plant is 270 KTA per year of stabilized, uncolored high and low density polyethylene resin in a pelletized form based on 8000 operating hours. With the modifications in consultation with Process Licensor NOVA, the plant capacity was upgraded to produce 297 KTA of polymers based on 8000 operating hours. Proposed PE - DBN aims to achieve 325 KTA of polymers production on 8000 operating hours' basis. This shall be achieved based on the pinch study and maximum plant load trials conducted to identify bottlenecks. The validation of identified bottlenecks will be undertaken by the Worley Parsons (Advisian) group to achieve 325 KTA of polymer production. The validation study will include validation of high load trials, process simulation, utility/raw material/feedstock/ effluent status, existing equipment/ instrument functional margin etc. The outcome of validation study shall be basis for equipment modification/upgradation in PE-DBN.

Indorama Corporation in pursuit of adopt the philosophy of sustainability development in its aspects of operations has embarked on development of management system to manage the social, environment and economic responsibilities in line with due process protocol defined by GSSB.

Governance Structure



ERM provided expertise the guidelines for determination of stakeholders and designed survey for determination material topics for all operating companies in Indorama Corporation.

Stakeholder survey was completed in Q2, 2021. Stakeholder and Materiality Analysis was completed in Q4, 2022.

ESG On Social Material Topics

Finalization of Material Topics and data elements:

Sr. No.	GRI Template Name	Total Data Elements in GRI Template	Qualitative Data in GRI Template	Quantitative Data in GRI Template	Direct Manual Entry in GRI Template	Data Elements Auto captured from GHG/HSE Calculation Files	Data Elements captured in GHG and HSE input files
1	General Disclosure	75	65	10	75	0	0
2	Compliance and Legal Cases	32	10	22	32	0	0
3	Biodiversity	35	30	5	35	0	0
4	Supplier Assessments	20	15	5	20	0	0
5	Employment	137	10	127	137	0	0
6	Training and Education	54	22	32	54	0	0
7	Human Rights	42	20	22	42	0	0
8	Labour Management Relations	13	12	1	13	0	0
9	Diversity and Equal Opportunities	76	10	66	76	0	0
10	Community Development	19	14	5	19	0	0
11	Ethics and Integrity	37	10	27	37	0	0
12	Customer Privacy	22	10	12	22	0	0
13	Product Stewardship	144	105	39	144	0	0
14	Energy & Climate Change	74	12	62	34	40	186
15	Water & Effluents	56	19	37	20	36	49
16	Solid Waste Management	37	16	21	16	21	26
17	Air Emissions	16	10	6	10	6	6
18	Safety	57	30	27	31	26	166
	Total	946	420	526	817	129	433

Development of Policies

Proposed Guidelines for deployment of IRC Policies across all businesses

1. The six IRC Group policies and the Code of Conduct shall be adopted by all the operating companies and is applicable to all employees, Board of Commissioners (wherever applicable), and Board of Directors of Indorama Corporation Pte. Ltd. and its direct and indirect subsidiaries ("IRC Group"). References in this document to "Indorama" or "Company" or "We" mean the entities of the IRC Group.
2. In the event that any provision contained in this policy is in conflict with the local laws, rules and regulations of any entity, and makes such provision invalid or unenforceable, then such local laws, rules and regulations will prevail. If any entity has adopted stronger practices than this policy or prevailing customs, the stronger practice shall apply. The revised policy in such cases shall be vetted by ESG Council.
3. These policies shall be displayed in all the corporate and other site and regional offices of the IRC group companies printed as per the corporate guidelines issued for this purpose.
4. The policies can be adopted by printing on the company's letter head and with signature of the MD/CEO. In case of any changes in the contents due to local regulatory or other requirement like ISO standards guidelines the changes shall be done post ensuring that the IRC Group policy content and intent is not diluted. As per incorporation under the company Law of the countries, the companies can frame other Policies/ maintain systems/ plans and devise Codes of/ for the Company/ Board of Directors and Senior Management Personnel/Directors and Employees etc. pursuant to the provisions of the corporate laws. Companies listed on Stock Exchanges may additionally be required to frame some other policies/ code as well, in compliance of the Listing Agreement and Stock Exchange board Rules and Regulations.
5. The Policies and Codes that are required to be framed by companies, needs also to be disclosed in the Board's Report forming part of the Annual Report and uploaded on Company's website, wherever applicable.
6. There may be requirement of site-specific policies related to operational aspects like ISO Frameworks, local safety and environmental authority's requirements. It shall be ensured that the alignment with the Company Corporate and IRC Group policies is verified and confirmed and kept on records.
7. All the IRC companies shall have a board resolution on adopting and adhering to the IRC Group policies. It shall be reconfirmed whenever future revisions are done. The policy statements shall be kept on record duly signed by the board members.
8. All HR/EHS heads will be requested to ensure that these docs reach all the employees, in their regional languages.

Community and Stakeholder Policy

At the core of our business philosophy is ensuring social well-being, adding value to communities, and respecting human dignity. We are committed to respecting the rights, cultures, customs, and values of employees and communities affected by our activities and will manage our businesses in a fair and equitable manner to meet our social responsibilities.

We will:

- Proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner.
- Comply with the regulatory requirements in the jurisdictions in which we operate.
- Develop systems to identify, manage, and mitigate risks and adverse impacts on communities and stakeholders;
- Foster leadership, learning and growth to deliver value to the organization and to society in a responsible manner, including training people and providing resources to meet social responsibility objectives and targets.
- Respect the social, economic, and cultural rights of communities and seek broad-based support for our operations by consulting and informing stakeholders in matters that affect them.
- Ensure that effective grievance management systems are in place.
- •Avoid involuntary resettlement and consider displacement only when business requirements make it unavoidable. When unavoidable, work with regulators to improve or restore quality of lives and standards of living of displaced persons.
- Adopt sustainable development as an integral part of the business plan and put in place appropriate structures to plan and implement community development initiatives, prioritizing local needs and long-term sustainable benefits to communities.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every two (2) years.

Board of Directors

1 July 2022

Environment and Climate Change Policy

We are committed to effective environmental management as an integral part of our business with the aim of minimizing impact on the environment and reducing our impact on climate change.

We will:

- Comply with applicable national, regional, and local environmental regulations, and good international practice.
- Develop, implement, and maintain environmental management systems aligned with our commitments and beliefs, and consistent with good international practice.
- Establish and review targets to continuously drive environmental improvement.
- Avoid, reduce, or mitigate impacts to the environment and neighboring communities, and where feasible improve and enhance environmental conditions.
- Minimize the consumption of water, energy, materials, and other resources.
- Recover, recycle, reuse, and reduce waste to minimize environmental discharge.
- Design, construct, operate, and close storage facilities and other assets in compliance with applicable laws and regulations and in alignment with good international practice.
- Conserve natural resources through process improvements, and by adopting environmentally friendly and energy-efficient technologies.
- Minimize and mitigate biodiversity risks throughout our businesses and integrate biodiversity conservation with business needs throughout the project lifecycle.
- Assess our climate-related risks and implement mitigation and adaptation measures.
- Establish programs to reduce our greenhouse gas emissions and achieve regional carbon abatement norms through renewable energy use, process improvements, innovative technologies, improved energy efficiency, and other measures.
- Incorporate environmental principles in procurement processes, and through a life cycle approach where applicable.
- Enhance awareness among our employees, service providers, and suppliers to act in an environmentally responsible manner.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Board of Directors

1 July 2022

Health and Safety Policy

We are committed to the goal of zero harm and safe and healthy workplaces. The health and safety of our employees, service providers, and any other person who may be impacted by our operations is of paramount importance.

We will:

- Comply with applicable national, regional, and local health and safety regulations, and good international practice.
- Provide safe systems of work.
- Maintain plant and equipment in a safe condition.
- Incorporate health and safety criteria in the selection of service providers, technology, plant, and equipment.
- Provide all employees and service providers with appropriate health and safety training.
- Ensure reporting and investigation of incidents with a view to preventing recurrence.
- Implement regular health surveillance and risk-based exposure monitoring to ensure the protection of employee and service provider's health.
- Develop, implement, and maintain health and safety management systems aligned with our commitments and beliefs and consistent with world-class standards.
- Monitor and prepare for health pandemics to protect our people and our business.
- Drive continuous health and safety improvement through setting and reviewing targets using good international practices.
- Promote a positive health and safety culture through effective communication, participation and consultation with employees and service providers.
- Influence our service providers and suppliers to adopt principles and practices in alignment with our policies.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Board of Directors

1 July 2022

Human Rights and Labour Policy

We are committed to protecting and respecting human dignity. We will conduct our business in a fair and equitable manner to meeting our social responsibilities, and we will respect the human rights of all our stakeholders in alignment with the United Nations Declaration on Human Rights.

We will:

- Uphold human and labour rights aligned with national and international regulations as applicable.
- Be compliant with labour laws of the countries in which we operate and promote fair working conditions as guided by international conventions.
- Ensure employees are fairly and reasonably paid and remuneration structures are compliant with regulatory obligations of the jurisdictions in which we operate;
- Have zero tolerance for any form of forced, compulsory, or child labour either directly or through contracted labour;
- Recognize and respect employee rights to associate freely in accordance with applicable laws and regulations, and to collective bargaining.
- Be an equal opportunity employer and treat all employees with respect and dignity, judging solely on their performance irrespective of race, religion, caste, gender, age or disability.
- Implement policies and practices to respect the rights and interests of women and support diversity and inclusion in the workplace.
- Eliminate harassment and discrimination and provide a mechanism to address worker grievances.
- Respect and preserve the culture and heritage of local communities and socially vulnerable groups that may be impacted by our operations and work towards developing constructive relationships that seek broad-based support for our operations, including free, prior and informed consent of Indigenous Peoples if applicable;
- Where appropriate, implement a human rights and security approach consistent with the
- Voluntary Principles on Security and Human Rights.
- Work with government agencies to develop a common understanding and agreement to protect human rights in the event of any unforeseen situations and to protect our people and assets.
- Regularly communicate social performance in an accurate, transparent, and timely manner.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Board of Directors

1 July 2022

Product Stewardship Policy

Indorama is committed to the highest standards of product safety and quality to meet customer expectations and achieve customer delight. Our Product Stewardship approach is designed to minimize health, safety, environment, and social impacts of products and is monitored for continual improvement.

Indorama wins and maintains long-term customer relationships based on the quality, safety, and value of its products and services, and we market our products responsibly and on their legitimate features and benefits. Our customers trust our word because we demonstrate integrity and honesty in our activities. We create value for our customers because we provide the information that they need to make the best purchasing decisions and ensure safe use of products.

We are committed to:

- Developing and providing quality and safe products for our customers.
- Assessing and managing potential health, safety, environmental, and social risks associated with our products.
- innovating to provide products that minimize air emissions, water consumption, water discharge, and waste generation.
- Providing accurate information to customers and supply chain partners without misrepresentation;
- Respecting the individual rights of customers, including maintaining the confidentiality of customer information.
- Providing channels for customers to file complaints relating to the quality and safety of products and services, and promptly addressing any complaints.
- Providing support for activities that strengthen and maintain a good, long-term relationship with our customers and supply chain partners.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Board of Directors

1 July 2022

Responsible Business Policy

We believe in business practices that provide benefits to society, ensure we act transparently and ethically, and address potential negative impacts associated with our operations. Our objective is to make positive contributions to the economic, environmental, and social progress at the locations in which we operate.

In addition to commitments detailed in our policies, we will:

- Implement an Indorama Code of Conduct, including controls that cover conflict of interest, data privacy, cyber security, and addressing grievances.
- Ensure suppliers act responsibly and achieve the commitments outlined in this policy and in the Indorama Group policies on human rights and labour, communities and stakeholders, and environment and climate change.
- Implement a tax strategy that ensures taxes paid to respective governments are equitable.
- Implement anti-bribery & corruption controls, including the prevention of facilitation payments.
- Ensure a ban on price fixing activities or other anticompetitive agreements.
- Ensure honesty, transparency, and integrity in dealings with governments, and maintaining proper conduct, responsiveness, impartiality, accountability, and respect;
- Maintain the independence of Board members from Indorama or a subsidiary, through employment, business dealings, or as its auditor.
- Implement a whistleblowing process to encourage and protect a person who exposes information or activity(s) that may be illegal, illicit, unsafe, or fraudulent.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Board of Directors

1 July 2022

Social Material Topic

ERM led assessment of business operations, engagement of stakeholders and analysis of actual and potentials social, environment and economic impacts paved way for finalization of following Social Material Topics for Indorama Corporation Sustainability Management Framework.

1. Employment
2. Human Rights
3. Ethics & Integrity
4. Diversity & Equal Opportunities
5. Training & Education
6. Community Development
7. Ethics & Integrity
8. Labour Management Relations

Employment

Preface:

Public disclosure of the organization's significant impact on the environment, economy, and people and how to manage these impacts. This is to enhance transparency on the organization's impacts and increase organizational accountability.

Policy Statement:

The Company respects the law of Federal Republic of Nigeria on employment. All appointment shall be done on merit basis while taking into consideration the relevant educational qualification, professional experience and other requisite skills and competency of the job profile keeping in view the interests of stakeholders.

Legal Framework:

The principal legislation governing employment issues in Nigeria is the Labour Act, Cap L1 LFN 2004 (the "Labour Act"). Other common employment and labour laws include:

- a. 1999 Constitution of the Federal Republic of Nigeria (as amended)
- b. Pension Reform Act 2014
- c. Employee's compensation Act 2010
- d. Personal Income Tax (Amended) Act 2011
- e. Immigration Act 2015
- f. Trade Union Act (Cap T 14) LFN 2004
- g. Trade Dispute Act (Cap T 8) LFN 2004
- h. National Industrial Court of Nigeria 2006

Qualitative Information

GRI-1-Emp-0001: Assessment Actual and potential impact

- a. Sustainable condition of service and working condition in line with best international practice that complies to international sustainable principles and applicable by the laws of Federal Republic of Nigeria.

- b. Gender diversity and inclusion is part of our business philosophy.
- c. Enforcement of human rights principles, non-discrimination, child labour, freedom of association, indigenous rights, forced labour in its operations as well as its suppliers in the value chain.
- d. Management recognises that failure to establish and foster a sound employee management relationship can undermine the effectiveness of talent acquisition, employee commitment and retention which may result low productivity, manpower shortage etc.

GRI-1-Emp-0002: Actions to prevent or mitigate potential negative impact

- a. Company has well defined Employee handbook,
- b. Code of Conduct and Collective Bargaining Agreements which stipulates company policies with respect to rights / obligations of management & employees.
- c. Quality, Health, Safety & Environment,
- d. Working hours, wages & allowances, overtime arrangements and overtime compensation.
- e. Leave for illness, maternity, vacation, or holiday, that has minimum compliance with national law.

GRI-1-Emp-0003: Actions to address actual negative impacts, including actions to provide for or cooperate in their remediation.

Management has put in following structures in place to sustain the positive impacts of social aspects in the organisation well defined policy framework for the following:

- a. Compensation structure
- b. Grievance Management System
- c. Employee engagement
- d. Welfare Committee
- e. Medical Committee
- f. Security Committee.

GRI-1-Emp-0004: Actions to manage actual and potential positive impacts.

Management has laid down following actions to manage impacts of sustainability social actions in the organisation:

- a. Monthly review of manpower analysis
- b. Employee engagement
- c. Grievance management.
- d. Annual Performance Appraisal, Increments and Promotions
- e. Quarterly welfare committee review meeting.
- f. Quarterly joint security review meeting.
- g. Quarterly Health Committee review meeting.
- h. Half yearly joint consultative committee employees and employee representatives

Management Approach:

GRI-3-3c-Emp-0001: Name of the Policy

- a. Employee Handbook
- b. Code of Conduct
- c. QHSE Policy
- d. Collective Bargaining Agreement
- e.

GRI-3-3c-Emp-0002: Company Commitment related to Employee Practices

- a. Enforcement of condition of service
- b. Freedom of Association
- c. National Minimum Wage
- d. Pension
- e. Life Insurance
- f. National Social Insurance Trust Fund
- g. Maternity Leave.

GRI-3-3e-Emp-0001: Management System implemented

- a. ISO 9001:2015; ISO 14001:2015; ISO 45001:2018

GRI-3-3e-ii-Emp-0001: Goals & targets

- a. Reduction in attrition rate
- b. Compliance to National minimum wages in the organisation and contractors & suppliers
- c. Compliance for pension & life insurance for all direct & indirect employees
- d. Compliance to maternity leave for direct & indirect employees

GRI-3-3e-ii-Emp-0002: Progress toward the goals and targets

- a. Attrition rate is < 1%
- b. 100% compliance to National minimum wage.
- c. Pension
- d. Life insurance
- e. Maternity leave for both direct and contract employees achieved.
- f. Zero loss of manhour on account of strike achieved.
- g. Zero work stoppage, Zero Strikes

GRI-3-3e-iv-Emp-0001: Lessons learned and how these have been incorporated into the organization's operational policies and procedures.

- a. Refresher Courses organised for applicants from host communities to improve their performance in Aptitude, Technical Test and Oral Interview

Reporting Requirements:

- a. Total number and rate of new employee hires during the reporting period, by age group, gender and region.
- b. Total number and rate of employee turnover during the reporting period, by age group, gender and region.
- c. Benefits provided to full-time employees that are not provided to temporary or part-time employees
- d. Evidence of parental Leave.

Reference documents:

a.	Employee Handbook	<i>Annexure 1</i>
b.	Employee Code of Conduct	<i>Annexure 2</i>
c.	QHSE Policy	<i>Annexure 3</i>
d.	Collective Bargaining Agreements	<i>Annexure 4</i>
e.	Employee Engagements	
f.	Monthly MIS Report	<i>Annexure 5</i>
g.	Grievance Register	<i>Annexure 6</i>
h.	Minutes of Committee meetings	<i>Annexure 7</i>
i.	Minutes of JCC meetings	<i>Annexure 8</i>

Human Rights

Preface:

Public disclosure of the organization's approach in the assessment of human rights impacts on its operations.

Policy Statement:

The Company is committed to protecting and respecting human dignity. We will conduct our business in a fair and equitable manner to meeting our social responsibilities, and we will respect the human rights of all our stakeholders in alignment with the United Nations Declaration on Human Rights.

Legal Framework:

The framework consists of a series of laws, rules, regulations, and other resources that shall protect and respect human rights of individuals while carrying out their business operations. This legal framework include:

- a. 1999 Constitution of the Federal Republic of Nigeria (as amended)
- b. Pension Reform Act 2014
- c. Employee's compensation Act 2010
- d. African Charter on Human and People's Rights
- e. Trade Union Act (Cap T 14) LFN 2004
- f. Trade Dispute Act (Cap T 8) LFN 2004
- g. National Industrial Court of Nigeria 2006
- h. Universal Declaration of Human Rights

Qualitative Information

GRI-1-HR-0001: Assessment Actual and potential impact

- a. Company has well defined Employee handbook, Code of Conduct and Collective Bargaining Agreements which stipulates company policies with respect to rights / obligations of management & employees w r t elements of human rights.
 - b. Well defined working conditions and conditions of services aligned to enforce the principles of human rights.
 - c. Contractors in the supply chain provide an undertaking to comply with the basic principles of human rights
- Gender diversity and inclusion is part of our business philosophy.

GRI-1-HR-0002: Actions to prevent or mitigate potential negative impact

ESG On Social Material Topics

- a. Implementation of Employee handbook, Code of Conduct and Collective Bargaining Agreements which stipulates company policies with respect to rights / obligations of management & employees w r t elements of human rights.
- b. Enforcing working conditions and conditions of services that are aligned to enforce the principles of human rights.
- c. Contractors in the supply chain provide an undertaking to comply with the basic principles of human rights.
- d. Training awareness programmes for employees
- e. Training awareness for security personnel undertaking from contractors to comply with he principles of human rights.

GRI-1-HR-0003: Actions to address actual negative impacts, including actions to provide for or cooperate in their remediation.

Management has laid down following actions to sustain positive impacts of sustainability social actions in the organisation for internal stakeholders:

- a. Monthly review of employee engagement
- b. Monthly review of grievance & disciplinary management.
- c. Quarterly Women's subcommittee meeting.
- d. Quarterly welfare committee review meeting.
- e. Quarterly joint security review meeting.
- f. Quarterly Health Committee review meeting.
- g. Half yearly joint consultative committee employees and employee representatives

GRI-1-HR-0004: Actions to manage actual and potential positive impacts.

- a. Regular training program
- b. Formation of worker organization
- c. Women subcommittee for enhancing diversity & inclusion
- d. Formation of contractors' association,
- e. Centralized payroll cell for contract workmen

Management Approach:

GRI-3-3c-HR-0001: Name of the Policy

- a. Employee Handbook
- b. Code of Conduct
- c. Collective Bargaining Agreement

GRI-3-3c-HR-0002: Company Commitment related to Employee Practices

- a. Enforcement of condition of service
- b. Freedom of Association
- c. National Minimum Wage
- d. Pension
- e. Life Insurance
- f. National Social Insurance Trust Fund
- g. Maternity Leave
- h. Non-discrimination policy
- i. Child labour policy
- j. GBVH Policy

- k. Retaliation and Reprisal Policy
- l. Applicable UN and ILO conventions

GRI-3-3e-HR-0001: Management System implemented

- a. ISO 9001:2015; ISO 14001:2015; ISO 45001:2018

GRI-3-3e-ii-HR-0001: Goals & targets

- a. Enforcement of condition of service
- b. Freedom of Association
- c. Non-discrimination policy
- d. Child labour policy
- e. Standardise working hours
- f. National Minimum Wage
- g. Standardise wage compensation structure
- h. Pension benefit, Life Insurance
- i. National Social Insurance Trust Fund
- j. Maternity Leave
- k. Medical insurance
- l. Annual Human Rights Audit contractors
- m. Training for all employees on Human Rights

GRI-3-3e-ii-HR-002: Progress toward the goals and targets

- a. Company has fully implemented Employee Handbook, Code of Conduct and Collective bargaining Agreement which enforces non-discrimination policy, child labour policy, diversity and inclusion, grievance management system, gender-based violence and harassment.
- b. All supervisors, Head of Sections, Heads of Department and Senior Management have undergone training in basic elements of risk assessment and management of human rights.

GRI-3-3e-iv-HR-0001: Lessons learned and how these have been incorporated into the organization's operational policies and procedures.

Continuous training and audit on the elements of human rights is essential for awareness and culture building

Reporting Requirements:

- a. Attendance list of All supervisors, Head of Sections, Heads of Department and Senior Management Human Rights Training.
- b. Attendance list of Security personnel trained in human rights policies or procedures.
- c. Reference document on significant investment agreements and contracts that include human rights clauses or that underwent human rights screening

Reference documents:

- a. Employee Handbook
- b. Employee Code of Conduct
- c. QHSE Policy
- d. Collective Bargaining Agreements
- e. Employee Engagements
- f. Monthly MIS Report
- g. Grievance Register

- h. Minutes of Women Subcommittee meetings
- i. Minutes of Committee meetings
- j. Minutes of JCC meetings

Ethics and Integrity

Preface:

Public disclosure of the organization's values, principles, standards, and norms of behavior

Policy Statement:

The Company is committed to protecting and respecting human dignity. All business shall be conducted in a fair and equitable manner to meeting social responsibilities, the human rights of all stakeholders shall be respected in alignment with the United Nations Declaration on Human Rights.

Legal Framework:

The framework consists of a series of laws, rules, regulations, and other resources that define corruption, regulate anti-corruption procedures and promote building integrity in the Nigerian public and private sector. This legal framework include:

- a. 1999 Constitution of the Federal Republic of Nigeria (as amended)
- b. Pension Reform Act 2014
- c. Employee's compensation Act 2010
- d. Personal Income Tax (Amended) Act 2011
- e. Trade Union Act (Cap T 14) LFN 2004
- f. Trade Dispute Act (Cap T 8) LFN 2004
- g. National Industrial Court of Nigeria 2006
- h. The Corrupt Practices and Other Related Offences Act, 2000,
- i. National Orientation Act, Cap N64 LFN 2004,
- j. United Nations Convention Against Corruption (UNCAC) and other relevant laws.

Qualitative Information

GRI-1-E&I-0001: Assessment Actual and potential impact

Company is committed to set high standard of corporate governance structure. Management recognises the impacts corporate governance on environment, economy, and people.

GRI-1-E&I-0002: Actions to prevent or mitigate potential negative impact

- a. Company has well established policies with regards to code of conduct which provides framework against corruption and corporate ethics.
- b. Training awareness for security personnel undertaking from contractors to comply with the principles of human rights.

GRI-1-E&I-0003: Actions to address actual negative impacts, including actions to provide for or cooperate in their remediation.

ESG On Social Material Topics

To manage sustainability expectation with regards social, environment and economic responsibilities, management has laid down clear policies and principles. Company has put in place structures to address the impacts. Important structure are board of directors, statutory audit, management audit, internal audit, management committee.

GRI-1-E&I-0004: Actions to manage actual and potential positive impacts.

Management is committed for capacity building through:

1. Orientation programmes
2. Training & development programmes and awareness programmes for identification of risk and mitigation of risk.
3. Management has put in place systems and procedures to eliminate conflict of interest.
4. Code of conduct for imbibing ethical and sustainability principles in every aspect of business operations.

Management Approach:

GRI-3-3c-E&I-0001: Name of the Policy

Responsible business policy such as:

- a. Employee Handbook
- b. Code of Conduct
- c. Community and Stakeholder policy
- d. Human rights & Labour policy
- e. Environment and climate change policy

GRI-3-3c-E&I-0002: Company Commitment related to Employee Practices

- a. Zero corruption

GRI-3-3e-E&I-0001: Management System implemented

- a. Management committee
- b. Grievance management system
- c. Company disciplinary committee
- d. Internal audit

GRI-3-3e-ii-E&I-0001: Goals & targets

- a. Zero corruption

GRI-3-3e-ii-E&I-0001: Progress toward the goals and targets

Policy framework in place. Training and awareness programmes in progress.

GRI-3-3e-iv-E&I-0001: Lessons learned and how these have been incorporated into the organization's operational policies and procedures.

- a. Multi-stakeholder collaboration
- b. Inter-governmental instruments and continual training programmes are for effectiveness policy framework

- c. Enforcement & inculcation of good governance culture.

Reporting Requirements:

- a. Reference documents of communication and training about anti-corruption policies and procedures to workforce
- b. Reference document of Operations assessed for risks related to corruption for workforce.

Reference documents:

- a. Employee Handbook
- b. Employee Code of Conduct
- c. QHSE Policy
- d. Company disciplinary committee reports
- e. Internal audit documentations
- f. Grievance Register
- g. Employee Engagements

Diversity and Inclusion

Preface:

Public disclosure of the organization's quantitative measure of diversity and inclusion within the workplace.

Policy Statement:

The Company is committed to promoting a workplace that integrates diversity and inclusion into its business practices.

Legal Framework:

The framework consists of a series of laws, rules, regulations, and other resources that define diversity and Inclusion and other resources that promote and integrate gender diversity in the workplace. This legal framework include:

- a. 1999 Constitution of the Federal Republic of Nigeria (as amended)
- b. Pension Reform Act 2014
- c. Employee's compensation Act 2010
- d. African Charter on Human and People's Rights
- e. Trade Union Act (Cap T 14) LFN 2004
- f. Trade Dispute Act (Cap T 8) LFN 2004
- g. National Industrial Court of Nigeria 2006
- h. Universal Declaration of Human Rights

Qualitative Information

GRI-1-D&EO-0001: Assessment Actual and potential impact

Company is committed to set high standard of corporate governance structure. Management recognises the impacts corporate governance on environment, economy and people.

GRI-1-D&EO-0002: Actions to prevent or mitigate potential negative impact

Respect for Diversity & Inclusion is an integral part of business philosophy in Indorama Nigeria. Management has put the following in place to mitigate the negative impacts on the social aspects of the organization:

- a. Achieving collaboration with both internal and external stakeholders are fundamental to achieving business goals. Company is committed to enforce sustainable condition of service and working condition in line with best international practices and in compliance to international sustainable principles and in compliance with applicable laws of Federal republic of Nigeria.
- b. Gender Based Violence and Harassment is an important aspect. Company has well-structured governance.
- c. Company has also carried out large scale capacity building for risk assessment and mitigation measures.
- d. Management recognises that failure to establish and foster a sound internal harmony amongst employees can undermine worker commitment and retention, result in labor strikes, and can jeopardise the organisation goals.

GRI-1-D&EO-0003: Actions to address actual negative impacts, including actions to provide for or cooperate in their remediation.

Management has put in following structures in place to sustain the negative impacts of social aspects in the organisation:

- a. Well defined policy framework
- b. Grievance Management System
- c. Employee engagement
- d. Gender Based (GBVH)
- e. Retaliation and retribution.

GRI-1-D&EO-0004: Actions to manage actual and potential positive impacts.

Management is committed for capacity building through:

- a. Training for all employees on principles of human rights, GBVH, retaliation / retribution

Management Approach:

GRI-3-3c-D&EO-0001: Name of the Policy

Responsible business policy such as:

- d. Employee Handbook
- e. Code of Conduct
- f. QHSE Policy
- f. Collective Bargaining Agreement

GRI-3-3c-D&EO-0002: Company Commitment related to Employee Practices

- a. Enforcement of condition of service
- b. Freedom of Association
- c. National Minimum Wage
- d. Pension, Life Insurance
- e. National Social Insurance Trust Fund
- f. Maternity Leave
- g. Applicable UN and ILO conventions

GRI-3-3e-D&EO-0001: Management System implemented

- a. ISO 9001:2015; ISO 14001:2015; ISO 45001:2018

GRI-3-3e-ii-D&EO-0001: Goals & targets

- a. 8% women in employment
- b. Implementation of non-discrimination policy
- c. implementation of grievance management system
- d. Training for all supervisors, Head of Sections, Heads of Department and Senior Management

GRI-3-3e-ii-D&EO-0001: Progress toward the goals and targets

- a. Target for women in employment is achieved.
- b. Implementation of non-discrimination policy has been implemented
- c. Grievance management system has been implemented
- d. Large scale training awareness programme has been completed

GRI-3-3e-iv-D&EO-0001: Lessons learned and how these have been incorporated into the organization's operational policies and procedures.

- a. Large scale training programmes is essential for awareness building

Reporting Requirements:

- c. Gender details of GBVH subcommittee members
- d. Age group details of GBVH subcommittee members
- e. GBVH subcommittee minutes of meeting
- f. Details of Gender based Ratio of basic pay
- g. Record of Incidents of discrimination and corrective actions taken

Reference documents:

- a. Employee Handbook
- b. Employee Code of Conduct
- c. QHSE Policy
- d. Women Subcommittee reports
- e. Grievance Register
- f. Employee Engagements

Training

Preface:

Public disclosure of the organization's investment in training, the degree to which the investment is made across the entire employee base and measures the extent to which the organization regularly appraises employee performance

Policy Statement:

The Company strongly believes that training and development is fundamental to the inculcation of culture of respect for human rights at the workplace.

Legal Framework:

The framework consists of a series of laws, rules, regulations, and other resources promotes development of fundamental skills through training. This legal framework include:

- a. 1999 Constitution of the Federal Republic of Nigeria (as amended)
- b. Pension Reform Act 2014
- c. Employee's compensation Act 2010
- d. Trade Union Act (Cap T 14) LFN 2004
- e. Trade Dispute Act (Cap T 8) LFN 2004
- f. National Industrial Court of Nigeria 2006
- g. Universal Declaration of Human Rights
- h. Industrial Training ITF Amendment Act, 2011

Qualitative Information

GRI-1-T&E-0001: Assessment Actual and potential impact

- a. Company is committed to provide a conducive learning environment and development opportunities to the employees for:
- b. Capacity building to innovate and deliver quality performance for meeting Company's business objectives.
- c. Company has developed a framework wherein employee development, improvement in individual performance and career progressions are interconnected.

GRI-1-T&E-0002: Actions to prevent or mitigate potential negative impact

- a. Annual Training Need Identification (TNI) and Annual Performance Management System are the two integrated approaches to link training and education with the business

GRI-1-T&E-0003: Actions to address actual negative impacts, including actions to provide for or cooperate in their remediation.

Individual Development Plan (IDP) provides focussed approach to monitoring impact of the training programme and performance on the job.

GRI-1-T&E-0004: Actions to manage actual and potential positive impacts.

High Potential Development Plan (HPDP) provides career development opportunities for employees who consistently demonstrate higher level of learning and performance capabilities

Management Approach:

GRI-3-3c-T&E-0001: Name of the Policy

- a. Employee Handbook
- b. Performance Management System

GRI-3-3c-T&E-0002: Company Commitment related to Employee Practices

All employees are covered under the process of Annual Training Need Identification and Performance Appraisal Systems which provides the basis for linkage between employee development, employee performance and career development.

GRI-3-3e-T&E-0001: Management System implemented

- a. 1999 Constitution of the Federal Republic of Nigeria (as amended)
- b. Pension Reform Act 2014
- c. Employee's compensation Act 2010
- d. Trade Union Act (Cap T 14) LFN 2004
- e. Trade Dispute Act (Cap T 8) LFN 2004
- f. National Industrial Court of Nigeria 2006
- g. Universal Declaration of Human Rights
- h. Industrial Training ITF Amendment Act, 2011
- i.

GRI-3-3e-ii-T&E-0001: Goals & targets

- a. Completion of Annual Training Need Identification
- b. Completion of Annual Performance Appraisal Review
- c. Development of Annual Training Calendar
- d. Completion of HPDP exercise for career progression

GRI-3-3e-ii-T&E-0001: Progress toward the goals and targets

- a. Annual performance Appraisal and training identification for all regular employees completed
- b. Implementation of Annual training calendar carried out
- c. HPDP exercise completed.

GRI-3-3e-iv-T&E-0001: Lessons learned and how these have been incorporated into the organization's operational policies and procedures.

- a. Enhancement of employee capability
- b. Superior performance
- c. Career progression

Reporting Requirements:

- a. Average hours of training that the organization's employees have undertaken during the reporting period, by gender and Employee
- b. Evidence of Percentage of employees receiving regular performance and career development reviews.
- c. Type and scope of programs implemented, and assistance provided to upgrade employee skills
- d. Minutes of training meeting

Reference documents:

- a. Employee Handbook
- b. Employee Code of Conduct
- c. Performance Appraisal Policy
- d. HPDP Policy
- e. Employee Engagements

Community Development

Preface:

Public disclosure of the organization's Operations with local community engagement, impact assessments, and development programs.

Policy Statement:

The business philosophy of the Company is to ensure social well-being, adding value to communities, and respecting human dignity. The Company is committed to respecting the rights, cultures, customs, and values of employees and communities affected by its activities and will manage its businesses in a fair and equitable manner to meet its social responsibilities.

Legal Framework:

The framework consists of a series of laws, rules, regulations, and other resources promotes development of fundamental skills through training. This legal framework include:

- a. International Finance Corporation (IFC)
- b. Performance Standards on Environmental and Social Sustainability, 2012.
- c. United Nations (UN) Convention, 'International Covenant on Economic, Social, and Cultural Rights', 1966
- d. United Nations (UN) Declaration, 'Declaration on the Right to Development', 1986
- e. United Nations (UN) Declaration, 'Universal Declaration of Human Rights', 1948

Qualitative Information

GRI-1-CD-0001: Assessment Actual and potential impact

- a. Company has well established procedure for social impact assessment & management.
- b. Stakeholder engagement programme and community development programme with an objective to promote socio economic development in the region, which provides peaceful environment for business operation and enhances positive corporate image.

GRI-1-CD-0002: Actions to prevent or mitigate potential negative impact

- a. Social impact assessment
- b. Development of social Action Plan
- c. Stakeholder engagement programme
- d. MOUs

GRI-1-CD-0003: Actions to address actual negative impacts, including actions to provide for or cooperate in their remediation.

- a. Implementation of Community Development Projects
- b. Scholarships for higher education
- c. Skill Acquisition Programmes
- d. Micro Credit Grants for Women
- e. Youth Entrepreneurship Programme for Youth

GRI-1-CD-0004: Actions to manage actual and potential positive impacts.

- a. Constitution of Project Advisory Committee
- b. Scholarship Sub Committee
- c. Employment Sub Committee
- d. Grievance Sub Committee.

Management Approach:

GRI-3-3c-CD-0001: Name of the Policy

- a. MOU and Community / Stakeholder Policy

GRI-3-3c-CD-0002: Company Commitment related to Community development Practices

- a. International Finance Corporation (IFC), Performance Standards on Environmental and Social Sustainability, 2012.
- b. International Finance Corporation (IFC), Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets, 2007
- c. United Nations (UN) Convention, 'International Covenant on Economic, Social, and Cultural Rights', 1966
- d. United Nations (UN) Declaration, 'Declaration on the Right to Development', 1986
- e. United Nations (UN) Declaration, 'Universal Declaration of Human Rights', 1948

GRI-3-3e-CD-0001: Management System implemented

Company Stakeholder Engagement Plan & MOU

GRI-3-3e-ii-CD-0001: Goals & targets

- a. Implementation of Community Development Projects
- b. University Scholarship,
- c. Acquisition Programmes
- d. Micro Credit Grants for Women
- e. Youth Entrepreneurship Programme

GRI-3-3e-ii-CD-0001: Progress toward the goals and targets

- a. Work in Progress

GRI-3-3e-iv-CD-0001: Lessons learned and how these have been incorporated into the organization's operational policies and procedures.

- a. Clear policy framework and direct engagement with stakeholder enhances trust and corporate image

Reporting Requirements:

- a. Operations with significant actual or potential negative impacts on local communities
- b. Incidents of violations involving rights of indigenous people
- c. Social impact assessments, including gender impact assessments, based on participatory processes.
- d. Local community development programs based on local communities' needs.
- e. Stakeholder engagement plans based on stakeholder mapping.
- f. Broad based local community consultation committees and processes that include
- g. vulnerable groups.
- h. Works councils, occupational health and safety committees and other worker representation
- i. bodies to deal with impacts.
- j. Formal local community grievance processes.

Reference documents:

- a. PAC Consultative Forum minutes of meeting
- b. Scholarship Sub Committee minutes of meeting
- c. Employment Sub Committee minutes of meeting
- d. Grievance Logs.
- e. MOUs
- f. Stakeholders Engagement policy
- g. Community development projects & budget allocation Reports



ANNEX 6: INDORAMA COMPASS HANDBOOK.2022.

INDORAMA

The Compass Handbook

2022



Excerpts from Global e-Townhall



Mr. S.P. Lohia
Chairman

About Compass:

"I am very satisfied that our new Compass captures Indorama's ethos, aspirations, and culture very well. This is our secret sauce, which must be preserved at all costs. But any philosophy is only as good as its practitioners. All of you are now custodians of this Compass. Hence, please embrace it and use it well".



Mr. Amit Lohia
Vice Chairman

About Competency Framework:

"Indorama's new Competency Framework defines the behaviors that determine excellence and success in our organization. The Competency Framework will be integrated with Indorama's Performance Management System, Recruitment decisions, Succession Planning, and Career Development opportunities for employees".

The Compass Handbook

More than words.

The Compass is our **DNA**; *it is who we are*.

It is our **purpose**, **vision**, **capabilities**, and **values**.

Our expression of our identity, aspirations, and strengths.

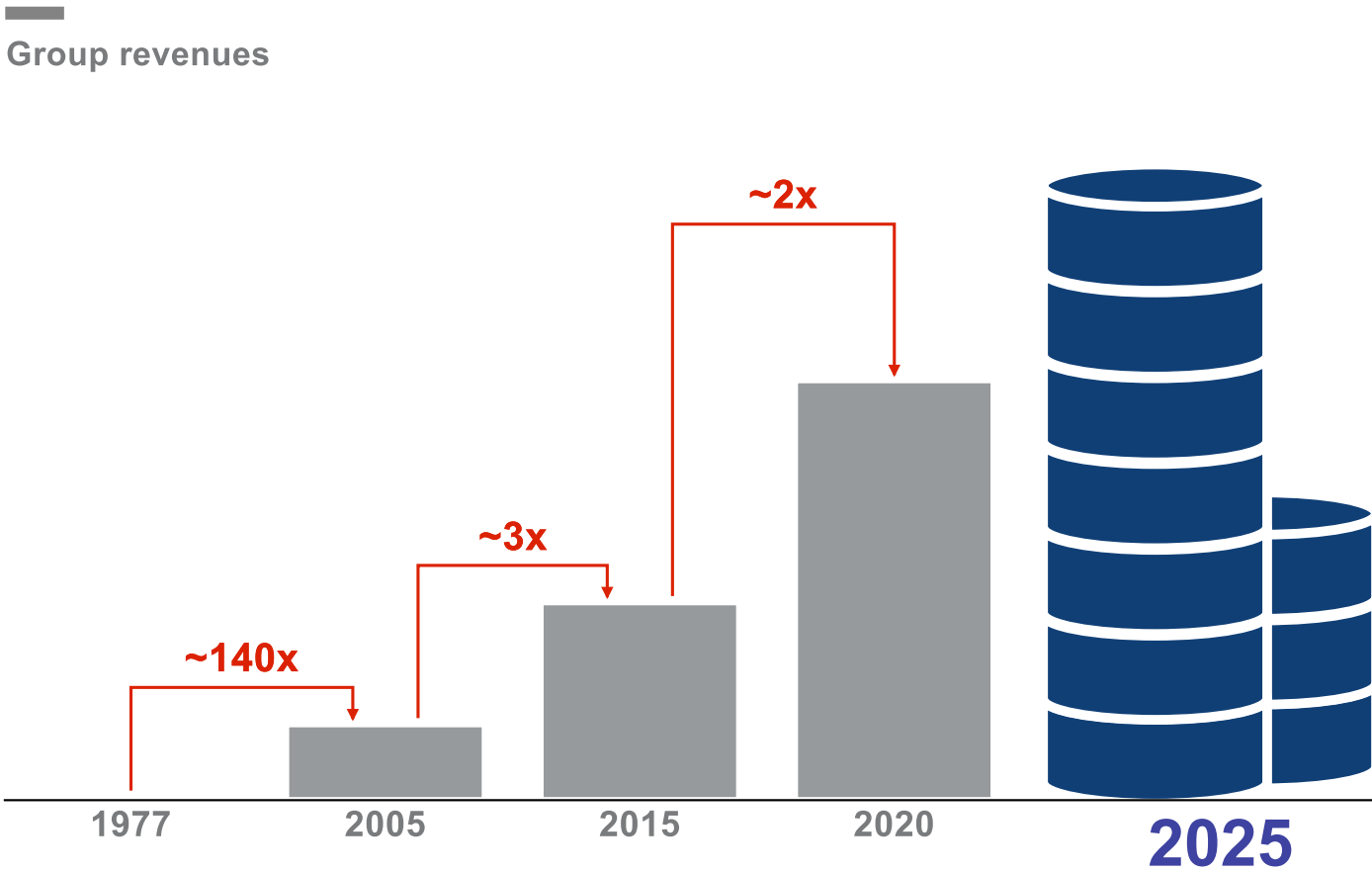


This handbook explains Indorama's Compass and its **four elements**.

It is a mandatory learning tool for new employees and also a valuable resource for existing employees.

Ambitious agenda for growth

While we have grown rapidly to a \$5B conglomerate, we continue to have an ambitious agenda for growth



Source: Indorama Management Data

We refreshed our Compass to prepare for the future

Simple

Brief, targeted and easy to remember

Meaningful

Resonates with our core philosophy

Future-ready

Articulates the future of Indorama

We have refreshed our Compass using multiple sources



Global experts

Knowledge in cultural transformation

Discussions

Internal and external discussions

Workshops

Multiple seminars with senior leaders

Best-in-class benchmarks

Analyzed leading global companies

Survey

Inputs from employees across BUs

Brainstorming sessions

Multiple sessions to refresh our Compass

Our refreshed Compass consists of four key elements



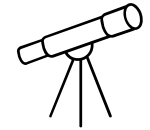
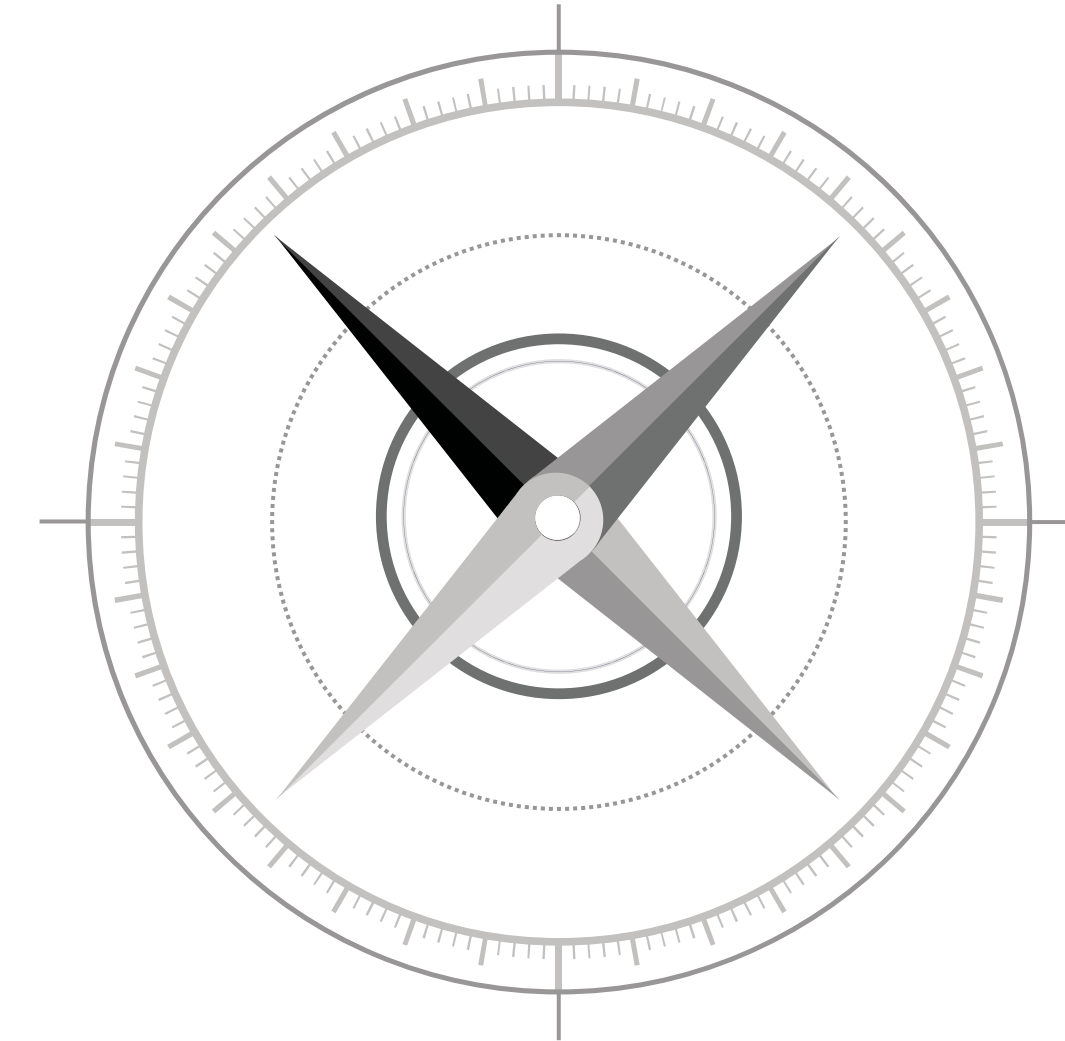
Purpose

Why we exist



Values

Who we are



Vision

Where we want to go



Capabilities

How we differentiate

Compass
Element:
Descriptions

Compass elements	Purpose <i>"Why we exist"</i> 1	Vision <i>"Where we want to go"</i> 2	Capabilities <i>"How we differentiate"</i> 3	Values <i>"Who we are"</i> 4
Description	Simple, inspirational, easy-to-remember, which resonates deeply with the entire organization	Strategic statement of intent – applicable across the entire organization	Our capabilities that give us our competitive advantage: today and in the future	Aspirations for how we behave and interact with one another and our external stakeholders

INDORAMA COMPASS

Purpose	(Essential Materials. Better Lives.)			
Vision	The materials company of choice for customers and employees <i>Driving scale, growth and sustainability</i>			
Capabilities	 Investing for the future	 Lasting relationships	 People first	 Best-in-class assets and operations
Values	 Act like owners	 Be adaptable	 Care deeply	 Deliver excellence

1

Our Purpose: Why we exist



Essential materials.

We produce materials that are **essential for our world** - fertilizers, medical gloves, textile and packaging materials.



Better lives.

We strive to **improve lives** and develop a better world: for our **customers, employees**, and other stakeholders.

2

Our Vision: Where we want to go

The materials company of choice for customers and employees
Driving scale, growth, and sustainability.



Materials company of choice

We aim to be one of the most distinctive and competitive materials companies in the world...



Customers and employees

...for our key stakeholders, our customers and employees without whom we wouldn't exist



Driving scale and growth

We invest in creating scale in existing businesses and new growth platforms for future prosperity



Driving sustainability

We aim to operate our business across markets and geographies in a responsible and sustainable manner

3

Our Capabilities: How we differentiate

Investing for the future 	Lasting relationships 	People first 	Best-in-class assets & operations 
Value creation. <i>We create value with prudence, patience, and a long-term outlook</i>	Committed partners. <i>We work collaboratively and foster long-term relationships</i>	Inspired employees. <i>We have a high-performance culture and treat our employees like family</i>	Technology and cost. <i>We use state-of-the-art technology to achieve cost competitiveness</i>
Growth platforms. <i>We invest in new ideas today to drive value tomorrow</i>	Across stakeholders. <i>We serve our customers and strategic partners with respect and excellence</i>	Empowered talent. <i>We trust and empower individuals so that they contribute their best</i>	Quality and safety. <i>We maintain the highest standards for quality & safety</i>

4

Our Values: Who we are

A ct like owners 	B e adaptable 	C are deeply 	D eliver excellence 
<i>passionate, courageous, responsible, and strategic</i>	<i>to opportunities, challenges, and ideas</i>	<i>for people and our planet with trust, respect, and humility</i>	<i>through knowledge, agility, innovation, and execution</i>



Act like owners



DO's	DONT's
Be passionate and courageous. <i>Be daring. Keep trying till you succeed. Act with confidence. Go the extra distance. Put your heart and soul into 'it'.</i>	Half-hearted behavior. <i>Being passive. Doing just the minimum amount to get by. Not showing interest</i>
Be responsible. <i>Act with honesty and integrity. Show commitment to our values and Code of Conduct. Report irresponsible behavior. Take responsibility for your actions and behavior.</i>	Irresponsible behavior. <i>Dishonest behavior. Disregarding our values and Code of Conduct. Overlooking irresponsible actions of others.</i>
Be strategic. <i>Always look at the big picture. Take proactive and informed actions that ensure Indorama's future success.</i>	Being short-sighted. <i>Not looking at the details. Getting lost in the details. Not thinking about future implications.</i>



Be adaptable



DO's	DONT's
Foster new opportunities. <i>Have a growth mindset. Plan for the best. Be ready for the worst.</i>	Avoiding new opportunities. <i>Staying in your comfort zone. Focusing too much on the negatives rather than the positives.</i>
Adapt to challenges. <i>Try different approaches depending on the situation. Keep reviewing and improving your strategy. Be ready for changes</i>	There is no solution. <i>Difficulties in your path stop you from achieving the desired results. There is no other way.</i>
Keep improving yourself. <i>Keep learning and updating your skills and Knowledge. Keep taking feedback and learning from others.</i>	I know everything. <i>I am always right. Others don't know anything.</i>



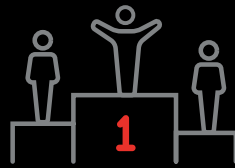
Care deeply



DO's	DONT's
Care for people and our planet. <i>Show empathy. Care deeply for the wellbeing of others and our environment. Help others achieve their full potential.</i>	Not caring. <i>Not feeling the pain of others. Showing indifference. Not thinking about the implications of your actions on people and the environment.</i>
Trust and Respect. <i>Build relationships based on trust and respect. Treat everyone with respect. Carry everyone with you.</i>	Disrespectful behavior. <i>Acting rudely or insensitively. Putting people down</i>
Humility. <i>Stay down-to-earth. No task is too small. The organization comes first.</i>	Ego. <i>The task is beneath me. My feelings are more important. I know important people.</i>



Deliver excellence



DO's	DONT's
Drive knowledge and innovation. <i>Challenge the status quo with your expertise. Keep upgrading and expanding your knowledge.</i>	Avoiding change. <i>Not trying new things. Resistance to change. I already know more than enough to do my job</i>
Be agile. <i>Make quick and timely decisions with data. Do it today.</i>	Moving slowly. <i>Delaying decisions. Not looking at the right data. Overcomplicating things</i>
Focus on execution. <i>Plan meticulously and keep reviewing frequently. Pay attention to details. Talk 10%, Act 90%</i>	More talk, less action. <i>Theoretical approach. Excessive discussion about unactionable things. Long and unproductive meetings.</i>



Frequently Asked Questions: *About our Compass*

What is the Compass?

The Compass contains Indorama’s purpose, vision, capabilities, and values; it is our DNA. It informs internal and external stakeholders about why we exist, what we stand for, what differentiates us, and how we engage with each other. Put simply, it is who we are.

Why is it important for me to understand our Compass?

The Compass will help you understand the purpose, vision, capabilities and values of Indorama. It shapes our strategy, daily operations and interactions with each other. It shapes how we behave and what we are evaluated on for career success.

Does the Compass only apply at our workplace?

No, the Compass and our values should be followed everywhere we go because we, as part of Indorama, always represent the organization. Any irresponsible action, whether we are on duty or not, reflects poorly on us and can damage our company’s reputation.



Frequently Asked Questions: *About our Compass*

Purpose: How do we create better lives through our materials?

We make lives better by providing life’s essential materials of the best quality that is accessible and affordable to people across the globe

Vision: What are our plans to instill sustainability in our operations?

We aim to reduce our carbon footprint and become a carbon neutral firm. We are also a leader in a variety of sustainability led initiatives across various functions in all our group organizations

Capabilities: How do we instill our capabilities in daily business operations?

Our four capabilities are the wonderful result of following Indorama’s philosophy, culture, operating principles, systems, processes, and practices which are spread across various businesses, geographies, and functions.

Frequently Asked Questions: *About our Compass*

How will I be measured or rated for alignment with the Compass?

You will be evaluated based on our Competency Framework, which is based on the 4 values described in the Compass. The evaluation will be done at least once a year through our PMS process.

How do I improve my alignment with the Compass and improve my competencies?

This is a continuous process of self-development. We provide support from HR such as handbooks, training material, and integration with various HR processes such as recruitment, performance management, and career development. Senior members of management are expected to exemplify our values and to be a positive role model for others. We encourage you to discuss actively with your managers and HR officers about Indorama's work culture, in addition, also seek and give feedback for areas for improvement.

COMPETENCY FRAMEWORK



About the Competency Framework

What are competencies?

Competencies are a set of individual **behaviours** which are observable, measurable and critical to successful individual and organizational performance. Indorama’s competency framework consists of **12 competencies** that are applicable for all employees at different levels and functions.

How did we develop our competency framework?

We developed a customized framework for Indorama by working with The Chemistry Group, a leading talent consulting firm in the UK, along with Bain & Company.

Purpose of this document

This document describes Indorama’s 12 competencies in detail. These competencies are used across Indorama for evaluating individuals for recruitment, training, rewards, promotion, and succession purposes.

- **Step One: Definitions** of the competencies.
- **Step Two: Structure** of each competency, which typically consists of 3 elements.
- **Step Three:** Assignment of competencies to management levels based on degree of relevance.
- **Step Four: Rating scale** for each competency using a 5-point scale.
- **Step Five:** Minimum expected **levels of mastery** by function and management level.

INDORAMA COMPASS

Purpose

(Essential Materials. Better Lives.)

Vision

The materials company of choice for customers and employees
Driving scale, growth and sustainability

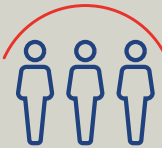
Capabilities



Investing for the future



Lasting relationships



People first



Best-in-class assets and operations

Values



Act like owners



Be adaptable



Care deeply



Deliver excellence

Competency Framework

Our 12 Competencies



Step One

Competencies and their definitions

Competency	Definition
Acting Responsibly	Takes responsibility for creating and delivering tangible results against Indorama's social purpose with strong focus on integrity, safety, conduct, and ESG.
Building Confidence	Empowers others by making confident decisions and communicating them effectively so that teams, colleagues and customers have a clear sense of purpose and sustained confidence in Indorama.
Acting Strategically	Weighs priorities and analyses benefits and risks to make good decisions that drive Indorama's strategy forward. Devises and implements strategies that focus on Indorama's future readiness.
Making it Happen	Prioritizes and plans with attention to detail, remaining adaptable and overcoming challenges in order to achieve the desired impact for Indorama.
Developing Self	Reflects on where they are successful, where they need to improve, and seeks opportunities that will challenge them and enable continuous personal development.
Curious and Learning Mindset	Seeks knowledge and understanding of the world around them, drawing on a range of sources to form a perspective, and uses their research to create organizational benefits.
Collaboration and Teamwork	Gathers the right people together to explore opportunities and challenges, finds common ground, and works effectively with others to best achieve Indorama's objectives.
Nurturing Trusted Relationships	Creates empathetic and enduring relationships by understanding and respecting the feelings, opinions, and goals of others and goes out of the way to help others.
Developing Talent	Adds to the success of Indorama's talent diversity through continuously training, coaching, mentoring, recognising potential, and celebrating others' success by managing fairly and with transparency.
Domain Knowledge	Demonstrates a comprehensive technical understanding of their domain and uses this knowledge to drive positive outcomes for Indorama and its customers.
Driving Innovation and Change	Thinks outside of the box and creates value by innovating and embracing the technological advances and changes that matter. Communicates effectively to inspire others and simplify complex ideas.
Continuous Improvement	Monitors collective success by defining standards for high performance and by identifying and monitoring metrics to track against those standards; challenges the way Indorama does things to optimize performance.

Step Two

Structure and elements of the competencies

Competency	Definition	Structure of competency (what it is measuring)		
Acting Responsibly	Takes responsibility for creating and delivering tangible results against Indorama's social purpose with strong focus on integrity, safety, conduct, and ESG.	Integrity	Objective-led	Safety
Building Confidence	Empowers others by making confident decisions and communicating them effectively so that teams, colleagues and customers have a clear sense of purpose and sustained confidence in Indorama.	Confident Decisions	Accountability	Confident communication
Acting Strategically	Weighs priorities and analyses benefits and risks to make good decisions that drive Indorama's strategy forward. Devises and implements strategies that focus on Indorama's future readiness.	Cost/Benefit analysis	Considers other opinions	Future focused
Making it Happen	Prioritizes and plans with attention to detail, remaining adaptable and overcoming challenges in order to achieve the desired impact for Indorama.	Detailed planning	Problem solving	Consistently delivers quality
Developing Self	Reflects on where they are successful, where they need to improve, and seeks opportunities that will challenge them and enable continuous personal development.	Self awareness	Values feedback	Takes development opportunities
Curious and Learning Mindset	Seeks knowledge and understanding of the world around them, drawing on a range of sources to form a perspective, and uses their research to create organizational benefits.	Wider research	Uses research	Understands the customer
Collaboration and Teamwork	Gathers the right people together to explore opportunities and challenges, finds common ground, and works effectively with others to best achieve Indorama's objectives.	Works well with others	Assembles good teams	Encourages others to speak up
Nurturing Trusted Relationships	Creates empathetic and enduring relationships by understanding and respecting the feelings, opinions, and goals of others and goes out of the way to help others.	Shows empathy	Influences through the needs of others	Builds lasting connections
Developing Talent	Adds to the success of Indorama's talent diversity through continuously training, coaching, mentoring, recognising potential, and celebrating others' success by managing fairly and with transparency.	Provides development opportunities	Feedback, training, coaching, mentoring	Celebrates the success of others
Domain Knowledge	Demonstrates a comprehensive technical understanding of their domain and uses this knowledge to drive positive outcomes for Indorama and its customers.	Domain knowledge	Improving technical expertise	Application of domain knowledge
Driving Innovation and Change	Thinks outside of the box and creates value by innovating and embracing the technological advances and changes that matter. Communicates effectively to inspire others and simplify complex ideas.	Creative thinking	Informed risk taking	Engaging communication
Continuous Improvement	Monitors collective success by defining standards for high performance and by identifying and monitoring metrics to track against those standards; challenges the way Indorama does things to optimise performance.	Defines high standards	Data driven decision-making	Challenges the status quo

Step Three

Competencies are assigned to management levels based on degree of relevance

Competency	Definition	Senior Mgmt	Middle Mgmt	Junior Mgmt	Non Mgmt
Acting Responsibly	Takes responsibility for creating and delivering tangible results against Indorama's social purpose with strong focus on integrity, safety, conduct, and ESG.	X	X	X	X
Building Confidence	Empowers others by making confident decisions and communicating them effectively so that teams, colleagues and customers have a clear sense of purpose and sustained confidence in Indorama.	X	X		
Acting Strategically	Weighs priorities and analyses benefits and risks to make good decisions that drive Indorama's strategy forward. Devises and implements strategies that focus on Indorama's future readiness.	X	X		
Making it Happen	Prioritizes and plans with attention to detail, remaining adaptable and overcoming challenges in order to achieve the desired impact for Indorama.	X	X	X	
Developing Self	Reflects on where they are successful, where they need to improve, and seeks opportunities that will challenge them and enable continuous personal development.	X	X	X	X
Curious and Learning Mindset	Seeks knowledge and understanding of the world around them, drawing on a range of sources to form a perspective, and uses their research to create organizational benefits.	X	X	X	
Collaboration and Teamwork	Gathers the right people together to explore opportunities and challenges, finds common ground, and works effectively with others to best achieve Indorama's objectives.	X	X	X	X
Nurturing Trusted Relationships	Creates empathetic and enduring relationships by understanding and respecting the feelings, opinions, and goals of others and goes out of the way to help others.	X	X	X	
Developing Talent	Adds to the success of Indorama's talent diversity through continuously training, coaching, mentoring, recognising potential, and celebrating others' success by managing fairly and with transparency.	X	X		
Domain Knowledge	Demonstrates a comprehensive technical understanding of their domain and uses this knowledge to drive positive outcomes for Indorama and its customers.	X	X	X	X
Driving Innovation and Change	Thinks outside of the box and creates value by innovating and embracing the technological advances and changes that matter. Communicates effectively to inspire others and simplify complex ideas.	X	X		
Continuous Improvement	Monitors collective success by defining standards for high performance and by identifying and monitoring metrics to track against those standards; challenges the way Indorama does things to optimise performance.	X	X	X	X

Step Four

Description of the rating scale and detailed rating guide for each competency

There are 5 broad levels to each competency. The level achieved by a person depends on the **quality** and **frequency** with which they demonstrate that competency. Each level has specific criteria within each competency, but the 5 levels are broadly defined below.

1	2	3	4	5
No evidence	Developing	Proficient	Role Model	Strategic
Limited evidence of demonstrating the competency; or does not apply to role.	Demonstrates the competency at a basic level. May require support from others, particularly in unfamiliar or challenging scenarios.	Consistently demonstrates the competency at a proficient level across a range of situations.	Proactively displays a strong and consistent use of the competency, positively influencing those in proximity.	Exemplifies the competency, promoting its effective application across a wide sphere of influence, beyond their direct team.

Each level of functional leadership will be allocated a specific ‘Mastery Level’ against the competencies in the framework. The set of Mastery Levels will provide individuals with a clear understanding of the expected level of competency they need to achieve.

Acting Responsibly

Takes responsibility for creating and delivering tangible results against Indorama’s social purpose with strong focus on integrity, safety, conduct and ESG.

Structure	1 No Evidence	2 Developing	3 Proficient	4 Role Model	5 Strategic
Integrity		Makes reference to the ethical ways in which Indorama does business, but a clear focus on high standards of conduct is not always present in their actions, decisions or in the way they communicate.	Demonstrates a strong advocacy for the ethical ways in which Indorama does business, championing the importance of integrity through their actions, communications and decision-making.	Ensures colleagues and peers advocate the ethical ways in which Indorama does business, actively finding ways to demonstrate the importance of integrity to external networks and the wider community.	Champions a culture across the organisation which empowers individuals to consider Indorama’s ethical way of doing business, and the importance of integrity, in the actions, decisions and communications they make.
Objective-led	Does not show the behavioural indicators required for Acting Responsibly.	They consider the importance of Indorama’s Compass, Code of Conduct, and ESG objectives but this may not be consistently demonstrated in the decisions they make.	Consistently makes decisions which are in line with Indorama’s Compass, Code of Conduct, and ESG objectives.	Proactively encourages other to make decisions in line with Indorama’s Compass, Code of Conduct, and ESG objectives.	Creates processes and systems that enable everybody at Indorama to make decisions in line with Indorama’s Compass, Code of Conduct, and ESG objectives.
Safety		Clear evidence of considering employee, asset, and environmental safety before taking decisions or actions is not demonstrated on a consistent basis.	Clear steps are taken to ensure employee, asset, and environmental safety is considered before decisions and actions are made.	Ensures that employee, asset, and environmental safety is always considered before decisions and actions are taken and encourages others to do the same by advocating the importance of safety in the workplace.	Drives a culture where employee, asset, and environmental safety is paramount and always considered before decisions and actions are taken.

Building Confidence

Empowers others by making confident decisions and communicating them effectively so that teams, colleagues and customers have a clear sense of purpose and sustained confidence in Indorama.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Confident Decisions	Does not show the behavioural indicators required for Building Confidence.	Tries to use their best judgement to make timely and accurate decisions but may turn to others for clarification or to make the final decision.	Effectively uses their judgement to make timely decisions in a self-assured way.	Makes timely and confident decisions. Encourages and supports others to do the same.	Creates a culture where timely and confident decision are made by all leaders.
Accountability		May not consistently take accountability for their decisions, which may leave others unsure of responsibilities.	Takes accountability for – and faces up to – difficult challenges, being open and transparent about their actions, decisions, and mistakes.	Exemplifies the importance of individuals taking accountability for their actions and being transparent in decision-making across Indorama.	Drives a culture of transparency and accountability which positively impacts the future success of Indorama.
Confident communication		May not consistently communicate their message clearly and in a way that builds the confidence of their audience.	Shows confidence in their ability to succeed through their clear messaging and communication.	Builds confidence, optimism and excitement in Indorama's ability to succeed through their clear messaging and communication.	Enables others across Indorama to communicate in a way that instils confidence about Indorama's ability to achieve collective success.

Acting Strategically

Weighs priorities and analyses benefits and risks to make good decisions that drive Indorama's strategy forward. Devises and implements strategies that focus on Indorama's future readiness.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Cost Benefit Analysis	Does not show the behavioural indicators required for Acting Strategically.	Compares a number of alternative options before making decisions but needs prompting or support when analysing the benefits and risks associated with each.	Weighs up alternate options or concepts, by evaluating their benefits and risks to Indorama's strategic objectives.	Conducts a full analysis and risk assessment of all options before making key decisions, taking both Indorama's current and future context into account.	Implements systems or processes which ensure full analyses and risk assessments are completed before decisions are made at all levels and functions across Indorama.
Considers other opinions		May not always consider the perspectives of others when making important decisions, maintaining their original approach.	Takes into account the opinions and priorities of a broad group of people before making decisions.	Encourages individuals in their team and function to consider the opinions and priorities of others before making decisions.	Creates a culture where people are encouraged to consider the opinions and priorities of others, and challenge decisions which do not provide sufficient evidence of this.
Future focused		Their lack of understanding of Indorama's and its customer's future needs, means that decisions may not be consistently future-focused.	Demonstrates a clear understanding of Indorama's and its customer's future needs, in order to make tactical decisions which meet its desired future state.	Enables others to better understand the future needs of Indorama, and its customers, in order to align their activity and decisions with its desired future state.	Sets a culture where the organization/function is always looking forward, anticipating the customer's needs and aligning Indorama's capabilities to meet its desired future state.

Making it Happen

Prioritizes and plans with attention to detail, remaining adaptable and overcoming challenges in order to achieve the desired impact for Indorama.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Detailed planning		Designs plans which enable projects or initiatives to be delivered to scope and on time but may not do so consistently.	Consistently designs and implements plans to be delivered to scope and on time, mitigating risks and clearly setting out the responsibilities of others in achieving these plans.	Designs and implements robust plans that consider Indorama’s strategic priorities with clear contingencies for overcoming potential risks that may occur.	Creates a environment that allows individuals to plan in a way that ensures that value is consistently delivered to Indorama and its customers.
Problem solving	Does not show the behavioural indicators required for Making it Happen.	Tries to remain flexible and takes action to overcome obstacles where possible, but may use a fixed mindset without adapting it as needed.	Shows adaptability to changing situations, revising plans and strategies as appropriate to overcome obstacles and finding solutions.	Sets an example for adapting to changing situations, overcoming obstacles, and finding solutions, and enables others to do the same.	Puts a culture in place across the business that encourages people to adapt to changing situations, be solution-oriented, and overcome barriers so that Indorama can continue to achieve its maximum impact.
Consistently delivers quality		May not consistently deliver work at the desired quality level or in a timely manner.	Consistently delivers work at a high standard and in a timely manner.	Sets an example for delivering work at a high standard and in a timely manner, and enables others to do the same.	Implements ways of working which allow individuals to deliver work at an exceptional standard and achieve the desired results for themselves, Indorama, and its customers.

Developing Self

Reflects on where they are successful, where they need to improve, and seeks opportunities that will challenge them and enable continuous personal development.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Self awareness		Takes action to better understand their personal strengths and identifies areas for growth by reflecting on their capabilities but may not do so regularly.	Can clearly identify their strengths and where they need to improve, takes timely and consistent action to improve as per a defined development plan	Is open with peers, colleagues and managers about their personal development journey, clearly defining development goals and regularly updating their development plan. Encourages others to do the same.	Enables processes and systems across the business which provide individuals, including themselves, with the opportunity to focus on their personal growth, enabling them to plan and take action to develop themselves.
Values feedback	Does not show the behavioural indicators required for Developing Self.	Is inconsistent in acknowledging and asking for feedback.	Asks immediate colleagues for timely and constructive feedback and acts constructively on the inputs provided.	Always asks for timely and constructive feedback from a variety of different colleagues, using it to inform their development, and encourages others to do so.	Builds a culture of open feedback by role modelling and encouraging everyone at Indorama to provide timely and constructive feedback to others.
Takes development opportunities		May not actively seek for stretching opportunities, tending to focus on opportunities which represent their current capability level.	Seeks stretching opportunities and takes on extra responsibilities to improve their capabilities and grow themselves.	Proactively seeks stretching opportunities outside their comfort zone, which align with the strategic objectives of Indorama, encouraging others to do the same.	Creates an environment where people feel safe and empowered to take on opportunities outside their comfort zone to help accelerate their own development, in line with the strategic objectives of Indorama.

Curious and Learning Mindset

Seeks knowledge and understanding of the world around them, drawing on a range of sources to form a perspective, and uses their research to create organizational benefits.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Wider research	Does not show the behavioural indicators required for Curious and Learning Mindset.	Tends to conduct research to support their understanding of a specific task but may need prompting to do so.	Consistently conducts research to keep up-to-date with current affairs and things that might be impacting Indorama as a business.	Conducts thorough research and fact-checks across a wide range of information sources (including internal information, internet search, customer feedback etc.) to keep themselves up-to-date on the marketplace, as well as Indorama's competitors and its wider strategy.	Supports an environment where individuals use a broad range of information to keep up-to-date on the industry, as well as Indorama's competitors and its wider strategy.
Uses research		Does not consistently use their research to generate benefits for the organization.	Applies their research for beneficial purposes such as training and development, upgrading knowledge of others, challenging existing assumptions, or improving existing practices.	Encourages others to do research using a variety of different types of information and data, using it to challenge assumptions, upgrade knowledge of others, or improve existing practices.	Puts systems and processes in place that enable Indorama to be a learning organization based on the research and learnings of its people.
Understands the customer		They do not consistently use research to better understand the changing needs of Indorama's customers and industry.	Through their research they clearly understand the changing needs of Indorama's customers and industry.	Shares research with others, in a way that helps them to better understand the changing needs of Indorama's customers and industry, and encourages others to do the same.	Creates a culture where individuals gather and share broad sets of research in order to better understand the changing needs of Indorama's customers and industry.

Collaboration and Teamwork

Gathers the right people together to explore opportunities and challenges, finds common ground, and works effectively with others to best achieve Indorama’s objectives.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Works well with others	Does not show the behavioural indicators required for Collaboration and Teamwork.	Recognises the benefit of collaboration but may not consistently work well with others.	Consistently collaborates with others, with the aim of driving better outcomes for Indorama.	Breaks down barriers between individuals, teams, and functions across regions and markets, emphasising their common purpose and goals to enable successful collaboration.	Creates an environment where collaboration is promoted to break down silos across the business and improve global working relationships.
Assembles good teams		May need to be prompted to actively reach out to others and bring them together to help solve problems, explore new ideas or make decisions.	Considers the expertise from across the organisation, bringing the right people together when attempting to solve specific problems, exploring new opportunities or when making decisions.	Consistently brings together diverse teams of individuals with different skills, capabilities and perspectives, inviting external expertise when they recognise their own limits, or a gap within their team.	Puts systems and processes in place to enable people to collaborate across markets and harness the collective knowledge and expertise of Indorama.
Encourages others to speak up		May listen to others, but their thoughts and opinions are not always demonstrated in the decisions they make.	Actively facilitates interactions between team members, inviting challenges and encouraging others to speak up, making sure that their contribution is clearly heard and recognised.	Promotes the importance of bringing diversity of thought into each decision, idea or project, ensuring conversations continue until a clear set of team concepts are created, or consensus reached.	Builds a culture where everybody feels empowered to give their opinion, to ensure that different experiences, styles, backgrounds and perspectives are leveraged when approaching work across Indorama.

Nurturing Trusted Relationships

Creates empathetic and enduring relationships by understanding and respecting the feelings, opinions, and goals of others and goes out of the way to help others.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Shows empathy		May not listen to others' feelings and perspectives in every situation.	Creates a feeling of empathy using positive dialogue. Actively listens, understands, and respects the ideas, feelings, and beliefs of others.	Sets an example for building empathetic relationships based on trust, respect, and understanding.	Creates an environment where individuals are encouraged to build strong relationships with others, customers, and the communities it serves, by taking the time to understand the feelings and perspectives of others.
Influences through the needs of others	Does not show the behavioural indicators required for Nurturing Trusted Relationships.	Makes attempts to influence others in a positive way but may not do so on a consistent basis.	Can positively influence others by understanding their point of view, behaving with trust, and contributing to their personal success.	Effectively builds win-win alliances between themselves and other people, by truly understanding the thoughts, opinions, and needs of others, behaving with trust, and contributing to their personal success. Encourages others to do the same.	Creates a culture where people influence others in a positive way by understanding their needs and requirements, behaving with trust, and helping each other to succeed.
Builds lasting connections		Does not consistently engage or include others beyond their immediate network.	Reaches out to individuals beyond their immediate network to build strong, lasting connections with others.	Proactively looks for opportunities to build positive connections with others beyond their immediate network and across the industries in which Indorama operates.	Develops a culture where individuals build lasting, positive connections beyond their immediate network for Indorama's future success.

Developing Talent

Adds to the success of Indorama's talent diversity through continuously training, coaching, mentoring, recognising potential, and celebrating others' success by managing fairly and with transparency.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Provides development opportunities		May need prompting to provide individuals with stretching opportunities that are in line with their development goals.	Provides development opportunities to others to stretch them further in their role, using defined and consistently applied standards/criteria.	Provides development opportunities that align to individual's personal ambitions and will stretch them in line with their career aspirations, using defined and consistently applied standards/criteria.	Introduces initiatives that enable Indorama to provide its people with a variety of development opportunities which align to their unique career aspirations, using defined and consistently applied standards/criteria to achieve this.
Feedback, training, coaching, and mentoring	Does not show the behavioural indicators required for Developing Talent.	Does not consistently provide feedback, training, coaching and mentoring to others when it is required.	Consistently provides timely and constructive feedback, training, coaching and mentoring to others, with the aim of helping them to achieve their development goals.	Allocates challenging responsibilities in line with individuals' development requirements and Indorama's strategy, supporting them by providing constructive feedback and acting as a mentor, coach or trainer.	Builds a supportive environment that enhances the capabilities of others, enabling them to realise their full potential. Creates ways for individuals to effectively coach, mentor, train and give feedback to team members, peers and colleagues.
Celebrates the success of others		May not consistently recognise the achievements of others or may need prompting to do so.	Consistently recognises the achievement of others and makes time and effort to celebrate successes.	Proactively recognises the achievements of colleagues and encourages others to do the same.	Sets up systems and processes across the business for people to recognise and celebrate each other's successes.

Domain Knowledge

Demonstrates a comprehensive technical understanding of their domain and uses this knowledge to drive positive outcomes for Indorama and its customers.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Domain knowledge		Displays a basic understanding of concepts, processes, regulation, compliance and legislation relevant to their domain.	Is knowledgeable in concepts, processes, regulation, compliance and legislation related to their specific domain.	Displays an in-depth understanding of a broad range of concepts, processes, methodologies, regulations, compliance and legislation relevant to their domain, sharing best practice with those around them.	Develops initiatives which enable others to build, and share, subject-matter expertise in a broad range of concepts, processes, methodologies, regulations and compliance across the business.
Improving technical expertise	Does not show the behavioural indicators required for Domain Knowledge.	Spends time increasing their relevant technical or domain knowledge, but only when required.	Consistently spends time researching their domain, to gather more information and improve their technical expertise.	Demonstrates a high degree of technical knowledge, keeping themselves up-to-date with the latest advances in their field to drive positive outcomes for Indorama and its customers.	Introduces systems and processes that enable others to improve their domain knowledge, using this information to help drive positive outcomes for Indorama and its customers.
Application of domain knowledge		Applies their technical understanding and knowledge to daily tasks and activities but does so on an inconsistent basis.	Consistently applies their technical understanding and knowledge to daily tasks and activities.	Proactively applies their technical understanding and knowledge to daily tasks and activities and encourages others to do the same.	Creates opportunities for people to apply their technical knowledge to their role more effectively, with the aim of driving better business outcomes for Indorama.

Driving Innovation and Change

Thinks outside of the box and creates value by innovating and embracing the technological advances and changes that matter. Communicates effectively to inspire others and simplify complex ideas.

Structure	① No Evidence	② Developing	③ Proficient	④ Role Model	⑤ Strategic
Creative thinking		Is clear on the benefit of innovation and technological advances, but draws upon the ideas of others, rather than developing their own.	Consistently forms creative ideas, options or solutions, that relate to the specific task or issue being considered.	Draws upon concepts outside of their immediate context to form new ideas which are applied beyond the task at hand to create innovative solutions for growth and sustainability.	Constantly designs and implements innovative solutions that positively impact the future of the entire organisation and/or marketplace.
Informed risk taking	Does not show the behavioural indicators required for Driving Innovation and Change.	May form new ideas to solve tasks and challenges, but these ideas may not always be realistic and actionable. May feel uncomfortable taking any sort of risk.	Uses creativity to unblock issues and overcome challenges. Is comfortable taking calculated risks, where appropriate.	Promotes the value of innovation and informed risk taking, encouraging others in their team and function to challenge themselves to think more creatively.	Develops an organisational culture that encourages and supports others to create new ideas or to take calculated risks, with the aim of driving sustainable growth or positive business outcomes.
Engaging communication		The simple and clear communication of complex issues and ideas is not always achieved, which may leave others unsure of their key points or confused.	Communication is clear, simple and well structured with good eye contact and minimal distractions. Complex issues and ideas are simplified and clearly understood by all.	Communication is truly inspirational, engaging their audience by using compelling content and stories to help explain complex issues and ideas in simple terms.	Responsible for the introduction of initiatives which help others to improve their communication and in particular how they engage others by explaining complex ideas in simple terms.

Continuous Improvement

Monitors collective success by defining standards for high performance and by identifying and monitoring metrics to track against those standards; challenges the way Indorama does things to optimise performance.

Structure	1 No Evidence	2 Developing	3 Proficient	4 Role Model	5 Strategic
Defines high standards	Does not show the behavioural indicators required for Continuous Improvement.	Defines and sets standards for success but may only do so in specific situations or for certain tasks.	Consistently defines and sets standards for success within their role and Indorama, using key metrics to track against these.	Enhances the collective success of Indorama by introducing higher standards of success for their team / division and using key metrics to track performance – encouraging others to do the same.	Enables a culture that empowers others to set high standards of performance across the organisation and continuously track performance against them.
Data driven decision making		May not consistently use data to make decisions or track their progress.	Key decisions are made using data and consistently tracked.	Consistently uses data to make informed decisions, changing their approach where appropriate based on new information and encouraging others to do the same.	Puts in place systems and processes that enable individuals to use data and relevant information when making decisions, and to support recommended changes in the business's operations.
Challenges the status quo		Challenges the way things are done but may need prompting to do this at times.	Challenges the way things are done at Indorama to determine where the company can improve and what needs to change to achieve this.	Enables colleagues in their team / function to challenge ways of working and takes clear action towards realising these changes.	Builds a culture of continuous improvement, enabling others to challenge the way things are done and successfully implement changes to optimise performance.

Step Five

Minimum expected levels of mastery by management level and function

		Competency is specifically important for Manufacturing		Competency is important irrespective of function			Competency is specifically important for Marketing						
		Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Manufacturing	Senior Management	5	4	4	4	3	4	4	3	3	4	4	4
	Middle Management	4	3	3	4	3	3	3	3	3	3	3	4
	Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3
Marketing	Senior Management	4	4	4	4	3	4	4	5	3	4	4	3
	Middle Management	3	3	3	4	3	4	3	4	3	3	3	3
	Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: Multifunctional

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Senior Management	5	4	4	4	3	4	4	4	4	3	4	3
Middle Management	4	3	4	4	3	3	3	3	3	3	3	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: Manufacturing

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Senior Management	5	4	4	4	3	4	4	3	3	4	4	4
Middle Management	4	3	3	4	3	3	3	3	3	3	3	4
Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: Marketing

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Senior Management	4	4	4	4	3	4	4	5	3	4	4	3
Middle Management	3	3	3	4	3	4	3	4	3	3	3	3
Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: Commercial/Supply Chain

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Senior Management	5	4	4	4	3	4	3	4	3	4	4	4
Middle Management	4	3	4	4	3	3	3	3	3	3	3	3
Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: HR

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Senior Management	4	4	4	3	4	3	4	5	4	4	4	3
Middle Management	4	3	3	3	3	3	4	4	3	3	3	3
Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: Services

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Senior Management	4	3	4	4	3	4	4	4	3	4	5	4
Middle Management	3	3	3	4	3	3	3	3	3	4	3	4
Junior Management	3	N/A	N/A	3	3	3	3	3	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Role Levelling: Non-Management

Level	Acting Responsibly	Building Confidence	Acting Strategically	Making it Happen	Developing Self	Curious and Learning Mindset	Collaboration and Teamwork	Nurturing Trusted Relationships	Developing Talent	Domain Knowledge	Driving Innovation and Change	Continuous Improvement
Non Management	3	N/A	N/A	N/A	3	N/A	3	N/A	N/A	3	N/A	3

1	Not demonstrated	2	Developing	3	Proficient	4	Role Model	5	Strategic

Frequently Asked Questions: *About our Competency Framework*

What is a competency framework?

A competency framework defines the behaviors that determine performance excellence and success at an organization. Indorama’s competency framework consists of 12 critical competencies that apply to various roles in the organization. They are also connected with Indorama’s 4 core values because values and competencies go together.

How does the competency framework affect me?

The competency framework is integrated with Indorama’s Performance Management System (PMS), recruitment decisions, succession planning, and career development of employees. Employees are constantly evaluated based on the 12 competencies. It affects pay and promotion decisions.

What is the difference between skills and competencies?

Skills are the specific learned abilities that you need to perform a given job well. Competencies, on the other hand, are the person’s knowledge and behaviors that lead them to be successful in a job.

Frequently Asked Questions: *About our Competency Framework*

What is purpose of Role Levelling?

To establish the level of mastery required within each of the five Indorama functions at the senior, middle and junior management levels. This helps us identify strengths and highlight key development areas.

What is the minimum desired rating level?

At Level 3, an individual is consistently performing that behavior to a very good standard. For more senior roles, higher levels of competency may be desired as shown in the Role Levelling slides.

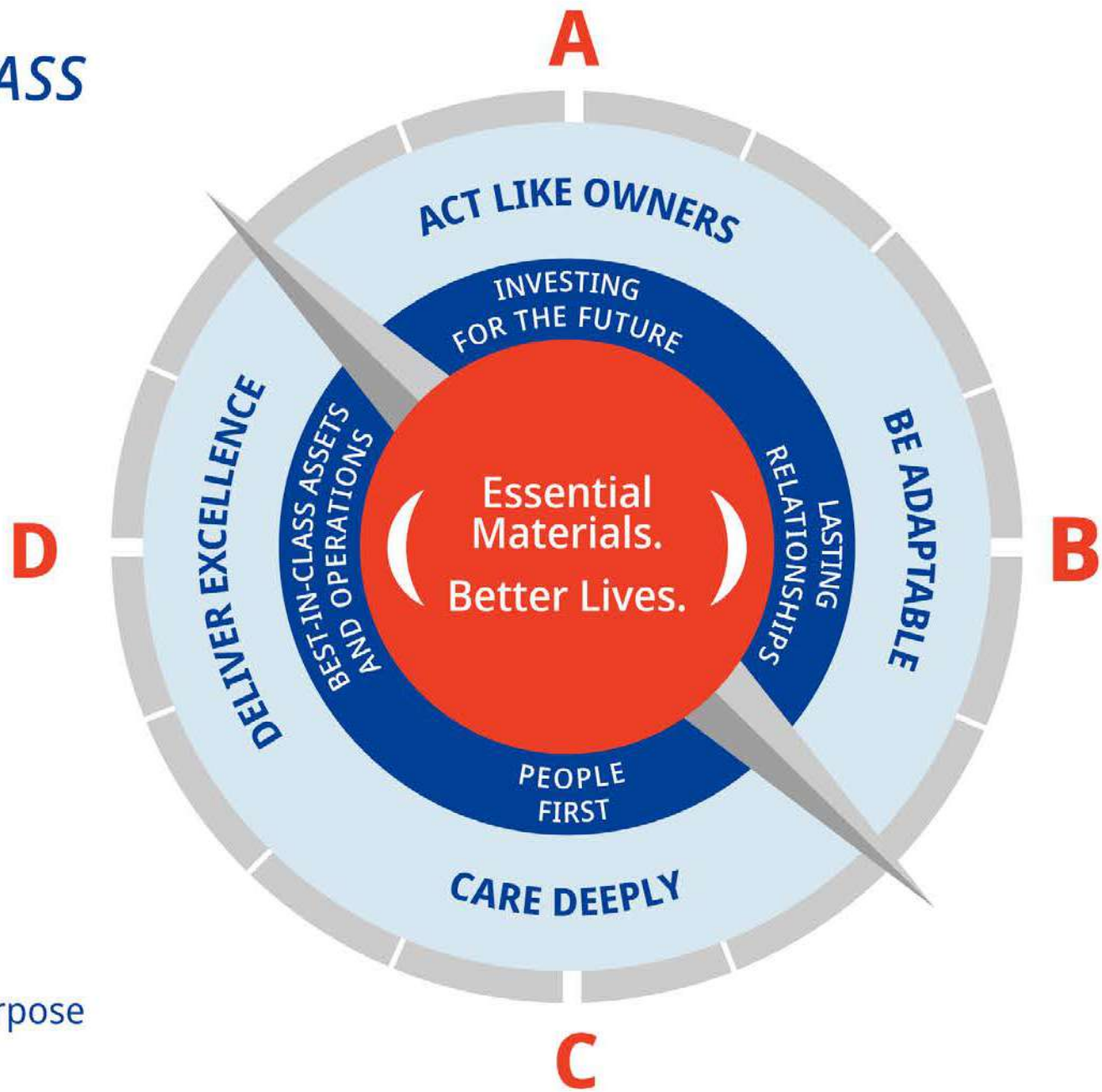
INDORAMA COMPASS

OUR VISION

The materials company of choice for customers and employees

—
Driving scale, growth, and sustainability

● Values | ● Capabilities | ● Purpose







ANNEX 2: ANNEX - ADDITIONAL STUDIES INLCUDED IN THE UPDATED ESIA SUPPLEMENTARY PACKAGE V2



TABLE OF CONTENTS

APPENDIX A	CUMULATIVE IMPACT ASSESSMENT OF WATER MANAGEMENT.....	509
APPENDIX B	ESMS CONTRACTOR MANAGEMENT.....	518
APPENDIX C	HAZARDOUS MATERIALS MANAGEMENT.....	611
APPENDIX D	HAZID RISK ASSESSMENT REPORT.....	621
APPENDIX E	HUMAN RESOURCES PLANS AND PROCEDURES.....	637
APPENDIX F	INFLUX MANAGEMENT PLAN.....	682
APPENDIX G	SECURITY MANAGEMENT PLAN & POLICY.....	696
APPENDIX H	SECURITY RISK ASSESSMENT.....	719
APPENDIX I	SUPPLIER CODE OF CONDUCT.....	745
APPENDIX J	SUPPLY CHAIN MANAGEMENT POLICY.....	768
APPENDIX K	SUPPLY CHAIN MONITORING PROCEDURE.....	775
APPENDIX L	GREENHOUSE GAS EMISSIONS TO IFC.....	787
APPENDIX M	TRAFFIC ASSESMENT.....	794



APPENDIX A CUMULATIVE IMPACT ASSESSMENT OF
WATER MANAGEMENT

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27th July 2025

Cumulative Impact Assessment Water Management in SCZone

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 1 of 8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27 th July 2025

1. Background

The Indorama Misr Fertilizer Project, currently under development within the Suez Canal Economic Zone (SCZone) in Ain Sokhna, will require a considerable quantity of industrial-grade water for process operations, utility systems, and supporting infrastructure. The primary source of this water is expected to be the SCZone's centralized **seawater desalination plant**, which already supplies existing industries in the area.

2. Projected Water Demand

Based on preliminary design details from the technology suppliers, the Indorama project is expected to demand approximately:

- **Industrial water:** 600-700 m³/hour for the purpose of Process water, Boiler feed water, Domestic usage, Fire water system etc

This demand profile will place a **continuous requirement** on the desalinated water supply network.

3. Cumulative Impact Assessment

a. Existing Desalination Plant Capacity

- The current SCZone seawater desalination plant is estimated to have a capacity of 100,000 m³/day
- Several operating facilities in Sokhna Industrial Area are already drawing water from this plant.

b. Cumulative Load Considerations

- Addition of Indorama's 16,000 m³/day demand (at peak) will have marginal increase in the total consumption in the area.
- A second desalination plant is being implemented with a capacity of 240,000 M3 / day and expects to be operational in 18-24 Month from now. The Expansion project will be owned by SCZone
- A third desalination plant of 250,000 M3 / Day expandable to 1.000.000 M3/Day is planned and expects decision for first phase in End of 2025. The Expansion project will be owned by SCZone
- If multiple ongoing and future industrial projects also connect to this plant, it will be taken care easily by SCZone **operational capacity**.
- The load of the additional water will be required from 2028 from the commissioning stage of the Project. Then there additional projects from Desalination would be completed.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 2 of 8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27th July 2025

c. Potential Impacts

- Reduced availability of desalinated water for other users.
- Pressure fluctuations or reduced water quality if plant operations are overstretched.
- Increased operational cost and maintenance cycles for the desalination facility.
- Risk of delays or constraints in water allocation for Indorama if demand surges unexpectedly.
- Environmental footprint related to higher intake volumes and brine discharge into the marine ecosystem.

4. Mitigation and Recommendations

- **Engagement with SCZone**
 - Early coordination with SCZone Authority to secure long-term water allocation. Indorama has applied for the supply of water from SCZone and submitted the master plan for the requirement of the water and other utilities as per the Annex 1
- Water demand optimization has been done. It will be further optimised by the selection of proper technology and Process through process efficiency, recycling, and reuse.
- On-site water treatment/reuse options for certain non-potable uses to reduce dependence on desalinated supply. Phosphoric acid plant is designed to consume the reject water to possible extent to the process.
- Monitoring of water demand in Ain Sokhna region and engagement in cumulative impact forums led by SCZone or environmental authorities.
- SCZone is already planned to increase the capacity of the Desalination plant capacity in staged Manner

5. Conclusion

The cumulative impacts of Minor water usage from the Indorama project, combined with other industrial users in Ain Sokhna, may place **Insignificant on the Total Consumption at the point of Project operations** on the existing seawater desalination plant. Proactive planning, demand-side management, and strategic collaboration with SCZone and utility providers will be in place to ensure sustainable and uninterrupted water supply throughout the project lifecycle.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 3 of 8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27th July 2025

Annexure

Following letter submitted to SC Zone

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27th July 2025



Support for Water Supply and Worker Influx

From Krishna Tibrewala <krishna.tibrewala@indorama.com>

Date Sun 2025-07-20 15:24

To Nader Kamel <nader.kamel@sczone.eg>

Cc Mukul Agrawal <mukul.agrawal@indorama.com>; Thavamani Balachandar <thavamani.balachandar@indorama.com>; Pradeep Datar <pradeep.datar@indorama.com>; zeina.hossam@SCZone.eg <zeina.hossam@SCZone.eg>

 1 attachment (485 KB)

Note.docx;

Dear Sir,

As discussed today, please find a small note attached herewith. A detailed project description is under preparation and will follow shortly.

Currently we need your support to address the following points:

1. Indorama new fertilizer plant has a requirement of **700 cubic meters per hour** of water which translates to a **daily requirement of approximately 16,800 m³/day** maximum and an **annual requirement of up to approximately 5.5 million m³**.

Currently SCZone sole desalination plant in Sokhna is 100,000 M3/Day. A second desalination plant is being implemented with a capacity of 240,000 M3 / day and is expected to be operational in next 2 years. Apart from above, it is also understood that there are other upcoming desalination plants which will be used solely for green hydrogen. For sake of clarity, Indorama requests SCZone to provide the current and future supply and demand of water. This will give Indorama a fair idea of its water allocation.

2. The project needs more manpower during the construction phase who will be sourced mostly from Egypt and expected to come from various parts of the country. Indorama / EPC contractors will provide the required accommodation for the resident labours and contractors in the nearby localities of the suez governate. During the construction there will be an increase in traffic as a result of Labour influx, Ammonia pipeline activities and project material transportation. We are expecting a roughly estimate of 1500 labourers during the peak of construction.

As per our understanding the current infrastructure is capable of supporting such numbers which is a very small percentage when compared to total number of labours working in the zone.

We request SCZone to provide their comments and confirmation please.

Rgds,
Krishna

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 5 of 8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27th July 2025

The Details of the Note is given below

Introduction

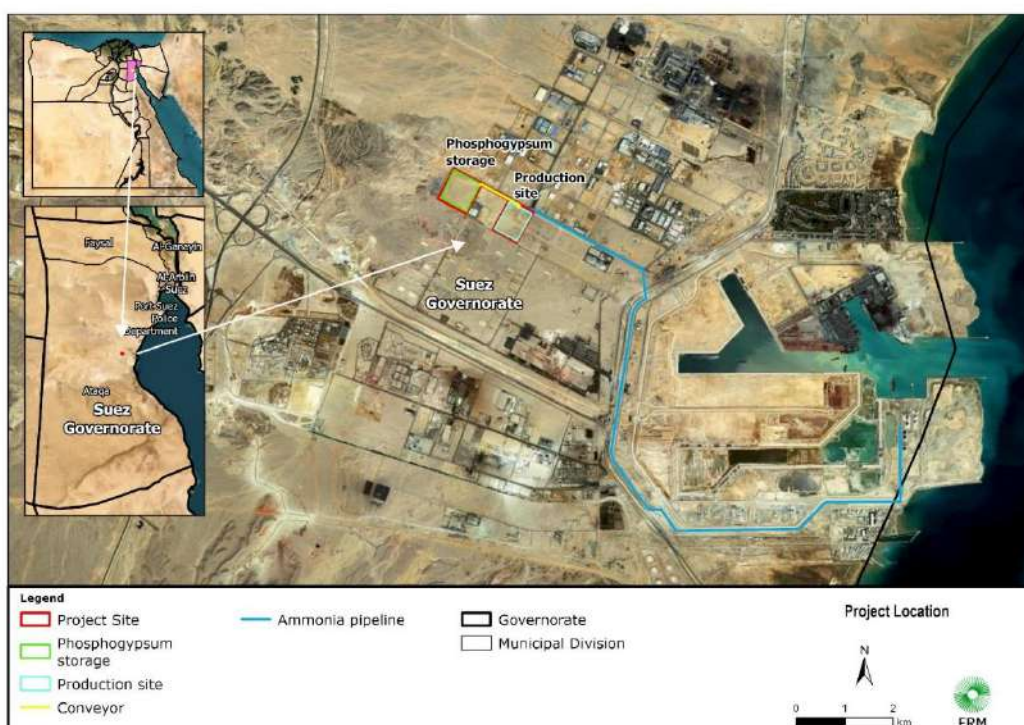
Project Description

Indorama Misr fertilizers Company S.A.E. (currently under incorporation) (hereinafter, Indorama) is one of the subsidiaries of Indorama Group, Ltd., which has several phosphate fertilizer plants in different countries (Senegal, Brazil, Uzbekistan and India). Indorama plans to establish a Phosphate fertilizer complex in Sokhna, Egypt (hereinafter, the Project).

The Project will produce Di-Ammonium phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers, as a main product. Sulphuric acid and phosphoric acid will be produced as intermediate products. In addition, phosphogypsum will be a byproduct of the industrial process.

The Project is located within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone (hereinafter, SC Zone), in Sokhna, Suez Governorate, Egypt.

The complex includes a production site, a phosphogypsum storage area and ammonia pipelines.



Utilities requirement for the Project

1. Power Requirement

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 6 of 8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27 th July 2025

The plant is expected to have a **connected load of approximately 29.5 MW** of which self-generation will be around 27 MW. The average operational demand from the national Grid is around **2.5- 3.5 MW and 12 MW while the startup of the plant**. Backup power will be ensured through diesel generator (DG) sets with sufficient capacity to support critical loads.

2. Water Requirement

Water will be used in Construction and process operations (such as Cooling Tower, Process requirement, Boiler feed water), domestic uses. The **total water demand** is estimated at **700 cubic meters per hour**, which translates to a **daily requirement of approximately 16,800 m³/day** maximum and an **annual requirement of up to approximately 5.5 million m³**.

3. Natural Gas Requirement

Natural gas will primarily be used for Sulphuric acid Plant startup, Auxiliary boiler startup, Rock phosphate drying in Phosphoric acid plant, and DAP product drying. The estimated **normal gas demand of around 1,500 Sm³/hour** and a **peak demand of approximately 5,000 Sm³/hour during the startup of Sulphuric acid Plant (once in a year for 6 days)**. The quality of the gas must meet industrial fuel-grade standards.

Summary Table

		Hourly	Daily	No of Days	Annual
Power	MW	2.5	60	330	19,800
Water	M3	700	16800	330	5,544,000
Natural Gas	sm3/h	1500	3d 6000	330	11,880,000
Natural Gas	MMBTU	54	1296	330	427,680

Worker Influx

The project needs more manpower during the construction phase who will be sourced mostly from Egypt and expected to come from various other countries also. Indorama will provide the required accommodation for the resident labours and contractor will take care of the contract manpower. During the construction increase in traffic is expected as a result of Labour influx, Ammonia pipeline activities and project material transportation

Manpower requirement during the Construction is as follows

	2025	2026	2027	2028
During The project Stage	Year 1	Year 2	Year 3	Year 4
Manpower from Egypt	50	1150	880	100
Manpower From Other Country	15	120	450	50

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 7 of 8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 27 th July 2025

Request Data from SCZone:

1) Indorama new fertilizer plant has a requirement of **700 cubic meters per hour** of water which translates to a **daily requirement of approximately 16,800 m³/day** maximum and an **annual requirement of up to approximately 5.5 million m³**.

Currently SCZone sole desalination plant in Sokhna is 100,000 M3/Day. A second desalination plant is being implemented with a capacity of 240,000 M3 / day and is expected to be operational in next 2 years. Apart from above, it is also understood that there are other upcoming desalination plants which will be used solely for green hydrogen. For sake of clarity, Indorama requests SCZone to provide the current and future supply and demand of water. This will give Indorama a fair idea of its water allocation.

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As per Indorama understanding the current infrastructure is capable of supporting such numbers which is a very small percentage when compared to total number of labours working in the zone.

SCZone is requested to provide their comments and confirmation for the above 2 points.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 8 of 8



APPENDIX B ESMS CONTRACTOR MANAGEMENT

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Contractor ESMS Management Plan

	Prepared by	Approved by
Name	Manish Mishra/Pradeep Datar	Mr. V Rajendran
Department	Mechanical/ Operation	Head Engg & Projects

Content

1	Project Overview	6
2	Scope of application	6
3	HSE Policy and Target	6
3.1	Contractor's HSE Policy.....	6
3.2	Project HSE Targets	7
4	HSE Organization, Responsibilities and Resource Allocation.....	7
4.1	Project HSE Organization Chart.....	7
4.2	HSE Responsibilities of Each Position.....	8
4.3	Resource Allocation.....	12
5	Communication and Coordination.....	14
5.1	Methods of Communication	14
5.2	Meeting	15
5.3	HSE Committee	16
5.4	HSE Rewards and Punishments	16
6	Education and Training	17
6.1	HSE Training Plan.....	17
6.2	Project Site Induction Training.....	18
6.3	Special Training	20
6.4	Daily HSE Training	21
6.5	Experiential Safety Training and Education	21
6.6	Training of HSE Management Personnel	22
7	HSE Management of Design and Procurement	22
7.1	HSE Management in Design Process	22
7.2	HSE Management in Procurement Process	22
8	Site HSE Management.....	24
8.1	Hazard Identification, Risk Assessment and Control	24
8.2	Management Standard	25
8.3	Change Management.....	26
9	Emergency Management	27
9.1	Emergency Preparation and Response	27
9.2	Training and Drill	27
9.3	Evaluation and Revision	27
9.4	Emergency Evacuation.....	28
9.5	Emergency Medical Facilities	28
10	Accident Management.....	29
11	Smart Site HSE Management.....	30

11.1	Labor service real-name system	30
11.2	Access control management	31
11.3	Behavior analysis management	31
11.4	Inspection management	32
11.5	Information service	32
11.6	Training and examination management	33
12	Selection of construction subcontractors	33
13	Preparation before Commencement	33
13.1	Site Review before Commencement	33
13.2	Construction Plan Review	33
13.3	Review of Personnel, Machines, Tools and Equipment	34
14	Site Construction Management	34
14.1	Work Permit	34
14.2	Device Management	35
14.3	Personal Protective Equipment Management	37
14.4	Scaffolding Management	38
14.5	Work at Heights (Fall Protection)	39
14.6	Excavation Operation	40
14.7	Confined Space	41
14.8	Temporary Electricity	42
14.9	Hoisting	43
14.10	Ray Operation	44
14.11	Cutting, Grinding and Welding	45
14.12	Manual handling & Carrying	45
14.13	Enclosure Management	46
14.14	Night work	46
14.15	Signs and Identifications	47
14.16	Compressed Gas Cylinder Management	47
14.17	Hazardous Chemicals	48
14.18	Civilized Construction Management	49
14.19	Traffic Safety Management	52
14.20	Fire Fighting	53
14.21	Medical Emergency Management	54
14.22	Office HSE	54
15	Pre-commissioning HSE management	55
15.1	Static equipment and piping system cleaning/purging	55
15.2	Electrical system debugging	57

15.3	Instrument and control system commissioning	58
15.4	Dynamic equipment rotating	59
16	HSE expense management	59
16.1	HSE capital investment	59
16.2	The commitment principle	60
16.3	Management requirement	60
16.4	Management process.....	60
17	Environmental Management.....	61
17.1	Dust Control	62
17.2	Noise and Light Pollution Control	63
17.3	Construction and Domestic Sewage Control	64
17.4	Hazardous Chemicals Control	64
17.5	Control of Solid Waste	64
17.6	Control of Construction Waste Gas	64
17.7	Control of Energy and Resources Conservation.....	65
18	Occupational Health Management	66
18.1	Management Requirements	66
18.2	Workplace Management	68
18.3	Occupational Health Monitoring.....	70
19	Working Conditions & Management of Worker Relationships	72
19.1	HR Policies & Procedures	73
19.2	Workers organizations.....	73
19.3	Retrenchment	73
19.4	Grievance Mechanism.....	73
19.5	Construction Living Camp Management	74
19.6	Protecting the workforce	76
19.7	Workers engaged by third parties.....	76
19.8	Access to grievance mechanism	76
20	Community Health & Safety	77
20.1	Disease prevention.....	77
20.2	Site Access Prevention.....	79
20.3	Traffic Safety	80
21	Security Management	82
21.1	Security risks	83
21.2	Security personnel management.....	83
21.3	Grievance mechanism for affected communities	84
21.4	Assess and document risks.....	84

21.5	Avoidance of personnel abuse	84
21.6	Stakeholder Management	85
22	HSE Inspection and Supervision Procedures	85
23	HSE Audit	88
23.1	HSE performance audit	88
23.2	HSE system audit	88
24	Records and Reports	89
1.	Workforce & Manhours	91
2.	Safety Statistics	91
3.	Site Safety Inspections	91
4.	HSE Training Conducted	91
5.	Toolbox Talks Summary	92
6.	Risk Management	92
7.	Key Observations / Issues	92
8.	Photographs of Non-Compliance / Best Practices	92
9.	Corrective Actions Summary	92
10.	Signatures	92

1 Project Overview

The Project comprises the development of an integrated phosphate fertilizer complex located within the Sokhna Industrial Zone, affiliated with the Suez Canal Economic Zone (SC Zone) in Egypt. The Project is promoted by Indorama Misr Fertilizers Company S.A.E., a subsidiary of the Indorama Group.

The Project aims to contribute to Egypt's economy by producing high-quality Di-Ammonium Phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers for local and export markets. The design reflects a strong focus on environmental and resource efficiency, aligned with IFC Performance Standards, World Bank EHS Guidelines, and EU BAT conclusions.

The complex will include the following core production units and supporting infrastructure:

- 1) Sulphuric Acid Plant 3100 TPD.
- 2) Phosphoric acid Plant 1000 TPD.
- 3) Di-Ammonium Phosphate Plant 1935 TPD.

Contractor: East China Engineering Science and Technology Co., Ltd.

2 Scope of application

This Plan is applicable to all personnel entering or engaged with the contractor's project site, including contractor staff, subcontractors, supplier personnel, technical service providers, and visitors. It applies not only to physical access and activities within the project site but also extends to off-site activities that may have environmental, social, labor, or safety (E&S) implications—such as material transportation, intermediate storage locations, logistics operations, and temporary worker accommodations.

The Plan outlines responsibilities and compliance expectations across the full spectrum of Environmental, Social, Labor, Health, and Safety (ESHS) management in alignment with Good International Industry Practice (GIIP), relevant national laws, and international standards (e.g., IFC Performance Standards, ISO 45001, ILO conventions).

3 HSE Policy and Target

3.1 Contractor's HSE Policy

The contractor will strictly abide by the commitment to safety, environment and health, and always carry out various management of safety, environment and health throughout the whole process of production activities. HSE policy of "safety first, prevention crucial; protecting environment, continuous improvement" shall be adhered to. Meanwhile, the contractor will comply with the owner's HSE policy, and also abide by the following basic principles during the execution of the project:

- Environmental Compliance per Egyptian Environmental Law 4/1994 and IFC EHS Guidelines. Protect local biodiversity and prevent off-site ecological impacts.
- Comply with Labor Law 12/2003 and Decree 55/1980 for safe plant operation. Provide PPE, training, incident response and medical surveillance.
- Decree 55/1980 on industrial safety and fire protection.
- Respect ILO Core Labor Standards, including, Freedom of association and collective bargaining. Elimination of forced, child, and discriminatory labor. Ensure fair working conditions for all employees and contractor workers.

- Manage security arrangements responsibly and in line with the Voluntary Principles on Security and Human Rights
- IFC Environmental, Health and Safety Guidelines (General + Industry-Specific).
- Monitor, audit, and continuously improve our SHE Management System through internal reviews, regulatory inspections, and stakeholder feedback.

3.2 Project HSE Targets

The project HSE management Aims to

Zero Accident, Zero Injury and Zero Pollution.

The project targets of safety management to be achieved shall be as follows:

Event Classification	Objectives of the contractor
Near Miss	Adopt incentive mechanism to encourage subcontractors
First Aid	Strictly manage the on-site medical room to achieve effective recording of FA
Recordable	≤0.10
LTI	≤0.00
Hazardous Waste Handling	100 % of hazardous waste stored/disposed legally
Spill/Leak Incidents	Zero Number of reportable spills
Waste Management	100 % of non-hazardous waste recycled
Safety Training	100% of workforce trained in site-specific safety
Worker Grievance Resolution	% resolved within 30 days

Note: Statistics based on 200,000 man-hours.

The project will adopt internationally recognized incident classification categories, including:

- **FA** – First Aid Case
- **MTC** – Medical Treatment Case
- **RWC** – Restricted Work Case
- **LTI** – Lost Time Injury
- **Fatality** – Work-related death
- **High Potential Near Miss** – No injury but potential for serious consequence
- **Environmental Spill** – Reportable or significant spill/release
- **Property Damage** – Damage to plant, equipment, or assets

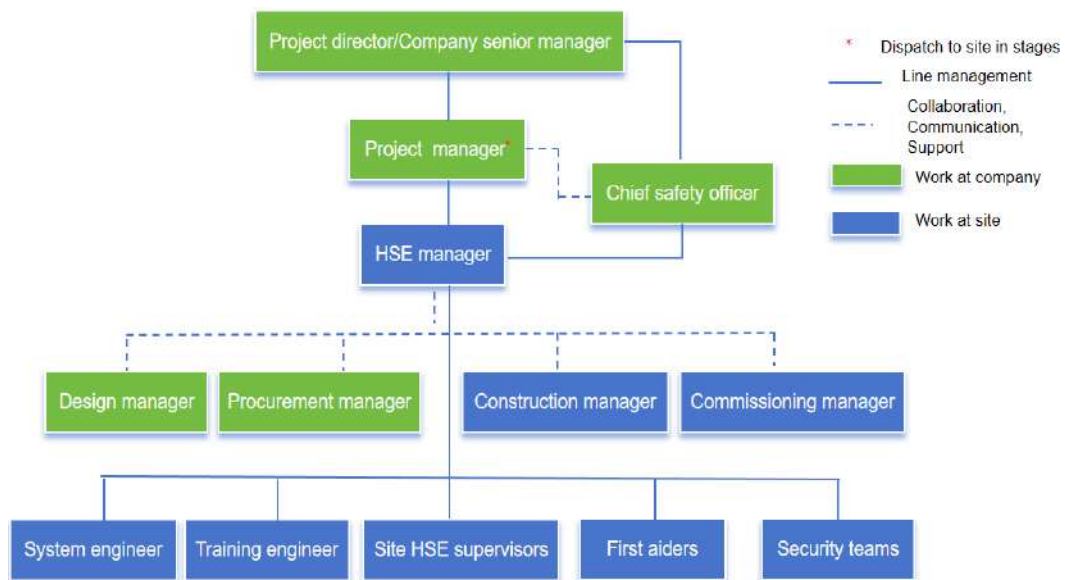
Each category will have defined reporting, investigation, and escalation protocols based on risk severity.

4 HSE Organization, Responsibilities and Resource Allocation

4.1 Project HSE Organization Chart

According to the owner's occupational health, safety and environmental management system, the contractor shall establish the following HSE Organization Chart during execution of the Project design, procurement, and construction (EPC) general contracting. The leader on each position shall be responsible for the HSE work within his responsibility scope based on the principle of "safety must be included in production management, and safety must be included in business management". The HSE organization is responsible for formulating the principles to be implemented, and transmitting them down level by level through line management and contract language, and is responsible for supervising and evaluating the success or failure of this process within the whole project scope. All position of HSE management organization holds HSE responsibility, and HSE manager is responsible for specific supervision, inspection and coordination.

4.2 HSE Responsibilities of Each Position



4.2.1 Project Manager

- 1) The project manager is the first person responsible for the HSE management of the project, and ***ultimately responsible for, Project SHE compliance, Any Accident or Incident, SHE performance.***
- 2) To implement national safety production laws and regulations and various HSE rules and regulations of local government, owner and the contractor;
- 3) To implement HSE requirements of the contractor and the owner;
- 4) To hold regular meetings to study and determine the HSE implementation plan and measures of the project, and check the implementation;
- 5) To organize and rectify the unqualified issues in HSE management;
- 6) To organize HSE publicity, education and training for employees, enhance their HSE awareness, and conduct emergency drills regularly;
- 7) To report HSE management of the project to the contractor and the owner in time;

- 8) To be responsible for providing enough necessary resources to ensure the effective implementation of HSE management plan.

4.2.2 HSE Manager

- 1) To be fully responsible for the technical and professional integration, plan content, personnel quota and implementation integration of the HSE plan, and report directly to the project manager;
- 2) To provide HSE plan guidance and instructions to project manager and project department members;
- 3) To provide strategic guidance for HSE plan and HSE members of the project;
- 4) To formulate the HSE management plan of the project, and integrate various HSE procedures, standards and processes into the plan formulation and work implementation;
- 5) To ensure enough HSE management personnel with good education, training, qualification and similar work experience to participate in site management;
- 6) To formulate, revise and implement the project's HSE plan, procedures and standards, and manage all changes related to HSE documents;
- 7) To conduct HSE evaluation and assist audit;
- 8) To investigate, evaluate and recommend the dangerous situation, concerned events and near miss events of management and staff, and determine rectification actions;
- 9) To coordinate HSE members to participate in activities of the project, including bid evaluation, HSE MS (management system) review and start-up activities;
- 10) To manage and monitor the implementation of HSE technical measures and special expenses of subcontractors and suppliers; check the update of standards and procedures to ensure consistency;
- 11) To review and evaluate the effectiveness of HSE plans and procedures against policy objectives and test objects; interface with stakeholders.

4.2.3 Construction Manager

- 1) To conscientiously implement the relevant national labor protection policies, laws, rules, regulations and the relevant provisions, take direct leadership responsibility for the HSE work in the construction and production, and be fully responsible for the implementation of HSE regulations on the construction site;
- 2) To lead and coordinate various project functional departments to manage the safe and civilized construction, and arrange safe and civilized construction work at the construction coordination meeting;
- 3) To be responsible for the inspection and confirmation of the safe and civilized construction measurement before the project unit's construction commencement. For major dangerous project partial units' construction, the construction manager shall be supervised in person;
- 4) To hold and participate in the safety inspection of the construction site, and timely eliminate the hidden dangers found out to ensure the safety of construction and production;
- 5) To organize, implement and coordinate the management of safe and civilized construction of subcontractors;

- 6) To participate in the investigation and treatment of serious personal injury accidents, major mechanical equipment accidents and fire accidents, and organize the implementation of preventive measures;
- 7) To check and feedback the implementation of HSE plans and measures in construction;
- 8) To cooperate with HSE manager to carry out various HSE activities, such as training, drill, etc.;
- 9) To supervise and urge the subcontractors to implement all HSE regulations and instructions.

4.2.4 Design Manager

The design manager shall perform various duties in the design HSE plan and regulations, and ensure that the professional engineers comply with various procedures, standards and working practices specified in the design HSE plan.

4.2.5 Procurement Manager

To be fully responsible for the procurement, inspection, delivery and transportation of equipment and materials, fully comply with the requirements of HSE management procedures, and strictly require suppliers to comply with the above requirements. Handing over the equipment and materials to the owner, relevant HSE data (production license, certificate of conformity, instruction manual, label of hazardous chemicals and MSDS, etc.) shall be handed over at the same time.

4.2.6 Start-up manager

To be fully responsible for the implementation of HSE management regulations for pre-commissioning in interlock and commissioning test.

4.2.7 Design HSE Engineer

- 1) To update HSE standards of the project, prepare HSE manual and project HSE evaluation;
- 2) To manage engineering review report; manage of risk review of out-of-control reactions;
- 3) To manage hemp (hazard and impact management process) review; manage ALARP (reasonably applicable as low as possible) review;
- 4) To check the implementation of HAZID registration, manage HAZOP (hazard and operability study), manage IPF (instrumented protection function) review, and check the implementation of HAZOP;
- 5) To participate in the preparation of HSE contents in contract package;
- 6) To review Layout Plan.

4.2.8 Site HSE Engineer

- 1) To provide assistance and support to HSE manager on construction HSE issues; coordinate construction HSE interface with subcontractors; manage and formulate project HSE guidance plan to be implemented at work site;
- 2) To conduct necessary site facilities inspection to ensure that the contractor and subcontractors are in a ready state when entering the site;
- 3) To be responsible for the formulation of site safety plan before construction, and check the site safety plan;
- 4) To provide standards, guidance and consultation to safety engineers of subcontractors, and check the performance of

subcontractors against safety specifications;

- 5) To assist in accident investigation and safety audit.

4.2.9 Field professional engineer

- 1) To incorporate HSE management work into the scope of technical management, promote new technologies, new processes, new machines, new materials, to improve working conditions through technological innovation, and be responsible for the preparation of related technical operating procedures;
- 2) To supervise and guide the subcontractor to prepare the HSE technical measures in the construction plan, and supervise and inspect the implementation of the measures;
- 3) To participate in the risk analysis and risk control of the project construction, and assist the construction unit to solve the HSE technical problems in the construction process;
- 4) Once any violation or unsafe work factor is found during the on-site inspection, the subcontractor's professional engineer or foreman shall be notified or instructed to correct it immediately until the violation or unsafe work factor is removed;
- 5) Site professional engineers should cooperate with HSE engineers and the professional engineers of the subcontractors to maintain close contact and jointly perform HSE management work;

4.2.10 Responsibilities of construction subcontractor

- 1) In accordance with the current national laws and regulations on HSE, the subcontractor must adhere to the policy of "safety first, prevention first, comprehensive treatment", and seriously implement a series of HSE rules and regulations of the contractor. The subcontractor shall be responsible for the contractor, be fully responsible for the HSE work within the scope of its subcontract, and obey the HSE management of the contractor on the construction site.
- 2) To organize the preparation of site HSE plan.
- 3) To sign HSE responsibility statement with the contractor and implement various HSE management responsibility.
- 4) To be responsible for the three-level safety education and training for the personnel entering into site. Personnel for special work must have certificates.
- 5) To accept the supervision and inspection of the on-site HSE implementation by the project's HSE management department, and promptly rectify problems when found, and to regularly organize HSE inspections internally and make HSE reports and records.
- 6) To ensure the effective input of HSE management resources according to the bidding commitment.
- 7) To identify environmental factors, important environmental factors, hazard sources and important hazard sources within the scope of responsibility, formulate corresponding control measures, and report to the contractor for review.
- 8) The employees of the subcontractor must abide by the HSE system of the project and the unit, operate in strict accordance with the safety operation regulations, and accept the supervision and inspection of HSE management personnel at all levels.
- 9) According to the site HSE management regulations, to set up safety signs and HSE propaganda slogans as required.
- 10) To fill in all kinds of HSE statistical reports regularly as required.

- 11) Ensure that all near-miss incidents are reported promptly and in accordance with the established HSE plan and procedures.
- 12) Implement a structured observation and inspection program across all departments, including Safety Observations, Daily Walkthroughs, Weekly Cross-Functional Inspections, and Behavior-Based Safety Audits. Ensure continuous improvement through regular communication of findings, recognition of proactive behavior, and periodic review of the program.
- 13) To care for the health of employees, prevent occupational diseases, and purchase personal accident insurance for employees in accordance with regulations.
- 14) Accept the supervision and inspection of the construction site by the safety, health and environmental protection departments of the local government, and go through the procedures for the supervision and inspection of HSE in respect of construction.

4.2.11 Responsibilities of employees

- 1) To be responsible for his own safety and health;
- 2) Ensure that their actions will not harm the health or safety of other employees, and will not cause adverse effects on the environment;
- 3) To maintain a safe and healthy working environment;
- 4) To put forward suggestions to improve HSE status;
- 5) To persistently participate in HSE activities;
- 6) To learn and comply with the requirements of HSE related laws, regulations and standards, and be able to apply them to practical work;
- 7) To study and comply with HSE management requirements and regulations of the owner;
- 8) To stop other people's bad behavior (illegal operation) and eliminate potential safety hazards.

4.3 Resource Allocation

4.3.1 Design department: Design HSE engineers shall be set according to regulations, and designers with corresponding professional design experience and qualifications shall be provided. (shall be in full compliance with **Egyptian Civil Defense Ministry of Interior guidelines**)

4.3.2 Procurement department: to provide procurement engineers with corresponding equipment, material procurement, transportation experience and corresponding qualifications as required.

4.3.3 Site HSE Management:

The contractor shall appoint one site HSE manager who shall meet the requirements of the owner's qualification and pass the owner's review and interview, and other personnel allocation is as follows:

- 1) HSE training personnel: The professional HSE training personnel shall be set on site to be responsible for the training and assessment of personnel entering the site.
- 2) Medical personnel: to be responsible for the treatment of medical incidents on site. First aiders should be trained by 3rd Party and obtain certificate, the ratio between worker and first aiders is 20:1.

- 3) Project HSE Engineer: To be responsible for daily inspections, permit processing and tracking, and safe working hours statistics. The contractor and its subcontractors shall have enough HSE engineers on site. The ratio of full-time HSE supervisors and workers on site shall not be less than 1:40.
- 4) Security personnel: To be responsible for the security work on the site, and ensuring the access management of personnel and equipment.

The above personnel shall work under the leadership of HSE manager and report directly to HSE manager.

4.3.4 The contractor will ensure that the personnel qualification and allocation of the project meet the following requirements:

- 1) Project manager and construction manager (with National First-Class Architect, Class B Personnel Certificate of Construction Enterprise, or National Registered Safety Engineer Certificate);
- 2) HSE Engineer and full-time HSE management personnel with Class C personnel certificate or registered safety engineer certificate of construction enterprise will have more than five years of HSE practical experience and pass the review and interview of the owner.

4.3.5 Site HSE material resource allocation (see the table below)

No.	Equipment Name	Unit	Quantity	Provider
1	First Aid Kit	each	As needed	Contractor and Subcontractors
2	AED (Automated External Defibrillator)	unit	As needed	Contractor and Subcontractors
3	Water Dispenser	unit	As needed	Contractor and Subcontractors
4	Dry Powder Fire Extinguisher	each	As needed	Contractor and Subcontractors
5	Air Quality Detector	unit	As needed	Contractor
6	Noise Tester	unit	As needed	Contractor
7	Leakage Protector	each	As needed	Contractor and Subcontractors
8	Grounding Resistance Tester	unit	As needed	Subcontractor
9	Ventilating Fan	unit	As needed	Subcontractor
10	Scaffold Steel Pipe	ton	As needed	Subcontractor
11	Wooden Plank / Springboard	m ³	As needed	Subcontractor
12	Safety Cable	met er	As needed	Subcontractor
13	Warning Rope	met er	As needed	Contractor and Subcontractors
14	Safety Belt / Harness	each	As needed	Contractor and Subcontractors
15	Safety Net	m ²	As needed	Subcontractor
16	Safety Helmet	each	As needed	Contractor and Subcontractors
17	Protective Shoes (Insulated, Anti-smash, Anti-puncture)	pair	As needed	Contractor and Subcontractors
18	Protective Earplugs	pair	As needed	Contractor and Subcontractors
19	Protective Mask (incl. Welding Mask)	each	As needed	Subcontractor
20	Protective Glasses	pair	As needed	Contractor and Subcontractors
21	General Work Clothes	set	As needed	Contractor and Subcontractors

22	Special Work Clothes (Chemical Resistant)	set	As needed	Subcontractor
23	Disposable Mask	each	As needed	Contractor and Subcontractors
24	Respirator	unit	As needed	Subcontractor
25	Protective Gloves	pair	As needed	Contractor and Subcontractors
26	Fall Arrester (Speed Differential Device)	unit	As needed	Subcontractor
27	Thermo-detector	each	As needed	Contractor and subcontractors
28	Sound level meter	each	As needed	Contractor and subcontractors
29	thermometer	each	As needed	Contractor and subcontractors
30	Illumination photometer	unit	As needed	Contractor and subcontractors
31	Anemometer	unit	As needed	Contractor and subcontractors
32	Gas detector	each	As needed	Contractor and subcontractors
33	Personal radiation dose alarm	unit	As needed	Contractor and subcontractors
34	Vehicle tachometer	each	As needed	Contractor and subcontractors
35	Torque wrench	set	As needed	Contractor and subcontractors
36	Water pump	unit	As needed	Contractor and subcontractors

4.3.6 Guarantee of HSE expenses

The contractor will ensure the full HSE cost of the project. The full input of HSE cost shall be stipulated in the agreement of construction subcontractor. The project HSE manager will review the input of the subcontractor's cost on site. And will make sure it is in between 1 to 3 % of budget as per Owner's standard.

5 Communication and Coordination

5.1 Methods of Communication

The contractor believes that only through effective communication that the project's HSE management target can be achieved. Therefore, the project will take various effective means to carry out education and publicity, improve HSE awareness, encourage and stimulate all staff to participate in HSE management. All activities will be conducted in compliance with Minister of Manpower and Migration Decree No. 134 of 2003, which sets out the minimum requirements for occupational safety and health in workplaces in Egypt. Compliance with this decree will be integrated into all HSE communication and education efforts to ensure alignment with national legal standards. These include:

- 1) HSE report;
- 2) Meetings;
- 3) Billboards, posters or slogans;
- 4) E-mail;
- 5) Network;
- 6) Training and education;
- 7) HSE activities;

- 8) Reward and punishment
- 9) Establish Anonymous Reporting Mechanisms.
- 10) Regular Worker Feedback Forums.
- 11) Track and Respond to Worker Inputs



Safety commitment activities on safety consultation day

5.2 Meeting

Some formal meetings or group discussions will be held regularly to convey HSE information. These meetings or panel discussions include:

1) Daily Tool-box Meeting

The regular tool-box meeting will be widely hold in the subcontractor's team, using 10-15 minutes a day to focus on the safety risks of the daily work and the measures to reduce risks. The contractor will focus on supervising the implementation and effect of the tool-box meeting system as an important part of the HSE assessment.

2) Weekly HSE meeting

The HSE manager of the contractor will organize a weekly HSE meeting with the participation of the construction manager of the contractor, the project manager of each subcontractor, and the HSE manager to focus on discussing the existing problems and the measures should be taken to solve the problems. When necessary, the contractor's project manager shall participate in the meeting.

3) Monthly HSE review meeting

HSE manager of the contractor will organize and hold monthly HSE review meeting. The contractor's project manager, construction manager, subcontract project manager and HSE manager shall participate in the meeting to focus on the HSE management performance of the project in the current month. The meeting will produce a review report.

4) Other HSE meetings, such as safety conference, HSE thematic meeting, HSE risk source identification and disclosure meeting, HSE celebration meeting, etc.



Tool-box meeting



HSE special meeting

5.3 HSE Committee

The effective implementation is key to achieve project HSE management objectives. The contractor and the subcontractor will establish HSE committee at the project site and hold regular meetings to ensure full and effective communication. The members of the committee will include the contractor's project manager, construction manager and subcontractor's project manager and construction manager. The meeting concerns on the effective implementation of HSE.

5.4 HSE Rewards and Punishments

1) HSE reward

The kinds of the site HSE rewards to be adopted by the contractor can be divided into: oral praise, public announcement praise, material rewards and economic rewards, etc. The objects of project site HSE rewards are: advanced owner in safe production, advanced teams, advanced individuals, advanced HSE workers, the first model sample of project safety protection facilities, avoiding major casualties and accidents, continuous safe working hours, etc.



HSE lottery ticket redemption

Individual reward for advanced safety production

2) HSE punishment

Project site HSE punishment methods of contractors includes: warning, notification of criticism, rectification within a time limit, economic punishment, deduction of liquidated damages, order to stop work, clearing of the site, etc.

The contractor will formulate the "Project Site Safety Supervision and Inspection Penalty Standards" based on the actual conditions of the project and the requirements of the owner. The contractor will give them the punishment of warnings, notifications of criticism, rectification within a time limit, economic penalties, deduction of liquidated damages, and suspension of work orders, based on the frequency and severity of various HSE management deficiencies of the subcontractor, unsafe behaviors of people, and unsafe conditions of objects from light to heavy. For subcontractors with various HSE management deficiencies, human unsafe behaviors, and physical unsafe conditions that have particularly serious problems, the contractor will clear their responsible persons from the site if they have repeatedly requested rectifications to be invalid and have extremely bad behaviors.

As for the employees of subcontractors, in principle, the subcontractors shall conduct unified management. However, the main management personnel and technical personnel will be managed refer to the relevant national or industry laws, regulations and contractual provisions. The specific penalties for the workers shall be formulated by their owner. For special cases, such as serious violations of regulations, personnel who do not have the corresponding qualifications, etc., the contractor will put forward suggestions and requirements, and order the subcontractor to criticize, replace, remove and exit the site.

For various HSE incidents/accidents occurred due to inadequate management of the subcontractor on project site, the corresponding penalties shall be given in accordance with the contract.

6 Education and Training

In order to ensure all person involved in the project construction holds suitable HSE awareness and skills for their work, the contractor will conduct continuous HSE training for them, and supervise the subcontractor to implement appropriate special safety training for their employees, to ensure the continuous improvement of HSE training activities.

6.1 HSE Training Plan

In order to ensure the employees, have the ability to complete the assigned tasks, the contractor will formulate the project HSE site guidance and training schedule like,

- Curriculum Development
- Site-Specific Risk Adaptation
- Role-Based Training
- Evaluation & Refreshers
- Documentation

which will be updated regularly and submitted to the owner for approval so as to timely reflect the necessary safety training during the work execution.

The contractor will insist on providing continuous HSE training to the existing staff, newly registered employees and

newly assigned workers of the project so as to ensure that all employees understand the project HSE policies, objectives and procedures.

The contractor shall build a training room on the project site to ensure the smooth implementation of training and education.

6.2 Project Site Induction Training

Project site induction training is a mandatory safety requirement for all personnel entering the project site, including contractors, subcontractors, suppliers, and visitors. The induction covers essential safety rules, site-specific hazards, emergency procedures, and behavioral expectations. It will be delivered in English, the local language, and other relevant languages as needed to ensure full understanding by all participants. The purpose of the training is to make all the personnel entering the contractor's site understand the basic and general safety requirements on site. According to the working time and work category, the training can be divided into three types: long-term personnel training, short-term personnel training and temporary visitors training.



Safety orientation



Re-education training for violation

6.2.1 Long term personnel training

Long term personnel have to receive the about 3 hours course of project site induction training before starting work on site. Only the personnel who have received complete training and passed the examination can get the site access certificate and enter the site to work. The contents of the project site induction training course include but are not limited to the following contents:

- 1) Safety entrance education video of the contractor;
- 2) HSE policy and concept of the project;
- 3) Main risks existing in site construction;
- 4) Personal safety requirements and behavior norm;
- 5) Safety hazard report;
- 6) Accident and near miss report;
- 7) Emergency response procedures;
- 8) Safety discipline, reward and punishment measures;

- 9) Safety operation regulations, etc.
- 10) Code of Conduct.
- 11) labor rights & grievance mechanism.

6.2.2 Short term personnel training

The personnel to enter the construction site for short-term construction within 3 days or providing technical services shall receive about 2 hours of induction training course. After the training, they will obtain temporary induction permit to enter the site for work. The contents of the training course generally include:

- 1) Safety entrance education video of the contractor;
- 2) HSE policy and concept of the project;
- 3) Main risks existing in site construction;
- 4) Personal safety requirements and behavior norm;
- 5) Emergency response procedures.

6.2.3 Temporary visitor training

The personnel who temporarily enter the construction site to visit shall receive a short entrance training of about 0.5h to obtain the visitor card, and shall be accompanied by the contractor's management personnel during the whole process before entering the site. The training contents generally include:

- 1) Safety entrance education video of the contractor;
- 2) Main risks existing in site construction;
- 3) Personal safety requirements and behavior norm.

6.2.4 HSE leadership training

The contractor shall organize on-site post managers and managers at all levels to conduct HSE leadership training. HSE leadership refers to how HSE personnel influence the top executives and managers at all levels so as to obtain their commitment and support to HSE work and their ability to actively participate in HSE work.

6.2.5 Other

The employees participating Special types of work (such as electricians, lifting workers, welders, scaffoldings, drivers, operators, etc.) and full-time HSE management personnel shall register and train with copies of valid qualification certificates issued by relevant national and local authorities, and forged qualification certificates are strictly prohibited.

The personnel who pass the HSE training will obtain a site ID Card with their own photo from the HSE department of the contractor only for personal use, not for lending. The site ID Card is the only valid personnel Gate Pass, and

the contractor will install a personnel access control system at the project site and the entrance of the prefabrication plant. All personnel entering and leaving the door must read the card through the card reader installed on the access control system. If you lose your ID Card on site, you should report it in time and apply for a replacement.

The site ID Card mainly includes the following contents: project name, unit name, construction area, name, position, pass number, ID number, training time, validity period, recent bareheaded photos, etc.

After passing the HSE training, the subcontractor's personnel shall also organize the three-level safety education of their own unit. After completing and passing the three-level safety education, the subcontractor's personnel can enter the site for construction operation.

6.3 Special Training

In addition to the site induction training organized by the HSE department of the contractor, all staff shall also participate in other training designated by the on-site project Department of the contractor according to the characteristics of their work and shall be renewed periodically according to legal requirements and risk level – typically every 1–2 years. These trainings include but are not limited to the following:

- 1) Training on license system;
- 2) Permit-to-work;
- 3) Hazard communication and reporting (including near misses and unsafe conditions);
- 4) Confined space awareness/entry training;
- 5) Electric safety training& lockout/tagout (LOTO) procedures;
- 6) Scaffold safety training;
- 7) Hot work training;
- 8) Lifting operation training;
- 9) Excavation operation control training;
- 10) Defensive driving and vehicle movement safety;
- 11) Work at height & Fall protection training;
- 12) Working near or around heavy equipment and mobile plant;
- 13) Pressure test training;
- 14) Emergency preparedness training;
- 15) Accident report and investigation training;
- 16) Cardiopulmonary resuscitation training;
- 17) Preparation and use training of job safety analysis;
- 18) Hand protection training;
- 19) Tool safety training;
- 20) Selection and use training of ladder;

- 21) Occupational health training;
- 22) Environmental protection training;
- 23) Site safety training during commissioning; etc.;
- 24) Pre-commissioning and energization hazards;
- 25) Gender-sensitive safety considerations and respectful workplace conduct;

Only competent personnel who have participated in the corresponding special training and passed the examination can perform related high-risk operations. Anyone who has not passed the special training shall not engage in the high-risk operations specified by the project.



Special HSE training

6.4 Daily HSE Training

The contractor and its subcontractor will carry out regular daily HSE training in the form of various meetings, radio, television, bulletin, slogan, cartoon, picture, safety speech, accident site meeting, etc. in combination with the actual production of the unit and personnel ideological dynamics. The contractor and its subcontractors will seriously organize HSE activities of teams and groups, and carry out daily safety inspection on work scope.

6.5 Experiential Safety Training and Education

Experiential safety training is not only a new way but also a new direction of safety education management. The contractor will establish on-site safety education and training experience hall for experiential safety training and education according to the site conditions. Through the personal experience of safety training and education mode, the safety work awareness and safety culture quality of employees can improve comprehensively.



6.6 Training of HSE Management Personnel

The full-time HSE management personnel of the CONTRACTOR shall possess a high level of professional competence and qualifications in occupational health, safety, and environmental management. These personnel shall regularly participate in specialized training programs organized by the CONTRACTOR to maintain and enhance their professional capabilities.

In addition, project-specific HSE training sessions will be organized on-site for all full-time HSE personnel. Comprehensive training records, including attendance sheets, certificates, and training content, will be maintained and made available for inspection during audits or upon request by the CLIENT or any external agency. The course will include, but is not limited to, the following topics:

Accident investigation and analysis	Job safety analysis (JSA)
Environmental management	Management of work permit
High risk operation control (hoisting operation, lifting operation, etc.)	Gas detection
Respiratory and hearing protection	Construction temporary power management
Emergency response	Scaffold specification and training for scaffold inspection personnel

7 HSE Management of Design and Procurement

7.1 HSE Management in Design Process

Before the implementation of the project, the contractor will submit the design HSE plan to the owner. The plan specifies the HSE management system of the contractor in the design process, and the HSE standards and review methods applied in the design and other contents.

7.2 HSE Management in Procurement Process

The whole process management of HSE procurement of the contractor involves all aspects of procurement, which outlines the criteria for supplier qualification, ethical sourcing, environmental and social risk screening, and HSE compliance across all tiers of the supply chain. as follows:

- 1) In the selection of suppliers, all suppliers must go through strict qualification examination, and the qualified suppliers who have obtained the certificate of quality management system are preferred to meet the management

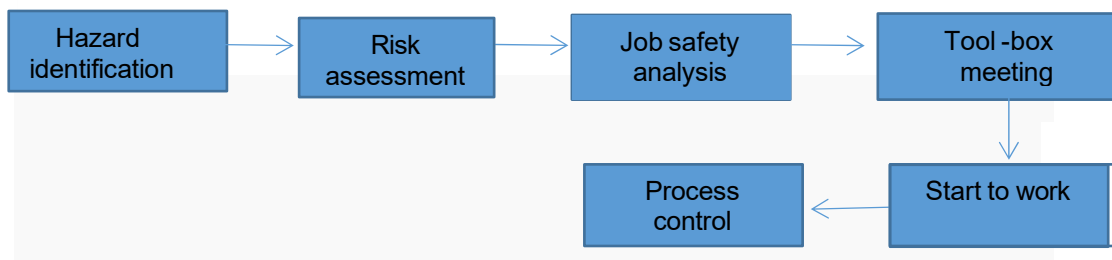
requirements of the owner;

- 2) The required strength, stiffness, safety and reliability of equipment/materials under manufacturing, testing, operation and use conditions must be specified in the requisition documents;
- 3) In the comprehensive review, under the same conditions, the qualified suppliers who have obtained the certificate of quality management system are ranked first;
- 4) The safety management requirements of equipment/materials are specified in the procurement contract. The manufacturing activities of the manufacturer shall not change the intrinsic safety characteristics of the equipment/materials; the equipment /materials must have corresponding safety measures in the manufacturing process. For the transportation of dangerous equipment and materials out of gauge, the supplier or transportation unit shall be required to submit the cargo transportation plan. The transportation plan prepared by the supplier shall be feasible, reliable, safe and relevant safety measures;
- 5) In the process of factory supervision and inspection, the owner's representative and the contractor's representative shall protect the safety of personnel according to the HSE management requirements of the manufacturer during the process of factory supervision and inspection, and the owner's representative and the contractor's representative in the process of factory expediting and verification;
- 6) When the purchased products are transferred to the project site, they shall be managed according to the HSE management requirements of the construction site to avoid environmental pollution and occupational health and safety hazards;
- 7) In the procurement process, provide the owner with HSE related information, including product (equipment) manufacturing license, product qualification certificate, operation manual, chemical dangerous goods label, chemical dangerous goods safety technical specification, etc.
- 8) The purchased equipment and materials must be inspected and accepted by relevant personnel before entering the site, and can be used only after having relevant quality and HSE certificates and applying for inspection. Materials that must enter the site but may affect safety or cause pollution must be provided with safe and reliable packaging or eye-catching marks and placed in the designated place;
- 9) The supplier's after-sales service personnel shall implement the site HSE management requirements in the process of on-site service to ensure personnel safety. The equipment/material supplier must provide safety technical operation instructions and corresponding services to ensure the safe application and operation of equipment / materials in the project.

8 Site HSE Management

8.1 Hazard Identification, Risk Assessment and Control

According to the method specified by the contractor and the owner, the contractor and the subcontractors will combine with the project implementation plan, regularly or irregularly carry out the project implementation, comprehensive and systematic hazard identification and risk control. On-site security risk management will be strictly implemented based on the following work procedures:



1) Hazard identification, risk assessment and control include the following five steps:

- Analyze all activities: what's the work, where it happens, who may be exposed to the source of injury;
- Hazard identification: identify the operation that needs further quantitative risk assessment;
- Quantitative risk assessment was carried out by using risk assessment matrix;
- Review existing / possible control measures to control risks;
- Develop a plan to implement all actions identified in the risk assessment.

2) Job safety analysis

The management personnel of the contractor and subcontractors must carry out job safety analysis (JSA) for each operation to be engaged, and hold JSA meeting for each working shift. JSA meeting shall be conducted separately from daily tool-box meeting.

Job safety analysis must be prepared and submitted to the construction supervisor for approval before the implementation of the construction activity. The construction activity can only be carried out after the approval of the construction supervisor. Before the construction, the construction supervisor shall communicate with the employees on the content of the job safety analysis through the tool-box meeting, so as to ensure that each employee is clear about the content of the job safety analysis, is familiar with the work process and related risks, and make clear the relevant risk prevention measures, and sign on JSA for confirmation. According to the requirements of hazard and risk control measures, the site team leader shall ensure that the elimination and prevention measures are fully implemented. The site HSE personnel shall supervise and inspect this hazard and risk control measures.

Relevant contents of accident lessons should be updated in job safety analysis. The main compilation basis of job safety analysis is risk assessment report based on project risk assessment.

3) Daily tool-box meeting

Before the daily construction, the team will hold a Tool Box Meeting to clarify the location, operation content, personal protective equipment required for the operation, identify the operation risk, implement effective control/reduction measures, special construction activities and major construction activities, and prepare special construction scheme, and the construction activities requiring calculation sheet shall also be prepared strictly and reliably. The personnel participating in the operation shall sign on the record card of the daily tool-box meeting to confirm that they have mastered the relevant HSE requirements and contents.

When the operation content changes or the operation environment changes, the Tool Box Meeting shall be held again and the Tool Box Meeting record card shall be filled in.

8.2 Management Standard

Based on the hazard identification and risk assessment results of the contractor, and in combination with the relevant HSE management regulations of the state, industry, and the owner, the "Project HSE management manual" shall be prepared, issued and implemented, which at least include the following:

- Regulations on the evaluation and management of project hazard sources and environmental factors
- Project job hazard analysis (JSA) management regulations
- Project HSE management organization and responsibility system
- Regulations on project HSE cost management
- Project HSE information exchange management regulations
- Project HSE meeting management regulations
- Project HSE publicity and warning management regulations
- Project HSE training management regulations
- HSE management regulations for project subcontractors
- Regulations on project work permit management
- Regulations on safety management of project hot work
- Regulations on safety management of work at heights
- Regulations on safety management of lifting operation
- Regulations on safety management of radiation operation

- Regulations on safety management of ground breaking operation
- Regulations on safety management of project confined space operation
- Regulations on safety management of scaffold operation
- Regulations on safety management of temporary power utilization
- Regulations on safety management of gas cylinders
- HSE management regulations for temporary facilities of the project
- Regulations on the management of project machinery, equipment and construction vehicles
- Project safety operation procedures
- Regulations on management of personal protective equipment
- Project civilized construction management regulations
- Project fire management regulations
- Project site security management regulations
- Project dangerous goods management regulations
- Project environmental protection management regulations
- Regulations on project occupational health management
- Regulations on safety management of project pre-commissioning
- Project HSE inspection and rectification management regulations
- Regulations on HSE assessment
- Project HSE reward and punishment management regulations
- Regulations on project emergency management
- Project HSE accident (incident) management regulations
- Regulations on project HSE management review

8.3 Change Management

During the execution of this project, the contractor needs to perform change management approval procedures for project variation, including but not limited to:

- 1) HSE procedures, regulations, rules, regulations and standards of the project;
- 2) Relevant laws and regulations of the People's Republic of China;
- 3) Various industry and international standards adopted by the project;
- 4) Other relevant procedures, regulations, rules, regulations and standards.

The following procedures must be followed for deviation management:

- 1) Before defining the content of the variation, the person who tries to propose the variation should carefully study the variation request to determine whether it is necessary to make a change;

- 2) To clarify the scope of the variation, the process and personnel affected by the variation, the affected area, time and degree, etc.;
- 3) Reasonably explain the reasons for the variation;
- 4) The HSE department of the project shall evaluate the threat to the safety situation caused by the variation content seriously and carefully together with the department or personnel proposing the variation. In the evaluation process, the industry standards and the prevailing HSE requirements must be considered at the same time;
- 5) To obtain the consent of relevant departments;
- 6) To implement the change.

9 Emergency Management

9.1 Emergency Preparation and Response

The contractor will establish an emergency organization and command system at the project site, determine the scope and position of potential accidents and emergencies, prepare "Project Emergency Management Manual", provide emergency resources, and determine emergency response procedure and communicate with the owner and social emergency response agencies according to the actual situation of surrounding environment, engineering construction and construction operation, during the identification and evaluation of major hazard sources and important environmental factors. The "Project Emergency Management Manual" at least includes the following contents: Overall Emergency Plan, Various Special Emergency Plans and On-Site Disposal Plans. The "Project Emergency Management Manual" will fully consider the impact of other devices of the project, coordinate with the

owner, and report to the owner for approval before implementation.

9.2 Training and Drill

The contractor will conduct an emergency response drill every 6 months to test "Project Emergency Management Manual". The first emergency response drill will be conducted within four weeks after mobilization. After each drill, the plan drill related to "Project Emergency Management Manual" will be comprehensively inspected and confirmed, and deficiencies will be found out, the defects in the emergency plan drilling process will be modified to meet the requirement of Project Emergency management. The modified "Project Emergency Management Manual" will be timely notified and distributed to relevant parties and personnel for training.

9.3 Evaluation and Revision

After emergency issues are handled, the emergency command group will fully evaluate the implementation effect of "Project Emergency Management Manual", find out the deficiencies during the execution, and revise the "Project Emergency Management Manual".

The revised "Project Emergency Management Manual" will be timely notified and distributed to relevant departments and personnel. If necessary, emergency plan drills will also be conducted to ensure effective handling of emergency issues.

9.4 Emergency Evacuation

Several "Emergency Muster Points" shall be set up on site, and the Emergency Muster Points shall be set in an open and safe area with clear and obvious marks.

The contractor shall establish an emergency team, which is composed of team leader, deputy team leader, members, information liaison officers, first aid personnel, evacuees, etc. Emergency team personnel will keep their mobile phones turned on for 24 hours.

Once being informed of an emergency and requiring evacuation, all employees in the relevant and affected areas must stop working and evacuate to the nearest safe emergency muster point. Before evacuation, employees should turn off the power switch of tools/equipment and the valves of gas cylinders.

When an emergency assembly is required, all employees must gather at the designated emergency muster point, and each supervisor is responsible for counting their own employees. Only the termination of the emergency plan and the lifting of the alert has been informed, the staff of the unit can be arranged to return to work.



Emergency evacuation route and assembly point

9.5 Emergency Medical Facilities

The Project is committed to ensuring robust and effective emergency medical arrangements throughout the construction and operational phases. In line with Good International Industry Practice (GIIP) and applicable legal requirements, the following provisions will be made:

- A **qualified nurse available 24x7** on-site.
- A **licensed doctor available during peak working hours**, and on-call for emergencies

- The clinic will include basic diagnostic tools, first aid equipment, and emergency stabilization facilities.
- The project will maintain **at least one fully equipped ambulance** (Type B or C as per local EMS classification) **on a 24x7 standby basis** at the site.
- If site risk profile demands, a **second ambulance** will be deployed
- A formal agreement/MOU will be signed with nearest qualified local hospitals for Emergency referrals, 24x7 admission support.
- A dedicated **MedEvac** arrangement will be considered at later stage if the requirement arise during review.

In case of an emergency medical accident occurred, the employee shall report immediately, call the emergency call of the project, and wait for the ambulance to arrive at the accident site. If the injured person is in a safe environment, do not move the injured person and wait for the arrival of the first aid personnel. If the injured person is in a dangerous environment, immediately convene employees of the unit who have participated in first aid training to transfer the injured person.

10 Accident Management

The contractor and its subcontractors will maintain occupational injury records for employees in accordance with government regulations and the requirements of the owner, including all dangerous accidents, first aid accidents and any type of recordable or safety incidents as per below

- All serious incidents (fatalities, major injuries, fires, chemical releases, environmental damage) shall be reported to the Owner within 1 hour of occurrence.
- All other recordable incidents (first aid cases, near misses with high potential, equipment damage) shall be reported to the Owner **within 24 hours**.
- A **preliminary** incident report shall be submitted to the Owner within **48 hours** of the incident, summarizing facts, immediate corrective actions, and potential causes.
- A **detailed** investigation report with **root cause analysis**, **corrective/preventive actions**, and **lessons learned** shall be submitted to the Owner **within 7 calendar** days of the incident.
- The incident will be formally closed only after the Owner's review and confirmation that all corrective actions are satisfactorily implemented.

The contractor will post such records at the project site for review by the owner's representative.

All personnel of the project shall immediately report any accident, including near miss, to the supervisor, HSE manager or project HSE personnel. The contractor will inform the owner's safety agency immediately.

The project Department of the contractor and its subcontractor will investigate each accident, determine the root reason and implement corrective measures.

In case of any accident (including near miss accident), rescue shall be organized immediately and reported to the

relevant competent department of the owner at the same time. According to the size of the accident, an accident investigation team will be set up to investigate and handle the accident, and timely submit the accident report to the relevant HSE personnel.

Once any accident occurs on site, no matter how big or small, such as near miss accident, traffic accident, fire accident, first aid accident, medical accident, lost workday accident, environmental pollution accident, property loss accident, etc., it shall be reported to HSE department in time. Accident report shall be submitted after accident investigation. No unit or individual is allowed to conceal or falsely report the accident. The contractor will take incentive measures to encourage on-site employees to actively report various accidents.

After the accident investigation and treatment, for ordinary accidents, the accident unit shall report the accident at the weekly HSE meeting of all staff, and report the accident causes and preventive measures so as to improve the ability of all employees to prevent accidents and prevent the recurrence of similar accidents. The project site will also report the accident within the scope of the project to remind all parties concerned to strengthen the preventive measures for similar accidents and put an end to the occurrence of similar accidents.

11 Smart Site HSE Management

The contractor's smart site system is an information platform integrating access control management, unsafe behavior analysis, inspection management, progress report, security examination management, statistical information service, mobile application and other aspects. The application of the smart site system has changed the traditional project management mode and effectively promoted the project information construction. Safety management is an important module of smart site system, which can effectively make up for the defects of traditional management mode, improve work efficiency and pre-control ability, realize all-round supervision of project construction safety, make the safety management fine, data, and improve the level of on-site safety management.

11.1 Labor service real-name system

In accordance with the requirements of the 'Real-name System Management Measures for Construction Workers', a real-name labor management system shall be established at both the Owner and Project levels. Following the principle of 'who employs the labor is responsible', the Project shall ensure strict control over labor personnel identification, attendance monitoring, and wage payment processes.

The Contractor shall supervise subcontractors' labor practices to ensure compliance with applicable laws and regulations, including but not limited to

- Egyptian Labor Law No. 12 of 2003, particularly provisions related to worker registration, fair wages, and working conditions,
- Ministerial Decrees related to migrant worker protection and occupational safety
- The Regulations on Ensuring the Payment of Wages for Migrant Workers (as per international standards where applicable)

A labor management system and oversight mechanism will be developed to ensure transparency, accountability, and full compliance with both Egyptian legislation and Good International Industry Practice (GIIP), including IFC Performance Standard 2 on Labor and Working Conditions.

11.2 Access control management

- 1) Through the docking access control system to complete the access management, real-time monitoring of people and vehicles in and out;
- 2) Statistical analysis of the number of site construction workers, jobs and personnel types of each contractor and the number of various types of vehicles which improves the contractor's accurate grasp and dynamic deployment of every subcontractor's manpower; 3) Management personnel can coordinate personnel/vehicle access anomalies in a timely manner by video surveillance;



Real-name access control

Video surveillance signage

11.3 Behavior analysis management

The site video surveillance can automatically analyze and process the construction site video, picture through artificial intelligence technology which improve the perception of the construction site. (Data protection and privacy of individuals will be handled with strict confidentiality and in full compliance with applicable Egyptian data protection laws, labor regulations, and Good International Industry Practice. Appropriate technical and organizational safeguards will be implemented to protect against unauthorized access, misuse, or disclosure of personal information) The specific implementation is as follows: unsafe behavior analysis and early warning:

- 1) Behavior identification and early warning of whether personnel wear helmets;
- 2) The behavior identification and early warning of whether the personnel dress is standard;
- 3) Identification and early warning of large and small outside vehicles.

地点：一号门人闸出门摄像机

类型：安全帽违规

时间：2020/05/20 05:54:24

画面截取



地点：二号门人闸行为规范摄像机

类型：衣着违规

时间：2020/05/20 06:07:05

画面截取



Analysis of non-standard dress behavior

11.4 Inspection management

The smart site can realize the registration of hidden dangers of on-site safety inspection and provide real-time early warning and statistical analysis.

- 1) Set inspection routes and rules;
- 2) Perform on-site inspection and locate management personnel;
- 3) Personnel inspection point punch record;
- 4) Statistical analysis of inspection results.



Inspection record

11.5 Information service

Real-time image, intuitive, visual information services can be provided by all kinds of display board.

- 1) Real-time video surveillance;
- 2) All kinds of information are integrated into the mobile terminal, so that you can know the current situation of the site anytime and anywhere;



Real-time video surveillance

11.6 Training and examination management

The smart site can realize the safety examination, admission qualification and face recognition management of all types of site personnel, especially workers.

12 Selection of construction subcontractors

The construction subcontractor of the project will be selected from the short list of construction subcontractors determined by the owner or the contractor. The contractor will report to the owner for approval, and review its HSE qualification and management performance. The construction subcontractor must have the HSE management system and performance expected by the contractor and the owner as explained in section 4.2.10

13 Preparation before Commencement

13.1 Site Review before Commencement

The contractor will review the site conditions with the owner and determine:

- 1) Whether the site conditions meet the commencement requirements and whether the site handed over by the owner meets the commencement requirements;
- 2) Site safety training and communication requirements;
- 3) HSE management standards and procedures on site.

13.2 Construction Plan Review

Before the commencement of the project, the contractor will review the construction plan of the subcontractor (construction organization design, construction scheme, construction technical measures, etc.) and submit it to the owner for approval.

13.3 Review of Personnel, Machines, Tools and Equipment

The contractor will review the personnel, machinery and equipment mobilized by the subcontractor to ensure that it meets the requirements of the owner. It generally includes the following items:

- 1) To determine whether the human resources, equipment and tools meet the corresponding work undertaken;
- 2) To determine whether the knowledge, information and necessary training of personnel meet the requirements of the assigned tasks;
- 3) To determine whether the personal protective equipment meets the construction requirements.

14 Site Construction Management

14.1 Work Permit

The work permit of the project includes: excavation, hot work, confined space entry, electrical connection and disconnection, lifting operation, pressure test, pipeline or equipment disconnection, radiographic inspection, use of manned basket, blind plate removal, grid plate removal, night work, blasting operation, commissioning operation, etc.

The contractor will submit the application for work permit to relevant departments in advance, and the construction activities can be carried out only after the construction activities is checked, confirmed and approved on site. The format of the contractor's work permit is as

follows (The work permit shall be adjusted through negotiation in combination with the requirements of the owner):

高处作业许可证

DMI03A09-01

项目编号:

申请	作业单位:	现场负责人:	联系电话:
	作业地点:	作业高度:	(米) 级
	作业内容:		
	作业时间: 从 年 月 日 时 分 至 年 月 日 时 分		
安全措施	作业人员:		
	我保证我及我的下属, 阅读理解并遵照执行安全方案和此许可证, 并在作业过程中负责落实各项安全措施。		
	作业单位申请人: 年 月 日 时		
	是否附专项安全方案: ☐ 是 ☐ 否 其他附件(危害识别、专项检查表等):		
	是否附图纸: ☐ 是 ☐ 否 图纸说明:		
	安全作业条件:		
	☐ 作业人员身体条件符合要求	☐ 作业区域有维护警示、监护措施	☐ 无雷电、雨雪、大雾、大风
	☐ 佩戴了合格的劳动防护用品	☐ 作业点照明充足	☐ 垂直分层作业中间有隔离
	☐ 员工清楚坠落风险	☐ 邻近区域无毒、害源点或架空电线	☐ 有合格的上下通道
	☐ 向作业人员进行了安全交底	☐ 现场的防坠落措施符合要求	☐ 有可靠的安全带悬挂点
	☐ 作业人员携带工具袋	☐ 30m 以上作业配备通讯工具	
	坠落防护设施:		
	全身式安全带:	垂直安全绳:	水平安全绳:
	☐ 连接部件齐全	☐ 强度 > 2268kg	☐ 专业人员设计
	☐ 有缓冲装置	☐ 侧向摆动防护	☐ 专门的锚固点
☐ 定期检查	☐ 无刃口接触	☐ 满足使用人数	
☐ 双大钩式钩锁	☐ 连接/断开保护	☐ 无磨损	
☐ 其它安全措施			
本人已阅读许可并且确信所有条件都满足, 并承诺遵守现场。			
现场作业监护人员: 年 月 日 时			
确认	我确认安全措施已落实或将于作业前落实。		我将进行或安排作业前及作业过程中安全检查。
会签	施工单位负责人: 年 月 日 时	施工单位安全部门: 年 月 日 时	
批准	相关单位负责人签字: 年 月 日 时	相关专业会签:	
批准	本人已确认该作业票的安全措施已落实, 我对本工作及作业人员的安全负责。	我同意本作业。	
批准	批准人: 年 月 日 时	批准单位安全部门: 年 月 日 时	
巡查	情况描述并签字:		
延期	延期有效期: 从 年 月 日 时 到 年 月 日 时		
延期	作业单位申请人: 批准人: 年 月 日 时		
关闭	此项作业已经安全的完成, 未在施工现场留下任何安全隐患。		
关闭	作业单位申请人: 年 月 日 时		
关闭	本人已确认该作业已按照要求安全的完成, 作业票关闭。		
关闭	批准人: 年 月 日 时		
取消	因以下原因, 作业票取消:		提出人: 批准人: 年 月 日 时

14.2 Device Management

1) Inspection before equipment mobilization

Before entering the construction site of the project, all equipment/tools, including all kinds of vehicle equipment such as crane, tower crane, lift, excavator, forklift, dumper, truck, bus, car, etc. All kinds of equipment such as welding machine, cutting machine, polishing machine, chainsaw, table saw, steel bar bending machine/cutting machine, all kinds of firefighting facilities such as fire extinguishers, hoisting rigging, seat belts, ladders, etc., must be inspected under the supervision of the contractor and the owner's equipment inspectors. Only after inspection is qualified, the equipment can entry into site.



Equipment inspection and acceptance

2) Daily and monthly inspection of equipment

Professional equipment inspectors of subcontractor shall perform daily equipment inspection and monthly equipment review, fill in the equipment inspection form and archive it, and the contractor's supervisor and HSE personnel will conduct inspections from time to time.

The project requires that all equipment and tools shall strictly carry out monthly inspection, and the qualified equipment/tools shall be affixed with monthly inspection labels, which shall be provided by the contractor, and the mode and monthly color shall be determined uniformly by the contractor.

The unqualified equipment/tools should be repaired in time, and power must be disconnected when repairing or replacing parts. Equipment/tools that cannot be repaired should be stopped immediately and cleaned out of site. The contractor HSE department shall review the equipment/tools inspection of the subcontractor. The defective equipment/tools shall be cleaned up immediately once found to be in use on site, and the subcontractor shall re-check his equipment.

A dedicated **Equipment and Vehicle Safety Manual** will be developed in coordination with the Owner, detailing the minimum safety features, operational guidelines, inspection frequency, and maintenance protocols for each category of equipment.

This manual will be aligned with:

- Applicable **Egyptian laws and regulations** regarding workplace safety and equipment operation,
- **IFC Environmental, Health, and Safety (EHS) Guidelines**, and
- **International standards** such as ISO 20474 for earth-moving equipment and OSHA/ANSI standards for mobile equipment and vehicles.

The Contractor will ensure that:

- All equipment mobilized to site meets the defined safety criteria,
- Operators are trained and certified,
- Daily pre-use checks and periodic inspections are documented,
- Equipment that does not meet safety standards will **not be allowed onsite** without formal approval.



Equipment monthly inspection

14.3 Personal Protective Equipment Management

1.1.1 Basic dress code

For all personnel entering the project site, except in the office area or the area approved by the owner, the following dress code shall be observed at all times: 1) Approved

industrial safety helmet;

- 2) Industrial anti fogging safety glasses;
- 3) Safety shoes (boots) against smashing and puncture;
- 4) High visibility clothing or vest with reflective strips all over the body; 5) Long sleeved overalls and trousers;
- 6) Long hair must be tied in the helmet or use a hair net and shall not be exposed.

1.1.2 Personal labor protection requirements for special operations

The contractor will formulate regulations on project site PPE management according to operation requirements, national standards and the owner's requirements, which shall at least meet the following management requirements:

- 1) Hearing protector (in noisy areas, sign or PTW requirements must be observed);
- 2) Respiratory protector (must comply with identification or PTW requirements);
- 3) Face and eye protection for grinding, welding and cutting, use of compressed gas, chemical operation (subject to Compliance with identification or PTW requirements);
- 4) If the working position is higher than 1.8m, full body safety belt shall be used;
- 5) Reflective vest must be worn for night operation and safety supervision;
- 6) Other special labor protection articles must be used in accordance with the work permit.

No.	Job type	PPE
1	Welding	Welder's mask and gloves
2	Gas welding and cutting	Goggles and gloves
3	Grinding and cutting	Mask
4	Flying debris	Mask and goggles
5	Chemical treatment	Mask, goggles and gloves
6	Electrical repair operation	Insulation shoes and gloves
7	Work at heights	Safety belt
8	Work in dust environment	Dust mask
9	Confined space work	Smoke prevention mask or self-contained breathing apparatus
10	Work at night	Reflective vests or clothing with logos
11	Noisy site operation	Earplugs or muffs

1.1.3 Personal labor protection Inspection

The gate guard shall check the PPE of all personnel entering the project site one by one, and they can enter only after passing the inspection. The contractor site HSE Engineer shall

check the personal basic labor protection articles every month and form a written report for internal archiving (whether they are fully equipped, correctly worn, any defects, within the validity period, etc.).

Operators shall carry out daily maintenance of personal protective equipment according to the manufacturer's instructions. Before use, the integrity of personal protective equipment shall be checked and properly stored as required.

14.4 Scaffolding Management

Only scaffolding worker with valid qualification certificate based on ANSI A 10.8 quality scaffolding, issued by relevant national departments, passed the project scaffolding operation training, and authorized by the subcontractor, that can be engaged in scaffolding operation, including the support frame for support. The contractor and subcontractor shall appoint a competent person to determine the feasibility of scaffolding during erection, use and removal. After the scaffolding is erected, the scaffolding supervisor of the subcontractor must inspect the scaffold. The number of such competent persons will be decided after detailed discussion with owner and as per good industrial practice. Only after passing the inspection, the scaffolding can be used with a tag. The scaffolding must be hung with a red card during erection / demolition or unqualified in inspection (it means that it is forbidden

to use, only for scaffolding). Being qualified after the inspection, a green card is hung, indicating that the scaffolding fully meets the requirements of the national standard and owner specifications, and it still need to wear a safety belt. The sign board shall be hung at the accessed and exited place of the scaffolding, and the allowable load and limit conditions shall be indicated on the sign. Scaffold inspection and acceptance

14.5 Work at Heights (Fall Protection)

Falling protection shall be provided in any high-altitude working area with a height of 1.8m or more from the ground and without falling protection devices (including upper guardrail, middle guardrail and skirting board). The effective use of fall protection devices shall be ensured at all times.

The safety belt must comply with national standard and the owner's requirement, and must be full body type. The front chest must have a D-shaped ring hanging point, two independent hanging ropes and hooks, and a buffer. The total length of safety rope with shock absorber and spring hook shall not exceed 1.8 M. Fall arrestor or rope grabber must be used for vertical passage without cage. Guardrail must be set for the edge enclosure, and all guardrails must be composed of rigid handrail, intermediate pole and skirting board, and 1 m away from the edge.

Generally speaking, vertical cross operation is not allowed on the same falling facade. If it is necessary to carry out vertical cross operation of multiple types of work, reliable safety protection and isolation measures should be set up in the middle, and special personnel should be set up to coordinate and supervise.

Lifeline installation personnel shall participate in relevant training, and those who have not been trained shall not be engaged in lifeline installation operation. After installation, HSE personnel shall be responsible for inspection and acceptance. It can be used only after being qualified, and also the lifeline inspection form shall be filled in. The lifeline shall be inspected weekly, and rectification shall be carried out immediately if any non-compliance is found. It can be put into use only after it is rectified and qualified.

During the performing high-altitude operations, the employee must keep the safety belt fastened on the strong fastening point at all times.

Other fall protection measures include: parachute gear, safety net, ladder, lifting working platform, manned gondola, etc., which must be inspected and qualified by the subcontractor's equipment inspector before being used, and the equipment / facility checklist and application form shall be submitted and approved by the owner or the contractor's HSE department before use.

The contractor will use aerial work vehicles at the site. The aerial work vehicle must pass the inspection and acceptance before entering the site, and can enter the site only with the permission of the owner or the contractor, and the vehicle shall be inspected once a month. All operators and supervisors must participate in the manufacturer's training. After passing the training, the manufacturer shall issue the operation certificate before operation (retraining must be carried out every three months). All operators will affix labels on their hats. During the use of the aerial vehicle, the working radius must be enclosed and supervised. It must be checked every day before use and supervised

throughout the driving process. All aerial vehicles on site must be regularly maintained and recorded by the manufacturer.



Safety protection facilities of pipe gallery construction

14.6 Excavation Operation

When the contractor uses labor or bulldozers, excavators and other construction machinery in the production and operation areas to form trenches, grooves, pits or depressions by removing soil, the contractor shall conduct operation risk analysis (JHA), determine the relevant measures to be taken according to the analysis results, and formulate the excavation scheme if necessary.

Before excavation, the location of underground facilities such as sewer, telecommunication cables, water pipes, fuel pipes, cables and gas pipes must be confirmed with the owner. At the same time, the hazard sources above must be evaluated.

At the excavation point and adjacent places, competent personnel shall be designated to inspect the excavation in advance every day, after rain and soil changes. In case of other operations, safety measures must be taken.

If excavation or trenching causes danger to buildings and walls, it will be protected by support or piling. Support

systems or other protection systems (e.g. steel sheet piles) must be used for excavation near backfill excavation, ditch or railway traffic, highway traffic or machinery and equipment operation (e.g. forklift, crawler crane, truck crane, truck).

If the excavation depth exceeds 1.5m and the width depth ratio is less than 1, it will be required to apply for a confined space work permit. Any excavation work more than 3M will need SHE design and an approval from owner.

Safe upper and lower passageways shall be set every 15m in the excavation area.

If the contractor finds fossils and cultural relics during construction, it will immediately report to the owner.



Foundation pit protection

14.7 Confined Space

Working in restricted space means the operation inside closed and semi-enclosed equipment and places such as entering or probing into towers, cauldrons, tanks, tanks and pipes, furnaces, flue, tunnels, sewers, ditches, pits, wells, pools, culverts, etc. Restricted space is not designed for human activities, limited imports and exports, inconvenient activities, enclosed characteristics, etc.

The safety management engineer of the contractor will evaluate the site situation once a week or increase the frequency of inspection as the site conditions change to determine which site areas should be identified as restricted space. The contractor will control the entrance by blocking the entrance to prevent unauthorized personnel from entering and posting no entry signs.

Operators entering the confined space must:

- 1) Working according to the task, place and time signed on the "Restricted Space Operation Ticket". Without approval of "Restricted Space Operation Ticket", no entering or probing into the restricted space is allowed;
- 2) Check whether the safety measures meet the requirements before operation. If the safety measures do not meet the requirements, the issuance of the "restricted space operation ticket" and the actual operation place, time does not match the operation;
- 3) To wear labor protective clothing and protective equipment according to regulations;
- 4) Operators should be familiar with the risk and emergency plan of the operation, know the alarm and contact method;
- 5) No operation supervisor, no work. The operator has the right to refuse to work in case of violation of these

regulations or failure to implement safety measures.



Safety warning signs of confined space

14.8 Temporary Electricity

All electrical works and equipment used on the construction site shall strictly comply with the requirements of Egyptian Electrical Decree No. 211 of 2003 and applicable safety codes. Accordingly:

- Only certified electricians, licensed under Egyptian law, shall be permitted to carry out electrical installations, inspections, and maintenance activities on site.
- All temporary construction electricity systems shall adopt the three-phase, five-wire system and the TN-S earthing system, in accordance with national standards.
- A three-level power distribution and two-level protection system (including leakage and overload protection) shall be implemented to ensure personnel and equipment safety.
- The use of bare conductors is strictly prohibited. All cabling shall consist of rubber-insulated flexible conductors suitable for the intended load and environmental conditions.
- For main distribution, armored cables may be used, and all joints must be mechanically secured, insulated, and weather-protected in accordance with statutory requirements.
- Electrical distribution boards, power tools, equipment, and cabling shall only be commissioned after inspection, testing, and certification. A labeling system shall be used to indicate the inspection status and approval for use.
- All temporary electrical systems and equipment shall be inspected monthly by a qualified electrician, and inspection records shall be maintained on site for audit and verification.



Distribution box protection shed

Cable standard hanging

14.9 Hoisting

Hoisting equipment must carry out strict equipment inspection before entering the project site, and issue relevant certificates of equipment, audit materials, etc. All hoisting equipment must be permanently and clearly marked with a safe working load (SWL) and checked before use, such as sling, wire rope, shackle, guide chain (gourd), balance beam, hook, etc. All personnel engaged in hoisting operations, including heavy industry, operators, commanders, etc., must hold valid qualification certificates issued by the relevant departments of the country. After entering the site, they should receive the training of hoisting operations stipulated in the project, and only after passing the examination they can be engaged in hoisting operations. Hoisting must always use rope to control the load to prevent the load from swinging and drifting. For loads that may cause sliding during hoisting, such as pipes, steel, etc., double-lane lashing or other feasible measures should be used to prevent the load from sliding, and the sharp edge of the load in contact with the rigging should be covered with cork to prevent damage to the rigging.

The hoisting area must be closed with red warning tape and marked as strictly prohibited. When hoisting, the commander must maintain good communication with the operator.

Before lifting operation, the pre-lifting checklist should be filled out and the lifting operation permit can be carried out. The work permit shall be issued before the crane is set in the working position. (That is, when the crane enters the site to the stop area and the personnel enter, the permit shall be issued).

If the lifting operation involves more dangerous sub-items (≥ 40 tons), the lifting plan and calculation book must be prepared, which will be examined by the chief engineer or project manager of the contractor, and submitted to the contractor and the owner's representative for approval before the hoisting operation can be carried out.



The hoisting work

14.10 Ray Operation

X ray technology (non-radioactive isotope) will be used in the Project for radiographic detection. Use of radioisotopes as radioactive sources shall be with caution, if necessary, it must be approved by the owner's security department.

Before the radioactive source arrives at the site, the following materials shall be submitted to the owner's on-site representative: the use license of the radioactive source, the qualification of the non-destructive testing personnel, the operating procedures and emergency

procedures, the leak test record, the valid radiographic instrument check record, the expected entry time, etc.

The subcontractor shall submit a written application to the engineering department of the contractor and all subcontractors likely to be affected before 24 hours in advance of the non-destructive testing (NDT) operation, and all relevant personnel shall sign and approve the radiographic operation license. The subcontractor shall notify all relevant parties, including the owner, in writing before radiographic operation.

Before the ray testing operations, operator of detection owner must participate in the project of ray operations HSE training with qualified examination.

The contractor will coordinate the construction work of other subcontractors according to the scope of the influence of the ray operation. After receiving the notice of the ray operation of the project, any unit shall evacuate all the operators in the affected area within the specified time. Before the radiation operation, the area affected by the ray must be enclosed with the international triangular radiation flag, which is a fluorescent flag. The ray intensity at any point in the enclosure boundary must be less than 2.5 Gy/h, rather than an average of less than 2.5 Gy/h at any time.

Before carrying out the ray operation, the ray operator should also carefully check whether there are any unrelated personnel in the enclosure. The radiation operations can be carried out only there are no unrelated personnel in the enclosure.

Flashing warning lights and "danger" should be set up at intersections, entrances, exits and more frequent personnel activities! Warning signs for radiographic operations are under way; special care should be set up to prohibit non-destructive testing personnel and unauthorized personnel from conducting radiographic operations.

During the ray operation, the NDT personnel should wear the corresponding personal protective equipment, dosimeter, ray alarm device and so on, and meet the relevant regulations in the GBZ132.



The X-ray operation

14.11 Cutting, Grinding and Welding

- 1) The grinding wheel must be selected correctly according to its application. The safe speed of grinding wheel should be equal to or higher than the machine speed. Chips shall not be used for grinding.
- 2) The grinding machine must be equipped with side handle.
- 3) The switch must not be locked.
- 4) Hearing protection and flame-retardant clothing are necessary.
- 5) The torch must be ignited with an electronic or friction lighter. Octane lighters shall not be used.
- 6) The oxygen and acetylene pipes at the end of cutting torch must be equipped with anti-backfire valve.
- 7) Welding and cutting sparks and strong light must be blocked with a screen.
- 8) The fire blanket shall not contain asbestos.
- 9) 5kg fire extinguisher shall be arranged near each cutting, grinding and welding activities.
- 10) The cylinder must be fixed vertically during use and storage.
- 11) Cylinders must be transported by special cylinder trucks.
- 12) The cap and shockproof ring of each cylinder must be complete.
- 13) Horizontal transportation of gas cylinders is prohibited on site.

14.12 Manual handling & Carrying

The contractor will arrange mechanical and equipment operations as much as possible to avoid manual handling tasks as much as possible. When manual handling and carrying cannot be avoided, the size, shape, weight and

material composition of heavy objects shall be evaluated so as to formulate the most effective and safe method to complete the task. Before the operation, operators shall be instructed to use correct skills and methods, provide correct tools to perform the operation task and wear personal labor protection articles.

14.13 Enclosure Management

Construction activities, dangerous environment and cross operation that may cause temporary hazards such as personnel falling and objects falling, high-altitude welding/gas cutting operation, hoisting operation, high-pressure water spraying cleaning work, radiographic inspection operation, foundation pit excavation operation, holes / openings / ditches, chemical leakage, etc., must be protected to prevent accidents such as personnel falling, falling objects injuring people, etc.

The enclosure is divided into soft enclosure and hard enclosure.

Soft enclosure only plays a warning function but not a protective function, and has no capacity of bearing external forces, such as warning tape enclosure. Soft enclosure is only applicable to short-term maintenance during the day (enclosure time is limited to the day). When the existence time of relevant hazards exceeds the current day, hard enclosure must be used. Hard enclosure is a kind of enclosure that can withstand certain external force and prevent

personnel and equipment from falling, such as the enclosure built with scaffold steel pipe.

The erection requirements of hard enclosure: it must be composed of double guardrails, the height of top guardrail is about 120cm, the height of middle guardrail is about 55cm, the distance between two supporting points of guardrail shall not be more than 240cm, and the strength of guardrail must be enough to withstand 90kg lateral pressure.



Protective barricade for foundation pit edge and holes

14.14 Night work

During the execution of the project, the contractor will try its best to avoid arranging night operation. When night operation must be implemented, it must ensure that all necessary preventive measures for night operation, such as the minimum lighting on the construction site, and the night operation construction management, licensed

electricians and full-time safety management personnel have been implemented and approved by the owner. If night operation involves other operations, the corresponding safety protection measures must also be implemented.

14.15 Signs and Identifications

The contractor will set up necessary safety signs and signs according to needs and on-site safety risks to ensure that nearby personnel are aware of potential dangers, and update them according to changes in risks. The color, symbol, specification, size and length width ratio of safety signs and signs must comply with the relevant regulations of the state, the owner and the contractor. The safety signs and signs must:

Logical, easy to identify and understand; Timely update

when safety risks change;

Safety signs and signs cannot replace normal health and safety measures; The installation is stable.



Safety warning signs and boards

14.16 Compressed Gas Cylinder Management

Compressed gas cylinders must always be kept upright and secured. Except during short periods of transportation, horizontal transportation of gas cylinders is prohibited on site. Do not carry gas cylinders manually; use gas cylinder carts or other methods.

The storage area of compressed gas cylinders shall be kept in good civilized construction, dryness and ventilation. Protective caps should be covered during storage and transportation. Gas cylinders shall be stored by classification, especially oxygen cylinders and acetylene cylinders, which must be stored separately with an interval of no less than 10M.

The compressed gas cylinders provided by the supplier shall meet the requirements of National Compressed Gas Storage Containers:

- 1) Each gas cylinder shall be equipped with double shockproof rubber ring;
- 2) The valve handle of each cylinder is in good condition;
- 3) Each cylinder shall be equipped with valve cap or cylinder cap;
- 4) The color of the gas cylinder shall conform to the national standard. The gas cylinder must be far away from the fire source, and the distance should not be less than 10m. Acetylene and oxygen must be installed with anti-backfire valve to prevent tempering. The use of gas tube should also meet the national requirements.

The gas cylinder should be regularly checked for leakage, and the test fluid can be soaping liquid.



Gas cylinder trolleys



Gas cylinder storage

14.17 Hazardous Chemicals

All hazardous chemicals shall be approved by the owner and contractor HSE department before entering the project. Before using hazardous chemicals, the following procedures along with owners' Hazardous material management (ESAP no 4) should be followed:

- 1) Each subcontractor shall include in the audit report the hazardous chemicals to be entered into the construction site and attach the material safety data sheet (MSDS) for each hazardous chemical, indicating the control method and submitting it to the contractor HSE management for approval;
- 2) Before handling, the containers and packaging of hazardous chemicals shall be checked whether they are

damaged or leaked. Only the minimum amount of hazardous chemicals required for the operation can be carried. Handling and storing hazardous chemicals shall be as direction of the manufacturer.

- 3) The subcontractor shall ensure that there is always a list of approved hazardous chemicals on site during the conduct of site operations related to hazardous chemicals;
- 4) The subcontractor must resubmit the hazardous chemical declaration form, the material safety data sheet (MSDS) and the relevant hazardous chemical control measures for the approval of the contractor HSE management department if the operation task changes or the hazardous chemical changes.

The subcontractor must prepare technical briefing documentation specifying the relevant control measures before carrying out operations involving hazardous substances.

Storage of Hazardous chemicals on the construction site must be identified, classified and marked in accordance with international practice, and the quantity stored shall be assessed according to the characters of the hazardous chemicals.

Places where hazardous chemicals are stored must have eye-catching warning signs. Hazardous chemicals warehouse must be equipped with fire-fighting, anti-theft, anti-leakage, and corrosion prevention measures.

Any stored hazardous chemicals, if no longer used, should be disposed of immediately after approval.

The subcontractor shall make a list of inventory information for all hazardous chemicals stored and used at the project site, which shall contain all hazardous chemicals involved in the site.

14.18 Civilized Construction Management

The Layout Plan of temporary facilities must be submitted to the owner before the arrangement of temporary facilities, and the construction of temporary facilities can be carried out only after being approved. The layout of temporary facilities must meet the requirements of relevant national standards and specifications, such as fire control, safety, emergency escape, import and export passageways, and HSE requirements. Temporary facilities, such as office, warehouse, material storage yard and soil bulldozing area shall be kept clean and tidy.

All materials should be designated special storage area, classified storage, neat and firm stacking. Tools, equipment, etc. shall be stored according to the storage requirements of the equipment itself. Small hand / electric tools shall be stored in a special warehouse or tool room and placed neatly. The subcontractor can build special storage rack for equipment and materials.

Waste materials should be placed by category, classified according to hazardous waste, harmless waste, recyclable waste, food waste and medical waste, and properly identified. A sufficient number of garbage sorting

facilities, such as, garbage cans and garbage buckets shall be provided on site. Requirements for garbage can: the garbage can be metal or plastic, which should be selected according to the types and properties of hazardous wastes, such as chemical and physical properties. Each garbage can have a cover to prevent the garbage from being blown away. The garbage can shall be properly marked. The hazardous waste storage container shall also be provided with warning signs. Garbage can and garbage hopper shall be cleaned regularly and transported to qualified treatment organization for treatment. Ensure that it is in normal empty state to meet the needs of storing construction waste and domestic waste. The project will require the size of the construction site, the amount of garbage generated, and the number of garbage cans and garbage buckets.

Materials with environmental pollution risk caused by leakage shall also be provided with anti-leakage facilities, such as oil pan, cofferdam, etc. The oil pan is generally made of thin iron sheet or aluminum sheet by processing and welding. The prepared oil pan must ensure that it will not leak again. When using diesel oil, gasoline generator and diesel electric welding machine in the project, and using and storing paint, diluent, lubricating oil, gasoline, diesel oil, etc., anti-leakage facilities corresponding to the size of equipment and container shall be used at the same time.

A safe access to all work and storage areas must be maintained. All corridors, gallery, escalators, footbridges, ramps, aisles and platforms shall be kept free of loose materials and

rubbish. The cable and hose shall be erected at a height of 2.1 meters or laid on the outside of the corridor. The platform grid plate must be installed firmly without tripping hazard.

Temporary cables such as welding handle wire, cable, gas pipe, rope and so on shall not be set on the pedestrian passageway, but shall be set along remote places. If it is really necessary to cross the pedestrian passage and work area, it can be buried. The buried depth shall meet the requirements of temporary power utilization management.

In the woodworking operation area and the prefabrication operation area of steel bar and pipeline, the civilized construction management shall be strictly carried out. All materials shall be stacked orderly and firmly by classification, and enclosure and identification shall be carried out, and hazard warning signs shall be posted. The scraps of prefabricated corners shall be cleaned up in time to ensure the cleanliness and tidiness of the working area. There shall be no nails or other sharp projections on formwork, wood or other materials.

The end of protruding reinforcement shall be covered with hard protective cap or groove with surface area not less than 40 square centimeters. These protective caps and grooves are used to provide impact and puncture protection. During the binding of steel bars, appropriate bases (such as plywood, thin steel plates and planks) shall be temporarily built on the steel bars for workers to walk/stand on the steel mesh. Suitable inlets and outlets shall be reserved for all temporary working surfaces.

The area where combustible materials are stored on site shall be equipped with sufficient fire-fighting equipment.

The quantity and configuration of fire-fighting equipment shall meet relevant national and local laws and regulations,

standards and specifications and HSE requirements of the project.

No meals are allowed in the construction work area. If it is really necessary to have meals at the project site, the temporary dining room/restaurant shall be constructed after obtaining the approval of the OWNER's representative. Dining tables and chairs should be set up for employees. The restaurant should be kept clean and tidy, and special personnel should be assigned to manage and clean the restaurant, and the restaurant should be disinfected regularly.

In this project, smoking is only allowed in designated smoking areas, and smoking in non-smoking areas is prohibited. Smoking areas and drinking water points shall be set up on the project site. The layout of smoking areas and drinking water points shall be planned together with temporary facilities and submitted to the owner for approval. Configuration requirements of smoking area: fire extinguisher, smoke bucket and clear sign of "smoking area". The smoking area must be kept clean and tidy. Drinking points provide sufficient drinking water, drinking containers and cups for employees.

Adequate portable toilet facilities should be provided on site, and should be kept clean, disinfected regularly, and toilets should be located at easily accessible areas. The number of portable toilets should meet the following requirements: 1 for 20 people or less, 1 for every 40 workers for more than 20 people, and 1 for every 50 workers for more than 200 people. The provision of toilets should consider the distance from the work area to the toilet (in principle it should not exceed 100 meters) and toilet facilities should be clean, well maintained, in good working condition and equipped with water, liquid soap and toilet paper.

Washing facilities should be provided on site when employees perform painting, coating, or other work involving substances that may be hazardous to employees.

Vehicles wash station should be established on site to ensure that the sludge on the tires is removed before all vehicles leave the site. The sewage from the car washing station must be deposited and qualified before being discharged into the rainwater pipe network. The sediment should be cleaned regularly.



Interior styling shelf



Material stack up



Temporary smoking points



Temporary toilet



Vehicle flushing



Road watering

14.19 Traffic Safety Management

For on-site lifting and hoisting, professional lifting owner certified by the owner shall be selected, and other companies shall be audited by the owner. All vehicle drivers of the project shall hold valid driving licenses issued by relevant national departments and have health examination reports.

The contractor will submit to the owner's representative a scheme for the protection of workers and on-site traffic control in areas such as roadside pipeline installation locations. This scheme will at least indicate the personal protective equipment, roadblocks, signs, correct assembly methods and distance warnings that workers need to wear, such as speed limit signs, speed bumps, etc.

Before entering into the project site, all vehicles must apply to the competent department of the contractor for review. After passing the examination, the vehicle pass can be issued before entering and leaving the project site. The project will review all vehicles once a quarter. If the vehicle fails to pass the review, the pass will be confiscated, and the vehicle will be cleared immediately. After the rectification of the non-conforming items is completed, the vehicle can enter the project site after passing the review.

The speed limit of roads within the project site is generally 10km/h, and the speed limit of roads around the site is not more than 20km/h.

Drivers are forbidden to use mobile phones and smoke when driving vehicles.

When the vehicle is running, the driver, the co-driver and the passengers should fasten the safety belt. The driver

must follow with the traffic rules on site, strictly follow with the traffic signs and speed limit requirements, obey the command of the traffic commander.

The operator shall carry out daily inspection on the brake system, reversing alarm device, reversing mirror, tire, lamp and operating system of the vehicle every day to ensure that the vehicle is in good working condition.

All vehicles of the project shall be equipped with fire extinguisher and Leakage Emergency Kit (including small shovel, plastic bucket with capacity of at least 5L, two pairs of plastic gloves, two pieces of 4dm² oil absorption cotton or cotton ball), which can be used in case of vehicle fire accident and oil leakage.

Driving overtaking and speeding are strictly prohibited at the project site. In principle, the transport vehicles shall not be overloaded, over high, over long and over wide. If the problem of over height and over length cannot be solved, warning signs shall be set up at the exceeding part, and special personnel shall be assigned to guide them.



Road separation from people and vehicles

14.20 Fire Fighting

The contractor will implement the fire role responsibility system and adhere to the principle of "who is in charge, who is responsible". Fire-fighting technical training and drills for employees shall be regularly organized to improve their ability to maintain and use fire-fighting facilities. Emergency plans shall be prepared for fire accidents and conduct drills regularly. Firefighting facilities and equipment must be managed and maintained by special personnel.

The management of operation activities shall be strengthened for fire, electricity and gas, and the implementation of corresponding fire safety measures shall be supervised. Only licensed special refueling vehicles can enter the project site and perform refueling operations in accordance with the operating procedures. The operating procedures must be strictly followed when refueling.



Temporary fire-fighting facilities

14.21 Medical Emergency Management

A First Aid Station will be established at the project site, which is visible and accessible to all employees. Management of First Aid Station or First Aid Kit shall be satisfied with the requirements of the owner. For activities involving corrosive chemicals, adequate flushing equipment shall be provided to flush eyes or any skin contact area for at least 15 minutes washing.

Five percent (5%) of the field staff are required to have a valid first aid/ cardiopulmonary resuscitation certificate to ensure that all workers can be rescued within five minutes.

Personnel with relevant certificates shall be identified by helmet sign, special vest or other similar identification methods.

Stretchers with strapping straps, baskets with straps, or other suitable devices in accordance with applicable government requirements and regulations will be provided at the site to remove the injured person from the work at height area. At the same time, as long as there is construction work on site, an ambulance must be equipped at the site to be on standby at any time to send the injured person to the designated emergency hospital.

The contact numbers of doctors, hospitals and ambulances will be posted in conspicuous places. It should include emergency contact information.

The contractor will contact the nearest people's Hospital as the nearest designated emergency hospital for the project, and will find a hospital around the project as the standby designated emergency hospital.



14.22 Office HSE

The project site office shall follow the project HSE management system. The office shall be equipped with sanitary ware, smoking area, fire-fighting equipment and other facilities, and special personnel shall be arranged for regular maintenance. The concept of "green office" should be advocated to save water, electricity and paper. Garbage generated from daily office should be properly treated, and solid waste such as ink cartridge and battery should be stored separately. For the sake of the health of others, smoking is generally not allowed in the office.

15 Pre-commissioning HSE management

Pre-commissioning is a series of system debugging, cleaning, mechanical and electrical performance test done for the test after the installation of equipment and pipeline system. The work content includes: static equipment and pipeline system cleaning/purging, electrical system debugging, instrument and control system debugging, single test of dynamic equipment, etc.

Safety concerns during hydrotesting

Overpressure Risk: Use calibrated gauges and pressure relief devices.

Burst Hazard: Keep people away from pressurized zones.

Leaks/Jetting: Never approach suspected leaks directly.

Secure Equipment: All hoses, blinds, and pipes must be properly rated and fixed.

Environmental Care: Manage water discharge responsibly.

PPE Required: Helmet, goggles, gloves, boots, and hearing protection.

Permit & Supervision: Always under PTW with trained personnel.

In the pre-commissioning stage, construction activities and pre-commissioning activities will be carried out at the same time, and also involve high pressure, chemicals, power energy, etc., which has a high operational risk. The project site must strictly follow the tag-out and lock-out procedures, and the daily coordination between the construction team and the pre-commissioning operators must be organized to ensure the site safety.

HSE management priorities are described below. Among them, the approval of all types of schemes involved will be reviewed by the owner.

15.1 Static equipment and piping system cleaning/purging

1.1.4 Piping system cleaning/purging

- 1) The purging and cleaning of the pipeline system will be carried out after the pipeline pressure test is qualified, and the contractor's pipeline professional engineer will check and confirm.
- 2) Special plans shall be prepared for purging and cleaning of pipeline system. The plan shall be prepared and approved by the contractor's subcontractor and reviewed by the contractor. Before the operation, the contractor will urge the subcontractor to make safety technical disclosure to workers on the purging and cleaning plan.
- 3) Before the operation, the contractor will urge the subcontractor to confirm the safety conditions, fill in the safety conditions confirmation form and report to the contractor for approval. The operation can only be carried out after the approval of the safety condition confirmation form is completed. In case of major changes on site operating conditions, the safety condition confirmation form shall be re-signed and approved.
- 4) Safety considerations for pipe cleaning and purging operations:
Overpressure or negative pressure is strictly prohibited during flushing and purging. Noise reduction measures should be taken during air and steam purging.

When air blasting is used for purging, the gas pressure charged to the system shall not exceed 0.5MPa. The blast blown exhaust pipe should be led to the outside and firmly supported to withstand the blowback force when the air is discharged. The exhaust pipe should be tilted upward, clearly marked, and the exclusion zone should be set around the exhaust port. When blasting purge is carried out, irrelevant personnel are strictly prohibited from entering the restricted area.

When steam purging, the heat insulation measures must be taken, flammable, explosive and other debris must not be placed on or near the pipeline.

1.1.5 Chemical cleaning of equipment and pipelines

- 1) Special plans shall be prepared for chemical cleaning of equipment and pipeline system. The plan shall be prepared and approved by the contractor's subcontractor and reviewed by the contractor. Before the operation, the contractor will urge the subcontractor to make safety technical disclosure to workers on the chemical cleaning plan.
- 2) Before the operation, the contractor will urge the subcontractor to confirm the safety conditions, fill in the safety conditions confirmation form and report to the contractor for approval. The operation can only be carried out after the approval of the safety condition confirmation form is completed. In case of major changes on site operating conditions, the safety condition confirmation form shall be re-signed and approved.



Barricade the pressure test area



Blind plate signboard for pressure test



Barricade the purging area

3) Safety concerns about chemical cleaning of equipment and pipelines

Operators should wear professional protective clothing when performing chemical cleaning and degreasing operations according to regulations, and should wear protective glasses, gas masks and other protective tools according to the degree of harm to the human body of different cleaning fluids.

The discharge of chemical cleaning waste liquid, degreasing residual liquid and sewage shall comply with the relevant standards of the state and the project location, and shall not be discharged anywhere.

After degreasing, it is strictly forbidden to use oil-containing media for purging and system airtight test.

When operators enter the equipment and pipelines for cleaning operations, confined space work permit must be applied.

15.2 Electrical system debugging

1.1.6 Electrical system test

1) After the electrical system has been installed and checked to meet the requirements of the design documents and the current national construction acceptance codes, the following tests should be carried out:

Transformer no-load test run;

High and low voltage distribution device adjustment test;

Protection control panel, screen and secondary loop simulation test; DC system debugging;

Interlock test between motor control center and emergency shutdown system, distributed computer control system and programmed logic controller.

2) Before the test, the electrical system test plan shall be prepared. The plan shall be prepared and approved by the contractor's subcontractor and reviewed by the contractor. The plan shall include safety measures and protection requirements.

3) Before the operation, the contractor will urge the subcontractor to make safety technical disclosure to workers on the electrical system test plan.

4) Before the operation, the contractor will urge the subcontractor to confirm the safety conditions, fill in the safety conditions confirmation form and report to the contractor for approval. The operation can only be carried out after the approval of the safety condition confirmation form is completed. In case of major changes on site operating conditions, the safety condition confirmation form shall be re-signed and approved.

1.1.7 Power supply and operation of the substation

1) Special plans shall be prepared for power supply and operation of the substation. The preparation, approval and expert demonstration of special plans shall be carried out in accordance with the safety management regulations of projects with greater risks.

- 2) Before the operation, the contractor will urge the subcontractor to make safety technical disclosure to workers about special plans and the contractor's construction and HSE management department will participate in the whole process.
- 3) Before the operation, the contractor will urge the subcontractor to confirm the safety conditions, fill in the safety conditions confirmation form and report to the contractor for approval. The operation can only be carried out after the approval of the safety condition confirmation form is completed. In case of major changes on site operating conditions, the safety condition confirmation form shall be re-signed and approved.
- 4) Safety concerns about Power supply and operation of the substation:

The power supply and operation of the substation shall be checked and confirmed by the local power supply department and the power supply formalities have been completed.

Before power supply and trial of the substation, safety operation management regulations shall be promulgated, and all kinds of work permit shall be complete.

Operating electricians should be trained and qualified, and licensed to operate.

Safety operation equipment is available.

Fire control equipment of substation is fully equipped, and fire emergency passage is unblocked.

Tag-out and lock-out of electrical system commissioning



15.3 Instrument and control system commissioning

After the installation of the instrument and control system, the system (loop) shall be debugged after inspection and adjustment to meet the requirements according to the provisions of the current national construction acceptance codes and design documents.

Before the system (loop) joint adjustment, the system loop joint adjustment plan should be prepared, and the plan should include safety measures and protection requirements.

Before the operation, the contractor will urge the subcontractor to make safety technical disclosure to workers on the system loop joint adjustment plan.

Before the operation, the contractor will urge the subcontractor to confirm the safety conditions, fill in the safety conditions confirmation form and report to the contractor for approval. The operation can only be carried out after

the approval of the safety condition confirmation form is completed. In case of major changes on site operating conditions, the safety condition confirmation form shall be re-signed and approved.

15.4 Dynamic equipment rotating

After the driving device, dynamic equipment or unit is installed in place, the rotating test will be carried out one by one. If the rotating test cannot be carried out due to the limitation of public works or media, the application will be carried out together with the cold test or hot test with the consent of the owner.

The special plan will be prepared before the rotating test, including safety measures and protection requirements. The plan shall be prepared and approved by the subcontractor and reviewed by the contractor. Before the operation, the contractor will urge the subcontractor to make safety technical disclosure to workers on rotating test plan. The contractor's construction and HSE management department will participate in the whole process.

Before the operation, the contractor will urge the subcontractor to confirm the safety conditions, fill in the safety conditions confirmation form and report to the contractor for approval. The operation can only be carried out after the approval of the safety condition confirmation form is completed. In case of major changes on site operating conditions, the safety condition confirmation form shall be re-signed and approved.

Rotating test shall establish organization, make the unified dispatch and command. Multiple leadership, illegal command and operation are strictly prohibited. The following safety concerns shall be focused:

- 1) The rotating test run shall include automatic control devices such as protective interlock and alarm. Command and operation must be carried out in accordance with the mechanical equipment instructions, test plans and operation methods.
- 2) Test operators should be trained, familiar with test plans and standard operating procedures, and be able to operate correctly;
- 3) The rotating test site shall be barricaded, and hang warning signs;
- 4) Rotating test operation shall communicate smoothly and operation instructions shall be clearly conveyed;
- 5) When using toxic, harmful or corrosive liquids as test media, it should be prevented from entering the eyes and respiratory tract;
- 6) When the machine is running, it is not allowed to clean, wipe or inject lubricating oil, and it is not allowed to check the temperature of the shaft seal or stuffing box by touching the finger;
- 7) During the test run, it is strictly forbidden to overhaul the standby equipment with interlocking devices.

16 HSE expense management

16.1 HSE capital investment

The project's safety provisions shall fully comply with the applicable **Egyptian laws and regulations**, including but not limited to:

- **Egyptian Labor Law No. 12 of 2003**, particularly the sections related to occupational safety and health,
- **Ministerial Decree No. 211 of 2003** on electrical safety standards,
- **Law No. 4 of 1994** (as amended) concerning environmental protection and pollution control,
- Relevant **Egyptian Building Codes** and **site construction safety regulations**.

In addition, the project shall adhere to:

- The **Owner's HSE requirements**,
- The **Contractor's internal safety standards**, and
- The principles of **Good International Industry Practice (GIIP)**, including applicable provisions of the **IFC Environmental, Health and Safety (EHS) Guidelines**.

Production safety expenses refer to the funds drawn from the cost by an enterprise in accordance with the prescribed standards for the purpose of improving and perfecting the production safety conditions of an enterprise or project. The Financial Assets Department of the Owner shall be responsible for the accounting and statistical management of the Owner's production safety expenses, cooperate with the project department to formulate the production safety expenses budget, and pay the production safety expenses in full and timely according to the project progress and the approved amount of subcontract.

The contractor shall guarantee the full HSE cost of the project. At the same time, it is agreed in the construction subcontract that the subcontractor shall guarantee the full investment of the HSE cost. The HSE manager of the project will review the input of the subcontractor's cost on site.

16.2 The commitment principle

- 1) Full withdrawal, timely payment, ensure needs, standardized use;
- 2) The project safety production costs shall be "calculated separately" and "settled according to the facts".

16.3 Management requirement

- 1) When bidding for construction subcontract, the contractor is required to list the production safety cost separately in the business bid, and the production safety cost is included in the project cost, and shall not be deleted or included in the out-of-bid management.
- 2) When a subcontract is signed, the cost of safety production shall be clearly stated in the contract and accounted separately according to the actual use.
- 3) When the cost of the construction and installation project is adjusted, the safety production cost shall be adjusted according to the proportion of the contract.

16.4 Management process

- 1) The contractor shall supervise the subcontractor's investment in place, ensure the site safety protection measures in place, and urge them to confirm in time;
- 2) The subcontractor shall declare the cost of safety production monthly;
- 3) The project construction /HSE management department is responsible for the review and confirmation of safety production cost input;
- 4) The project cost control engineer shall review and determine the price and final production safety cost according to the contract agreement and billing standard;
- 5) The finance department shall pay the safety production cost to the subcontractor after approval by the project manager;
- 6) The owner's financial assets Department is responsible for the accounting and statistical management of the owner's production safety expenses, and assists the project department in formulating the production safety expenses budget.

安全生产费用申报表（据实结算部分）							
填报单位：			时间：XXXX年XX月XX日—XXXX年XX月XX日				
序号	日期	安全防护设施项目	安全防护设施项目明细*单价	费用（元）	费控审核	证明材料	备注
1	2020.8.2	3.2 安全文化宣传牌	6 块*360 元/块	2160.00		参安全防护设施确认表（编号）	
2							
3							
4							
5							
6							
合计							

说明：

- 1.证明材料：经总包商施工HSE管理人员核实确认的《安全防护设施确认表》。
- 2.本表由施工单位费控工程师或造价工程师编制，HSE 经理审核，施工单位项目经理签字后报东华项目部。
- 3.东华项目部 HSE 经理、施工经理根据安全防护设施确认表审核事实与数量，费控工程师审核价格，报项目经理批准确认。确认的结果应告知施工单位，施工单位有异议时，应进行复审。东华财务根据项目审核结果按合同约定支付相应安全生产费用。

施工单位项目经理： HSE 经理审核： 编制人：

东华项目经理： 费控工程师核定： 施工经理审核： HSE 经理审核：

The monthly declaration of safety production cost

17 Environmental Management

The Contractor shall submit a detailed Site Environmental Management Plan to the Owner's Representative for approval. This plan will outline specific measures to control and manage environmental impacts associated with the project, including dust, noise and light pollution, construction-related domestic sewage, hazardous chemicals, solid and construction waste, waste gas emissions, and energy conservation during all phases of implementation. Environmental management shall be carried out in strict accordance with the applicable **Egyptian environmental laws and regulations** and aligned with **Good International Industry Practice (GIIP)**, including the **IFC**

Performance Standards, specifically:

- **PS3:** Resource Efficiency and Pollution Prevention
- **PS4:** Community Health, Safety, and Security

17.1 Dust Control

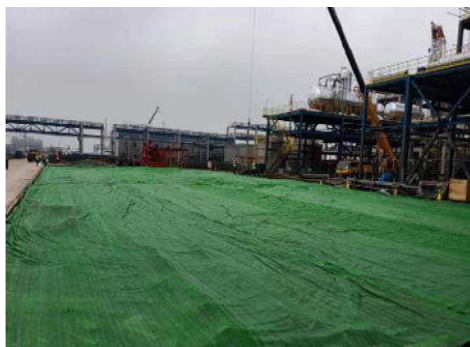
Dust control during construction and related activities shall be implemented in line with Egyptian environmental regulations, including Law No. 4 of 1994 and its Executive Regulations, as well as Good International Industry Practice (GIIP) and relevant IFC Environmental, Health, and Safety (EHS) Guidelines, specifically the General EHS Guidelines and the Construction and Decommissioning Sector Guidelines under IFC Performance Standard 3.

Sandblasting and rust removal shall be conducted in enclosed or isolated areas, equipped with effective dust capture systems such as bag filters to prevent emissions. At fixed workstations, local dust suppression systems (e.g., water sealing or mechanical extraction) shall be installed to reduce particulate emissions.

Site roads will be regularly cleaned and watered, and surfaces will be stabilized or hardened to reduce dust generation, especially during dry or windy conditions. Spraying will be timed to avoid active working hours and will not interfere with visibility or worker safety.

For activities such as bulk cement mixing, powder filling, or material transfer, operations shall be conducted in fenced or enclosed areas. Wet methods will be used for tasks such as floor cutting, wall drilling, and lining removal. During transport of powdery materials and construction waste, covering and sealing measures will be strictly enforced to avoid fugitive dust emissions. Site clearing and earthworks, which are primary dust-generating activities, will be controlled through pre-watering, phased excavation, minimal vegetation removal, and post-clearance stabilization. These practices will be incorporated into the Construction Environmental and Social Management Plan (CESMP).

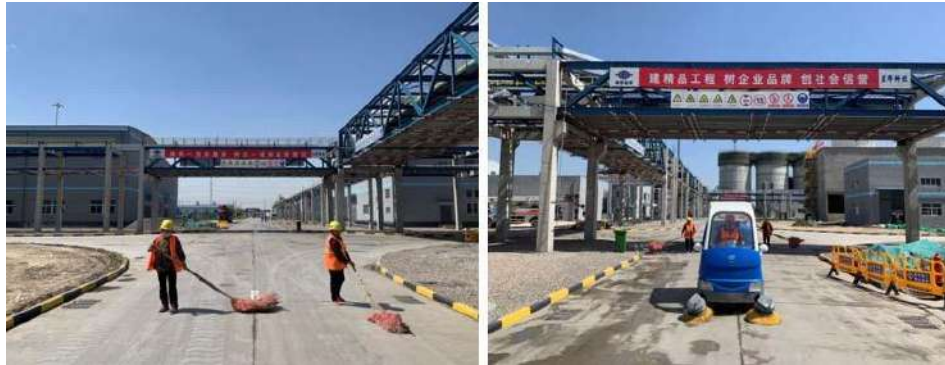
The plan shall also consider potential impacts on sensitive receptors, in particular the Swiss Inn Hotel, located approximately 1.7 km northeast of the project site within TEDA Industrial Park. Monitoring and mitigation will ensure compliance with applicable ambient air quality limits for PM₁₀ and TSP as per Egyptian law and IFC Guidelines.



Soil covers anti-dust mesh



Spray and dust control



Road daily cleaning

17.2 Noise and Light Pollution Control

Noise and lighting impacts during construction shall be managed in full compliance with:

- **IFC Performance Standard 3 (Resource Efficiency and Pollution Prevention)**
- **IFC General EHS Guidelines – Noise Management**
- **Egyptian Law No. 4 of 1994** and its Executive Regulations regarding environmental noise (as amended by Ministerial Decree No. 1095/2011)

Occupational Noise Control

The noise level in the working environment shall not exceed **85 dB(A)** (8-hour time-weighted average). The **maximum instantaneous noise** exposure shall not exceed **115 dB(A)**. If noise exceeds occupational thresholds:

- **Noise source isolation**, installation of **silencers**, equipment replacement, or **construction method modifications** shall be applied.
- If levels still exceed 85 dB(A), workers' **exposure duration shall be limited**, and they must be provided with **certified hearing protection** (earplugs, earmuffs).

Ambient Environmental Noise Control

- **Daytime limit (7:00–22:00)**: shall not exceed **70 dB(A)**
- **Nighttime limit (22:00–7:00)**: shall not exceed **60 dB(A)** (per **Egyptian standards**)
- Noise-emitting activities such as **pipeline flushing**, **piling**, **concrete mixing**, or **large-scale testing** shall be **restricted to daytime hours** or **scheduled in advance** to minimize nuisance.

The **main subcontractor** shall implement a **noise monitoring program**, log results, and take **corrective measures** where limits are exceeded.

Sensitive Receptors

Special attention shall be given to **sensitive receptors**, particularly the **Swiss Inn Hotel** located approximately **1.7 km northeast** of the project site, within **TEDA Industrial Park**. Noise mitigation measures shall ensure no exceedance of applicable limits at receptor locations.

Light Pollution Control

For night operations:

- Use **directional, shielded lighting** to prevent spillover to nearby facilities and roads.
- **Glare reduction measures** (e.g., deflectors, filters) shall be adopted to protect workers and minimize community disturbance.

17.3 Construction and Domestic Sewage Control

Drainage ditches and sedimentation tanks are set at the project site. Construction sewage can be discharged into the municipal sewage pipe network only after it reaches the discharge

standard after sedimentation treatment.

The laundry at the project site shall use phosphorus free and qualified detergent to reduce water pollution. Catering facilities shall adopt oil separation facilities and be cleaned in time to reduce the discharge of waste oil. The septic tank of temporary toilet shall be subject to anti-seepage treatment.

17.4 Hazardous Chemicals Control

The special warehouses for hazardous chemicals such as oils and chemical solvents shall be built on the project site, and the ground is treated with anti-leakage treatment. Waste oil and chemical solvents and other hazardous chemicals are disposed of in a centralized manner, and dumping at will is strictly prohibited. As per ESAP no 4

17.5 Control of Solid Waste

The construction waste and domestic waste produced at the project site shall be stored by category. The garbage shall be sorted and a reasonable number of garbage recycling bins and garbage ponds shall be set up, and the garbage ponds shall be cleaned regularly. The on-site garbage shall be entrusted to a qualified third party for disposal and the garbage disposal agreement shall be signed.



Classification of domestic waste

17.6 Control of Construction Waste Gas

To minimize air emissions and associated environmental impacts during construction, all activities on site shall comply with:

- **Egyptian Environmental Law No. 4 of 1994** and its executive regulations (particularly regarding air quality and emissions limits)
- **IFC Environmental, Health and Safety (EHS) Guidelines – General and Construction and Decommissioning Guideline**
- **IFC Performance Standard 3: Resource Efficiency and Pollution Prevention**

a. Emission Control Measures:

- All **combustion equipment** and **vehicles** operating on the construction site must comply with **national and local emission standards**, including relevant fuel quality standards.
- Only **qualified, low-emission fuels** (e.g., low sulfur diesel) shall be used on-site.
- Operators shall **strictly follow operating procedures**, and all combustion equipment and flue gas treatment units shall be **routinely maintained and inspected** to ensure optimal efficiency and minimal emissions.

b. Prohibited Activities:

- The **open burning of any waste**, including domestic waste, packaging, construction debris, or hazardous materials, is **strictly prohibited** on-site.

c. Consideration of Sensitive Receptors:

- Emission control measures must be implemented with specific attention to **nearby sensitive receptors**, particularly the **Swiss Inn Hotel**, located approximately **1.7 km northeast** of the project site within the **TEDA Industrial Park**.

17.7 Control of Energy and Resources Conservation

The general layout of the project site construction, the layout of temporary facilities and the selection of materials should be scientific and reasonable to save resources. Temporary electrical equipment and appliances should use energy-saving products.

The Reasonable entry plan of materials and equipment shall be arranged to reduce secondary transportation, and implement quota requisition.

The information management system shall be adopted for project site office to reduce the use and loss of office consumption. The consumption of energy resources, including construction and domestic water and electricity, shall

be measured and managed. Water-saving appliances shall be used, and water-saving signs shall be used.

18 Occupational Health Management

The contractor shall recognize that personnel are the owner's most valuable resource and shall implement a comprehensive Occupational Health Management System (OHMS) in alignment with international standards, including:

- IFC Performance Standard 2 (Labor and Working Conditions)
- International Labour Organization (ILO) guidelines
- ISO 45001:2018 (Occupational Health and Safety Management Systems)

To uphold these standards and ensure effective control of occupational health risks, the contractor will:

- Develop and enforce comprehensive, project-specific occupational health regulations and procedures, based on identified hazards and risk assessments.
- Define clear roles, responsibilities, and accountability mechanisms for occupational health across all levels — including contractor staff, subcontractors, supervisors, and HSE personnel.
- Integrate occupational health into the Environmental and Social Management System (ESMS) to ensure a coordinated approach to worker health, safety, and wellbeing.
- Implement systematic monitoring and reporting mechanisms, including health surveillance, workplace inspections, incident tracking, and compliance audits.
- Ensure the availability of qualified occupational health professionals and first aid/medical facilities on-site, supported by clear emergency response protocols.
- Deliver mandatory induction and ongoing training programs on occupational health risks, controls, and safe work practices, adapted to specific roles and tasks.
- Regularly review and update the OHMS based on incident trends, lessons learned, regulatory updates, and stakeholder feedback.

18.1 Management Requirements

The contractor shall implement a comprehensive Occupational Health and Hygiene Program aligned with IFC Performance Standard 2, ILO Guidelines, and ISO 45001:2018. This program shall ensure protection against occupational hazards for all workers, including subcontracted personnel, and promote a healthy work environment across the project lifecycle.

a. Occupational Health Screening and Medical Surveillance

- Pre-employment health checks are mandatory for all workers exposed to occupational disease hazards. Medical examinations must be repeated at defined intervals based on exposure risk (e.g., every 6–12 months).
- Employee occupational health records shall be established, confidentially maintained, and periodically updated.

- Registration, statistics, and reporting of occupational diseases shall follow national occupational health regulations and international best practices.
- Individuals with occupational contraindications must be reassigned to positions without health risks. Monitoring and follow-up are required.

Responsibility: Site HSE Manager and Occupational Health Officer, in coordination with certified medical providers.

b. Workplace Monitoring and Control of Occupational Hazards

The project site shall conduct regular monitoring of workplace hazards such as dust, noise, radiation, and chemical agents.

- Monitoring frequency: At least monthly in high-risk zones, or more frequently during specific operations.
- Monitoring data must be recorded, reviewed, and acted upon. Threshold breaches must trigger immediate mitigation and be reported to site leadership.
- Examples of control measures:
 - Adequate ventilation systems
 - Use of localized extraction systems
 - Placement of warning signage and lead shielding
 - Establishment of chemical burn control zones (for acid/alkali use)

Responsibility: HSE Engineer (Monitoring), Occupational Health Officer (Analysis & Reporting), Contractors' Supervisors (Implementation)

c. Personal Protective Equipment (PPE)

Workers exposed to hazardous agents must be equipped with appropriate PPE, including:

- Dust masks, gas masks
- Earplugs and earmuffs
- Protective gloves and suits
- Radiation dosimeters or alarms
- PPE must be:
 - Issued by the employer
 - Inspected regularly
 - Replaced as needed
 - Used correctly by trained personnel

Responsibility: Contractor Safety Manager and Line Supervisors

d. Sanitation, Food Safety, and Vector Control

The contractor shall comply with the "Environmental and Sanitation Standards for Construction Sites" and ensure:

- Cleanliness of dormitories, toilets, canteens, and workspaces
- Regular disinfection to prevent pests/insect breeding
- Safe drinking water supply
- A food procurement and handling plan shall be developed to ensure food provided to workers is free from biological and chemical contamination.

Responsibility: Camp Manager, with HSE oversight

e. Emergency Preparedness and Response for Occupational Incidents

All sites must be equipped with first-aid stations, trained medical staff, and decontamination facilities (e.g., eye wash and safety showers).

- Dust/chemical operations (e.g., handling acids, alkalis, toxic substances) must be supervised by qualified HSE personnel and supported by on-site emergency teams.
- Occupational health risks shall be integrated into the site's Emergency Response Plan (ERP).

- Scenario-based emergency drills (chemical exposure, fire, collapse, radiation) shall be conducted at least bi-annually, with documented outcomes and improvement actions.

Responsibility: Emergency Coordinator, HSE Manager, First-Aid Team Leader

f. Training and Capacity Building

All personnel shall undergo mandatory occupational health training before commencing work and refresher training every 6 months.

Training must include:

- Proper use of PPE
- Dust and toxin awareness
- Use and maintenance of dust-proof and poison-proof facilities
- Emergency response actions
- Effectiveness of training shall be monitored through:
 - Periodic knowledge assessments
 - Field observations
 - Feedback collection
 - KPIs such as % trained, training compliance rate, and incident reduction trend

Responsibility: Training Coordinator, supported by HSE and HR Teams

g. Roles and Responsibilities

- Contractor Management:
 - The main contractor must establish a dedicated Occupational Health Team responsible for coordination, monitoring, and compliance.
 - Full-time occupational health management personnel must be deployed on-site.
- Subcontractor Requirements:
 - Subcontractors engaged in high-risk work must submit their Occupational Health Plans, including staffing, PPE, and training arrangements, for review and approval.
 - Subcontractor compliance will be monitored through audits, inspections, and incident reviews.

18.2 Workplace Management

a. Dust Exposure Control

- Dust-generating workplaces must be equipped with effective local exhaust ventilation systems and enclosed or sealed processes wherever feasible.
- Labor protection equipment for the respiratory system, such as dust masks or respirators, shall be provided and used appropriately.
- Dust concentrations at the operator's point shall be regularly monitored and maintained below occupational exposure limits, in line with sanitary standards.
- Equipment and control systems must be inspected regularly, and any breakdown must trigger immediate corrective action.

b. Noise Hazard Control

- Sound insulation or noise-dampening enclosures shall be installed at noise sources to ensure compliance with hygienic noise standards.
- When noise levels exceed 85 dB(A), employees must wear earplugs or earmuffs, and time limits shall be imposed on exposure durations.
- Audiometric testing should be provided periodically for exposed personnel as part of the occupational health monitoring program.

c. Confined Space Entry

- Confined spaces must not be entered without a valid Permit-to-Work (PTW) issued under the site's Confined Space Entry Protocol.
- Entrants must be provided with and trained in the use of self-contained breathing apparatus (SCBA) or other suitable respiratory protection.
- Gas detection equipment, ventilation systems, and rescue plans must be in place prior to entry.
- A standby person must be present outside the confined space at all times during entry operations.

d. Toxic and Hazardous Work Environments

- Areas with acute occupational disease risks (e.g. toxic gas, chemical spills) must have:
 - Prominent warning signs and hazard instructions in languages and symbols understandable by all workers
 - Alarm systems, emergency showers, eye wash stations, and clearly marked evacuation routes
- The warning instructions shall include:
 - The type of hazard
 - Health consequences
 - Preventive measures
 - Emergency response actions

e. Chemical Contact Protection

- Employees handling **chemical reagents that can irritate or damage the skin** must be provided with:
 - **Chemical-resistant gloves** (e.g., rubber or nitrile)

- **Protective aprons, goggles, and face shields** where splash risk exists
- **Material Safety Data Sheets (MSDS)** must be made available at the point of use in multiple languages and explained during task-specific training.

f. Heat Stress Prevention (Hot Weather Work)

- During construction in hot seasons, a **heat stress management plan** must be implemented including:
 - Awareness campaigns and **daily pre-shift toolbox talks**
 - Provision of **cool drinking water**, shaded rest areas, and **scheduled breaks**
 - **Heatstroke prevention kits** and availability of **first-aid treatment**
 - **Monitoring of high-risk workers**, such as those wearing impermeable PPE

g. Hazardous Materials Prohibition (Asbestos and Others)

- The use of **Asbestos and Asbestos-Containing Materials (ACM)** is **strictly prohibited** at all project sites. This prohibition must be clearly stated in the **Hazardous Materials Management Procedure**.
- Any suspect materials shall be tested and verified before disturbance.
- The use of **Refractory Ceramic Fibers (RCFs)** is only permitted with **prior written approval** and shall follow strict handling protocols, including PPE and containment measures.

Roles and Responsibilities:

- **HSE Manager:** Oversight of implementation, monitoring, and training
- **Supervisors:** Day-to-day enforcement, equipment checks, and worker briefings
- **Contractor/Subcontractor Interface Manager:** Ensuring subcontractor compliance with all occupational health risk control measures
- **Training Coordinator:** Ensuring language-adapted instruction and signage, verifying understanding across multilingual teams

18.3 Occupational Health Monitoring

To ensure the protection of workers' health and compliance with applicable national laws and international standards (including ILO guidelines, IFC PS2, and ISO 45001:2018), the Contractor and all subcontractors must implement a formal Occupational Health Surveillance Program under the oversight of Indorama's HSE and HR teams.

a. Periodic Medical Surveillance

Based on national and industrial guidelines, the Contractor and Subcontractors shall conduct:

- Annual health checks for general workforce
- Semi-annual (every 6 months) for workers in high-risk jobs (e.g., exposure to carcinogens, heavy metals, high noise)
- More frequent examinations if triggered by risk assessment, incident investigation, or exposure exceedance

Parameters monitored include: blood profiles, liver/kidney function, lung function, hearing tests, and biological monitoring as required.

Any change in job assignment must be preceded by a job-specific health re-assessment.

b. Exit/Separation Medical Examinations

All workers engaged in hazardous operations must undergo an exit medical examination upon:

- Contract termination
- Resignation
- Redeployment to non-hazardous work

This examination aims to verify whether the worker has developed any occupational illness, and shall be used to:

- Establish eligibility for compensation
- Support early intervention or treatment referrals
- Fulfil legal obligations for exposure documentation

c. Occupational Illnesses and Accommodations

If a worker is diagnosed with an occupational illness, the following steps shall be taken:

- Immediate referral to a licensed occupational health specialist or hospital
- Notification to Indorama's EHS and HR departments for documentation and further support
- Development of a Return-to-Work Plan or modified duty program, based on medical advice
- Where applicable, provision of temporary or permanent job reassignment

d. Confidentiality and Records Management

All health records shall be:

- Managed by a designated Occupational Health Coordinator
- Stored securely, accessible only to authorized medical and HR personnel
- Retained in accordance with national laws (typically for a minimum of 30 years for hazardous exposure cases)
- Workers have the right to access their health files upon request.

e. Non-Compliance Management

Any failure by contractors or subcontractors to conduct required health checks shall be treated as a non-conformance under Indorama's Contractor Management System.

- First violation: written warning and corrective action request
- Repeated violation: suspension of work and potential contract termination

Indorama reserves the right to audit subcontractor health systems and to request corrective plans where deficiencies are identified.

f. Subcontractor Oversight

All subcontractors are mandatorily subject to Indorama's occupational health screening, monitoring, and compliance requirements.

- Contractors must ensure their subcontractors:
- Appoint a competent health officer
- Submit pre-employment and periodic medical data for review (while protecting confidentiality)
- Allow Indorama site medical staff or third-party auditors to verify compliance



Occupational health exam

19 Working Conditions & Management of Worker Relationships

19.1 HR Policies & Procedures

Contractor strictly adheres to IMF HR policy section & Egypt employment-related legislation and works with local third-party human resource companies in Egypt to employ all types of employees;

Contractor does not discriminate against any person on any of the grounds listed in the Employment Equity Act, 1998;

Contractor makes every effort to provide appropriate training and development opportunities for Egypt employees from the local community and beyond;

Contractor integrates all employees into the company's management system and makes it a priority to safeguard their occupational health and safety and to provide the necessary benefits in compliance with local regulations;

Contractor conducts regular audits of third-party companies to ensure that all employees are paid in a timely manner;

Contractor informs all employees of the performance standards they expect and the policies, procedures, rules and regulations that govern their work;

Contractor stipulates the probationary period, duties and working hours of employees within the framework of meeting Egypt legal requirements, and does not arrange overtime for non-special construction tasks, and overtime arrangements are made with full respect for the wishes of the employees.

19.2 Workers organizations

Contractor respects the right of on-site employees to form or join worker organizations.

19.3 Retrenchment

When the worker's probationary period does not meet established requirements; When the worker violates the Anti-Zero Tolerance Policy and Life-saving Rules; When the worker violates the HSSE management rules several times in a row;

When the worker is grossly negligent/reckless, resulting in downtime, damage or injury; When contractor's project construction tasks finish.

19.4 Grievance Mechanism

Each employee is permitted to file a grievance if the employee feels aggrieved;

- Regardless of employment status, shall have the right to raise grievances if they experience unfair or inappropriate treatment. Complaints may be submitted **either verbally or in writing**, in the worker's language of choice, through available channels including:
 - Directly to the immediate supervisor or manager (unless the grievance is about them),
 - Through a designated grievance officer,
 - Via a confidential grievance box, or
 - By email, phone, or a dedicated hotline if available.

- If the grievance is against a supervisor or manager, or if the worker is uncomfortable reporting through the direct line of management, the complaint may be submitted directly to the Contractor's Human Resources Manager or a designated neutral contact point.
- Upon receipt of a grievance, the Human Resources Manager (or appointed representative) will acknowledge the complaint, conduct an impartial investigation, and consider all relevant information, while ensuring confidentiality and respect for all parties involved.
- The Contractor will strive to resolve all grievances within **7 working days** and communicate the resolution outcome clearly to the complainant. If additional time is required, the complainant will be informed of the expected timeline.
- Retaliation, victimization, or discrimination against any worker for raising a grievance in good faith is strictly prohibited and will result in disciplinary action.
- A summary of grievances received, resolved, and pending will be maintained for monitoring and reporting purposes. Statistics and trends will be reviewed periodically to identify recurring issues and improve working conditions.

The grievance mechanism will be explained to all workers during induction training and orientation, and clearly displayed in a **prominent location** at the site and the workers' accommodation, in languages understood by the workforce.

Grievances must be submitted in writing immediately to the employee's manager. If the complaint is against a manager, the employee must raise the complaint with the Human Resources Manager;

The Human Resources Manager will investigate the complaint and consider all relevant information relating to the complaint.

The Human Resources Manager will endeavor to resolve the complaint within seven (7) days. Contractor will not retaliate or discriminate against an employee who has filed a complaint. This grievance procedure is not a substitute for any other remedies available to the employee at law.

Contractor will inform of the grievance mechanism during orientation and will have a sign informing of the grievance mechanism prominently displayed on-site and at the campground.

19.5 Construction Living Camp Management

In order to facilitate unified management, contractor will build a staff living camp, which will be equipped with security personnel and leisure sports facilities such as basketball courts, billiard tables and table tennis tables;

Contractor will build a staff dormitory with the standard of 4-8 persons/room and shall contain at least 4-5.5 square meters floor space for each occupant., each person has an independent storage room, and is divided into boys' dormitory and girls' dormitory;

- Girls' dormitory

Female areas should be located in **well-lit zones** with clear access paths and **security cameras** installed outside (not inside) the dormitory perimeter.

Privacy measures such as individual cubicles in toilets and showers, and **gender-appropriate partitions**, are mandatory. Signage for female-only zones must be clear and respectful in local and common languages.

Sanitary pads and menstrual hygiene materials must be freely and discreetly available in female bathrooms or via designated female staff.

- Disposal bins for sanitary products must be:
- Covered, foot-operated, and regularly emptied
- Located inside toilet cubicles
- Female workers must be made aware of access during induction and awareness sessions.

The staff dormitory to provide independent beds, dormitory area to provide sufficient drinking water (cold, hot water) in line with Egypt standards; provide sufficient living garbage cans, for the dormitory area of the public space and garbage cans, contractor will arrange for someone to clean up daily, clean;

In accordance with local environmental protection and chemical use requirements, contractor will regularly carry out pest control, vector control and disinfection in the entire living facilities. Dormitories will be provided with fans, mosquito screens, mosquito nets, chairs, adequate lighting and necessary bedding such as mattresses; Clinic will be set up in the camp;

Contractor's camp set up male and female separated bathing room and toilet, male toilet urinal and toilet seat with reference to 15 people/set, bathing room with reference to 15 people/set, hand-washing sink with reference to 15 people/set; female toilets, bathing rooms and hand-washing sinks are consistent with the standard for male. Public laundry is provided in the dormitory area, and the laundry room distinguishes between the laundry area for non-working clothes and the laundry area for working clothes, and there is a drying area.

The course is designed for students who want to learn how to make a living by using the latest technology in the field of smoking.

The dormitory is equipped with smoke detectors, the camp is equipped with sufficient fire extinguishers, and an emergency assembly point is set up in a prominent position in the camp, and a megaphone is equipped;

The camp provides cafeteria, and the cafeteria is set up with spacious and bright dining area to fully guarantee the safety of employees' dining;

The camp canteen set up oil collection tank, regular cleaning of grease; set up a living sewage treatment device, living sewage after treatment to meet the discharge standards or according to the needs of the site, re-use;

Kitchen garbage and domestic garbage cooperates with legal third-party waste treatment companies and entrust them to handle them in a compliant manner;

Contractor will develop a food safety management regulation, and regularly inspect the cafeteria and camp hygiene and inform them in the monthly safety committee.

• **Camp-Specific Grievance Mechanism**

To ensure the health, safety, dignity, and well-being of all workers residing in the camp, the Contractor shall establish a **dedicated grievance mechanism** to address issues specifically related to **camp life and accommodation conditions**. Workers may lodge complaints verbally or in writing, in a language they understand, and without fear of retaliation.

Grievances can be submitted through Grievance drop boxes, In-person reporting, Digital reporting app

A confidential process shall be ensured, especially for sensitive issues.

Female workers shall have access to female grievance officers or designated female points of contact

All grievances shall be Logged in a Grievance Register Acknowledged within 48 hours, Investigated and resolved within 7 working days, or an update provided if more time is needed
Camp-related grievances shall Tracked in a separate Camp Grievance Logbook, reviewed monthly by the Welfare or Camp Management Committee, reports shared with all

19.6 Protecting the workforce

1.1.8 Prevention of child and forced labor

Contractor is committed to not employing children under the legal age of Egypt and adults over the age of 60. Before all employees enter the site, contractor will screen the age of the workers entering the site IMF HR policy section 3

Contractor does not engage in forced labor practices; the site because of special circumstances require overtime work, will be negotiated with the staff and respect the wishes of the staff;

Contractor ensures that all subcontractors providing services to do not use child labor and forced labor in their on-site services.

1.1.9 Identification and Monitoring

In order to avoid child labor and forced labor as guided by IMF HR policy section 3, contractor's HR specialist will review the information of the employees dispatched by the labor companies to ensure that they meet the basic requirements of the project jobs before they are allowed to work on site.

Contractor's HR specialists or HR managers will interview the workers on site from time to time and ask them whether they have been subjected to forced labor and other unequal treatment, and post the contact information of the complaint in a prominent place on site, so as to make it easy for the workers who have been subjected to forced labor or other unequal treatment to make a complaint;

The contractor HR department will investigate the complaints received carefully and give feedback to the complainants within a limited time.

19.7 Workers engaged by third parties

1.1.10 Contractors ESMS

Contractor will agree with all subcontractors to unconditionally comply with Egypt and contractor's HSSE and HR management system and strictly follow the IMF HR policy section 3

Contractor will brief all subcontractor personnel, especially management personnel, on Egypt and contractor's HSSE and HR regulations, and require subcontractors to implement Egypt and contractor's HSSE and HR management requirements;

Contractor will regularly evaluate the performance of subcontractors in terms of HSSE and HR management according to the management system.

19.8 Access to grievance mechanism

The Contractor shall ensure that all workers employed by third parties (e.g., subcontractors, service providers) who work on the site are included in the Contractor's worker management system and are equally entitled to access the grievance mechanism

and strictly follow the IMF HR policy section 3

- All workers, regardless of employment status, shall have the right to raise grievances if they experience unfair or inappropriate treatment. Complaints may be submitted **either verbally or in writing**, in the worker's language of choice, through available channels including:
 - Directly to the immediate supervisor or manager (unless the grievance is about them),
 - Through a designated grievance officer,
 - Via a confidential grievance box, or
 - By email, phone, or a dedicated hotline if available.
- If the grievance is against a supervisor or manager, or if the worker is uncomfortable reporting through the direct line of management, the complaint may be submitted directly to the Contractor's Human Resources Manager or a designated neutral contact point.
- Upon receipt of a grievance, the Human Resources Manager (or appointed representative) will acknowledge the complaint, conduct an impartial investigation, and consider all relevant information, while ensuring confidentiality and respect for all parties involved.
- The Contractor will strive to resolve all grievances within **7 working days** and communicate the resolution outcome clearly to the complainant. If additional time is required, the complainant will be informed of the expected timeline.
- Retaliation, victimization, or discrimination against any worker for raising a grievance in good faith is strictly prohibited and will result in disciplinary action.
- A summary of grievances received, resolved, and pending will be maintained for monitoring and reporting purposes. Statistics and trends will be reviewed periodically to identify recurring issues and improve working conditions.

The grievance mechanism will be explained to all workers during induction training and orientation, and clearly displayed in a **prominent location** at the site and the workers' accommodation, in languages understood by the workforce.

20 Community Health & Safety

20.1 Disease prevention

To address the significant health threats posed by infectious diseases during construction—particularly due to labour mobility, poor hygiene, and inadequate sanitation—the contractor shall implement a comprehensive Community Health and Safety (CHS) Plan. This plan will be based on risk assessment, international best practices (e.g. IFC PS4, ILO, ISO 45001), and close collaboration with local health authorities.

a. Risk-Based CHS Planning

A Community Health and Safety (CHS) Plan shall be developed and periodically updated based on:

- Health risk assessments
- Site-specific environmental conditions (e.g. stagnant water, camp density)
- Labor demographics and mobility
- Local disease epidemiology (e.g. malaria, dengue, STDs)

The CHS Plan will include a vector control strategy, a disease surveillance protocol, and response mechanisms for outbreaks.

b. Medical Screening and Access to Care

- All workers must be medically screened prior to site mobilization, ensuring they are fit for duty and free from communicable diseases.
- Onsite health posts/clinics and affiliated medical providers must:
- Treat infectious diseases confidentially
- Provide early diagnosis and referral
- Maintain anonymized health records in compliance with privacy laws
- Special care and outreach will be prioritized for mobile or migrant workers.

c. Worker Health Education and Behaviour Change

- Infectious disease prevention shall be addressed during:
- Worker induction training
- Special training sessions focused on sexually transmitted infections (STIs), malaria, and hygiene practices
- Regular health education campaigns and face-to-face consultations will be conducted to:
- Promote use of condoms
- Encourage early treatment-seeking behaviour
- Raise awareness about personal hygiene, sanitation, and vector control
- Educational materials (flyers, posters, audio-visual aids) will be developed in languages understood by all workers.

d. Sanitation and Vector Control Measures

- The contractor shall maintain strict environmental hygiene across site and accommodation camps, including:
- Daily cleaning and disinfection of toilets, kitchens, canteens
- Elimination of stagnant water and improvement of drainage channels
- Use of insecticides (stored and handled per safety guidelines) on dormitory walls and communal areas
- Workers will be supplied with:
- Mosquito nets, repellents, and protective clothing
- Preventive medicine (e.g., antimalarials for non-immune personnel)
- A comprehensive vector control program shall be implemented and audited monthly.

e. Monitoring, KPIs, and Reporting System

A health monitoring and surveillance system shall be established with the following Key Performance Indicators (KPIs):

- Number of reported infectious disease cases (monthly)
- Number of health education/training sessions conducted
- Percentage of workers screened at entry and exit
- Vector control inspection frequency and non-conformities
- Weekly and monthly reports will be submitted to the Project HSE Manager and shared with relevant health authorities.

f. Community Engagement and Awareness

- A Community Health Awareness Strategy shall be developed to:

- Inform local residents about potential risks associated with labour influx
- Promote collaborative disease control efforts between the contractor and the host community
- Share public health resources such as treatment referrals, health alerts, and outreach events
- Outreach materials shall be developed in local languages and distributed in cooperation with community leaders, health centres, and NGOs.

g. Collaboration with Local Health Sector

The contractor shall:

- Coordinate with local and regional health authorities for reporting, referrals, joint inspections, and emergency response
- Support capacity-building initiatives by sharing health data and resources
- Facilitate integration with local health surveillance systems for epidemic monitoring
- Joint activities with Ministry of Health, WHO field units, or Red Crescent/Mobile Clinics will be organized as needed.

20.2 Site Access Prevention

To minimize the risk of unauthorized personnel entering the project site—potentially leading to personal injury, security breaches, or property damage—the contractor will implement a multi-layered site access control system integrated with community safety measures. The system shall include the following components:

a. Secure Access Points

Separate gates will be designated for:

- Authorized personnel
- Light passenger vehicles
- Heavy goods or material supply vehicles

Each gate will be equipped with:

- Access permit verification systems
- ID card scanners and biometric (face recognition) systems
- Vehicle and personnel inspection points

b. Temporary Visitors and Supplier Protocol

All temporary visitors, including suppliers and contractors, must:

- Pre-register or register on arrival at the security gate
- Submit valid identification for verification and entry logging
- Receive a temporary visitor ID that must be worn visibly
- Be escorted at all times by authorized project personnel
- Vehicles entering the site for deliveries will undergo:

c. Physical Barriers and Demarcation

The project site will be completely fenced with durable materials and:

- Clearly marked perimeter signage in local languages
- Installation of “No Unauthorized Entry” and hazard warning signs
- Use of buffer zones, barriers, and safety lighting around access points

d. Trespassing and Community Interface Risk Mitigation

The contractor will recognize and address trespassing risks, especially:

- In areas bordering residential zones or community paths
- During off-hours or public holidays
- Community awareness sessions will be conducted on:
 - The dangers of unauthorized site entry
 - Specific hazards present on-site (e.g. heavy machinery, excavation pits)
- Community members will be provided with information through:
 - Posters, leaflets, or audio messages in relevant languages
 - Engagement via local leaders or community liaison officers

e. Incident Management and Escalation

Any unauthorized access or breach will be:

- Logged in the site incident register
- Investigated by the site security team
- Reviewed as part of regular HSE inspections
- Results of access incidents will feed into corrective measures (e.g. improving fencing, adjusting signage locations, or updating patrol routines)

f. Integration with Traffic and Pedestrian Safety Controls

All access control measures will align with the Traffic and Pedestrian Control Plan, including:

- Pedestrian-only zones
- Vehicle speed limits
- Designated crossing points

20.3 Traffic Safety

Contractor recognizes that traffic safety is critical to protecting workers, road users, and the surrounding community. This includes both on-site traffic and off-site movement of workers, materials, and equipment. As such, the following measures will be implemented to uphold high standards of traffic safety and comply with Egypt traffic laws and regulations, including applicable provisions under the National Road Traffic Act, Occupational Health and Safety Act, and other municipal requirements.

a. Baseline Traffic Impact Assessment

Prior to the start of construction activities, IMF will conduct a baseline traffic assessment in collaboration with relevant stakeholders to:

- Assess the volume, type, and frequency of project-related traffic
- Identify high-risk routes, intersections, and pedestrian zones
- Understand local road conditions, accident history, and community traffic patterns
- Inform mitigation planning and determine areas where increased traffic flow may impact communities

The findings will guide the development of route selection, transport scheduling, and community engagement strategies.

b. Driver Management and Vehicle Safety

All drivers operating project vehicles must:

- Possess valid licenses and demonstrate driving competency
- Undergo periodic fitness-to-drive assessments
- Be included in a driver database maintained by the site HSE or transport coordinator
- Driving hours will be limited and shift rotations established to avoid driver fatigue.
- All project and contractor vehicles will:
 - Undergo regular safety inspections, including tires, brakes, lights, and mirrors
 - Be fitted with seat belts, reverse alarms, and fire extinguishers
 - Be clearly labeled with the company logo and vehicle ID

Use of locally procured materials will be prioritized to reduce transportation distances and road pressure.

c. On-Site Traffic and Pedestrian Control

The site layout will include:

- Segregated vehicle and pedestrian routes
- Clearly marked zebra crossings, speed limits, and warning signs
- Designated parking areas with front-out parking and reversing barriers
- Signalmen or traffic marshals will be deployed at high-risk crossing points during peak traffic hours.

d. Off-Site Community Traffic Risk Management

Where transport activities intersect with public roads or communities:

- Road safety signage will be installed at key access points and intersections
- Community outreach campaigns (e.g., in schools, clinics) will promote awareness of:
 - Project-related traffic
 - Pedestrian safety
 - Reporting procedures for traffic-related complaints or incidents

Contractor will collaborate with local traffic authorities to address high-risk situations, particularly during the peak movement of construction materials.

e. Emergency and Incident Management

Emergency contact signs will be installed at community access points and intersections.

In case of traffic accidents:

- First responders from the project site will initiate on-site emergency response

- Accidents will be recorded in the incident register, with root cause analysis and corrective actions
- Traffic safety emergency drills will be conducted at least twice annually.

f. Supplier and Subcontractor Compliance

All logistics providers and transport subcontractors must:

- Adhere to Egyptian traffic regulations
- Comply with Owner's and Project traffic safety policies
- Participate in pre-mobilization training on traffic safety
- Submit vehicle inspection logs and driver rosters periodically

g. Monitoring, Reporting, and Review

A Traffic Safety Officer or Transport Coordinator will:

- Maintain up-to-date records of vehicle inspections, incidents, and route planning
- Monitor driver compliance using spot checks or dashcam/GPS data (if available)
- Review and update this plan at least quarterly based on:
 - Near-miss/incident reports
 - Community feedback
 - Changes in construction traffic volume

Key Performance Indicators (KPIs) include:

- Number of road safety trainings held
- Number of traffic-related incidents and near misses
- Compliance rate with vehicle inspection schedules
- % of local materials sourced to reduce road transport

21 Security Management

The contractor will implement closed management in the construction area of the project to control the access of personnel, machines, tools, materials and vehicles. Access control management system shall be set at the entrance and exit. The management will hire an established third-party security Owner to provide security management services as per guidelines of Security management plan and policy document of IMF, such as site access management, security patrol, traffic management, project information protection, etc.



On-site access control

21.1 Security risks

In order to better control personnel and vehicle and equipment at entrances and exits, safeguard assets in the office and living areas, and better deal with unexpected conflicts among employees, contractor will work with a legally established security company in Egypt to hire security personnel with no criminal record, good conduct and a strong sense of responsibility to serve on site. However, hiring such security personnel will also bring certain risks to the project, mainly including:

Theft of project assets and confidential documents by security personnel using their position; Security personnel collude with external criminal forces to steal project assets and confidential documents;

Security personnel lack emergency response and communication skills, and under certain circumstances have violent conflicts with project personnel or community members;

The security personnel use their position to misbehave with foreigners of the project;

Lack of responsibility on the part of security personnel, who do not perform their duties conscientiously during their work, resulting in unforeseen risks arising from unrelated persons and vehicles entering the project site without careful inspection;

21.2 Security personnel management

Contractor will sign an agreement with the third party security company that the security personnel serving on site should have no criminal record, be of good character, responsible, obedient, and free from violence, and that the security company will be liable for the loss of project assets or confidential documents as a result of the security personnel's negligence; Contractor will actively communicate with the Owner, local judicial authorities and the third party security company, so that when the project encounters social unrest or violent conflicts, it can do its best to support and protect contractor at the first time;

Contractor HSSE department will regularly check the working condition of the security personnel and give regular feedback to the security company. When the security personnel are found to have non-performance of their duties, irregularities to the employees, drug abuse, etc., they will be dismissed immediately;

Contractor will employ a certain number of people from the neighboring communities who meet the basic requirements of security personnel into the security team, so as to be able to quickly grasp the security situation in the community and communicate amicably with the community on the situation related to the security management of the project;

Contractor will employ a certain number of female security personnel, taking into account the number of employees, the ratio of men to women and the characteristics of the work. In order to protect the personal safety of female security personnel, female security personnel will not be assigned to night duty;

Contractor will train and assess the project security personnel on the basic HSSE management regulations, basic code of conduct for security personnel, respect for human rights, prevention of violence, positive communication, emergency response and other procedures and requirements.

21.3 Grievance mechanism for affected communities

In order to protect the personal safety and human rights of the project staff and the surrounding community, when staff and community members are obstructed, verbally attacked or even violently attacked by security personnel due to their normal work or reasonable visiting behavior, the project will set up a telephone number for reporting misconduct by security personnel at each entrance, and will conduct a serious investigation upon receipt of the report, and will give feedback to the reporter after the investigation

21.4 Assess and document risks

Taking into account the political, economic and social developments in the region in which the project is currently located, contractor's current security risks include, in addition to the "Risks posed by security arrangements within and outside the project", a risk to the personal safety of foreign nationals working on the project and during their travels in Egypt. To address this risk, contractor will work with security companies to hire legal armed security guards to escort foreigners to and from the airport to ensure their personal safety. Regarding the 5 "Risks posed by security arrangements within and outside the project", contractor will actively communicate with the heads of security companies and community representatives to discuss specific control measures for these 5 risks;

Contractor will record possible security risks, reported incidents, and recordable security incidents during the construction process, and organize an investigation team to investigate the risks and possible consequences of the incidents.

21.5 Avoidance of personnel abuse

Contractor will communicate carefully with security companies and community representatives regarding the performance of security personnel, and will clarify the code of conduct for security personnel during normal working hours, the use of force in cases of self-protection and the protection of company assets, and add contact information for complaints and reports

of misconduct by security personnel, etc., in order to regulate and avoid the abuse of authority by security personnel.

21.6 Stakeholder Management

Stakeholders are any group or individuals who have an interest in or are impacted by the project including local government, media, contractor project management team, neighbor plant, supplier, project employees, local community and local resident etc.

Contractor will take relevant measures to mitigate the impact to the Stakeholders during the project execution.

Project public information pack accessible to the local communities.

Regular mailing of contractor information and other project/operation briefing materials. Regular updates to stakeholders of the project progress set up local stakeholder and community relations team.

Consult the stakeholders on the identified mitigation and enhancement measures via public meeting or survey.

Establish Community Advisory Panel (CAP) as a platform for information exchange with affected local communities.

Establish a dedicated grievance mechanism for stakeholders.

22 HSE Inspection and Supervision Procedures

The contractor establishes this procedure to demonstrate strong leadership commitment to health, safety, and environmental (HSE) performance at all levels of project execution. The objective is to identify and mitigate risks proactively, ensure safe work practices, and maintain full compliance with project HSE requirements.

To ensure inspections are consistent, transparent, and effective, the contractor will use standardized inspection tools and checklists developed in alignment with:

- ISO 45001:2018 – Occupational Health and Safety Management Systems
- ILO Guidelines on Occupational Safety and Health
- OSHA Standards, where applicable
- Applicable local laws and regulations

All inspections will be supported by detailed documentation and performance tracking tools embedded in the project's ESMS (Environmental and Social Management System).

22.1 HSE Inspection System

The contractor shall implement a tiered HSE inspection program, including:

- Daily HSE inspections & BBSO (Behavior-Based Safety Observation)
- Weekly joint inspections
- Monthly joint inspections

Special and ad-hoc inspections (e.g., pre-holiday, post-incident, audit-based)

Each inspection will use a structured checklist with scoring and corrective action categories based on international best practices.

22.2 Daily Patrol Inspections

The Contractor's HSE Manager and HSE Engineers shall conduct daily inspections and BBSO. Key actions include:

- Completing standardized daily inspection forms
- Recording findings in a centralized tracking system
- Assigning corrective actions with due dates and responsible parties
- Verifying and documenting closure of actions

22.3 Weekly Joint Inspections

Weekly inspections shall be led by the contractor's HSE Manager and attended by representatives from the contractor and subcontractor teams. The scope shall include:

- Emergency equipment readiness
- PPE compliance
- Electrical safety (distribution panels, cables, earth leakage protection)
- Use and storage of hazardous chemicals
- Housekeeping and hygiene
- Tool and equipment safety
- Visual status of inspection tags or color-coded systems
- Identification of unsafe acts/conditions and near misses

In addition, the inspection will verify:

- Compliance with approved method statements (Construction Schemes)
- Adherence to Job Safety Analysis (JSA)
- Compliance with Permit-to-Work (PTW) conditions

Documentation: The contractor HSE Manager shall compile an inspection report with:

- Observations and photographic evidence
- Root cause analysis (if required)
- Recommended corrective actions
- Assigned responsibilities and timelines

The report will be distributed to all relevant stakeholders, and unresolved issues shall be escalated to the construction manager.

22.4 Monthly Joint Inspections

Monthly inspections shall involve senior leadership from both contractor and subcontractor teams. Key focus areas include:

- HSE leadership and visibility
- Compliance with project HSE policies and procedures
- Comparative performance across different zones

- Review of recurring issues and systemic trends

Reporting: A comprehensive inspection report shall be submitted to the Contractor's Project Manager for review and approval, including:

- Strategic HSE recommendations
- Summary of trends from past inspections
- Performance benchmarking across subcontractors

22.5 Other Inspections

These may include:

- Pre/post-holiday shift inspections
- Targeted inspections in response to high-risk observations
- Inspections and audits conducted by the Owner, PMC, or third-party specialists
- Unannounced spot checks

All such inspections shall follow the same standardized protocol and reporting framework.

22.6 HSE Rectification Protocol

The contractor and subcontractors shall take ownership of corrective actions identified during inspections.

Rectification follows these principles:

- All non-conformances must be rectified by the relevant subcontractor.
- Time-bound issues shall be managed through an official "Notice for Rectification of Hazard" and tracked until closure.
- Violations of the Zero Tolerance Policy (e.g., life-critical rules) will result in immediate removal of the offender from the site and revocation of access credentials.

In cases of imminent danger, work will be stopped immediately until control measures are implemented.

Repeated or high-risk HSE violations may trigger work suspension for subcontractors until performance improves, and a formal review by the project's HSE and construction managers.

All corrective actions will be entered into a centralized Corrective and Preventive Action (CAPA) system for tracking and trend analysis.

22.7 Subcontractor HSE Performance Evaluation

Monthly HSE evaluations will be conducted to assess subcontractor compliance and safety culture. Evaluation criteria will include:

- Compliance scores from daily/weekly/monthly inspections
- Number and severity of non-conformances
- Incident/accident statistics (TRIR, LTIFR, near misses)
- Training participation and effectiveness
- Worker engagement in BBSO and toolbox talks

- Responsiveness to corrective actions
- Control and implementation of JSAs and PTWs

A quantitative scoring system will be applied to each parameter using a standardized evaluation form based on ISO 45001 performance metrics. The results will feed into subcontractor performance reviews and may affect future work allocation.

23 HSE Audit

23.1 HSE performance audit

The construction shall establish HSE performance review procedures, observe, test and evaluate HSE management performance to ensure good HSE performance and continuous improvement. HSE performance review shall be conducted once a month. HSE performance review focuses on safety behavior observation, special audit of high-risk operations, leading and lagging indicators analysis, accident investigation and root cause analysis, etc.

23.2 HSE system audit

The Technical Quality Department of the Contractor formulates an internal HSE system audit plan, organizes the implementation of the HSE system internal audit for the whole process of the project planning, design, procurement, construction and commissioning, to ensure that all links in the project implementation process are effectively controlled to ensure the design, procurement, construction, commissioning and engineering quality. During the implementation of the project, an internal audit of the HSE system of this project will be organized at least once a year.

The HSE manager of the project is responsible for inspecting the operation of HSE system of the project according to relevant requirements, and preparing the inspection report, which shall be submitted to the project manager and the project management department of the contractor.

The project manager will timely organize relevant personnel of the project management department to rectify the problems found in the audit and inspection, so as to ensure the effective operation of the project HSE.

In addition to the above normal HSE audit, the third-party audit of the HSE system of the project shall be arranged at least once during the supervision/re-evaluation and certification audit process of the contractor's HSE system by Shanghai quality system audit center so as to ensure the effective implementation of the project HSE system.

According to the arrangement of the owner, the contractor will actively cooperate with the owner to organize the special HSE audit on the implementation of the HSE system of the project and the third-party audit of the HSE system of the owner.

24 Records and Reports

The contractor will regularly submit various HSE reports on site to the owner. The content, format and frequency of HSE report will be jointly negotiated, communicated and confirmed according to the requirements of the contractor and the owner.

The contractor's HSE management activities in various forms on the project site will form written records and reports, and be saved and circulated to ensure the full sharing of project HSE information. Including but not limited to the following:

- 1) Project HSE plan;
- 2) Project HSE management manual and project emergency management manual;
- 3) Special construction safety scheme;
- 4) HSE Incident investigation report;
- 5) HSE inspection report;
- 6) Work permit and job safety analysis (JSA);
- 7) HSE training and education records;
- 8) Qualification certificate;
- 9) Mobilization, regular inspection and acceptance records of machines and equipment;
- 10) Material safety data sheet (MSDS);
- 11) Violation / hidden danger record

HSE REPORT TEMPLATE

Contents

- 1. Workforce & Manhours 91
- 2. Safety Statistics 91
- 3. Site Safety Inspections 91
- 4. HSE Training Conducted 91
- 5. Toolbox Talks Summary 92
- 6. Risk Management 92
- 7. Key Observations / Issues 92
- 8. Photographs of Non-Compliance / Best Practices 92
- 9. Corrective Actions Summary 92
- 10. Signatures 92

HSE REPORT TEMPLATE

Project Name:
Reporting Period:
Reported By:
Report Submitted To:
Submission Date:

1. Workforce & Manhours

Item	This Period	Cumulative
Total workers on site		
Total manhours worked		
Subcontractor manhours		

2. Safety Statistics

Metric	This Period	Cumulative
Lost Time Injuries (LTI)		
Near Misses		
First Aid Cases		
Medical Treatment Cases		
Fatalities		
Environmental incidents		
Fire incidents		
Unsafe acts/conditions reported		

3. Site Safety Inspections

Item	Count	Remarks
HSE inspections done		
Corrective actions raised		
Corrective actions closed		

4. HSE Training Conducted

Date	Topic	No. of Participants	Trainer Name

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

5. Toolbox Talks Summary

Date	Topic	No. of Attendees	Area Covered

6. Risk Management

- New high-risk activities this period:
- New Job Safety Analysis (JSA) conducted:
- Permits to Work (PTW) issued:

7. Key Observations / Issues

- Summary of unsafe conditions observed
- HSE alerts issued
- Worker behavior concerns (e.g., PPE compliance, fatigue)

8. Photographs of Non-Compliance / Best Practices

(Attach or reference image files here)

9. Corrective Actions Summary

ID	Description	Raised On	Target Date	Responsible	Status

10. Signatures

Prepared by: _____

Reviewed by: _____

Approved by: _____

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 92 of 92



APPENDIX C HAZARDOUS MATERIALS MANAGEMENT

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Hazardous Material Management During the Construction

	Prepared by	Approved by
Name	Manish Mishra/Pradeep Datar	Mr. V Rajendran
Department	Technical	Head Engg & Projects

Rev: 00	INDORAMA MISR FERTILIZER	Page: 1 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Contents

Objective	3
Project Overview	3
IFC General EHS Guidelines.....	3
Definition of the Hazardous Material	3
Key Hazardous Materials covered under the Hazardous Material During Construction.....	4
Fuels & Combustibles	4
Chemicals & Solvents	6
Compressed Gases	6
Construction related Material	7
Specialized Material	7
Spill Control.....	8
Waste Management.....	8
Training.....	8
Monitoring & Control	9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Objective

It is for defining mitigation measures for the safe handling, storage, and disposal of hazardous materials during construction of the phosphatic fertilizer complex, ensuring Indorama Misr Fertilizer (IMF) compliance with EBRD/IFC guidelines, and Egyptian regulations.

Project Overview

Plant:

- Sulphuric Acid Plant – 3,100 MTPD
- Phosphoric Acid Plant -1,000 MTPD
- DAP/NPK Plant -1,935 MTPD
- Utilities & Offsites
- Ammonia Storage-10,000 MT and 13 km Ammonia Pipeline.
- PAP and Ammonia Pipeline

EPC Contractor: ECEC China (SAP, DAP, O&U and Ammonia Storage)

PAP and Ammonia Pipeline : Being Fih

IFC General EHS Guidelines

The World Bank Group (WBG) Environmental, Health and Safety (EHS) Guidelines (1991 and updated in 2012) are a set of generic 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 PSSs.

All practices shall align with EPC contractor's Environmental and Social Management System and relevant performance standards:

- IFC PS 3 & 4 (Resource Efficiency and Community Health & Safety)
- Egyptian Law No. 4/1994
- ISO 14001 & ISO 45001 Standards

Definition of the Hazardous Material

According to the IFC Environmental, Health and Safety (EHS) Guidelines and Performance Standard 3 (PS3) on Resource Efficiency and Pollution Prevention, hazardous materials include any substances that pose a risk to health, safety, or the environment due to their chemical, physical, or biological properties.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 3 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Key Hazardous Materials covered under the Hazardous Material During Construction Fuels & Combustibles

Material	Hazard	Use Area
Diesel Fuel, Gasoline	Fire, explosion, inhalation	Construction equipment, generators
LPG Gas cylinders	Fire/explosion, asphyxiation	Hot work operation

Mitigation Plan

Diesel Fuel, Gasoil and LPG cylinders will be stored as per following IFC EHS guidelines and NFPA standards along with Egyptian safety law in fire-rated, ventilated areas.

"Storage of diesel, gasoil, and LPG shall comply with the IFC General EHS Guidelines (2007), Section 1.5 Hazardous Materials Management, and referenced international standards such as NFPA 30 and NFPA 58."

There will be provision for separation from ignition sources and intrinsically safe tools in classified areas will be enforced to use. Fire extinguishers of appropriate type must be placed within accessible range. Controlled storage will be ensured for the material and will be issued for use to trained supervisors/technicians/workers.

The control storage will be having the following systems in place

Dedicated & Secure Location:

Clearly marked and restricted access to authorized personnel only.

Adequate fencing, signage, and controlled entry (e.g., lock and key, security personnel).

Secondary Containment:

Use bunds/dikes or trays that can contain 110% of the largest container volume or 25% of total stored volume.

Impermeable floors and materials resistant to stored substances.

Ventilation & Temperature Control:

Proper ventilation systems to avoid buildup of fumes or vapors.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 4 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

Temperature and humidity controls if needed for chemical stability.

Fire and Explosion Prevention

No ignition sources near flammable materials.

Fire extinguishers and fire suppression systems (sprinklers, alarms) installed.

Materials segregated based on reactivity, flammability, corrosiveness, etc.

Chemical Compatibility and Segregation

Store incompatible chemicals separately (e.g., oxidizers away from organics, acids away from bases).

Use material safety data sheets (SDS) to guide proper storage practices.

Labeling, Signage, and Inventory

All containers must be:

Clearly labeled with chemical name, hazard class, and expiry date.

Stored according to a chemical inventory system.

Install warning signs: "Hazardous Material", "No Smoking", "Authorized Personnel Only".

Spill Prevention and Emergency Response

Provide spill kits and absorbents.

Ensure that trained personnel are available for emergency response.

Conduct regular drills and maintain emergency contact information.

Access Control and Training

Limit access to trained, qualified personnel.

Provide periodic training on:

Chemical handling

PPE use

First aid and emergency procedures

Waste and Empty Containers

Empty containers of hazardous materials must be:

Rev: 00	INDORAMA MISR FERTILIZER	Page: 5 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Treated as hazardous waste unless decontaminated.

Stored in designated waste areas until proper disposal.

Disposal must follow IFC Waste Management Guidelines (Section 1.6).

Chemicals & Solvents

Material	Hazard	Use Area
Paints, thinner, adhesive	Flammable, toxic vapours	Structure & Equipment painting
Cleaning agents	Corrosive, irritants	Surface preparation, Flushing pipelines
Grease and Lubricants	Slips, Flammable	Machinery, Maintenance

Mitigation Plan

Material Safety Data Sheets (MSDS) will be available on-site for all chemicals. MSDS will be posted at all storage location. Storage shall be in segregated, bunded enclosures. Workers handling volatile substances will use PPE such as gloves, goggles, and face shields, and follow safe handling protocols. Adequate ventilation will be ensured. Controlled atmosphere storage will be ensured for taking care of fire risks. The materials will be issued for use to trained supervisors/technicians/workers. Fire extinguishers of appropriate type must be placed within accessible range

Compressed Gases

Material	Hazard	Use Area
Oxygen	Fire accelerant	Metal cutting
Acetylene	Explosive, Flammable	Cutting and brazing
Nitrogen	Asphyxiation	Pipe line purging, Blanketing
Argon	Explosive, Flammable	Cutting and brazing
Liquified petroleum gas	Explosive, Flammable	Cutting and brazing

Mitigation Plan

Cylinders will be secured vertically using chains, with separation between oxidizers and flammables. Leak tests and proper valve, flash back arrestors & protections will be mandatory. Only trained personnel shall handle gas cutting and welding equipment, and hot work permits will be in place. Continuous training will be ensured. Controlled storage will be ensured for the material and will be issued for use to trained supervisors/technicians/workers. Fire extinguishers of appropriate type must be placed within accessible range

Rev: 00	INDORAMA MISR FERTILIZER	Page: 6 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Construction related Material

Material	Hazard	Use Area
Cement, Sand, Torr steel	Respiratory irritation, skin burns, Hand injury	Civil Construction
Material dust	Silicosis	Excavation, cutting

Mitigation Plan

Dust suppression techniques such as water spraying and vacuum extraction will be used in high-dust zones. Workers shall use respiratory protection (N95 or better), and the use of relevant PPEs during construction. Mechanical cutting tools with enclosures will be recommended.

Specialized Material

Material	Hazard	Use Area
Ammonia	Highly toxic, corrosive, explosive	During commissioning in DAP plant
Phosphoric acid	Corrosive	During commissioning in PAP plant
Sulphuric acid	Corrosive, skin burn	During commissioning in SAP plant
Battery Acids	Corrosive	Used in UPS system, instrumentation

Mitigation Plan

Process plants pre-commissioning requires specialized PPE like self-contained breathing apparatus (SCABA, BA set). Emergency showers and eyewash will be provided in area. Ammonia, Phosphoric acid and Sulphuric acid will be transported in dedicated specific type of tankers and pre planned delivery routes will be selected. Acids and Ammonia will be stored inside premises in dedicated fabricated tanks before commissioning. Special training for handling acids and ammonia will be given to workers/staff. Battery rooms must have acid-resistant flooring and neutralization kits. Controlled storage will be ensured for the material and will be issued for use to trained supervisors/technicians/workers. HAZID/Risk assessment is prepared for each of the material which contains the risk, mitigation plan & PPE requirement.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 7 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

The Mitigation plans will be devised by the detailed HIRA as below

HIRA is a structured approach to identify hazards, analyze risks, and implement controls to ensure safe operations. This process is essential for compliance with IFC Performance Standards, ISO 45001, and general international best practices in EHS (Environment, Health & Safety).

The steps of HIRA are as follows

1. Planning and Preparation
2. Hazard Identification
3. Risk Assessment
4. Determine Control Measures (Hierarchy of Controls)
5. Documentation of Risks and Controls
6. Implementation of Controls
7. Review and Update of HIRA

Spill Control

The hazardous materials included above will be handled as per SOP (Standard operating procedures) will be developed before commencement of construction for that specific material and under proper supervision and the guidance as per MSDS. Moreover, IMF will ensure the proper labelling of containers, display of MSDS and availability of secondary containment and provision of spill control equipment. In the event of phosphoric acid or sulphuric acid spill, the spill will be washed with sufficient quantities of water, following which water will be routed to effluent treatment facility. During construction minor spill during transfer of diesel/gasoline will be collected in secondary containment and reused.

Waste Management

Segregation of hazardous and non-hazardous waste will be ensured. IMF will tie-up with authorized waste disposal contractors. All waste movements will be documented as per IFC regulations, regulatory norms and Egyptian Law No. 202/2020

Training

Training will be given to each and every employee & worker, whoever are responsible for handling, storage and transportation of these hazardous materials. Mandatory use of PPE (gloves, goggles, flame-resistant clothing) will be ensured for handling such materials.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 8 of 9

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Monitoring & Control

Safety supervisor would be appointed for every group of people (1 supervisor for every 25-40). His responsibility will be to implement the procedure, continuous monitoring, compliance and audits, providing training & take corrective action wherever required.



APPENDIX D HAZID RISK ASSESSMENT REPORT

INDORAMA	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

HAZID / RISK ASSESSMENT REPORT

	Prepared by	Approved by
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Department	Mechanical/ Operation	Head Engg & Projects

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 1 of 15

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Contents

1.	INTRODUCTION.....	3
2.	PROJECT DESCRIPTION	3
3.	OBJECTIVE AND SCOPE	3
4.	HAZID Exemptions and Rationale	4
5.	ABBREVIATIONS	4
6.	BASIS OF STUDY & Methodology	5
7.	HAZID WORKSHOP SESSIONS	6
8.	SUMMARY AND CONCLUSIONS	7
9.	HAZID WORK SHEETS	8

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

1. INTRODUCTION

This document presents the results of the Hazard Identification (HAZID) Study conducted for the Phosphatic Fertilizer Plant covering key systems such as Sulphuric acid plant, Phosphoric acid plant & Di-ammonium phosphate plant. Detailed HAZOP study will be carried out during detailed engineering stage of the project.

2. PROJECT DESCRIPTION

The Project comprises the development of an integrated phosphate fertilizer complex located within the Sokhna Industrial Zone, affiliated with the Suez Canal Economic Zone (SC Zone) in Egypt. The Project is promoted by Indorama Misr Fertilizers Company S.A.E., a subsidiary of the Indorama Group.

The Project aims to contribute to Egypt's economy by producing high-quality **Di-Ammonium Phosphate (DAP)** and **Nitrogen, Phosphorus, and Potassium (NPK)** fertilizers for local and export markets. The design reflects a strong focus on environmental and resource efficiency, aligned with **IFC Performance Standards, World Bank EHS Guidelines**, and **EU BAT conclusions**.

The complex will include the following core production units and supporting infrastructure:

- 1) Sulphuric Acid Plant 3100 TPD.
- 2) Phosphoric acid Plant 1000 TPD.
- 3) Di-Ammonium Phosphate Plant 1935 TPD.

3. OBJECTIVE AND SCOPE

3.1 Objectives

- Identify hazards related to chemical handling, dust, high-pressure operations, and emissions.
- Support safe design and operational planning by identifying risks early.
- Assess risks to personnel, environment, and equipment.
- Recommend safeguards and mitigation controls.

3.2 Scope

The HAZID covers:

- Sulphur Handling, Melting & Storage
- Sulphur dioxide gas handling
- Sulphuric acid handling and storage
- Rock Unloading, Conveying, and Grinding
- Reaction Section (Sulfuric & Phosphoric Acid with Rock)

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 3 of 15

- Phosphoric Acid handling & Storage
- Scrubbers, Stack Emissions
- DAP/NPK Granulation, Drying

4. HAZID Exemptions and Rationale

- Ammonia Storage and Handling Systems:

Rationale: Ammonia-related risks are comprehensively assessed under a separate Quantitative Risk Assessment (QRA) study due to the need for detailed consequence and frequency analysis. Interfaces with other systems are considered in the QRA and cross-referenced where applicable.

- Laboratory Activities:

Rationale: These are small-scale, controlled operations governed by standard lab safety protocols. Risk assessments are conducted independently for laboratory work.

5. ABBREVIATIONS

- PAP: Phosphoric Acid Plant
- DAP: Di-Ammonium Phosphate
- SO₂: Sulphur Di oxide
- HF: Hydrogen fluoride
- H₂SO₄: Sulphuric Acid
- HSE: Health, Safety, Environment
- SOP: Standard Operating Procedure
- ERP: Emergency Response Plan.
- GEP: Good Engineering Practice
- ATEX: Safety compliance for equipment operating in explosive atmospheres.
- CEMS: Continuous Emissions Monitoring System.
- UTG: Ultrasonic thickness gauging
- FRP: Fiberglass Reinforced Plastic
- PPE: Personal Protective Equipment
- PTFE: Polytetrafluoroethylene.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

6. BASIS OF STUDY & Methodology

6.1 Overview

- Workshop conducted at Cairo office on 30/06/2025 as per below team details
- Facilitated per **ISO 31000:2018**, Risk Management – Principles and Guidelines and **CCPS** Guidelines for Hazard Evaluation Procedures
- Used experience-based hazard identification and plant design inputs.
- Guidewords Used in HAZID
 - Chemical Exposure - To identify risks from handling, storage, and transfer of chemicals
 - Toxic Release- To consider accidental release of toxic gases (e.g., SO₂, HF, NH₃)
 - Dust Generation- To assess inhalation, explosion, or environmental risks from dust.
 - Corrosion/Erosion- To evaluate degradation leading to leaks or failures
 - Overpressure- o identify potential causes and consequences of pressure excursions
 - Emission to Atmosphere- o consider controlled/uncontrolled gaseous emissions
 - Ignition/Explosion- To identify scenarios involving flammable gases or combustible dust
 - Human Error- To identify risks arising from operational or maintenance errors

Workshop Team

Sr. No.	Name	Designation	Role In HAZID	Signature
1	V. Rajendran	Head Engg. & Projects	Facilitator /Workshop Chair	
2	Rakesh Sharma	Sr. VP. Purchase	Project Representative	
3	T. Balachandran	Head Technical	SHE Lead	
4	Manish Mishra	Head Mechanical	Maintenance Input	
5	Krishna Tibrewala	Head Commercial	Project Representative	
6	Pradeep Datar	Head Sulphuric acid plant	Operation Representative	

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 5 of 15

6.2 Risk Ranking

- Risk Matrix includes 5 consequence levels × 5 likelihood levels.
- Categories: People, Environment, Asset, and Reputation.

Likelihood ↓ / Severity	1 - Insignificant	2 - Minor	3 - Moderate	4 - Major	5 - Catastrophic
A - Rare	1 (Low)	2 (Low)	3 (Low)	4 (Medium)	5 (Medium)
B - Unlikely	2 (Low)	4 (Medium)	6 (Medium)	8 (High)	10 (High)
C - Possible	3 (Low)	6 (Medium)	9 (High)	12 (High)	15 (Very High)
D - Likely	4 (Medium)	8 (High)	12 (High)	16 (Very High)	20 (Very High)
E - Almost Certain	5 (Medium)	10 (High)	15 (Very High)	20 (Very High)	25 (Extreme)

1–5: Low Risk

6–10: Medium Risk

11 -15 High Risk

16–25: Extreme Risk

7. HAZID WORKSHOP SESSIONS

7.1 Study Nodes

Node NO	Area	Activities	Guide word
1	Sulphuric Acid Plant	Handling & Storage of Raw Sulphur & Liquid Sulphur	Handling & Storage of Raw Sulphur & Liquid Sulphur
2	Sulphuric Acid Plant	Handling of Sulphur di-oxide gas in convertor section	Overpressure, Toxic Release
3	Sulphuric Acid Plant	Handling and storage of Sulphuric acid	Leakage, Corrosion, Overfilling, Pipe Rupture, Human Error
4	Phosphoric Acid Plant	Handling & Storage of Rock Phosphate, Grinding of Rock Phosphate	Dust Emission, Erosion, Exposure.
5	Phosphoric Acid Plant	Handling and storage of Phosphoric acid	Spillage, Corrosion, Equipment Degradation
6	Phosphoric Acid Plant	Operation of Gas scrubbing	Emission, Blocked Nozzle, Overflow, Corrosion, Ineffective Scrubbing
7	Di Ammonium Phosphate/NPK Plant	Ammoniation, granulation, drying	Toxic Release, Dust Generation, Fire/Explosion, Equipment Malfunction
8	Di Ammonium Phosphate/NPK Plant	Operation of Gas scrubbing	Toxic Release, Dust Generation, Fire/Explosion, Equipment Malfunction

7.2 Reference Documents

- Basic Offer from Party
- MSDS for acids, ammonia, fluorine
- Utility consumption & process calculations
- Stack emission & control equipment specs

7.3 HAZID Worksheets

Each node includes:

- Hazards
- Causes
- Consequences
- Existing Controls
- Risk Level (Before & After)

8. SUMMARY AND CONCLUSIONS

8.1 Study Results

Node	LOW	Medium	High	Total Risks
Sulphuric Acid Plant	0	4	0	4
Phosphoric Acid Plant	0	4	1	5
DAP/NPK Plant	0	2	0	2
All Plants	0	0	1	1

8.2 Key Recommendations

- Install dust suppression systems, enforce ATEX compliance.
- Install multi-point fire detection covering all hazardous areas.
- Install Gas Detectors in plant with Alarm System.
- Design bunded acid-resistant containment.
- Overfill alarms, safe overflow divergence system and corrosion monitoring.
- Integrate toxic gas detection, auto-shutdown valves, and wind-direction indicators.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- Use dispersion modelling and apply GEP for stack height.
- Perform hydrodynamic modelling for runoff and containment.
- Design suitable lining for Gypsum storage.
- Structured training program be developed and implemented for personnel involved in project & Operation.

9. HAZID WORK SHEETS

1. Sulphur dust explosion resulting in fire, equipment damage, and potential injury			
A sulphur dust explosion is a combustion event involving fine sulphur particles suspended in air, capable of causing violent deflagrations or, under specific conditions, detonations. Such explosions pose a significant hazard in facilities handling solid sulphur, where dust generation and dispersion are likely.			
Before Management	Likelihood	Severity	Risk Index
	2	5	10
Management Measures: Perform routine cleaning to remove settled sulphur dust, especially from elevated and hard-to-reach surfaces. Deploy fog cannons, to bind airborne dust and prevent formation of explosive dust clouds. Install proper grounding and bonding of all equipment, piping, and storage systems. Only allow vehicles equipped with spark arrestor silencers and intrinsically safe electrical systems in sulphur handling zones. Use only ATEX-certified electrical and instrumentation equipment in sulphur dust-prone areas. Install water spray nozzles in conveying system			
After Management	1	5	5

2. SO₂ release to atmosphere resulting in toxic exposure, environmental impact, and regulatory breach			
Sulphur dioxide (SO ₂) is a toxic and irritant gas, primarily affecting the respiratory system. SO ₂ is also contributes to acid rain, leading to damage to vegetation, soil degradation. Potential Sources of SO ₂ Release Include Fire in sulphur storage shades or sulphur processing units, Operational upsets Leakages in SO ₂ -rich duct lines.			
Before Management	Likelihood	Severity	Risk Index
	2	4	8
Management Measures: All equipment and structures in sulphur handling areas shall be properly grounded and bonded to prevent accumulation and discharge of static electricity. For small to medium fires, steam flushing systems are installed in vessels and critical equipment to suppress combustion by displacing oxygen and reducing temperature.			

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 8 of 15

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Fixed SO ₂ gas detectors are installed in critical plant areas to enable early detection of leaks or releases. A CEMS is installed on the main stack to continuously monitor SO ₂ emissions and ensure compliance with environmental regulatory limits. DCS shall have alarms and automated controls for critical parameters.			
After Management	1	3	3

3. Liquid Sulphur Spillage or Leakage			
Spillage or leakage of hot liquid sulphur can cause severe thermal burns to personnel upon contact and poses a significant environmental hazard due to soil contamination. If the spill reaches drainage systems or water bodies, it may lead to widespread contamination.			
Before Management	Likelihood	Severity	Risk Index
	2	4	8
Management Measures: • Install redundant (dual) level transmitters on sulphur storage tanks to ensure accurate level monitoring and early detection of overfill conditions. • Provide a safe overflow line connected to a dedicated catchment bund or emergency sump to contain any excess liquid sulphur in the event of an overfill. • Construct dyke walls (bund walls) around sulphur storage vessels and transfer areas to prevent uncontrolled spread of spilled sulphur and direct it to designated collection zones. • Use of mandatory Personal Protective Equipment (PPE) such as eye protection, hand gloves, gum boots, and gas masks			
After Management	1	4	4

4. Sulphuric Acid Release or Leakage			
Release or leakage of sulphuric acid can cause severe chemical burns to personnel, corrosive damage to equipment and structures, and environmental pollution if it enters stormwater drains, soil, or water bodies. Such incidents pose serious safety, environmental, and operational risks, potentially leading to plant shutdowns, regulatory non-compliance, and long-term remediation efforts			
Before Management	Likelihood	Severity	Risk Index
	2	5	10
Management Measures: • Provide bund walls around acid storage tanks, sized to contain at least 110% of the largest tank's volume. • Ensure the bund interior is coated with acid-resistant lining (e.g., epoxy or rubber-lined concrete) to withstand prolonged exposure to sulphuric acid. • Install redundant level transmitters for reliable tank level monitoring.			

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 9 of 15

- Implement high-level and high-high-level alarms with interlocks.
- Include automatic trip functions to halt acid transfer operations when critical levels are reached.
- Design an overflow diversion system (overflow piping to emergency catchment pit or secondary tank).
- Conduct periodic ultrasonic thickness gauging (UTG) to monitor for wall thinning due to corrosion for Pipes and Tanks.

After Management	1	5	5

5. Heavy Dust Formation during Rock phosphate Handling.

Heavy dust formation can result in severe safety, environmental, and operational risks. Inhalable dust poses health hazards to workers, reduces visibility and safety in operational areas, and can lead to environmental pollution through deposition on land or water. Excessive dust can also damage sensitive equipment, clog filters, and require frequent maintenance shutdowns

Before Management	Likelihood	Severity	Risk Index
	3	3	9

Management Measures:

- Install dust extraction systems with bag filters and cyclone separators at key dust-generating points.
- Maintain adequate moisture content in raw materials (where applicable) to suppress dust during handling and conveying.
- Use fully enclosed conveyors, transfer chutes, and loading/unloading stations to minimize dust dispersion into the workplace and environment.
- Conduct regular housekeeping using industrial vacuum systems rather than sweeping or compressed air, to safely remove accumulated dust from surfaces and walkways.
- Provide and enforce the use of appropriate PPE

After Management	2	2	4

6. Phosphoric Acid Release

Release or leakage of phosphoric acid can cause serious safety hazards, including chemical burns and inhalation risks to personnel. It also poses environmental threats due to contamination of soil and water bodies, and can result in operational disruptions, equipment corrosion, and potential regulatory non-compliance

Before Management	Likelihood	Severity	Risk Index
	2	4	8

Management Measures:

- Provide a bunded area with acid-proof flooring and lining (e.g., epoxy, FRP, or vitrified tile).
- The bund shall be sized to hold at least 110% of the volume of the largest reactor or acid-containing vessel to prevent external release during spillage.
- Install redundant level transmitters on reactors and tanks to ensure continuous monitoring.

- Equip systems with level alarms (high and high-high) and automatic trip mechanisms to stop acid feed or transfer operations.
- Include overflow diversion piping to safely redirect acid to a secondary containment or emergency storage.
- Conduct regular ultrasonic thickness gauging (UTG) of tanks, pipelines, and nozzles to detect wall thinning or pitting from acid corrosion.
- Perform visual inspections for signs of leakage, corrosion, or mechanical damage.
- Schedule routine mechanical integrity assessments of tank support, foundations, and anchor bolts to detect stress, corrosion, or displacement that could compromise vessel stability.
- Apply protective coatings or corrosion-resistant materials to exposed structural elements.

After Management	1	4	4

7. Release of Toxic Gas

Hydrogen fluoride is a byproduct of phosphate rock digestion. HF is highly corrosive and can pose severe health hazards to personnel, including respiratory distress, eye irritation, or fatal exposure depending on concentration and duration. It also presents a major environmental risk, potentially impacting air quality, nearby populations, and vegetation

	Likelihood	Severity	Risk Index
Before Management	3	3	9

Management Measures:

- Install redundant circulation pumps to ensure continued treatment of process gases in case of primary failure.
- Use corrosion-resistant materials (e.g., PTFE, FRP, or alloy steels) for scrubber internals, ductwork, and nozzles especially when handling acidic or fluorinated gases like HF or SO₂
- Deploy fixed toxic gas detectors (e.g., HF, SO₂) in all critical process areas, especially near scrubbers, storage tanks, and pipelines. Integrate detectors with alarm systems and automated safety interlocks to initiate emergency response.
- Continuous Emissions Monitoring Systems (CEMS) of HF.
- Regular inspection and cleaning of scrubber internals, especially mesh pads and spray nozzles.

After Management	1	3	3

8. Release of Fine Dust from DAP plant

DAP (Diammonium Phosphate) dust is a fine, dry particulate that poses multiple hazards. Inhalation can cause irritation to the respiratory tract, coughing, and throat discomfort. The dust can become suspended in air and form an explosive dust cloud. If exposed to a spark, hot surface, or open flame. High concentrations of airborne dust can reduce visibility, interfere with safe equipment operation, and settle on machinery, leading to slips, overheating, or malfunction

	Likelihood	Severity	Risk Index
Before Management	2	3	6

Management Measures:

- Dust Collection Systems, baghouses, cyclones, to capture dust at the source.
- Ensure proper duct design and airflow to maintain negative pressure and prevent dust escape.
- Regular Housekeeping and cleaning.

Air quality monitoring sensors

After Management

1

3

3

9.Release of Toxic Gas

Typical Gases like Ammonia, Hydrogen fluoride & Acid mists released from DAP plant due to unreacted ammonia in the process, fluorine compounds in phosphoric acid can cause severe eye and skin burns, throat irritation & shortness of breath.

Before Management

Likelihood

Severity

Risk Index

3

3

9

Management Measures:

All scrubber components, including ductwork and tanks, should be constructed from corrosion-resistant materials such as fiberglass-reinforced plastic (FRP), PTFE-lined steel, or rubber-lined vessels.

Continuous Emissions Monitoring Systems (CEMS) are essential for real-time tracking of key pollutants such as ammonia (NH₃).

A preventive maintenance program should be in place to regularly inspect and clean scrubber internals, pumps, fans, and nozzles.

Alarm and interlock systems for detecting deviations in scrubber performance.

After Management

1

3

3

10. Stack Downwash Hazard

The emission stacks of the sulfuric acid plant, Phosphoric acid plant & DAP plant may be of inadequate height or poorly designed in relation to nearby structures and terrain. This can cause insufficient dispersion of pollutants such as SO₂ and H₂SO₄ mist, HF, Ammonia leading to a phenomenon called stack downwash, where emissions are pulled down to ground level due to building-induced turbulence, low plume buoyancy, or adverse meteorological conditions.

Before Management

Likelihood

Severity

Risk Index

3

4

12

Management Measures:

Perform **air dispersion modelling** using AERMOD during design phase.

- Ensure exit gas **velocity ≥ 15 m/s** and temperature are sufficient to induce buoyancy.
- Maintain stack height based on emission rate and terrain.
- Avoid siting stack directly next to tall structures or buildings.
- Install ambient air quality monitoring stations near plant boundary.
- Provide real-time monitoring at stack and workplace locations.

After Management	1	4	4

11. Flooding and Leachate Dispersion from Gypsum Storage Area

Absence or inadequacy of hydrodynamic modelling during the design of the gypsum storage area can result in underestimation of stormwater loads, leading to overtopping, erosion, or failure of the containment system. This may cause the uncontrolled release of phosphor gypsum slurry or leachate containing fluoride, sulphate, and trace heavy metals to surrounding soil, surface water bodies, or groundwater.

Before Management	Likelihood	Severity	Risk Index
	3	4	12

Management Measures:

- Perform hydrodynamic modelling.
- Design appropriate lining option and leachate collection system.
- Regular inspection and desilting of drains.
- Periodic update of model using terrain data.
- Monitor the soil and groundwater quality
- Regular monitor for the groundwater levels and groundwater quality parameters

After Management	2	3	6

12. Gypsum Dust

Gypsum dust is generated during conveying, and storage of gypsum. This dust poses both occupational and environmental hazards. The primary risk to personnel is inhalation, skin and eye irritation due to direct contact. Visibility reduction in operational areas and potential for dust buildup on equipment or structures. Environmental contamination

Before Management	Likelihood	Severity	Risk Index
	2	3	6

Management Measures:

- Enclosed conveyors with wetting systems.
- Regular house- keeping.
- Use of Mask, gloves, goggles, and overalls.
- Area dust monitoring

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

After Management	1	3	3

INDORAMA	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Annex 1 - HAZID Workshop

INDORAMA	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 30 th June 2025

Project Title: Phosphate Fertilizer Complex
Workshop Title: HAZID (Hazard Identification) Workshop
Location: Cairo Project Office
Dates: 30/06/2025

Sr. No.	Name	Designation	Role in HAZID	Signature
1	V. Rajendran	Head Engg. & Projects	Facilitator /Workshop Chair	
2	Rakesh Sharma	Sr. VP. Purchase	Project Representative	
3	T. Balachandran	Head Technical	SHE Lead	
4	Manish Mishra	Head Mechanical	Maintenance Input	
5	Krishna Tibrewala	Head Commercial	Project Representative	
6	Pradeep Datar	Head Sulphuric acid plant	Operation Representative	



APPENDIX E

HUMAN RESOURCES PLANS AND PROCEDURES

INDORAMA	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

HR Policies, Plans & Procedures

	Prepared by	Approved by
Name	T Balachandar	Mr. V Rajendran
Department	Technical	Head Engg & Projects

Rev: 00	INDORAMA MISR FERTILIZER	Page: 1 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Contents

Section 1- Group Overview	3
Section 2-Objectives	9
Section 3 -Specific Policies	10
3.1 Working Conditions and Terms of Employment Policy	10
Scope.....	10
3.2 Prohibition of Child Labour Policy.....	11
3.3 Human Rights and Labour Policy	11
3.4 Independent Contractors' Policy.....	12
3.5 Gender Based Violence and Harassment (GBVH) Policy.....	12
3.6 Local Recruitment for Contractors and Sub-Contractors	18
3.7 Project Workforce Management Policy	19
3.8 Collective Dismissals and Retrenchment Policy	22
3.9 Oversight of Contractor HR Policies and Labour Compliance Policy	24
3.10 Worker Grievance Redress Mechanism (GRM) Policy	25
Section 4 Group Policies.....	26
4.1 Code of Conduct	26
4.2 Community and Stakeholder Policy	36
4.3 Environment and Climate Change Policy	37
4.4 Responsible Business Policy	38
4.5 Health and Safety Policy	39
4.6 Intellectual Property Policy	40
4.7 Social Media Policy.....	42

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

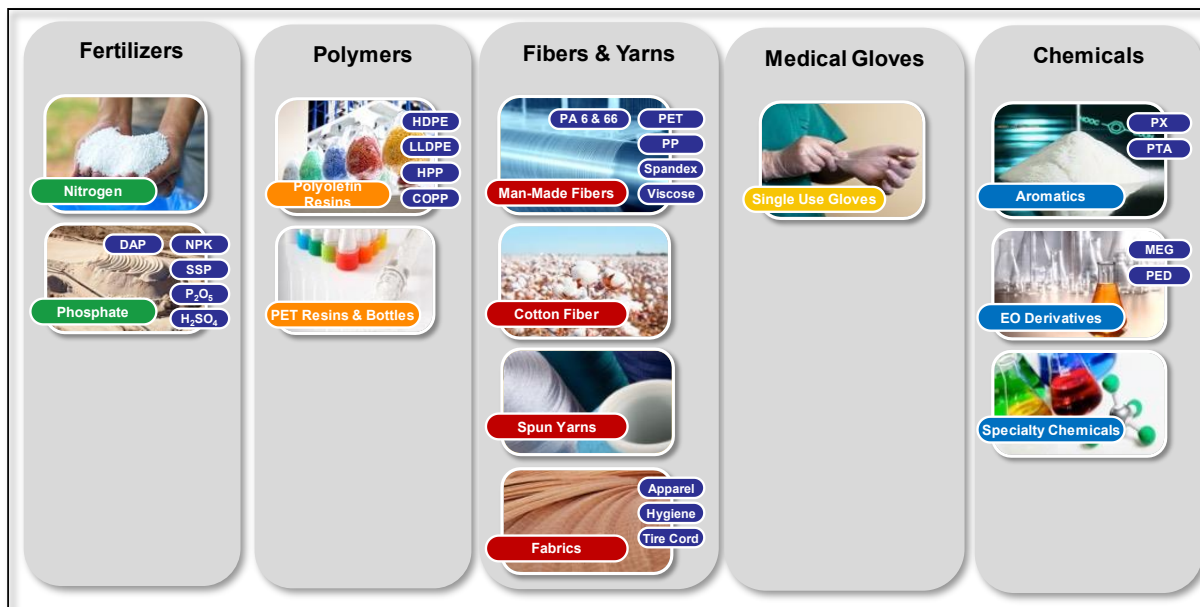
Section 1- Group Overview

Indorama Corporation is one of Asia's leading chemical companies. Its origins trace back to 1975 with the start of Indorama Synthetics in Indonesia by its founder, M.L. Lohia, and his son, S.P. Lohia. Indorama Synthetics started as a cotton yarn spinning company. In 1991, the company diversified into the production of polyester fibres from petchem derivatives, and subsequently into the production of PET resins.

Today, Indorama Corporation, which is headquartered in Singapore, manufactures a multitude of products including nitrogen fertilizers, phosphate fertilizers, polyethylene, polypropylene, polyester, textiles, cotton fibre, and medical gloves. We are the largest producer of urea and phosphate fertilizers in Sub-Saharan Africa, the largest producer of polyolefins in West Africa, and the third largest producer of synthetic gloves in the world. We are also an integrated producer of cotton and synthetic spun yarns. We employ over 20,000 people worldwide (www.indorama.com).

Our associate, Indorama Ventures Public Company Limited (IVL), is the largest producer of PET Resin in the world and also one of the biggest producers of polyester feedstock (www.indoramaventures.com).

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025



Indorama Compass

The Indorama refreshed Compass consists of four key elements: -

- Purpose (Why we exist?)
- Vision (Where we want to go?)
- Capabilities (How we differentiate ourselves?)
- Values (Who we are?)

Our **COMPASS**

Purpose Essential materials. Better lives.

Vision The materials company of choice for customers and employees
Driving scale, growth and sustainability

Capabilities



Investing for the future



Lasting relationships



People first



Best-in-class assets and operations

Values



Act like owners



Be adaptable



Care deeply



Deliver excellence

1

Our Purpose: Why we exist



Essential materials.

We produce materials that are **essential for our world** - fertilizers, medical gloves, textile and packaging materials.



Better lives.

We strive to **improve lives** and develop a better world: for our **customers, employees**, and other stakeholders.

2

Our Vision: Where we want to go

The materials company of choice for customers and employees

Driving scale, growth, and sustainability.



Materials company of choice

We aim to be one of the most distinctive and competitive materials companies in the world...



Customers and employees

...for our key stakeholders, our customers and employees without whom we wouldn't exist



Driving scale and growth

We invest in creating scale in existing businesses and new growth platforms for future prosperity



Driving sustainability

We aim to operate our business across markets and geographies in a responsible and sustainable manner

3

Our Capabilities: How we differentiate ourselves

Investing for the future



Value creation.

We create value with prudence, patience, and a long-term outlook

Lasting relationships



Committed partners.

We work collaboratively and foster long-term relationships

People first



Inspired employees.

We have a high-performance culture and treat our employees like family

Best-in-class assets & operations



Technology and cost.

We use state-of-the-art technology to achieve cost competitiveness

Growth platforms.

We invest in new ideas today to drive value tomorrow

Across stakeholders.

We serve our customers and strategic partners with respect and excellence

Empowered talent.

We trust and empower individuals so that they contribute their best

Quality and safety.

We maintain the highest standards for quality & safety

INDORAMA	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

4 Our Values: Who we are

 Act like owners <i>passionate, courageous, responsible, and strategic</i>	 Be adaptable <i>to opportunities, challenges, and ideas</i>	 Care deeply <i>for people and our planet with trust, respect, and humility</i>	 Deliver excellence <i>through knowledge, agility, innovation, and execution</i>

Why work at Indorama Corporation?

a) Family:

We are more than a company - we are a family that believes in treating everyone with respect, trust, and compassion. We deeply care about the wellbeing of our employees. And because we care deeply, our employees also feel a strong sense of commitment, loyalty, and belongingness to the organization.

b) People First:

We are People First, which simply means, people factor in all our decisions. Rules and policies are important, but we never lose sight of the importance of the human touch.

c) Growth:

Growth is our way of life. And because we are always growing, there are ample opportunities and challenges for professional development and career progression.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 7 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

d) Excellence:

When you work with Indorama, you are part of a legacy of excellence that spans across generations and borders. We are never content with the status quo. We value curiosity and innovation. Whether it's improving processes, developing products, or implementing new technologies or projects, we are always thinking about how to do things better.

e) Empowerment:

We believe empowerment unlocks peoples' true talents and potential, which is why we empower and delegate more than other organizations.

f) Continuous Learning:

We value continuous learning and are deeply passionate about personal development. We have many digital tools, programs, and initiatives to support that.

g) Culture of collaboration:

Our success comes from collaboration and teamwork. We help and support each other so that everyone can achieve their personal and organizational goals.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Section 2-Objectives

This Handbook is a compendium of policies and procedures meant for governance of contractor and sub-contractor human resource policies with applicable labour laws, ethical standards and Indorama's workforce management expectations. This guidebook will serve as a reference tool to promote fair labour practices, enhance transparency, and ensure consistency in the oversight of employment terms, working conditions, grievance handling, and labour compliance across all tiers of the project supply chain.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Section 3 -Specific Policies

3.1 Working Conditions and Terms of Employment Policy

Objective

To ensure that all contractors and sub-contractors engaged by [Company Name] in Egypt uphold fair, safe, and legally compliant working conditions for their workers.

Scope

This policy applies to all contractors and sub-contractors and their personnel working on behalf Indorama in Egypt.

Policy Guidelines:

1. Legal Compliance

- Contractors and sub-contractors must comply with the applicable national labour laws, including provisions related to working hours, rest periods, wages, and employment terms.

2. Written Employment Terms

- All workers must have clear written contracts specifying job roles, wages, working hours, benefits, and termination conditions.
- Terms should be in a language the worker understands.

3. Wages and Benefits

- Workers must be paid at least the legal minimum wage, on time, and in full.
- All statutory entitlements such as paid leave, social insurance, and overtime (where applicable) must be provided.

4. Working Hours and Rest

- Regular working hours must not exceed the legal limit (typically 8 hours/day, 48 hours/week). in accordance with **Egyptian Labor Law No. 12 of 2003** and **ILO Convention No. 1 – Hours of Work (Industry) Convention, 1919**, Article 2. The Overtime limitations and the compensation will be based on ccording to Egyptian Labor Law (Articles 85–89) and ILO Convention No. 30 – Hours of Work (Commerce and Offices) Convention, 1930, ensuring fair remuneration and rest periods. Workers are entitled to **at least one day of weekly rest, paid public holidays, and annual paid leave**, in accordance with **Egyptian Labor Law (Articles 47, 48, and 52)** and **ILO Convention No. 132 – Holidays with Pay Convention, 1970**.

5. Safe and Healthy Work Environment

- Contractors must ensure that workers operate in a safe, hygienic, and hazard-free environment.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 10 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- Adequate PPE (personal protective equipment) and safety training must be provided.
- 6. Non-Discrimination and Dignity at Work**
- All workers must be treated with respect and dignity.
 - Discrimination, harassment, and abuse of any kind are strictly prohibited.
- 7. Child and Forced Labor Prohibition**
- Employment of children below the legal working age or any form of forced or bonded labour is strictly prohibited
- 8. Oversight and Accountability**
- Indorama reserves the right to audit contractor and sub-contractor practices to ensure adherence to this policy and to take corrective action, including termination of contracts, in cases of non-compliance.

3.2 Prohibition of Child Labour Policy

Indorama Egypt does not and shall not offer employment nor employee any person below the age of eighteen (18) years at its place of work. We maintain zero tolerance towards the breach of this policy.

We shall maintain appropriate documents of all relevant details of employees and EPC contractors and sub-contractors including age. These documents will be open for verification by authorized personnel or relevant statutory body.

3.3 Human Rights and Labour Policy

Indorama Egypt's Human Rights Policy is guided by the International Human Rights Principle as enshrined in the Universal Declaration of Human Rights, The Internal Labour Organization's Declaration on Fundamental Principles of Rights at Work and Egypt's National Human Rights Strategy (2021-2026). These include:

- Right to life and physical integrity
- Right to personal freedom
- Freedom of association
- Freedom of expression
- Freedom of religion and belief
- Right to privacy
- Healthy work environment
- Safety at workplace
- Non-discrimination

Rev: 00	INDORAMA MISR FERTILIZER	Page: 11 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- Freedom from bullying, sexual harassment
- Right to litigation and strengthening guarantees for a fair trial
- Any other such rights as necessary and recognized by the law of the Republic of Egypt

Violation of the Human Rights and Labour Policy

It is incumbent upon the organization to ensure that standards of conduct or rights are implemented and maintained and to seek remedies when such standards or rights are violated using first the established channels.

3.4 Independent Contractors' Policy

For the purpose of this policy, independent contractors are workers working for Indorama Egypt but Indorama Egypt does not manage how they work, except to accept or reject their final results. Independent contractors are separate business entities, with opportunity to experience profit or loss, deliver the same type of service to multiple organizations, and responsible for the payment of their own business expenses, general liability insurance and employees' compensation insurance.

Indorama Egypt recognizes that independent contractors definitely elevate the level of risks to a business. They are not well known to the company or other employees, they may introduce risk accidentally, simply as a result of poor work habits. They may cause changes in the way infrastructure is used and configured, opening up risks that mistakes could lead to a breach or introduce weakness that did not exist before. Indorama Egypt has no control over independent contractors and their employees.

Indorama Egypt directs all independent contractors working with it to strictly comply with the company's guidelines on the following: Employee hand book, Grievance handling and management policy, Anonymous Grievance handling mechanism, Child labour prohibition policy, Human Rights policy, Non-discriminatory policy, Retrenchment planning (Redundancy) as stipulated in the labour law, work place discipline policy, security and safety policy, Employee compensation policy and any other policy necessary for the wellbeing of the independent contractors and their employees.

3.5 Gender Based Violence and Harassment (GBVH) Policy

Indorama is committed to promote gender diversity in the organization and also recognizes the potential risk of Gender Based Violence and Harassment (GBVH). Indorama Egypt has zero tolerance for GBVH and on continual basis endeavours to identify the risk areas, upgrade preventive measures; create awareness amongst both internal & external stakeholders, enhance capability building and increase effectiveness of grievance

Rev: 00	INDORAMA MISR FERTILIZER	Page: 12 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

management system. The objective this policy is to define a policy framework and define strategies for addressing the issue of GBVH. This document also aims to provide an integrated framework for stakeholder engagement and grievance management system with a focus on GBVH at all states of business cycle.

3.5 a. Scope of this Policy

This policy applies to Indorama applicants and employees, agency workers, contractors, sub-contractors, visitors, local business partners and both internal / external stakeholders. This policy applies to new projects as well as existing operations. In the event of a new project the policy applies to pre-construction phase, construction phase and post construction phase. During the project phase emphasis shall be on the alignment with Environment and Social Impact Assessment, Stakeholder Engagement Programme and Grievance Management System. During the operation phase emphasis will on the alignment with the HR Policies and Employee Grievance Management System. Manpower Service contractors are very critical stakeholders. Indorama Egypt shall expect an undertaking by manpower service contractors to GBVH policy of the company. With reference to contractors' emphasis shall be given to training and capacity building for stakeholder engagement and grievance management.

3.5 b. Business Case for GBVH

GBVH is a life-threatening, global health issue that violates international human rights laws and principles of gender equality. This policy, therefore, is aimed at addressing this social malaise which could lead to mental, physical and psychological problems. These problems have potential for far reaching organizational setback in form of low morale, low trust, lack of teamwork, fear full work environment, absenteeism, industrial actions, litigations, loss of productivity and above all loss of reputation for the company.

3.5 c. Classification of GBVH

Situations classified as such include but not limited to the following violent conduct, economic abuse and harassment:

- a) Sexual battery, verbal, physical assault and abuse including rape, molestation, unwanted touching, pinching, kissing, caressing, grabbing, poking another employee's body.
- b) Unwanted conduct or sexual advances such as remarks, jokes, or comments about an employee's sexuality or appearance.
- c) Any act, display or show of offensive objects either in hardcopy or in electronic form capable of causing sexual excitement or suggestive of unwelcome sexual conducts or advances.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 13 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

d) Emotional and psychological abuse such as deprivation, threats or coercion or any conduct that consist of unwanted requests and persistent proposals.

e) Any form of inducement, intimidation, preferential treatment or promises of preferential treatment to an employee with a view to submitting to sexual conduct or engaging in sexual activity.

f) Any intention to make the performance of an employee's job more difficult either in retaliation of or subjecting to threats to unwelcome sexual conducts or advances.

g) Discrimination, victimization, or punishment for sexual harassment complaints.

h) Economic abuse is a form of gender-based violence (GBV) where one person controls another's access to financial resources, diminishing the victim's ability to support themselves and forcing dependence. It includes tactics such as:

- Controlling access to money and financial information
- Preventing someone from working or earning an income
- Withholding or misusing shared financial resources
- Accumulating debt in another's name

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

3.5 d. Risk Identification, Risk Management and Accountabilities

Stages	Action to Address the Risk	Risk Management & Monitoring	General Principles	Accountability
Project Phase:				
a. Pre-construction Phase	Social and Environment Impact Assessment (ESIA)	a. Stakeholder Engagement Programme. B. Stakeholder Grievance Management System	Inclusion of women representatives in Management Committees	Head - Human Resources
b. Construction Phase	Development of Policies & Procedure	Grievance Management Committee	Participation of women in the Grievance Management Committee	Manager - Human Resources
c. Post Construction Phase	Development of demobilization policy	Grievance Management Committee	Participation of women in the Grievance Management Committee	Manager - Human Resources
Operation Phase:				
a Internal	Development of Policies & Procedures	Employee Handbook Grievance Management Committee Formation Women Committee	Inclusion & empowerment of Women in the Committee	Manager - Human Resources
b. External	Development of ESMP / ESAP / MOUs	a. Stakeholder Engagement Programme. B. Stakeholder Grievance Management System	Women member in Project Advisory Committee and decision-making process	Head - Community Relations

3.5 e. Capacity Building and Resources

Training & Awareness building - Management strongly believes that training and development is fundamental to the inculcation of culture of respect for human rights at the workplace.

Women Working Committee – self managed women committee is vital in addressing the issue of GBVH. Management shall constitute a special women cell to oversee the GBVH aspects.

Indorama shall deploy all relevant resources to address such incidences whenever they occur, through her internal mechanism and facilities as available.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 15 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

The Human Resources Manager and the Industrial Relations Manager will be designated as per the International Practice are the Ombudsperson for this process that coordinates the operations of the Committee. All HODs, Safety Ambassadors and Security officers/Journey Managers are to be on high alert with special focus on areas such as locker rooms, washrooms, remote office/plant areas, night duty shift, recreation club.

There shall also, be briefing for official travellers or commuters by Security/Journey Managers, to prevent any incident or act that breaches this policy.

3.5 f. General Principles

Indorama shall continue to uphold an equal opportunity employer tenets and views GBVH with utmost seriousness and will not be permitted or condoned. Company shall promote the policy of inclusiveness and collaboration. The company shall also ensure continuous efforts to create and maintain an enabling environment for all stakeholders including the in-house labour Unions representation to promote fair hearing, the spirit of teamwork and collaboration as well as a Special Disciplinary Committee for this purpose, with a compulsory female member.

3.5 g. Grievance Management System

Grievance management will be integrated with the existing process as enshrined in Employee Handbook. However, GBVH will require special supervision by the Ombudsperson, who will activate a Special Grievance / Disciplinary Committee with a female gender representation to investigate and make recommendations within 5 working day for Management at any time an incidence of sexual harassment or violence is reported.

The main purpose is to provide a safe, confidential, survivor-centered, and accessible channel for receiving, responding to, and resolving complaints related to gender-based violence and harassment (GBVH), including sexual harassment, exploitation, assault, and economic abuse in project-affected areas or workplaces

The Grievance management system shall also accommodate an abridged process where an alleged incidence of sexual harassment or violence, the person offended or harassed shall have the responsibility to report the incidence of harassment to the Human Resources Manager. Such a report should either be in person or through anonymous communication via email/letter or phone to the designated persons and when such a situation occurs.

3.5 h. Discipline and Disciplinary Procedures

The Company places high value on discipline. The Management and the employees have vital roles to play in maintaining discipline by ensuring that all relevant provisions of the

Rev: 00	INDORAMA MISR FERTILIZER	Page: 16 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Company policy are complied with. There shall be a Company Disciplinary Committee (CDC) with representation of both Management and the employee for the purpose of fairness, equity and justice for all employees and protecting the interest of the Company.

3.5 i. Formation of Special Committee to address misconduct connected to GBVH

In the event that the reported grievance / misconduct is connected to GBVH then a special committee will be formed to investigate and make recommendations within 5 working days for Management. When a CDC is presiding over a matter which relates to GBVH, then a committee will be represented by a female member.

3.5 j. Role of GBVH Apex and working Committee and disciplinary action

The role of the GBVH Committee is to provide overall mentorship to stakeholders at various plant levels. The objective of mentorship is to create awareness among women and provide a conducive environment where women can speak out and seek grievance redressal. Management is committed to capacity building at different levels in the organization to foster gender inclusive organizational culture. An employee in the organization may directly refer GBVH related issues to the Committee and same shall be taken up on behalf of the aggrieved employee in line with the grievance management policy of the company.

3.5 k. Monitoring and Reporting

Indorama commits to follow-up after the conclusion or closure of any incidence under focus. Consequently, the Ombudsperson shall ensure periodic review of the process and monitor the situation for assurance of the desired change or whether it has progressed from harassing to victimization to enable further action or advise as appropriate.

The outcome of this follow-up action may lead to a fresh complaint of victimization as the case may be and ultimately, a more severe disciplinary action on such offender. It may also lead to subjecting such person(s) to appropriate training to address the situation.

In extreme cases, the victim may be advised and/or supported to take further action such as civil legal action for damages.

3.5 l. Confidentiality and Management of Retaliation & Outcome

All reported cases of sexual harassment shall be investigated as prescribed in this policy and treated with the strictest of confidentiality. Subsequently, Management shall take

Rev: 00	INDORAMA MISR FERTILIZER	Page: 17 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

appropriate disciplinary measures for established violation of this policy in accordance with the recommendation of the Special Disciplinary Committee which shall include but not limited to verbal or written warning, suspension from work, termination of employment or dismissal from service.

Company is also responsible for any worker who reports a case of gender-based violence and harassment (GBVH), or who uses the grievance mechanism to raise related concerns, will be protected from any form of punishment, threat, discrimination, or negative consequences for doing so.

3.6 Local Recruitment for Contractors and Sub-Contractors

Objective

To promote inclusive economic development by ensuring that job opportunities—both skilled and unskilled—are made available to local community members to the greatest extent possible during the construction and operation phases

Scope

This policy applies to all contractors and sub-contractors engaged by Indorama for projects in Egypt.

Policy Guidelines:

Rev: 00	INDORAMA MISR FERTILIZER	Page: 18 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

1. Local Hiring Priority

- Contractors must prioritize qualified local community members for job opportunities, particularly for unskilled and semi-skilled roles, and wherever feasible for skilled positions.

2. Transparent Recruitment Process

- Vacancies will be advertised locally as much as possible to ensure visibility and access.

3. Engagement with Local Stakeholders

- Contractors should engage with local authorities, community leaders, and employment offices as much as possible to identify potential candidates and align hiring with local development goals.

4. Documentation and Reporting

- Contractors should maintain records of recruitment efforts, number of local hires, and reasons for non-local hiring when applicable.
- Indorama may request regular reporting on local employment figures during the project lifecycle.

5. Capacity Building

- Where skill gaps exist, contractors are encouraged to provide or support basic training or skill development initiatives to enable local participation in more technical roles.

6. Non-Discrimination

- The recruitment process must be fair and merit-based, free from discrimination based on gender, ethnicity, religion, or social background.

Oversight

Indorama Egypt will monitor contractor compliance through audits, site visits, and stakeholder feedback and reserves the right to take corrective action if local hiring targets are not adequately pursued.

3.7 Project Workforce Management Policy

Objective

To ensure that all project workforce—whether directly employed, third-party, or part of the supply chain—is managed responsibly, ethically, and in full compliance with applicable national labour laws and Indorama Egypt’s standards throughout the project lifecycle.

Scope

Applies to all contractors, sub-contractors, labour agencies, and suppliers engaged on Indorama’s projects in Egypt.

Approach and Policy Guidelines

Rev: 00	INDORAMA MISR FERTILIZER	Page: 19 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

1. Legal and Ethical Compliance

- All workforce engagements must fully comply with the Egyptian Labor Law No. 12 of 2003 and relevant International Labour Organization (ILO) Conventions, including but not limited to provisions governing:
 - Employment terms and contracts (Labor Law Articles 32–36),
 - Working hours and rest periods (Articles 80–89; see also ILO Convention No. 1 – Hours of Work (Industry) Convention, 1919),
 - Wages and compensation (Articles 34, 38, 85; aligned with ILO Convention No. 100 – Equal Remuneration Convention, 1951),
 - Social insurance and benefits (governed under Egyptian Social Insurance Law No. 148 of 2019),
 - Worker protection from unfair dismissal, discrimination, or unsafe conditions (Articles 69–71; ILO Convention No. 155 – Occupational Safety and Health Convention, 1981).
- No use of child labour, forced labour, or exploitative practices will be tolerated.
- Child labour is strictly prohibited, in line with:
 - Egyptian Labor Law Articles 64–69, and
 - ILO Convention No. 138 – Minimum Age Convention, 1973, and
 - ILO Convention No. 182 – Worst Forms of Child Labour Convention, 1999.
- **Forced labour and any form of exploitation** are absolutely forbidden, consistent with:
 - **ILO Convention No. 29 – Forced Labour Convention, 1930**, and
 - **ILO Convention No. 105 – Abolition of Forced Labour Convention, 1957**, and
 - **Egyptian Constitution Article 89**, which prohibits slavery, servitude, forced labor, and human trafficking

2. Workforce Planning and Tracking

- Contractors must submit workforce plans, including headcount forecasts, job roles, and sourcing strategy.
- Accurate and updated personnel records must be maintained for all workers, including those sourced through labour providers or sub-contractors.

3. Third-Party and Supply Chain Oversight

- Contractors are responsible for ensuring their sub-contractors, labour suppliers, and vendors adhere to the same labour

Rev: 00	INDORAMA MISR FERTILIZER	Page: 20 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

standards and compliance requirements as per Supply chain management policy of Indorama (document no esap12)

- Indorama Egypt reserves the right to conduct spot checks, audits, and interviews to verify labour practices throughout the value chain.

4. Fair Working Conditions

- All workers must receive written contracts, timely payment, fair wages, access to grievance mechanisms, and safe working conditions, irrespective of employment tier or type.

5. Worker Welfare and Conduct

- Contractors must ensure that worker accommodations (where provided) and on-site facilities meet minimum health, safety, and dignity Workers' Accommodation: Processes and Standards – A Guidance Note by the IFC and EBRD (2009) and Applicable Egyptian regulations, including Ministerial Decree No. 211/2003 on minimum health and safety conditions in labor accommodations.
- Workforce conduct should align with project-specific codes of behaviour, including respect for local communities and zero tolerance for harassment.

6. Training and Communication`

- Contractors must ensure all workers are oriented on their rights, duties, and site rules.
- Regular briefings on health and safety, grievance redress, and worker welfare must be provided.

Oversight and Accountability

Indorama Egypt will actively monitor labour practices through audits, worker engagement, and compliance reporting. Non-compliance may result in corrective action, penalties, or termination of contract.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 21 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

3.8 Collective Dismissals and Retrenchment Policy

Objective

To ensure that all retrenchment and collective dismissal actions involving contractors and sub-contractors in Egypt are conducted in compliance with applicable laws and ethical labour practices.

Scope

This policy applies to all contractors, sub-contractors, and their engaged personnel working under agreements with Indorama in Egypt.

Reference to IFC retrenchment Policy

The **IFC Good Practice Note on Managing Retrenchment** (2010) offers detailed guidance.

- Avoid sudden or mass layoffs without planning.
- Engage workers early and provide psychological and financial support.
- Align with **ILO Convention 158**, which sets international retrenchment standards.

Indorama is committed to develop the detailed retrenchment policy and be followed

Policy Guidelines:

1. Contractual Compliance

- All termination or retrenchment actions must align with the terms specified in the contractor/sub-contractor agreement and relevant provisions of the applicable national labour laws.
- Contracts must clearly define duration, scope of work, and termination clauses.

2. Legal and Regulatory Notification

- In cases of collective retrenchment (termination of a group of workers for economic, structural, or technological reasons), the sub-contractor must notify the **local Manpower Office** and seek guidance, as required under IFC Good Practice Note Managing Retrenchment and National labour regulations. The document IFC Good Practice Note Managing Retrenchment is attached as Annex.
- Documentation of the rationale and process must be maintained and shared with Indorama upon request.

3. Fair and Transparent Process

Rev: 00	INDORAMA MISR FERTILIZER	Page: 22 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- Selection for retrenchment should follow objective and non-discriminatory criteria (e.g., project completion, role redundancy, performance).
- Workers must be provided with due notice or pay in lieu of notice as per contractual or legal requirements.

4. Severance and Final Settlements

- Sub-contractors are responsible for ensuring any statutory dues (if applicable) and final settlements are paid to affected workers in accordance with Egyptian law or contractual terms.

5. Consultation and Grievance

- Where applicable, sub-contractors should engage in dialogue with worker representatives prior to mass terminations and maintain a channel for grievances.

6. Oversight and Reporting

- Indorama reserves the right to review and audit the retrenchment processes of contractors and sub-contractors to ensure compliance with this policy and labour norms.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

3.9 Oversight of Contractor HR Policies and Labour Compliance Policy

Objective

To ensure that all contractors and sub-contractors engaged by Indorama Egypt uphold fair labour practices and comply with applicable employment laws and standards.

Scope

This policy applies to all third-party contractors and sub-contractors providing manpower or services to Indorama in Egypt.

Policy Guidelines:

1. HR Policy Review and Approval

- Contractors and sub-contractors must maintain documented HR policies and procedures covering recruitment, employment terms, wages, working hours, grievance handling, and worker protection.
- Indorama Egypt will mandate submission and periodic review of these policies to ensure alignment with all applicable national laws and company standards.

2. Labour Compliance Monitoring

- Contractors must demonstrate compliance with labour laws, including worker contracts, social insurance registration, legal wages, working hours, and leave entitlements.
- Indorama Egypt reserves the right to conduct compliance checks, audits, or request documentation to assess adherence.

3. Performance Evaluation

- Labour practices of contractors will be factored into regular performance reviews, and any violations may result in corrective action, penalties, or contract termination.

4. Worker Grievance Access

- Contractors must maintain a transparent and accessible grievance mechanism for their workers.
- Workers must also be able to report concerns directly to [Company Name] without fear of retaliation.

5. Capacity Building

- Indorama may support contractors with guidance or training on compliance, ethical labour standards, and improvements in HR processes.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 24 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Oversight

The team designated internally within Indorama is responsible for enforcing this policy and maintaining records of contractor evaluations and compliance status.

Responsibility:

3.10 Worker Grievance Redress Mechanism (GRM) Policy

Objective

To ensure all contractors and sub-contractors engaged by Indorama in Egypt establish and maintain an effective, transparent, and accessible internal grievance mechanism for their workers.

Scope

This policy applies to all contractors and sub-contractors and their workforce operating under agreements with Indorama in Egypt.

Policy Guidelines

1. Establishment of GRM

- Contractors must implement a formal grievance redress mechanism that enables workers to raise concerns related to wages, working conditions, discrimination, safety, or any other workplace issues.

2. Accessibility and Confidentiality

- The GRM must be easily accessible to all workers, free of charge, and available in a language they understand.
- Complaints must be handled confidentially and without fear of retaliation.

3. Timely Resolution

- Grievances should be acknowledged and addressed within a defined timeframe, with records maintained of all complaints and actions taken.

4. Escalation and Appeal

- The mechanism should include clear steps for escalation and an appeal process if the worker is unsatisfied with the initial resolution.

5. Awareness and Training

- Contractors are responsible for informing workers of the GRM and training relevant supervisors on how to handle complaints appropriately.

6. Grievance Reporting

The aggrieved individual may contact to raise a grievance to Mr. Emad Khalek Contact No:+2 02 26014740 email: emad.khalek@indorama.com

7. Periodical Review

Rev: 00	INDORAMA MISR FERTILIZER	Page: 25 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- Regular review of grievances will be done at the regular interval and structured evaluation of all complaints or concerns received through the grievance mechanism to ensure:
 - Effective resolution of issues
 - Systemic problems are identified and addressed
 - Transparency and accountability in the grievance process
 - Continuous improvement of grievance handling procedures

Outcome of the periodical review will be shared with the Top management.

Oversight

Indorama reserves the right to review the GRM procedures, receive anonymous complaints directly, and request corrective action from contractors in cases of unresolved or mishandled grievances.

Section 4 Group Policies

4.1 Code of Conduct

Version: 4 Effective: 19 February 2025

Article 1 Guiding Principles

- This document outlines specific principles and policies covering key ethical issues. It identifies risk areas that employees may encounter in their job and provides guidelines on how employees should conduct themselves. In the event of any doubt, suitable guidance should be taken from superiors and/or the respective HR department.
- All employees must demonstrate their commitment to the Code by setting the right example, maintaining a workplace environment that adheres to the Code, and acting affirmatively to prevent violations of the Code.

Article 2 Supervision

Supervision of conduct is as important as supervision of performance. Managers are expected to lead by example and support their team members to be ethical in all dealings and to avoid even the appearance of unethical conduct. Open communication should be

Rev: 00	INDORAMA MISR FERTILIZER	Page: 26 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

encouraged, particularly with regard to questions concerning ethical matters. Self-reporting of ethical violations should be encouraged, and voluntary self-reporting will be considered positively when determining disciplinary action. Also, employees who raise ethical issues should be recognized and appreciated

Article 3

Disciplinary Actions for Violations

Appropriate disciplinary action, up to and including termination, may be taken against anyone who violates the Code. Self-reporting of ethical violations is encouraged and will be considered positively when determining the appropriate disciplinary action.

Article 4

How to Raise a Concern

Concerns or possible violations of these guidelines (or other Indorama policies) may be reported by any of the following methods:

- a) Open Door: The Open Door is the most direct way to voice any concerns to a superior. If you believe your supervisor(s) is involved in misconduct, then the misconduct should be reported to the next level of management or a member of the Board of Directors of your respective Indorama entity. It is the responsibility of the receiving member to promptly escalate the matter to his/her superiors.
- b) Confidential Reporting: Each Indorama entity will have specific guidelines for reporting concerns or possible violations confidentially by email, phone and/or mail to specified third parties appointed for this purpose, the Board of Directors of the respective Indorama entity and/or the Corporate Office.

Article 5

Honesty and Integrity

All employees and business associates are required to act in accordance with the highest standards of personal and professional integrity and honesty. Employees must not take or receive any benefit in cash or kind from any supplier, customer, agent, service provider, business partner, or affiliate. Should an employee be offered cash or other benefits from any third party in connection with the performance or intended performance of their duties, the matter must be immediately reported to their superior. If an employee has received anything in the form of a gift or cash from any third party in connection with the performance or intended performance of their duties, they should immediately hand over the same to their superior. If any employee witnesses another employee receiving any

Rev: 00	INDORAMA MISR FERTILIZER	Page: 27 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

form of corruption or bribery, the matter must be reported promptly. All employees must ensure that they do not, inadvertently or otherwise, “tip-off” or disclose to the concerned employee and/or third party any information which may prejudice future investigations.

Article 6

Conflict of Interest and Misuse of Authority

- a) A conflict of interest exists where the interests or benefits of an employee or business associate conflicts directly or indirectly with the interests or benefits of Indorama. Situations and relationships must be avoided that involve actual or possible conflicts of interest. The appearance of a conflict may be just as damaging as an actual conflict. A conflicting situation arises if an employee takes actions or has interests that are inconsistent with the interests of Indorama, or that may interfere with their ability to perform their job impartially and to the best of their ability on behalf of Indorama.
- b) Employees are responsible for advancing Indorama’s business interests when the opportunity to do so arises. They may not take any opportunity or use any confidential information for their personal gain or benefit, or for the gain or benefit of their friends, family members, or third parties.
- c) Employees may also not use their position in Indorama or any of Indorama’s resources, property or information for their personal gain or benefit, or for the gain or benefit of their friends, family members, or third parties.

Article 7

Cultural Sensitivity and Community Service

- a) We operate in many different countries and amidst diverse cultures. Foreign employees are expected to learn, understand, and respect local customs and culture and not cause offense to local sentiments in any way.
- b) All employees are encouraged to participate in community services. Except with prior approval from management, any community activities must be planned outside of normal working hours.

Article 8

Gifts and Gratitude

- a) Employees may not request, encourage, or accept any gift or gratitude from an existing or potential supplier, service provider, customer, or any other business partner.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 28 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- b) Corporate compliments of nominal value that are given on special occasions (such as New Year) or corporate gifts (such as annual diaries, pens, calendars, etc.) which are under the value of US\$100 are exempt.
- c) Any other gift or gratitude received must be returned on the pretext of company policy. If return is impractical, any gift that is not returned should be reported to the employee's supervisor and should be deposited with the HR or commercial department for re-use or for other purposes.
- d) Any offer of a gift or gratitude must be reported to the employee's supervisor.

Article 9 Confidential Information

- a) All employees should be fully aware of and strictly keep Indorama's information and documents confidential and shall not divulge or disclose the same to any unrelated persons. Confidential Information includes but is not limited to trade secrets, know-how, methods or processes, non-public company information, customer information, supplier information, or information about other organizations with whom we have association or do business with. Employees must not share any passwords (email, banking and internal/external systems), tokens or similar credentials with anybody else. We aim to maintain the highest level of confidentiality for information belonging to our customers, channel partners, suppliers and other business partners.
- b) Employees must return all Confidential Information along with any other Indorama property in their possession at the end of their employment.
- c) Confidential Information must not be divulged to anyone outside Indorama without the written approval of the disclosing employee's supervisor. Before any exchange of material information, a "Confidentiality Agreement" must be signed with the other party (available with the Commercial or Finance Department). Disclose Confidential Information only for legitimate business purposes. Handle all Confidential Information with care to avoid inadvertent or careless disclosure.

Article 10 Trade Secrets

- a) Indorama has invested greatly in the development of its systems, processes, products, know-how and technologies. This information is regarded as our trade secrets. All trade secrets must be kept confidential and secure. In addition to protecting our own trade secrets, we must respect the trade secrets of others also.
- b) Any creation or invention that any employee makes as an Indorama employee is the rightful property and trade secret of Indorama.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 29 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Article 11 **Insider Trading**

- a) It is illegal to buy/sell stock or other securities on the basis of insider information. It is also illegal to communicate (or “tip”) insider information to others so that they may buy/sell stock or other securities. All employees who are aware of material non-public information about Indorama or any other company, including our suppliers, customers, or business partners, are prohibited from trading (directly or indirectly) or tipping others to trade in the stock or other securities of those companies. The same restrictions apply to any person who lives in your home or who is financially dependent on you.
- b) Insider information is any non-public information that a reasonable investor is likely to consider important in making an investment decision. Common examples of insider information include:
 - (i) Earning projections,
 - (ii) News of a significant or pending merger, acquisition, or tender offer,
 - (iii) News of a significant sale or disposition of assets,
 - (iv) Changes in dividend policy, the declaration of a stock split, or the offering of additional securities,
 - (v) Changes in management,
 - (vi) Significant new products or discoveries,
 - (vii) Impending bankruptcy or financial liquidity problems,
 - (viii) Gain or loss of a significant supplier or customer, and
 - (ix) Possible award or cancellation of a significant contract.

Article 12 **Safeguarding of Assets**

- a) Indorama’s property should be used for business purposes only and should not be used for any personal gain or benefit. Employees are responsible for safeguarding Indorama’s property under their care and should take reasonable steps to protect it from theft, misuse, loss, damage or sabotage.
- b) The Indorama letterhead may not be used for personal or non-business purposes.

Article 13 **Media Statements**

Rev: 00	INDORAMA MISR FERTILIZER	Page: 30 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Employees may not make any statement (written or verbal) on behalf of or pertaining to Indorama to the media, news publications, trade publications or any other public channel of communication without prior approval from Corporate Office. Also, employees may not respond to any inquiry from outside media concerning Indorama without prior approval from Corporate Office.

Article 14 **Mutual Respect**

- a) All employees must treat each other with dignity and respect. They should be fair and courteous in all of their interactions in the workplace. By demonstrating our commitment to fairness and equal opportunity, we build relationships of mutual respect and trust.
- b) Indorama will not tolerate any form of racism, including vilification or any behaviour that encourages others to hate, disrespect, or abuse a person or group of people because of their race, colour, culture or religion. This includes verbal, written, online communications, or physical behaviour towards any employee, business associates, or other stakeholders.

Article 15 **No Discrimination**

Indorama will not tolerate discrimination in employment or organizational decisions on the basis of ideological views, race, colour, ethnicity, religion, gender, sexual orientation, national origin, regional origin, marital status, age, disability, or any status regarded as a human right. Also, any such discrimination against a customer, supplier, service provider or business partner is strictly disallowed.

Article 16 **Harassment and Inappropriate Physical Conduct**

- a) Harassment of any type, whether directed at an Indorama employee, supplier, customer or anyone doing business with Indorama, will not be tolerated and Indorama shall have the right to take appropriate disciplinary action, up to and including termination, against any employee who it considers to be guilty of harassment. Harassment is broadly defined and includes any conduct which negatively interferes with work performance, diminishes

Rev: 00	INDORAMA MISR FERTILIZER	Page: 31 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

the dignity of any person or which creates an intimidating, hostile or otherwise offensive work environment.

- b) Verbal, visual, or physical conduct of a sexual nature is unacceptable in the workplace. Examples include:
- (i) Sexual advances, requests for sexual Favors, foul language, inappropriate jokes, remarks about a person's body or sexual activities,
 - (ii) Displaying sexually suggestive pictures or objects, suggestive looks, or leering, and
 - (iii) Inappropriate texts, emails, or other communications that cause discomfort.
- c) Indorama will also not tolerate violent acts or threats of violence on Indorama property, in the course of employment or while doing business with Indorama.

Article 17 **Immigration**

- a) Indorama is committed to following all local immigration rules pertaining to the recruitment and employment of foreign workers.
- b) Indorama requires that all employment agencies, contractors, and others doing business with Indorama fully comply with local immigration laws.

Article18

Fraternization

- a) Employees are expected to conduct themselves in a manner that promotes respect, trust, safety, and efficiency in the workplace. Employees should not become romantically involved with another employee if either person can influence the other person's terms or conditions of employment, or if it has the potential to hurt local customs.
- b) In case of romantic involvement, the HR department or a senior supervisor should be informed so that any conflicts may be avoided and transfers may be made in case there is a reporting relationship.

Article 19 **Alcohol and Controlled Substance Abuse**

Rev: 00	INDORAMA MISR FERTILIZER	Page: 32 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

- a) Indorama is committed to a controlled substance and alcohol-free work environment. If any employee is found to be under the influence of controlled substances or alcohol during work, Indorama shall have the right to terminate that employee's employment contract immediately.
- b) Disciplinary action up to and including termination may be taken against any employee who violates the Code as a result of or while being under the influence of controlled substances or alcohol. For the avoidance of doubt, being under the influence of controlled substances or alcohol shall not be an excuse for any violation of the Code.
- c) Indorama requires job applicants to be controlled substance screened as part of the hiring process. Any applicant who tests positive for illegal controlled substance use will not be hired. Where permitted by law, employees may also be subject to random testing or specific testing if there is a reasonable basis to suspect they are under the influence of controlled substances or alcohol.

Article 20

Suppliers, Trading Partners and Business Partners

Indorama bases its relationships with suppliers, trading partners, and business partners on lawful, efficient and fair business practices. The selection of suppliers must be made on the basis of objective criteria, including quality, price, delivery, adherence to schedules, product suitability, adequate source of supply, and Indorama's purchasing practices and procedures. Suppliers must be treated with respect, fairness and honesty keeping Indorama's business objectives in view. We also expect our suppliers and partners to follow all applicable legal requirements in their business practices and to operate ethically.

Guidelines

- (i) Current or potential suppliers and/or partners should not be approached about providing employment for one's family members or friends,
- (ii) Indorama will not do business with former employees if a conflict of interest exists between his/her former position at Indorama and his/her new position,
- (iii) Do not direct business to a supplier/partner owned or managed by a relative or friend,
- (iv) Employees who are involved in proposals, bid preparations, or contract negotiations must be certain that all statements, communications and representations are accurate and truthful,
- (v) Do not have social or other relationships with suppliers/partners if such relationship may create the appearance of impropriety or give the perception that undue business influence is being exerted, and

Rev: 00	INDORAMA MISR FERTILIZER	Page: 33 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

(vi) Be watchful for suppliers/partners who violate worker safety, environmental, human rights, or other legal requirements and promptly report any such activities to your supervisor.

Article 21

Environment, Health and Safety

Indorama is committed to employee health, safety, protection of the environment, and to conducting business in compliance with all applicable laws. Employees must always comply with all relevant environmental, health and safety laws, rules and regulations. Any policies pertaining to these matters must be displayed at all strategic locations at all sites.

Guidelines

- (i) Reduce waste,
- (ii) Dispose of toxic or hazardous materials responsibly and as per applicable laws,
- (iii) Respect the environmental rights and interests of our neighbours and local communities,
- (iv) Create and maintain a safe working environment,
- (v) Prevent accidents and injuries,
- (vi) Avoid unsafe activities and conditions, including blocking fire exits, improper storage of inventory, and obstructing aisles, and
- (vii) Follow all Indorama policies and directives, including relating to the environment, health and safety.

Article 22

Government Dealings and Political Activities

- a) Except as required by law or allowed by local management, employees may not use their work time or other employees' work time for political activities. Employees may not use their job title or Indorama affiliation in connection with the support, endorsement, or testimonial of a political candidate or organization without prior approval from the Board of Directors of their respective Indorama entity.
- b) Inquiries from government investigators must be answered accurately and in accordance with any guidance issued by the competent authority

Article 23

International Trade

Rev: 00	INDORAMA MISR FERTILIZER	Page: 34 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

a) international trade is regulated through means of various international, bilateral and multi-lateral treaties, and local economic policies and regulations.

(i) Federal agencies at times administer a variety of embargoes and sanctions programs against a number of countries, as well as against nationals of those countries or other individuals, because of activities deemed contrary to the interests of their country and the interests of their allies. Transactions with designated individuals and criminal organizations, such as terrorist organizations, narcotics traffickers and weapons proliferators, are strictly prohibited. Severe civil and/or criminal penalties may be levied against companies or individuals that violate these regulations. Always consult with your supervisor prior to entering into international trade negotiations or transactions with any organizations/countries/individuals that you suspect might be the subject of sanctions.

Guidelines

(ii) Follow all relevant international trade control regulations, including licensing, shipping documentation, duty requirements, import/export documentation, and reporting and record retention requirements, of all countries in which you conduct business,

(iii) Understand which party in an international trade transaction is responsible for the accuracy of trade documentation and ensure that Indorama has properly discharged its obligations in the transaction, and

(iv) Employees are responsible for knowing with whom they are dealing with.

Article 24 Data Security

Data security is crucial for the continuity of our business. In order to protect information, systems, and data, security measures are necessary. All employees must take responsibility to protect their information systems and data and comply fully with internal IT security rules.

Article 25 Plagiarism

Plagiarism is the act of copying or using in substantially the same form the work of others, including words, images, ideas or other content, and passing it off as one's own work without acknowledging the source of the material. Employees should always act with honesty and integrity, including in producing any work product. In referencing the work of

Rev: 00	INDORAMA MISR FERTILIZER	Page: 35 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

others, employees must properly cite sources, especially for external publications. The act of plagiarism could infringe laws and lead to legal proceedings against you and Indorama.

4.2 Community and Stakeholder Policy

At the core of our business philosophy is ensuring social well-being, adding value to communities, and respecting human dignity. We are committed to respecting the rights, cultures, customs, and values of employees and communities that may be impacted by our activities and will manage our businesses in a fair and equitable manner to meet our social responsibilities.

We will:

- proactively engage key stakeholders on sustainable development challenges and opportunities in an open and transparent manner;
- comply with the regulatory requirements in the jurisdictions in which we operate;
- develop systems to identify, manage, and mitigate risks and adverse impacts on communities and stakeholders;
- foster leadership, learning and growth to deliver value to the organization and to society in a responsible manner, including training people and providing resources to establish and meet social responsibility objectives and targets;
- respect the social, economic, and cultural rights of communities and seek broad-based support for our operations by consulting and informing stakeholders in matters that affect them;
- ensure that effective grievance management systems are in place;
- avoid involuntary resettlement and consider displacement only when business requirements make it unavoidable. When unavoidable, work with regulators to improve or restore quality of lives and standards of living of displaced persons;
- adopt sustainable development as an integral part of the business plan, and put in place appropriate structures to plan and implement community development initiatives that prioritise local needs and long-term sustainable benefits to communities.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 36 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

4.3 Environment and Climate Change Policy

We are committed to effective environmental management as an integral part of our business with the aim of minimizing impact on the environment and reducing our impact on climate change.

We will:

- comply with applicable national, regional, and local environmental regulations;
- develop, implement, and maintain environmental management systems aligned with our commitments and beliefs, and consistent with good international practice;
- establish and review targets to continuously drive environmental improvement;
- avoid, reduce, or mitigate impacts to the environment and neighbouring communities, and where practicable improve and enhance environmental conditions;
- minimise the consumption of water, energy, materials, and other resources;
- recover, recycle, and reuse materials to reduce waste to minimise environmental discharge;
- design, construct, operate, and close storage facilities and other assets in compliance with applicable laws and regulations and in alignment with good international practices;
- conserve natural resources through process improvements and by adopting environmentally friendly and energy-efficient technologies;
- minimise and mitigate biodiversity risks throughout our businesses and integrate biodiversity conservation with business needs throughout the project lifecycle;
- assess our climate-related risks and implement mitigation and adaptation measures;
- establish programs to reduce our greenhouse gas emissions and achieve regional carbon abatement norms through renewable energy use, process improvements, innovative technologies, improved energy efficiency, and other measures;
- incorporate environmental principles in procurement processes and through a life cycle approach where applicable;
- enhance awareness among our employees, service providers, and suppliers to act in an environmentally responsible manner.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 37 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

This policy will be reviewed every 2 years.

4.4 Responsible Business Policy

We believe in business practices that provide benefits to society, ensure we act transparently and ethically, and address potential negative impacts associated with our operations. Our objective is to make positive contributions to the economic, environmental, and social progress at the locations in which we operate.

In addition to commitments detailed in our policies, we will:

- implement an Indorama Code of Conduct, including controls that cover conflict of interest, data privacy, cyber security, and addressing grievances;
- ensure suppliers act responsibly and achieve the commitments outlined in this policy and in the Indorama Group policies on human rights and labour, communities and stakeholders, health and safety, and environment and climate change;
- implement a tax strategy that ensures taxes paid to respective governments are equitable;
- implement anti-bribery & corruption controls, including the prevention of facilitation payments;
- ensure a ban on price fixing activities or other anticompetitive agreements;
- ensure honesty, transparency, and integrity in dealings with governments, and maintaining proper conduct, responsiveness, impartiality, accountability, and respect;
- maintain the independence of Board members from Indorama or a subsidiary, through employment, business dealings, or as its auditor;
- implement a whistleblowing process to encourage and protect a person who exposes information or activity(s) that may be illegal, illicit, unsafe, or fraudulent.

Each Indorama business will implement this policy. We will share good practices throughout the organization and will measure and report progress and performance on a periodic basis.

This policy will be reviewed every 2 years.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 38 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

4.5 Health and Safety Policy

We are committed to the goal of zero harm and safe and healthy workplaces. The health and safety of our employees, service providers, and any other person who may be impacted by our operations is of paramount importance.

We will:

- comply with applicable national, regional, and local health and safety regulations in alignment with good international practice;
- provide safe systems of work;
- maintain plant and equipment in a safe condition;
- incorporate health and safety criteria in the selection of service providers, technology, plant, and equipment;
- provide all employees and service providers with appropriate health and safety training;
- ensure reporting and investigation of incidents with a view to preventing recurrence;
- implement regular health surveillance and risk-based exposure monitoring to ensure the protection of employee and service provider's health;
- develop, implement, and maintain health and safety management systems aligned with our commitments and beliefs and consistent with good international practice;
- monitor and prepare for health pandemics to protect our people and our business;
- drive continuous health and safety improvement through setting and reviewing targets using good international practices;
- promote a positive health and safety culture through effective communication, participation and consultation with employees and service providers;
- influence our service providers and suppliers to adopt principles and practices in alignment with our policies.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 39 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

4.6 Intellectual Property Policy

We will protect the Intellectual Property Rights (IPR) of others, as we would like them to respect ours. Intellectual property may typically take the form of copyrights, patents, trademarks or trade secrets. The formal definition, according to the World Intellectual Property Organization, is “creations of the mind.” Intellectual property includes information such as inventions, creations, innovations, discoveries, and improvements generated, obtained or gathered by companies, including their patents, copyrights, trademarks, trade secrets and related confidential business information.

Our policy on IPR is to observe laws and regulations associated with them, to protect the results of intellectual activities with such rights and make extensive use of those rights, and to respect the legitimate IPR of third parties. We have a system with which to register trademarks and brands in order to protect them for our own use. We will not knowingly infringe upon the IPR of a third party, whether through the use of hardware or software which we have acquired through purchase or hire.

Software Use

It is Indorama’s policy to use only licensed software in accordance with the terms of their license agreement. Violating a license agreement is illegal and may subject the relevant Indorama entity to prosecution and substantial monetary penalties. Voluntary self-reporting will be considered positively when determining disciplinary action. Employees who raise ethical issues will be recognized and appreciated.

Indorama Intellectual Property and Trade Secrets

The general policy of Indorama is that a person who creates a work privately is the author of that work, unless the work is "work made for hire." A "work made for hire" is a work prepared by an employee within the scope of his / her employment or a work specially ordered or commissioned for use as a contribution to a collective work.

Indorama pays its employees for work, some of which includes creating or improving products or systems whether implemented or not.

Rev: 00	INDORAMA MISR FERTILIZER	Page: 40 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Therefore, Indorama shall remain the owner of all intellectual property created by its employees as employees and this will remain as Indorama's property even after those employees have left Indorama.

Trade secrets are a part of our intellectual property and may be tangible or intangible, for example a strategy to increase work efficiency. We expect current and former employees to maintain our trade secrets.

Unless a written agreement is entered into specifying ownership or assignment of rights, Indorama does not own the IPR of a commissioned work that is performed by a consultant or independent contractor.

Confidentiality

All parties are to respect the confidentiality of our intellectual property including trade secrets. We reserve the right to take legal action to enforce our rights if we believe anyone has abused information or sought to gain from our property or trade secrets.

This policy will be reviewed every 2 years.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

4.7 Social Media Policy

Article 1 Guiding Principles

This policy provides a framework for using social media. Social media is a place where people exchange information, opinions and experiences to learn and develop, and also for recreation. Whether you are handling a corporate account or using one of your own, you must not cause damage to our organization in any way. This policy provides practical advice to avoid issues that might arise by improper use of social media.

By “social media”, we refer to a variety of online communities like blogs, social networks, chat rooms and forums – including but not limited to Facebook, LinkedIn, Twitter, Instagram, etc.

This policy is built around two different elements: first, using personal social media at work and second, representing Indorama through social media.

Article 2 Using Personal Social Media

We allow our employees to access their personal accounts at work, but we expect you to act responsibly and ensure that your productivity is not affected.

Whether you are using your accounts for business or personal purposes, you may easily get sidetracked by the vast amount of content available. Accordingly, please restrict your use to a few minutes per workday.

We also ask you to be careful when posting on social media and expect you to adhere strictly to all applicable Indorama policies and confidentiality obligations at all times. We also caution you not to violate any applicable anti-harassment regulations, or post content that might make your collaboration and teamwork with your colleagues more difficult (such as hate speech against groups which your colleagues belong to).

In general, you are expected to:

Rev: 00	INDORAMA MISR FERTILIZER	Page: 42 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- (a) Ensure that others know that your personal account and statements do not represent Indorama. You should not state or imply that your personal opinions and content are authorized or endorsed by Indorama. We advise using a disclaimer such as “these opinions are my own” to not cause misunderstandings.
- (b) Avoid sharing intellectual property like trademarks on a personal account without approval. Confidentiality policies and laws always apply.
- (c) Avoid any defamatory, offensive or derogatory content. Such content may be considered a violation of Indorama policies, particularly if directed towards colleagues, clients, partners, or other stakeholders.

The list above is illustrative only and not intended to be exhaustive. You should always exercise professional and responsible judgment before posting content to your personal social media account.

Article 3 **Representing Indorama**

Some employees may be asked to represent Indorama by handling corporate social media accounts or speaking on Indorama’s behalf. When doing so, we expect you to act carefully and responsibly to protect Indorama’s image and reputation. You should:

- (a) Be respectful, polite and patient when engaging in conversations on Indorama’s behalf. You should be extra careful when making declarations or promises towards customers and stakeholders.
- (b) Avoid speaking on matters outside your field of expertise. Everyone should be careful not to answer questions or make statements that fall under somebody else’s responsibility.
- (c) Comply with Indorama policies and observe all applicable laws, including without limitation relating to copyright, trademarks, plagiarism and fair use.
- (d) Consult with your manager or Indorama management (as applicable) before sharing any major- impact content.
- (e) Avoid deleting or ignoring comments for no reason. We should listen and reply to criticism.
- (f) Never post or re-post discriminatory, offensive or libelous content or commentary.
- (g) Correct or remove any misleading or false content as quickly as possible.

Article 4 **Disciplinary Consequences**

We may take disciplinary action leading up to and including termination if employees do not follow this policy's guidelines. Examples of non-conformity with this policy include but are not limited to:

Rev: 00	INDORAMA MISR FERTILIZER	Page: 43 of 44

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- (a) Disregarding job responsibilities and deadlines to use social media at work.
- (b) Disclosing confidential information through personal or corporate accounts.
- (c) Making offensive comments.

Please consult with your manager or Indorama management (as applicable) if you are unsure whether any specific content can be shared on social media.

This policy will be reviewed every 2 years.



APPENDIX F INFLUX MANAGEMENT PLAN

Influx Management Plan

Contents

Description of Baseline Environment	3
Proposed Project Activities and Potential Influx Drivers	4
Drivers and Nature of Influx.....	5
Baseline Environment and Current Settlement Trends	6
Sensitive Receptors	7
Key Concerns for Receptors	8
Mitigation and Management Measures	9
Monitoring Indicators.....	10
Conclusion	10

	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

Description of Baseline Environment

Ain Sokhna, located on the western coast of the Gulf of Suez, has emerged as a strategic industrial hub within Egypt's Suez Canal Economic Zone (SC Zone). The area hosts numerous industrial activities, including petrochemicals, fertilizers, steel production, energy, logistics, and port operations. Over the past two decades, Ain Sokhna has experienced significant infrastructural growth, attracting private and public investments. This economic transformation has been accompanied by a demographic shift, characterized by increased immigration driven by employment and livelihood opportunities. The development of a large-scale industrial complex in Ain Sokhna is expected to bring significant socio-economic transformation to the region. While the Project promises positive outcomes in terms of job creation, procurement, and infrastructure development, it may also induce an influx of migrant workers and job seekers into surrounding communities. This report analyses the extent of such influx, the associated risks, and strategies for managing these impacts.

Demography of Ain Sokhna

Ain Sokhna comes under the Suez governorate, where the demographic statistics are explained as follows. The following data depicts the Population as per the recent data as of 2024.

Population & Growth

Total population (2025 estimate): 45,552 residents. Ain Sokhna is part of the Suez governorate, which had a population of around 843,385 by November 2023. From 1975 to 2015, population in Ain Sokhna grew massively—from ~3,479 to ~15,178 (+336%).

Gender & Age Structure (Based on latest published data)

Gender ratio (2015): approximately 52.7% male (7,998) and 47.3% female (7,180). Median age: around 23.9 years, slightly younger for females (~22.9) than males (~24.8).

Vulnerable populations: Children under fifteen and seniors over 65 form dependent cohorts needing targeted health and social services.

Urban Planning Context

Ain Sokhna is a major port, industrial, and logistics hub, integrated with residential zones and tourist developments. Linked to the Suez Canal Corridor Project, which includes zoning for manufacturing, logistics, and new urban extensions. Nearby Al Galala City, launched in 2015–2021, is a planned mixed-use development including university, resorts, housing, and public infrastructure.

Housing, Healthcare, Education & Sanitation

Housing & Urban Quality

Resort-style residential compounds near the Red Sea (e.g. Il Monte Galala, Majeda) offer villas, chalets, green spaces, lagoons, recreational and health facilities. Master-planned neighbourhoods like Majeda include pharmacies, medical centres, schools, jogging trails, supermarkets, child-play zones and clubhouses. Scale and quality vary—new developments are high-end, while older areas may see aging

Rev: 00	Influx Management Plan	Page: 3 of 13

infrastructure and informal housing issues.

Healthcare Services

Ain Sokhna is planned to host emergency hospitals integrated with Egypt's Universal Health Insurance system, aimed to serve both residents and tourists. Health service demand is rising in Suez Governorate; expansion in diagnostics and treatment services is underway.

Education & Social Infrastructure

Galala University (est. 2020) is located on the Al Galala Plateau between Ain Sokhna and Zaafarana, offering extensive higher education programs across 13 faculties. Schools and primary educational infrastructure are embedded within new compounds, though detailed public-sector school data is limited.

Water, Sanitation & Hygiene

Al Galala City and associated resorts rely on large-scale desalination plants (~150,000 m³/day) to supply potable water and support tourism and industries. Planned infrastructure includes sewage treatment, irrigation reuse systems, and irrigation-based landscaping using treated wastewater. Nationally, Egypt's urban piped water coverage is 100%, with sanitation access improving significantly (from ~50% in 2015 to over 66% by 2019).

3. Summary Table

Domain	Key Findings – Capacity & Quality
Population	~45,552 (2025), youth-heavy, reliant on working-age cohorts
Housing	Presence of high-end resort communities, though overall housing quality varies; older neighbourhoods might require renovations / upgrades.
Healthcare	Emerging hospital infrastructure; universal insurance integration
Education	Galala University established; local schools within compound zones
Water & Sanitation	Large desalination capacity; sewage treatment infrastructure expanding

Proposed Project Activities and Potential Influx Drivers

The Project includes the construction and operation of multiple industrial units including

- Sulfuric Acid Plant (3100 TPD)
- Phosphoric Acid Plant (1000 TPD)
- DAP/NPK Fertilizer Plant (1935 TPD)

INDORAMA	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

- 30 MW Power Plant (based on waste heat recovery)
- Ammonia Storage Tank
- Gypsum Storage Facility
- Phosphoric acid Storage system in Port
- Ammonia Unloading arm at Port Jetty
- Ammonia Pipeline from Jetty to Site

Workforce Requirements

- Construction Phase Workforce including the Contract Workers: Approximately 1500-2000 workers over a 15–18-month period

	2026	2027	2028	2029
During The project Stage	Year 1	Year 2	Year 3	Year 4
Manpower from Egypt	50	1450	1450	100
Manpower From Other Country	15	550	550	50

- Operational Phase Workforce: Approximately total 600 full-time workers in which company employees 300 and around 300 as contract workers.
- Local Recruitment Target: ~70% workers to be hired from Ain Sokhna and neighbouring communities
- External Recruitment: ~30% from other governorates within Egypt, especially Upper Egypt, Nile Delta, and Greater Cairo

In addition to the anticipated influx of construction and operational phase workers - estimated at 1,500–2,000 during peak construction and approximately 600 full-time workers during operations - the project is also likely to attract other population groups to the area. While precise figures are unavailable, experience from similar industrial projects in Egypt suggests that increased economic activity can draw in support service providers such as petty traders, food vendors, transport operators, and informal sector workers seeking to capitalize on increased demand. Furthermore, public service staff (e.g., security, health, and administrative personnel) and NGO workers may be deployed or self-mobilize in response to evolving community needs, perceived environmental or social risks, or opportunities for community development.

Though the project is located within an established industrial zone near Ain Sokhna - which already has some infrastructure and services - this secondary in-migration could still place additional pressure on local housing, services, and infrastructure in nearby communities, particularly if local planning systems are not fully prepared for the indirect demographic impacts of the project.

Drivers and Nature of Influx

Influx into the Ain Sokhna region can be classified into two categories:

Rev: 00	Influx Management Plan	Page: 5 of 13

INDORAMA	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

A. Direct Influx:

This category includes individuals migrating specifically for job opportunities directly associated with the project:

- Construction-related employment: During the 15–18-month construction period, the workforce is expected to peak at 1,500–2,000 workers. While approximately 70% of this workforce is targeted to be recruited from Ain Sokhna and nearby communities, the remaining 30% will come from other parts of Egypt and abroad. The presence of highly specialized roles not available locally may further increase reliance on non-local workers.
- Operational phase staffing needs: Once operational, the facility will employ approximately 600 full-time staff, split evenly between company employees and contract workers. A share of these roles, particularly technical and managerial positions, may also be filled by workers from outside the region.
- Temporary or seasonal job opportunities in subcontracted services (e.g., catering, cleaning, logistics): Additional temporary influx is expected for subcontracted services such as catering, cleaning, security, and logistics, especially during peak construction and early operational phases.

B. Indirect & Induced Influx:

This category comprises individuals not directly employed by the project, but who are drawn to the region due to secondary or tertiary economic opportunities:

- Entrepreneurs and small businesses: The project is expected to stimulate growth in ancillary services, including food vendors, transport providers, accommodation operators, and general retail. This is likely to attract informal traders and micro-entrepreneurs from outside the area. Support services and suppliers: Contractors and suppliers not directly linked to the project, but seeking proximity to capitalize on new demand or logistical advantages, may establish a more permanent presence in the region. Family members of workers relocating: Particularly during the operational phase, workers may choose to relocate with their families, contributing to longer-term settlement and increased demand for housing, education, and healthcare.

Other stakeholders: NGO staff, public service workers, and community-based organizations may also relocate or increase their activity in the area in response to growing population needs, socio-environmental changes, or perceived development opportunities. The cumulative impact of both direct and indirect influx is expected to lead to increased population density, greater pressure on local infrastructure and basic services, and shifts in the social and economic dynamics of surrounding communities. Even though the project is located within an established industrial zone, the nearby settlements - particularly those with limited planning capacity - may face challenges in absorbing this growth without appropriate support and forward planning.

A more precise quantification of this influx is anticipated and requires close coordination with local authorities, updated demographic baselines, and regular monitoring during project implementation. Baseline Environment and Current Settlement Trends

Findings from 2002–2022 Satellite Analysis

- Significant urban expansion along industrial corridors of Ain Sokhna
- Increased settlement density near Ain Sokhna Suez Road.
- Growth of informal or semi-formal housing clusters

Rev: 00	Influx Management Plan	Page: 6 of 13

	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

- Settlement patterns indicate that industrial activity is a major magnet for population movement
- SCZone has the complete control over the Ain Sokhna area.

Although detailed planning documents and infrastructure thresholds were not available, SCZone's centralized role suggests a degree of planning oversight. However, the growth of informal settlements points to challenges in enforcement and infrastructure capacity, particularly in peripheral areas.

Although direct community engagement has not yet been undertaken, the pattern of settlement growth indicates that the region is already experiencing in-migration tied to economic opportunity. The Project is expected to accelerate this trend and may contribute to cumulative pressure on local infrastructure and services and will be closely coordinated with SCZone and other relevant authorities.

Sensitive Receptors

The project site is located within a heavily industrialized area of the Ain Sokhna section of the SCZone and the project' site is surrounded by the following activities:

- North: Flash flood protection trench followed by the Orascom Industrial Park.
- East: Vacant land.
- South: Vacant land, and to the southeast Egyptian Steel, followed by El-Sewedy Electric Infrastructure.
- West: Vacant land

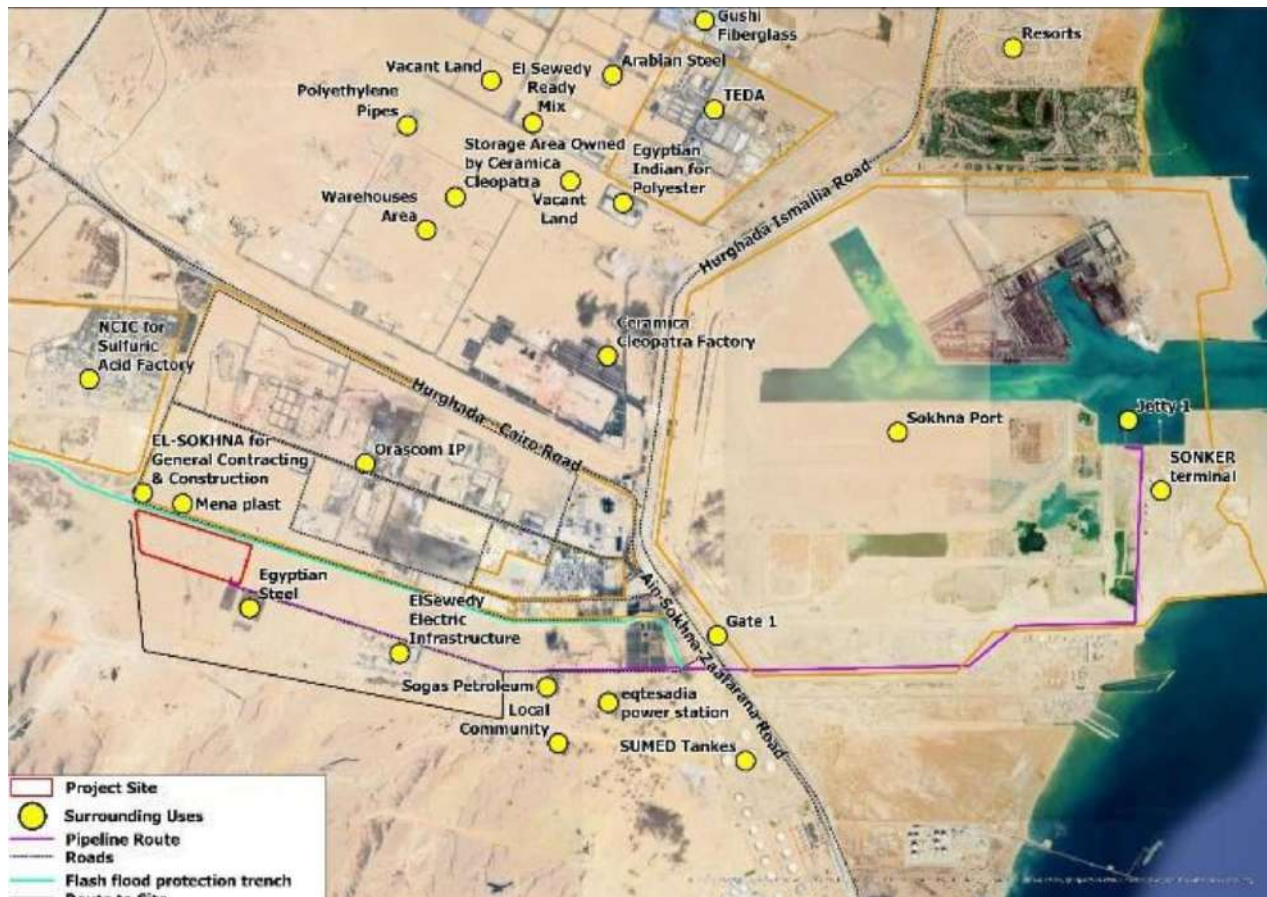
The presence of these industrial neighbors, along with areas of vacant land, may serve as physical interfaces with project activities and potential locations for informal settlement or services used by incoming workers during the construction and operational phases. Although these areas are not residential in nature, unregulated worker accommodation or service hubs (e.g., food vendors, transport stops) could emerge in proximity, potentially leading to local pressures or friction with neighboring industries.

No non-industrial sensitive receptors (e.g., schools, health clinics, community centers) are currently identified in the immediate vicinity of the site.

Natural receptors such as groundwater and air quality are important considerations due to the project's industrial context and the cumulative emissions from nearby operations. A baseline assessment was carried out through air quality and geophysical investigations at the project site. Continuous monitoring will be conducted throughout both the construction and operational phases of the project.

At this stage, only limited information on local population centers, service infrastructure, and governance arrangements for land use control is available. As such, a more detailed assessment of sensitive social receptors, particularly beyond the industrial zone boundaries, will be required during the next phase of project planning or once further engagement with local authorities and service providers is undertaken.

Rev: 00	Influx Management Plan	Page: 7 of 13



Area of Influence of the Project area

Potential Impacts of Influx

- Increase risk of Gender based violation, Child Protection: A large, predominantly male workforce may increase risks of gender-based violence, harassment, and exploitation. Influx-related economic activity (e.g., vending, waste collection, informal services) could create conditions for child labour, particularly among low-income families. The risk of school dropout may rise if children are engaged in income-generating activities. Impact on Local Culture and Identity like language friction: Influx from diverse regions may lead to language friction or shifts in local norms, particularly in nearby communities with strong local identity.
- Housing Pressure: Increased demand for rental housing could lead to inflated prices and displacement.
- Public Services: Potential strain on local healthcare, sanitation, and education systems, especially if informal settlements grow unregulated.

INDORAMA	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

- Social Tension and Security: Competition for jobs or services could cause community friction, while rising population density may contribute to petty crime or conflict. Health Risks: Possible spread of communicable diseases due to dense living conditions.
- Security: Potential increase in petty crime and conflicts.
- Environmental Pressure: Influx is likely to increase waste generation and resource consumption, particularly water and electricity.

Key Concerns for Receptors

- Vacant lands: Risk of informal occupation or squatting
- Industries: Traffic congestion, workforce interaction, security concerns
- Storage & hazardous facilities: Inappropriate proximity of informal populations may increase safety and fire risks
- Roads: Higher vehicle-pedestrian interaction risks due to increased commuting and vending activities

Mitigation and Management Measures

Based on the analysis provided, the impact from the influx of migrant workers and job seekers into adjacent communities will be a “Moderate Negative Impact” pre-mitigation.

The settlement of migrant workers or jobseekers related to the Project is most likely to be observed in the immediately adjacent communities. However, the induced economic activity and potential for “camp followers” suggests that influx may also occur more broadly, throughout the Ain Sokhna area.

Management Measures

The site is in SCZone Industrial area and there are no communities within 4-5 km from the site. Moreover, the neighbouring plots are mostly vacant and are reserved for industries that may come up in future. So, we expect minimum impact on neighbouring communities and industries during the construction and operational phase.

Labor accommodation Plan

Maximum influx expected during the project is ~2000 workers. The land for labour camp will be provided by IMF to all the contractor and the subcontractors in the Gypsum storage area which measures 25 Hectares. It is more than adequate for the construction of worker camps. The required standards for the labour camps will be defined in the contracts for the construction and will be as per the IFC standard PS 2. All the health and hygiene, sanitation, water, electricity, Food, lodging & boarding and other infrastructure will be provided by IMF. The influx management plan has been discussed with SCZone authorities and shared with them. These documents have been discussed with EPC contractor and details are available in the Contractor Management document sec 19.5 Construction living camp management,

The Local employment framework is as follows,

Local Hiring Framework: Maximize hiring from Ain Sokhna to reduce external influx pressure.

Workforce Accommodation Strategy: Construct managed worker camps with adequate water, sanitation, electricity, and waste disposal as per IFC/EBRD "Worker Accommodation: Processes and Standards" (2009)

Influx Management Plan: Develop in coordination with local authorities and apply IFC PS5 guidelines

Rev: 00	Influx Management Plan	Page: 9 of 13

	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

Code of Conduct: Ensure behavioural standards and quick conflict resolution

Vendor and Service Screening: Formalize informal vendors through registration and training

Stakeholder Engagement: Regular communication with industrial neighbours, landowners, and local communities

Monitoring and Surveillance: Track settlement growth, demographic changes, and early warning signs through field teams and GIS mapping

Grievance Management mechanism (Procedures are defined in the HR Policy & Procedures)

- Maintain a grievance mechanism for workers.
- Regular inspections and maintenance.
- Contractors and subcontractors must comply with same standards.
- Records must be kept on accommodation, inspections, incidents.

Based on the implementation of the proposed mitigation measures provided in Section, the significance of the residual impact from the influx of migrant workers and job seekers into adjacent communities will be a “Insignificant Impact” post mitigation

Monitoring Indicators

Indicator	Frequency	Responsibility
Number of incoming job seekers	Monthly	Social & HR team
Growth of informal settlements	Quarterly	E&S team
Pressure on local services	Semi-annually	In coordination with local authorities
Grievances related to influx	Monthly report	Community Relations
Number of local vs. external hires	Bi-monthly	HR Department

- The indicators will be tracked and reviewed periodically. Perception surveys will be conducted for the stakeholders.
- The key KPIs will be the % of the Grievances received for the month, % of the Grievances closed after the required action.
- Based on the feedback from the survey and indicators data corrective actions will be taken wherever required

Compliance to IFC

This Influx Management Plan complies with the following:

Rev: 00	Influx Management Plan	Page: 10 of 13

INDORAMA	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

- IFC Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts.
- IFC Performance Standard 2: Worker's accommodation process and standards.
- IFC Performance Standard 4: Community Health, Safety, and Security
- IFC Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Applicable Egyptian labour and urban planning regulations.

Conclusion

The Project in Ain Sokhna represents a major industrial investment that will generate wide-ranging socio-economic benefits. However, the potential for influx of migrant workers and job seekers poses challenges that require early planning, stakeholder coordination, and active monitoring.

By adopting international best practices and through responsible local integration and workforce management strategies, the Project can mitigate risks while contributing positively to the sustainable development of the Ain Sokhna region.

Rev: 00	Influx Management Plan	Page: 11 of 13

Annex 1
Local Hiring Procedure

	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

LOCAL HIRING PLAN

The Local Hiring Plan has been developed to organize and enhance Project employment opportunities for local people in a culturally appropriate manner and in accordance with COMPANY social policies and commitments.

OBJECTIVES

This Plan's overall objective is to define the process and guidelines for hiring local workers in the Project's area of influence, within the framework of IMF commitments. Local Worker is defined as any person who is employed by COMPANY or any of its CONTRACTORS or subcontractors and resides in the Project area of influence since before the start of Project activities.

The specific objectives are to:

- Develop procedures and practices that maximize opportunities for hiring local workers and that intend to minimize project-related social risks in the areas of influence.
- Develop transparent procedures that allow access to Project jobs by the local population in an organized and fair manner.
- Establish a hiring process that respects local cultural and social norms to facilitate local participation and avoid conflicts and other negative social impacts.
- Promote fair practices in the hiring of local workers that protect against unauthorized third-party job brokers, child and forced labour, and discrimination.

Project CONTRACTORS will seek skilled and semi-skilled candidates from the area of influence of the Project and will fill as many available positions as feasible with candidates having suitable experience. CONTRACTORS will provide training to suitable local candidates with the intent of qualifying them for applicable skilled and semi-skilled positions.

HIRING PROCEDURES

Clear and consistently applied criteria for hiring local workers are critical to maintaining community support and achieving a balanced workforce that meets Project objectives.

As stated earlier, "local worker" (or "local employee") is defined as any person who is employed by COMPANY or any of its CONTRACTORS or subcontractors and resides in the Project area of influence since before the start of Project activities. Similarly, "local population" refers to the people born and living, or living for a long period, in the provinces included in the Project area of influence. Therefore, COMPANY will require that the place of residence of the prospective workers is established by any reasonable means.

The Project is committed to offering open access to local employment and to respecting local culture and customs. Therefore, the Plan will allow the local organizations and families to decide who can better fill the open positions, assuming the candidates are deemed capable of performing the work satisfactorily and have the required skills. Work opportunities will be communicated widely and openly by CONTRACTOR with COMPANY's Supervision, without coercion or manipulation to Favor certain groups or individuals to apply for any specific positions.

Rev: 00	Influx Management Plan	Page: 13 of 13



APPENDIX G SECURITY MANAGEMENT PLAN & POLICY

Security Management Plan & Policy

	Prepared by	Approved by
Name	T Balachandar	Mr. V Rajendran
Department	Technical	Head Engg & Projects

Contents

1.0 Introduction	3
2.0 Objectives, Mission and Approach Of Company Security	4
2.1 Security Policy	4
2.2 The Approach	5
2.3 Security Philosophy and Standards	6
3.0 Overview Of Security Situation	7
4.0 Physical Security	9
5.0 Security Operating Procedures	13
6.0 Security Supervision and Control.....	13
7.0 Security Force Management.....	17
8.0 Managing Relations with Public Security	18
9.0 Incident Reporting And Inquiry	19
10.0 Community Engagement and Grievance Mechanism.....	22

1.0 Introduction

IMF Misr Phosphate

IMF Holdings B.V. Company is one of the subsidiaries of IMF Group, Ltd., which has several phosphate fertilizer plants in different countries (Senegal, Brazil, Uzbekistan and India). The Company plans to establish a Phosphate Fertilizer Complex (the Project) within Suez Canal Economic Zone (SCZone), Sokhna, Egypt.

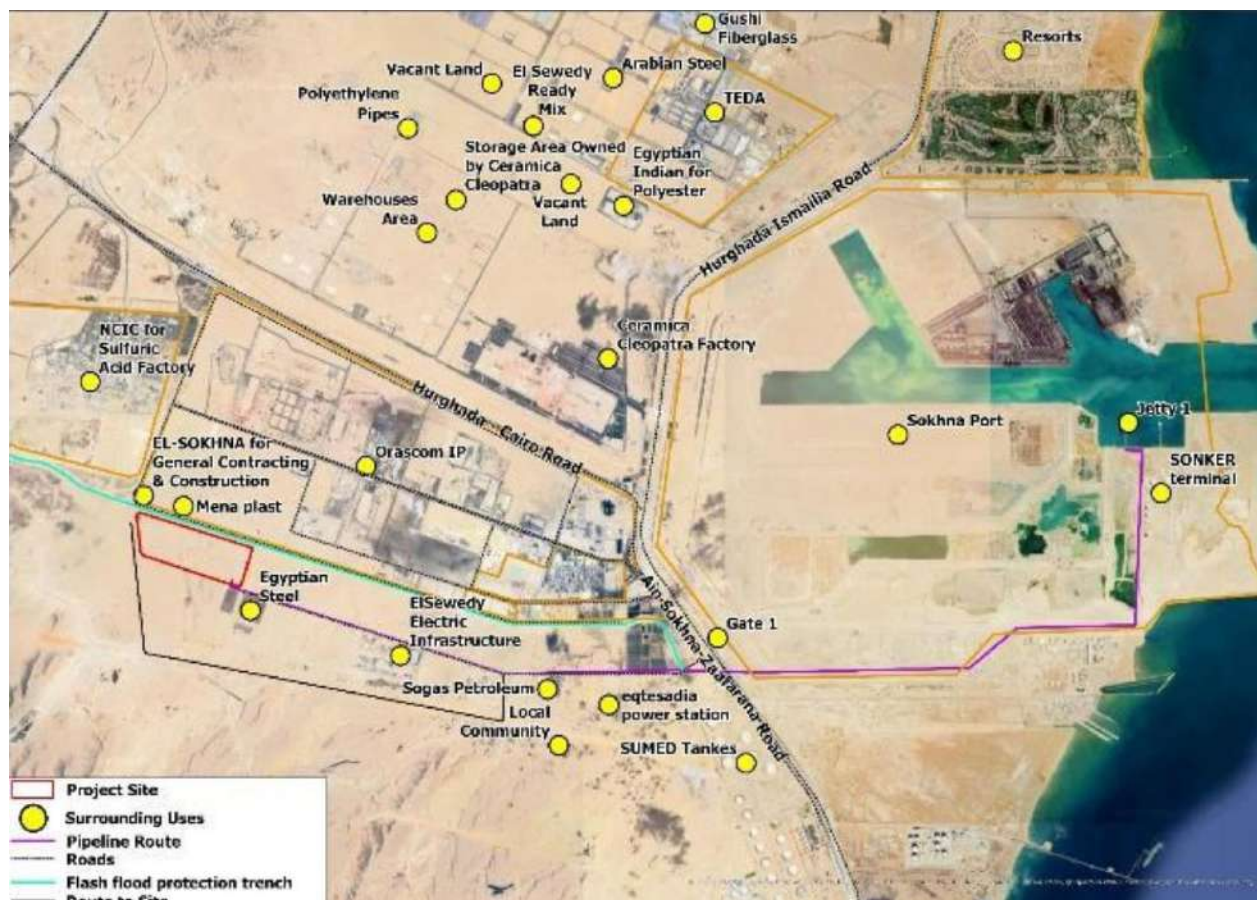
The proposed project site will occupy an area of about 525,000 m² in industrial area within SC Zone, in Sokhna, Suez Governorate

Project Overview and Description

The Project is located within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone (hereinafter, SC Zone), in Sokhna, Suez Governorate, Egypt. The complex includes a production site, a phosphogypsum storage area and ammonia pipelines.

The Project will consist in the following key elements:

- **Sulfuric acid plant (SAP):** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of double contact double absorption (DCDA). It will be operated continuously for 24 h/day over 7 days a week.
- **Phosphoric acid plant (PAP):** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of Dihydrate technology. It will be operated continuously for 24 h/day over 7 days a week.
- **DAP/ NPK fertilizer plant:** consisting of a series of equipment and processes to produce sulfuric acid, using the well proven technology of Dihydrate technology. It will be operated for 22 h/day and cleaning activities will be done for approximately 2 h/day.
- **Port Facilities :** consisting of a Ammonia Unloading arm, Ammonia cross country pipeline. The ammonia pipeline inside the port will be above ground and will be governed by Port Authority. The remaining Pipeline outside port area will be underground (1 m below ground level) till the site. Phosphoric acid tanks with capacity of 15000 MT X 2 with Acid Unloading and Loading system will be constructed in the Liquid terminal of the port.



This Security Management Plan (SMP) applies to all activities undertaken within the IMF Misr Fertilisers for regular operations and construction of the Project thereof.

2.0 Objectives, Mission and Approach Of Company Security

IMF is committed to constructing the Project in a manner that protects worker and public as its security concern. The Project shall be constructed in accordance with applicable laws, regulations, as laid down by the Egyptian government and strictly abide by the 'law of the land'.

2.1 Security Policy

We at IMF (Indorama Misr Fertiliser), Egypt are committed to ensure the business continuity of the companies within this complex, create a safe and secure work environment for employees, associates and assets as well as to communities, through:

- Regular assessment of security threats to business operations and manage the associated risks to eliminate or reduce them to manageable level.

- Ensuring that appropriate security measures are in place such that we do not expose employees **or surrounding communities** to significant risk, while maintaining respect for human rights and minimizing adverse impacts on local populations.
- Ensuring that appropriate response procedures are in place to minimize the impact of any security incident or emergency.
- Record, analyze and training of security operatives / personnel for enabling them to effectively discharge their duties.
- Continual review & improvement investigate all reported security incidents directly involving our business operations or employees to develop improvements to prevent their recurrence.
- Continual education of security objectives, plans, procedures and practices for attainment of highest level of operational efficiency and plant performance.
- Developing contingency plans and measures for emergency relating to potential security incidents.
- We shall not employ armed security unless there is no acceptable or practical alternative to manage the risk.
- Comply all legal & other requirements of organization.

2.2 The Approach

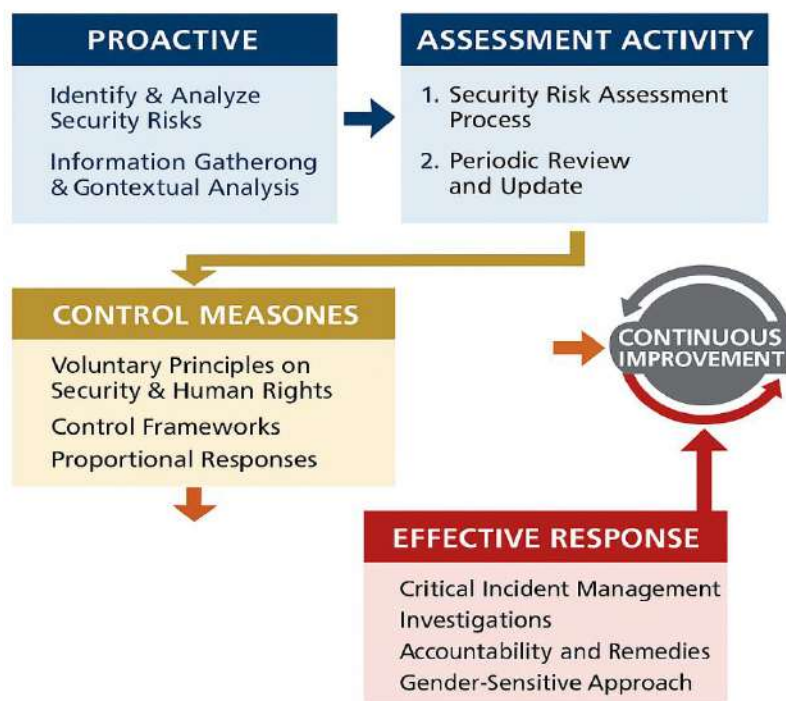
IMF's security approach is based on respect for people and human rights, and is guided by the Voluntary Principles on Security and Human Rights. These Principles are integrated into our Security Policy, and all working at site endeavor to follow them. IMF strives to be a good partner and we value our reputation as a good corporate citizen that engages and supports local communities. These relationships are important on many levels, including establishment of a calm, secure environment for our operations.

Security and safety of our people are foremost. IMF has numerous proactive programs to protect people, ranging from stringent access controls at sites to specialized training for personnel on how to avoid security risks while traveling or working in remote locations. We encourage all individuals in the organization to take responsibility for their own security, and we empower them to play a role.

Safeguarding the company's products and assets is fundamental to preventing losses and protecting shareholders' interests. Our security program has established best practice standards for the protection of our personnel and other materials, and we are continuously reviewing and improving these standards.

The IMF Security Management System enables our company to manage and respond to security challenges wherever we operate. We are committed to a proactive program using the best protection measures available to keep everyone and everything safe and secure.

2.3 Security Philosophy and Standards



The IMF Security Management System is grounded in a proactive, rights-based, and context-sensitive approach to managing security risks. The system begins with the early identification and contextual analysis of potential security risks across operational areas. This analytical foundation enables the conduct of structured assessments, such as Security Risk Assessments (SRA) and periodic reviews, to ensure risks are accurately understood, continuously tracked, and updated in alignment with evolving local dynamics. Once risks are assessed, the system implements a suite of administrative, technical, and physical control measures aimed at reducing both the likelihood and impact of security incidents. These measures are firmly anchored in the Voluntary Principles on Security and Human Rights, ensuring that:

- Human Rights are respected at all times during the provision of security.
- Use of force is strictly proportional, preventive, and defensive only, with escalation only as a last resort.
- Gender-sensitive approaches are adopted to acknowledge and respond to the different experiences, vulnerabilities, and needs of women and marginalized groups in security contexts.

This includes appropriate training of security personnel, ensuring female representation in security

teams where possible, and maintaining channels for gender-responsive grievance handling.

- In the event of a security incident, the system supports a coordinated and effective response, which includes:
 - Critical incident management
 - Timely and transparent investigations
 - Clear accountability mechanisms
 - Protection measures for vulnerable individuals, especially women and minority groups who may be disproportionately affected.

Crucially, the entire system operates as part of a continuous improvement cycle. This means that lessons learned from incidents, stakeholder feedback, and evolving socio-political environments are consistently integrated into the system. This adaptive approach ensures that the IMF Security Management System remains effective, inclusive, transparent, and aligned with international good practice principles.

3.0 Overview Of Security Situation

The IMF Egypt Fertilizer Site is situated in Ain Sokhna, a relatively secure and industrially active zone. As of the current reporting period, the security situation is stable, with no major incidents or disruptions recorded at the site or in its immediate vicinity.

Routine site surveillance, controlled access systems, and engagement with local authorities help maintain a low threat profile. Security protocols are in place to address any emerging risks, in line with the IMF Security Management System and international best practices.

- **Risk Identification and Assessment**

While the overall environment remains peaceful, the following contextual risks have been identified through ongoing Security Risk Assessments (SRAs):

Risk Category	Description	Current Risk Level	Control Measures
Community Unrest	Local grievances due to unmet expectations or employment issues	Low	CSR programs, grievance mechanism, local dialogue. Close relationship with administration and Local Police Proactive engagement with surrounding communities
Labor Disputes	Worker dissatisfaction related to working conditions or management decisions	Low to Moderate	Transparent HR policies, worker engagement forums. Grievance management system
Petty Theft/Intrusion	Unauthorized access or minor theft from the site perimeter	Low	Fencing, CCTV, access control, Site security,
External Security Threats	Regional political or social instability	Very Low	Liaison with local police, emergency preparedness

Community Engagement and CSR Integration

To mitigate community-related risks and enhance long-term stability, the IMF management has committed to strategic CSR initiatives in nearby communities. These include:

- Education support programs
- Health and sanitation infrastructure improvements
- Local employment and skill-building workshops
- Support to youth and women's groups

These initiatives serve dual purposes:

- Enhancing the company's social license to operate
- Reducing worker discontent, particularly where local labor is employed, as they benefit indirectly from such schemes

By positioning CSR as a core part of its stakeholder engagement strategy, IMF is proactively alleviating potential sources of community tension and reinforcing a peaceful security climate.

Stakeholder Communication and Grievance Handling

To ensure effective dialogue with all internal and external stakeholders, the following mechanisms are in place:

- Anonymous grievance reporting system (in line with IFC Performance Standards)
- Regular engagement with community leaders and local authorities
- Bi-monthly worker dialogue sessions
- Transparent reporting of security and CSR activities

These processes are designed to:

- Foster mutual trust and transparency
- Enable early detection of grievances
- Ensure accountable and respectful responses

Continuous Improvement and Monitoring

The site's security risk profile and stakeholder dynamics will be reviewed quarterly, incorporating:

- Lessons learned from incident reviews (if any)
- Stakeholder feedback, particularly from community and workforce representatives
- Adjustments to the Security Management Plan and CSR strategy as needed

This adaptive approach ensures the security system remains fit-for-purpose, aligned with human rights, proportionality, and gender-sensitive principles, and evolves with changing site dynamics.

4.0 Physical Security

The security management system at Indorama Misr fertilizer is divided in three (03) strata namely:

- Core security team
- IMF Security Team
- Contract security Team reporting to IMF Security Management

A brief metrics of security resource is as below:

S/N	SECURITY RESOURCE	ACTIVITY	MANNING	Responsible for Risk Identification & Assessment
01	Core Security Management	24x7 security vigilance at site and controls all over the complex for monitoring.	Security management team supported by dedicated control room and floor staff	Primary Responsibility – Core Security Management Team
02	IMF Security Team	24x7 security vigilance at site and controls all over the complex for monitoring	Security management team supported by dedicated control room and floor staff	Supports implementation but not responsible for formal risk assessments. Implementation of Risk mitigation and control strategies
03	Contract Security personnel drawn from experienced private security deployed at critical access points and resources.	24x7 contract security guards engaged for complete checks, access controls, traffic guards, emergency services and gate controls	team consisting of security coordinators, supervisors & guards	Operational role; not responsible for structured risk assessments. Onground Implementation of security procedures

Security Personnel Employment and Conduct

Contracted private security personnel are deployed at key access points and critical infrastructure at the IMF Egypt Fertilizer Site. Their selection and conduct are aligned with IFC Performance Standard 4 (PS4) and international best practices.

Security agency will be selected based on experience, background checks, capability, availability of resources

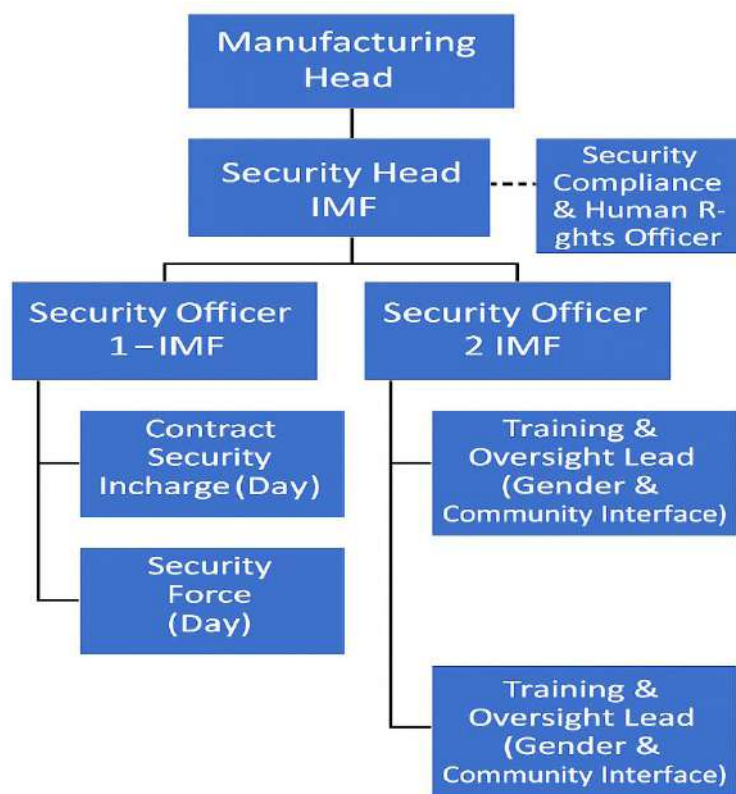
- Due Diligence: All security staff are vetted to ensure they have no history of human rights abuses or misconduct. Only licensed, experienced personnel are employed.
- Conduct and Use of Force: Guards operate under a clear code of conduct, emphasizing proportionality, prevention, and respect. Use of force is strictly controlled and limited to defensive measures.
- Training: All personnel receive regular training on human rights, respectful behavior, de-escalation techniques, gender sensitivity, and appropriate use of force (including less-lethal methods and firearms, where applicable).
- Oversight: IMF monitors security behavior through routine supervision. Grievance mechanisms allow reporting of misconduct, with clear procedures for accountability and corrective action.

This approach ensures that security at the site remains professional, rights-based, and community-sensitive.

The management of security has been designed to ensure the unilateral reporting to Head-Security and Administration channelized through various hierarchies.

This helps in centralized and quick decisions with effective actions implemented thereof.

Typical Organization chart of Security Team is depicted as follows



4.1 Physical Security Measures

Physical measures such as to-and-fro transportation for employee's will be a great advantage. This ensures a direct discipline of all personnel reporting for their respective duty hours validated by Biometric Punching. Apart from this, a dedicated and secured car parking space is created within the Indorama Misr fertilizer for employees commuting in their own vehicles.

A dedicated fleet management system is a place that functions to transport employees, contractors, guests and visitors across the site on periodical basis. The fleet management is owned and controlled by administration department to ensure vehicle road worthiness as well as drivers' discipline. Further, this prevents any untoward vehicles entering inside thereby making it a foolproof security management. Apart from the human resource, various tools and tackles including proven technologies are being used to eliminate any security issues at site. The technology is infused with security practices with defined responsibilities for each function and is established to form a cohesive activity.

Table below highlights the various tools and technology being practiced at site on regular basis:

S/N	Security Resource Hardware	Activity	Manning	Responsibility
1	Perimeter Protection	Preventing external intrusion. Securing the perimeter of the site and the Port facilities	Fence on perimeter wall, CCTV camera surveillance, physical patrols.	Security Officer (Patrolling Team)
2	CCTV Monitoring System	Surveillance of access gates, perimeter, and critical areas & Port facility	24x7 monitoring by a team of CCTV operators and technicians.	CCTV Control Room Supervisor
3	Biometric Access Control System	Prevent unauthorized access.	Guards at access gates; monitoring by CCTV team.	Access Control Supervisor
4	Material & Vehicle Movement	Control of personnel, material, and vehicular access.	24x7 manning by security guards; oversight by CCTV operators.	Gate Security Supervisor
5	Visitor Management System	Restrict unauthorized individual entry into the complex.	Managed by gate security and access control teams.	Visitor Management Officer
6	Ammonia Pipeline Leak Detection System (PLDS)	Ensure safe and secure ammonia transfer via pipelines.	24x7 manning by ground surveillance team; control room monitoring by PLDS operators.	Safety & Emergency Response Coordinator

Apart from these, routine security checks (frisking and metal detector checks) are being done. These are done on random basis to ensure no theft issues take place.

5.0 Security system in Port Facility

The Indorama Port Facility at Ain Sokhna operates under a comprehensive, multi-layered Security Management System (SMS) designed to protect personnel, assets, cargo, and critical infrastructure in full compliance with the ISPS Code (International Ship and Port Facility Security Code) and Egyptian maritime security regulations.

The facility maintains a designated Port Facility Security Officer (PFSO) responsible for implementing and overseeing the Port Facility Security Plan (PFSP). Access control is strictly enforced through biometric and ID-based entry points at all perimeter gates, with differentiated access zones — public, restricted, and highly restricted — clearly demarcated throughout the terminal. All personnel, vehicles, and cargo undergo security screening before entry, and contractor or visitor access is managed through a pre-authorization protocol.

A 24/7 surveillance network of CCTV cameras covers the quayside, storage yards, control rooms, and perimeter fencing, monitored continuously from a central security control room. Waterside security is maintained through patrol vessels and restricted anchorage zones, preventing unauthorized maritime access to the berths and offshore infrastructure.

The SMS incorporates a three-tiered security level framework (MARSEC Levels 1–3), allowing rapid escalation of security measures in response to elevated threat conditions, coordinated with the Egyptian Navy, Coast Guard, and Ain Sokhna Port Authority. Regular drills, threat assessments, and security audits ensure operational readiness, while an incident reporting and response protocol guarantees swift action in the event of any breach, intrusion, or emergency.

All security personnel are trained to international standards, with ongoing refresher programs covering threat recognition, emergency response, communication protocols, and cybersecurity awareness — reflecting the facility's commitment to maintaining a safe, compliant, and resilient port environment.

6.0 Security Operating Procedures

Detailed Operating Procedures are in place for the below mentioned activities:

- Management of Convoy
- Access Control
- Finished Goods/Logistics Vehicular Access
- Patrolling
- Procedure for handling Emergency scenarios
- Access to Project related manpower/vehicles
- Regular surveillance of the Ammonia pipeline corridor
- Separate procedure for Port Facility

7.0 Security Supervision and Control

IMF's security management takes a systematic approach to the company's security needs by providing appropriate frameworks, procedures, standards, and guidelines that can be consistently applied across all operations and construction project. This enables the company to implement best practices and achieve planned security outcomes.

A major focus for IMF security has been developing robust, world-class security framework for asset protection including, plant and equipment, vehicles, commodities, and materials. To protect these assets, IMF's security has established a set of physical and technological security measures that are used for its operations. These standards provide a level of assurance to the senior leadership team, Board, shareholders, and to external stakeholders that IMF's security team is taking proper steps to secure human and other assets. This same approach will be extended/applied for the new project.

IMF's approach considers relevant risks and exposures, along with an evaluation of the appropriate balance between technology and staff resources. They are developed in consultation with key stakeholders to achieve these objectives:

- Establish minimum compliance levels
- Enable effective auditing to ensure standards are being maintained
- Create controls over unnecessary or redundant expenditure
- Align security activity with key priorities

In addition to the minimum standards, site security team is encouraged to put in place additional measures or controls required or recommended at their particular operation as dynamic control measures.

IMF has developed a comprehensive, industry- leading approach through a set of best practice measures for the protection of assets and personnel and is supported by an audit program, detailed procedures, and an alternate control/exemption process. Any exception to the standard is subject to a thorough risk assessment process and must satisfy senior management that an appropriate alternate control is in place. Through the auditing process, IMF Security Management System ensures that effective internal controls are implemented. If any control gaps are identified, the audit process outlines any remedial actions required. Standards and guidelines for protecting fuel, explosives and other materials are also part of the IMF Security Management System, along with standard operating procedures for various tasks and responsibilities of security personnel.

IMF security function has an annual audit plan that addresses the highest priority risks. These periodic audits ensure that security is compliant with corporate strategy, standards, legislation, and regulations. In addition to the annual audit plan, management may request focused audits or reviews as desired. The audit scope may cover various technical, procedural and/or organizational areas. Audits are conducted by members of the security team who may be assisted by internal and external resources. Combined with periodic risk assessments, reviews, and information analysis, these audits help determine the continuing suitability and effectiveness of security controls implemented for a particular risk environment.

	INDORAMA MISR FERTILIZER EGYPT	Date: 26 th April 2026

S/N	Security Resource Hardware	Activity	Manning	Responsibility	Construction Phase Measures & Dynamic Controls
1	Perimeter Protection	Prevent external intrusion. Secure site boundary.	Perimeter fence, CCTV, patrolling guards	Security Officer (Patrolling Team)	Temporary fencing, lighting towers, and watch towers; mobile patrols during non-working hours
2	CCTV Monitoring System	Monitor gates, perimeter & critical zones.	24x7 operators & technicians	CCTV Control Room Supervisor	Deploy mobile surveillance units or drones; install temporary tower cameras during heavy construction activities
3	Biometric Access Control System	Prevent unauthorized personnel access.	Security guards & CCTV team	Access Control Supervisor	Use biometric/ID verification for labor; maintain daily labor logs; conduct spot checks by supervisors
4	Material Vehicle Movement Control	Manage entry/exit of people, vehicles & materials.	24x7 security guards, monitored by CCTV	Gate Security Supervisor	Temporary access permits for construction vehicles; checkpoint logs; RFID/barcode-based vehicle entry control
5	Visitor Management System	Prevent unauthorized individuals from entering.	Gate security & access control team	Visitor Management Officer	Use of temporary visitor passes; escorting all visitors on site; log entry and exit times in a central digital register

6	Ammonia Pipeline Leak Detection System (PLDS)	Ensure safe & secure ammonia transfer.	24x7 on-ground team and PLDS operator	Safety Emergency Response Coordinator &	During construction: Pipeline construction monitored by safety team; mock leak response drills; access restricted to authorized staff
7	Lighting and Signage	Ensure visibility, deter intrusion, and direct movement.	Night-time lighting inspections	Security Officer	Portable solar lights in non-electrified areas; dynamic placement based on construction progress
8	Incident Reporting & Emergency Response	Rapid response to safety/security incidents.	Security incident response team	Emergency Response Coordinator	Set up mobile incident response unit with first aid; install temporary muster/assembly points; simulate emergency drills regularly

8.0 Security Force Management

As indicated earlier, a dedicated contract management staff is at place and functional for the entire IMF Misr fertilizer. This team mans the entire site at all the security gates 24 x 7 and controls the movement of personnel, vehicles and goods after confirming valid documentation.

All the security guards are provided with Radio (Walkie-Talkie) with security channel hooked up. This enables the security officers to stay in touch with the security guards all the time and message percolation for quick action in case of any civil disturbance.

Apart from this, the security guards are trained to handle industrial emergencies like fire, gas release and emergency management. The guards are trained to understand the basics of emergencies and responsibility entrusted to them to act in these conditions.

The security guards are rotated at all gates to enable them to gain learnings and exposed to various nuances of security functions.

The staffing is from local communities and their background credentials are verified before hiring to eliminate criminal antecedents' characters. Periodic trainings are conducted on regular basis. Their

reporting is to IMF Core Security Team. Systems and documentation is at place for reporting to track all developments.

9.0 Managing Relations with Public Security

The IMF Security Management team will have regular contact with local Egyptian security teams. This forms the interface basis of contact for Public Security and are consulted for any public security contacts. Since the group is in constant touch with agencies, update as are regularly received and dynamic actions may be formalized based on the intelligence inputs.

- The IMF Security Management Team acts as the strategic oversight authority, ensuring that the security posture of the project remains compliant with international performance standards such as IFC PS4, EBRD PR4, and UN Voluntary Principles on Security and Human Rights (VPSHR).
- The Local Egyptian Security Team is the implementation arm, responsible for daily operations, coordination with contracted security agencies, and community interface on security issues.

Responsibility Area	IMF Security Management Team	Local Egyptian Security Team
Policy & Governance	Develops corporate-level security policy and aligns with IFC, EBRD, and international standards (e.g. UNGP, VPHSR)	Implements policies on the ground in accordance with local laws and site-specific needs
Security Strategy & Oversight	Defines the overall strategy, risk thresholds, and compliance objectives	Executes the site security plan and ensures physical implementation of controls
Contractor Screening & Vetting	Ensures no engagement of contractors implicated in past human rights abuses	Provides documentation and assists with due diligence for contract security personnel
Training & Capacity Building	Provides mandatory human rights, use-of-force, and behavior training modules	Conducts on-the-ground training and induction of security guards, including site familiarization
Monitoring & Auditing	Conducts periodic audits and KPIs review of site-level security performance	Maintains security logs, shift reports, incident registers; supports audit with documentation
Community Interaction Oversight	Defines protocol for respectful interaction with workers and community	First-line of communication with workers and visitors; refers grievances or sensitive issues to IMF leadership

Emergency Preparedness & Response	Designs emergency response framework and allocates responsibilities	Executes emergency drills, participates in mock exercises, and maintains contact with local police/fire/ambulance services
Incident Reporting & Escalation	Receives escalated incident reports; responsible for reporting to senior management and stakeholders	Logs daily incidents, initiates immediate on-ground responses, and escalates serious matters to IMF team
Construction Phase Security Coordination	Establishes guidelines for enhanced controls during high-risk construction periods	Deploys mobile patrols, gate checks, temporary barriers, lighting, and fencing during ongoing construction

9.0 Incident Reporting And Inquiry

Like any major corporation in the primary industries, IMF is subject to a wide range of security challenges in the course of its normal operations.

These challenges may include critical incidents, which we define as single high-impact security events that require an immediate local response. Examples of critical incidents include:

- Fraud
- Unauthorized access
- Sabotage
- Major theft
- Strike
- Kidnap/abduction
- Bomb threat
- Evacuation

For high-impact critical incidents, IMF Security has developed a critical incident management plan to ensure an appropriate response and an orderly recovery process.

IMF Critical Incident Management Plan (CIMP)

For High-Impact Security Events – Ain Sokhna Site

- Objective

To establish a structured and coordinated response mechanism for high-impact critical incidents that ensures rapid containment, protection of life and assets, continuity of operations, and transparent recovery.

- Scope

This plan applies to all personnel, contractors, visitors, and assets at the IMF Egypt Fertilizer Site in Ain

Sokhna during a critical security, safety, or operational incident.

- Definition of Critical Incident
 - Any unexpected event that:
 - Threatens life, safety, or security of personnel
 - Causes or may cause significant asset damage
 - Leads to severe disruption of operations
 - Poses legal, reputational, or environmental risks

Examples: large-scale protest, armed intrusion, serious accident, fire/explosion, coordinated theft, natural disaster.

- Incident Command Structure

Role	Responsibility
Incident Commander (IC)	Head of Security or delegate; overall control of incident response
Deputy IC	Site Manager or EHS Lead; supports command
Security Coordinator	Deploys security teams, controls access, and secures perimeter
EHS Officer	Manages safety/hazardous materials response
Liaison Officer	Coordinates with police, civil defence, ambulance, etc.
Communications Lead	Handles internal updates and media response (if applicable)

- Response Framework (R-A-C-E-R)
 - R – Recognize:
 - Immediate detection and reporting of the incident
 - Alert sounded (radio, siren, or public address)
 - A – Assess:
 - Confirm level and nature of the incident
 - Evaluate risks to life, property, environment
 - C – Contain:
 - Isolate affected area
 - Evacuate if required using predefined routes
 - Deploy trained security and emergency responders
 - E – Engage External Help:
 - Contact emergency services, police, fire department, medical responders
 - Maintain liaison via the Liaison Officer
 - R – Recover:
 - Once stabilized, initiate asset recovery, debriefing, and site clean-up

- Support for injured or affected personnel (medical or psychological)
- Begin incident investigation and documentation
- Communication Protocol
 - Initial report to Control Room (via radio/phone)
 - Activation of Incident Command Team
 - Situation reports (SitReps) issued every 30–60 minutes during escalation
 - Communication blackout may be imposed to avoid misinformation
- Documentation & Post-Incident Review
 - Complete Incident Report within 24 hours
 - Debriefing session with all involved personnel
 - Root Cause Analysis (RCA) and corrective action plan
 - Lessons learned integrated into system improvements
- Training & Drills
 - Quarterly mock drills for various incident types (e.g., fire, intrusion, protest)
 - Annual review and update of this plan
 - Training for all security, operations, and emergency response personnel
- Supporting Plans & References
 - Emergency Evacuation Plan
 - Access Control SOP
 - First Aid & Medical Emergency Plan
 - Site Security Risk Assessment
 - IFC PS4 – Community Health, Safety & Security

Each plan outlines the resources and equipment required for an immediate response to mitigate and contain any impact. The plan clearly identifies – according to the nature of the incident – the required actions and participants' roles and responsibilities. The critical incident plan also details decision points that require engagement of the regional and corporate crisis management teams. Crisis management plans contain guidelines for engagement with the media, host community, and other stakeholders.

These plans help IMF Security manage a critical incident effectively, and ensure integration into the IMF Crisis Management System. This approach reduces the potential for harm to people, ensures the continuity of the business, and reduces financial loss and negative impacts on company reputation.

Unlawful acts by security personnel: The security personnel themselves are subjected to intense scrutiny and are always subjected to regular questioning. Further, if any suspicious elements are identified, they are under intelligence radar. Suitable evidences are gathered for malpractices conducted by him / her. Finally, they are subjected to internal inquiry and the handed over to Public Security (Police) for final inquest.

If proven guilty, they are suspended and are blacklisted for re-recruitment.

The same law applies to all the personnel.

10.0 Community Engagement and Grievance Mechanism

Community engagement is a central aspect of a good security program, and good relations with employees and local communities can substantially contribute to overall security in the project as well as operations area.

Further, the “operational silos” condition is eliminated since most of the employees also being from the same communities and are well connected without having a fear jinx. An exclusive Community Relations (CR) team will be in place headed by HR functionary. The CR team is the receptacle of all complaints from various communities and have a well-established system to address these. These have been well acknowledged by all the community stakeholders. Any grievance toward security team shall also be routed through this channel since the team and system is well- connected and is the known face among the communities.

Further, the empanelment of this grievance team is from the community themselves to enable them to mitigate the grievances in smooth manner.



APPENDIX H SECURITY RISK ASSESSMENT

SECURITY RISK ASSESSMENT

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Contents

Executive summary	3
Threat assessment	3
Threat Environment – Egypt (2025)	3
Vulnerability and capability analysis	4
Risk assessment	6
Risk treatment plan	7
Security risk assessment	7
Threat assessment	10
Vulnerability and capability analysis	11
Security management organization	12
Intelligence gathering and incident reporting	14
Risk mitigation table per risk register matrix	23
Annex A. Security threat definitions	24
Methodology	24

Executive summary

Indorama Misr Fertilizer Misr fertilizers Company S.A.E. (currently under incorporation) (hereinafter, Indorama Misr Fertilizer) is one of the subsidiaries of Indorama Misr Fertilizer Group, Ltd., which has several phosphate fertilizer plants in different countries (Senegal, Brazil, Uzbekistan and India). Indorama Misr Fertilizer plans to establish a Phosphate fertilizer complex in Sokhna, Egypt (hereinafter, the Project).

The Project will produce Di-Ammonium phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers, as a main product. Sulphuric acid and phosphoric acid will be produced as intermediate products. In addition, phosphogypsum will be a byproduct of the industrial process.

The Project is located within the Sokhna Industrial Zone affiliated with the Suez Canal Economic Zone (hereinafter, SC Zone), in Sokhna, Suez Governorate, Egypt.

The complex includes a production site, a phosphogypsum storage area and ammonia pipelines.

The Project site covers a total area of 56 ha, divided into two separate plots of approximately 28 ha each, located about 600 m apart. One plot will be used as a phosphogypsum storage area, and the other plot will be for the production site.

The Project site is located 2 km north of the Orascom Industrial Park and 6.2 km west of Suez Gulf. On the other hand, the ammonia pipelines (main and secondary) are routed for 13 km starting from the Sokhna Port (specifically the Sonker' Bulk Liquids Terminal) and ending at the production site. Most of the pipelines' route will pass inside Sokhna Port, and the remaining (smaller part) will be outside the port crossing Hurgada-Ismaïlia Road and then routed to the Indorama Misr Fertilizer production site, all within the Sokhna Industrial Zone. The elevation of the Project site ranges from 20 m to 40 m above sea level.

Threat assessment

This Security Risk Assessment identifies potential threats and vulnerabilities associated with the construction and operation of the **Indorama Misr Fertilizer Misr fertilizers** Complex in Ain Sokhna, Egypt. The assessment includes analysis of physical, operational, and security risks and proposes mitigation strategies to align with national regulations and international best practices (e.g., IFC Performance Standard 4).

Threat Environment – Egypt

Threat Type	Description
Crime	Moderate risk of petty theft and material pilferage
Terrorism	Low risk at industrial zones; some activity in remote Sinai
Civil Unrest	Occasional protests linked to economic hardship or labour disputes
Insider Threat	Risk of unauthorized access, sabotage, or data theft

Vulnerability and capability analysis

The vulnerability assessment analyses the impact of the security threats to Indorama Misr Fertilizer, its personnel, assets and activities and the adequacy of the organizational security framework to minimize their level of exposure to these security threats. The specific areas covered within the assessment are as follows:

- **Security management organization:** This relates to the structure of the organization to manage the security function, roles, and responsibilities of individuals with security accountabilities, and the framework underpinning the security management system.
- **Incident/emergency response / crisis management planning:** This relates to the organization's readiness to react, respond to, and recover from an adverse event should it occur. This includes an escalating actionable plan that can be taken as the security situation within an operating environment deteriorates or returns to normal. It also includes an organization's capacity to deploy a response / intervention team to personnel or sites that may be affected by adverse security events.
- **Intelligence gathering and incident reporting:** This relates to how an organization sources macro- and micro- level intelligence and how threat information is disseminated internally and externally. It also considers the effect of live security updates for minimizing personnel's risk of exposure to security events.
- **Personnel management / recruitment:** This relates to insider threats and the risks they pose to the organization. It also details measures taken by the organization to reduce its level of exposure to insider risks from the outset (from the recruitment stage onwards). This also applies to risks posed by external parties such as local communities, contractors, subcontractors, suppliers, and ad hoc staff.
 - Personnel Management and Insider Threat Mitigation Measures (*Aligned with IFC PS4 Expectations*)
To proactively address labor- and security-related risks, including insider threats, the organization has adopted the following protocols during recruitment and personnel management:
 - I. Screening and Vetting Procedures
All new hires, contractors, subcontractors, suppliers, and temporary/ad hoc staff are subject to:
 - a. Identity verification (national ID/passport)
 - b. Reference checks from previous employers
 - c. Criminal background checks, where legally permissible
 - d. Verification of qualifications and certifications
 Additional screening is applied for personnel in sensitive roles, including access to hazardous materials, critical infrastructure, or IT systems.
 - II. Contractor and Supplier Vetting
 - a. Security expectations and personnel conduct clauses are embedded in contracts with:
 - b. Security service providers
 - c. Manpower suppliers
 - d. Engineering, construction, and transport contractors
 - III. Contractors are required to:
 - a. Conduct background checks on deployed personnel
 - b. Provide periodic training on security conduct and site protocols
 - c. Report any incidents of misconduct or disciplinary action to the IMF
 - IV. Misconduct and Disciplinary Protocols
The organization maintains a zero-tolerance policy for misconduct, including:
 - a. Theft, sabotage, or data breach
 - b. Harassment, violence, or discriminatory behaviour
 - c. Breach of safety or security protocols
 - V. Any personnel (direct or contracted) found in violation are subject to:
 - a. Immediate suspension or removal from site
 - b. Formal investigation and disciplinary procedures
 - c. Reporting to local authorities, if legally warranted
 - VI. Ongoing Monitoring and Training

All site personnel are subject to:

- a. Security awareness induction upon onboarding
- b. Regular refreshers on site access protocols, reporting channels, and escalation procedures
Supervisors are trained to identify early signs of insider risk or misconduct, and encouraged to report through confidential mechanisms.

VII. Community and Third-Party Risks

- a. The project maintains a protocol to screen external stakeholders (e.g. local community labor, transport providers) for eligibility and suitability.
- b. Community security incidents or grievances are addressed through the project's grievance mechanism in coordination with local authorities.

- **Community relations:** This relates to the community being an integral factor in the security posture of IMF sites and how strong community engagement can provide a positive security outlook for IMF assets or personnel. Conversely, poor engagement can lead to consequent deterioration of security at the project site.

Community Interaction and Security Risk Management

Currently, the level of interaction with nearby communities is expected to be limited, given the project's location and operational design. However, even limited interaction can carry risks, particularly in contexts where government security forces (GSF) may be involved in site protection or emergency response.

In line with IFC Performance Standard 4 (Community Health, Safety and Security), and recognizing the potential vulnerabilities in engaging with GSF—especially where the IMF has limited authority over their rules of engagement—we are taking proactive steps to minimize risks and avoid tensions or miscommunication with local stakeholders.

Where applicable, the following measures will be implemented:

I. Stakeholder Communication:

Open, culturally sensitive communication channels will be maintained with local communities to explain the purpose, role, and limitations of any security presence—particularly GSF—in a transparent and respectful manner.

II. GSF Engagement Protocols:

The IMF will make reasonable efforts to communicate expected conduct standards to GSF deployed on or near project sites, encouraging alignment with the UN Voluntary Principles on Security and Human Rights and IFC PS4 requirements, despite the IMF's limited control.

III. Training and Awareness:

Any private security personnel under the IMF's contract will be trained on respectful engagement with communities, human rights obligations, and the need to de-escalate conflict. Where feasible, this awareness will be extended to GSF through engagement with relevant authorities.

IV. Grievance Mechanism:

An accessible, confidential grievance mechanism will be in place to allow community members to report security-related concerns, including misconduct or abuse by any security personnel. All grievances will be addressed in a timely and transparent manner.

V. Monitoring and Reporting:

A system will be established to monitor community feedback and incidents involving security personnel, including those involving GSF. Findings will be reviewed regularly to inform risk management strategies.

VI.

- Public security forces:** This relates to the inherent vulnerabilities and risks of engaging with government security forces (GSF), considering that the IMF has limited authority in defining the rules of engagement or the compliance of GSF deployed to IMF's personnel or sites.
 Where public security forces (GSF) may be engaged at or near Indorama Fertilizer Company sites, IMF acknowledges associated risks, including potential use of force and human rights concerns. While IMF has limited authority over GSF conduct, efforts will be made to promote adherence to the Voluntary Principles on Security and Human Rights (VPSHR). There is no possible community presence near project areas no child protection risks,
- Private security forces:** This relates to the social risks of engaging with private security companies and their guards, including the potential for guards to be reported for negligence or dereliction of duties, as well as their potential complicity in illegal activities at IMF sites.
 At Indorama Fertilizer Company sites, all private security providers are required to undergo training on human rights, local laws, and the proportionate use of force, in line with **IFC Performance Standard 4**. This is essential to minimize social risks, especially where guards interact with workers or nearby communities.
 Indorama acknowledges the potential risks of negligence, misconduct, or complicity in illegal activities by private security personnel. As such, strict contractual obligations, supervision mechanisms, and incident reporting protocols are in place to ensure accountability and safeguard the rights of all stakeholders.
- Asset protection:** This relates to the physical, technical, and operational security protocols in place to deter, detect, delay, and deny a security incident from occurring at the site.

Indorama Misr Fertilizer security management team is cognizant of the fast-evolving threats within the operating environment, and that they will adopt a security philosophy that ensures a threat-led and risk-based approach to mitigating identified threats. The security philosophy is based on best practice, and the security management team considers the approach to be effective because there has not been a major critical incident at Ain Sokhna site over the past five years. Consequently, the security team must remain resilient and stay abreast of new and emerging security trends within their operating environment to continually mitigate new and emerging threats that Indorama Misr Fertilizer personnel and assets might be exposed to.

Risk assessment

The risks identified are primarily based on the threat operating environment, how it might affect the IMF, and the levels of human, technical, and procedural security infrastructure in place to deter, detect, delay, or deny a security incident from occurring and afford the capability to respond and react if an adverse event occurs. **This assessment identifies 09 key security risks for Indorama Misr Fertilizer site. However, a risk assessment is an evolving process and must be carried out on a continual basis, especially if there are changes in the threat environment, security management system, or operational activities within the site.**

The security risks in relation to the Indorama Misr Fertilizer site are outlined below:

Current risk index distribution

Total	Very high	High	Medium	Low	Very low
Strategic risks	9	0	4	5	0

Based on the risk treatment plan recommendations, the anticipated post-treatment residual project risk profile is as follows:

Residual (post mitigation) risk index distribution

Total	Very high	High	Medium	Low	Very low
Strategic risks	9	0	4	5	0

Risk treatment plan

Our evaluation is that the existing measures are robust and meet international standards. The continued effectiveness of these measures is, however, contingent on the continued implementation of the existing security standards and on the security team remaining consistent in risk-assessing the fast-devolving security environment, identifying new and emerging trends and security threats, and ensuring that there is no single point of failure or weaknesses in the system that can be exploited by internal and external threat factors.

The risk mitigation strategy focused on developing security measures that will further reduce the IMF's vulnerability to potential threats within the operating environment. These are outlined as follows:

- Asset protection: The objective is to bolster the physical security barriers to deter and deny adversarial attacks from occurring at the site and/or to reduce the impact should an adverse event occur. Asset protection measures should be based on an evaluation of the threat environment and should be scalable during heightened security measures considering new and emerging security trends / threats.
- Develop security awareness programs for staff who may be at risk of opportunistic criminality.
- Ensure that business contingency plans are in place to mitigate the risks of operational disruptions.
- Ensure continued implementation and adherence to suitable security plans, policies, and procedures.
- Ensure continued reliability of intelligence gathering sources and networks. All intelligence reports should continually be analyzed and disseminated to relevant and affected stakeholders to aid decision-making.
- Mitigate social risks prevalent among private security forces by ensuring the working conditions of the guard force are decent, focusing on working hours, wages, personal protective equipment, and sustenance.
- Continue collaboration with the HR and relevant business units, ensuring that the security management team are kept abreast of potential labor issues so that security levels can be raised, and the security operatives maintain heightened level of alertness.
- Continue proactive engagement with the local communities, ensuring that issues that may cause agitations addressed promptly.

Security risk assessment

Control Risks this security risk assessment has conducted using international methodologies and best-practice guidance.

Philosophy

General philosophy is that risk assessments should be dynamic, integrated, tailored, and delivered with a flexible approach, but always to an international best-practice standard

Process

- Assessed the operating environment to identify the specific threats to Indorama Misr Fertilizer, its personnel, and assets, and how that might affect.
- Identified the strategic risks to the project personnel, assets, and activities based on the threat assessment and information garnered.
- Subsequently, developing a high-level risk mitigation strategy that should be adopted to reduce the inherent risks to a tolerable level.

Risk assessment

Asset characterization

- Asset characterization is the process of identifying assets and understanding their criticality to Indorama Misr Fertilizer and the potential consequences of those assets being compromised, lost, damaged, or harmed.
- Control Risks has identified critical assets based on the information gathered during brain storming. This information is captured within an asset register which at this stage identifies the assets, asset type, and the function and/or role of the identified asset. Assets include people, property, processes, information, and reputation.

Threat assessment

Threat assessment is the identification of security threats within the operating environment and how they might affect the project. This section considers the intent and capability of identified threat actors that may pose a risk to an identified asset including, but not limited to, people, property, process, information, or reputation.

Asset identification

Assets represent the fundamental elements required for Indorama Misr Fertilizer's successful operations and include:

- **People** (project personnel – local and foreign nationals)
- **Property** (buildings, infrastructure, and equipment)
- **Processes** (systems and business processes)
- **Information** (data)
- **Reputation**

Control Risks undertook an asset identification assessment and identified the following assets for inclusion within this report.

- **People** – Employees, visitors, and subcontracted personnel
- **Property** – Infrastructure, equipment
- **Processes** – Operational activities
- **Reputation** – Indorama Misr Fertilizer's corporate, sector, national, and

international reputation These assets have been included in the below.

Asset identification, valuation, and characterization

The following asset registers records Indorama Misr Fertilizer's key assets (people, property, and processes) and the consequence ratings for loss, damage, or harm to those assets. This has been used to provide an overall assessed criticality rating for each asset; this rating has then been used during the risk assessment process.

Asset register

Consequence of worst-case loss/damage								
ID	Assets	Brief description	Environmental degradation	People	Reputational risks	Loss or interruption of capability	Financial loss	Assessed criticality
People								
A1	Indorama Misr Fertilizer's operations personnel	Technicians	LOW	HIGH	MEDIUM	HIGH	MEDIUM	HIGH
		Experts						
		Staff						
A2	Indorama Misr Fertilizer's operations personnel	Foreign nationals	VERY LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	MEDIUM
		Local nationals						
		Staff						
A3	Visiting personnel	Corporate visits by Indorama Misr Fertilizer top management Visits by experts including third-party and foreign consultants	VERY LOW	HIGH	LOW	LOW	MEDIUM	MEDIUM
A4	External stakeholders	Investors	VERY LOW	HIGH	MEDIUM	HIGH	HIGH	HIGH
		Financiers						
		Board						
A5	External stakeholders	Government stakeholders:	VERY LOW	HIGH	HIGH	MEDIUM	MEDIUM	HIGH
		Regulators						
		Government security agencies						
A6	External stakeholders	Community stakeholders such	VERY LOW	MEDIUM	HIGH	MEDIUM	MEDIUM	MEDIUM
A7	Indorama Misr Fertilizer's subcontractors	Construction contractor at Ain Sokhna						
			MEDIUM	MEDIUM	MEDIUM	HIGH	MEDIUM	MEDIUM
A8	Indorama Misr Fertilizer's subcontractors	Construction sub-contractor at Ain Sokhna	HIGH	MEDIUM	HIGH	HIGH	HIGH	HIGH
A9	Indorama Misr Fertilizer's subcontractors	Third-party service providers and adhoc subcontractors	VERY LOW	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM

Consequence of worst-case loss/damage								
ID	Assets	Brief description	Environmental degradation	People	Reputational risks	Loss or interruption of capability	Financial loss	Assessed criticality
Property								
A10	Infrastructure	Sulphuric acid Plant water treatment Plant Turbo Power plant Phosphoric Acid Reactor Weak acid storage Concentration unit Gypsum handling facility DAP/NPK plant Bagging warehouse Warehouses Utilities and other associated / supporting facilities Substations Effluent treatment plant Storage tanks	MEDIUM	MEDIUM	HIGH	HIGH	VERY HIGH	VERY HIGH
A11	Security Infrastructure	Communication equipment Surveillance cameras Biometric panels Surveillance monitoring systems	MEDIUM	MEDIUM	LOW	MEDIUM	HIGH	MEDIUM
A12	Infrastructure	Admin Block Technology blocks Residential blocks Clinic Canteen	LOW	LOW	LOW	MEDIUM	LOW	LOW
A13	Equipment	Office equipment	LOW	LOW	LOW	LOW	LOW	LOW
A14	Vehicles	Trucks SUVs Buses Fuel – AGO or PMS	MEDIUM	MEDIUM	MEDIUM	HIGH	HIGH	HIGH
A15	Operational resources	Petty cash for routine operations Emergency funds	VERY LOW	LOW	LOW	MEDIUM	MEDIUM	MEDIUM

Threat assessment

Crime, particularly financially motivated crime are the most persistent security threats to Indorama Misr Fertilizer in Ain Sokhan. Although EC Zone of Ain Sokhna records comparatively fewer security incidents than elsewhere in Egypt, similar security threats persist. These regularly recorded types of criminal activities across the zone. Other security threats such as “smash- and-grab” robberies, carjackings, and unrest driven by political and socioeconomic developments are also prevalent.

Threat assessment and register

ID	Event description	Threat actor	Intent	Capability	Threat rating	Analysis/comments
Crime						
T1	Common or petty crime targeting Indorama Misr Fertilizer personnel	Criminals	MEDIUM	HIGH	HIGH	Although crime levels in EC zone are comparatively lower than some other parts of Egypt, Indorama Misr Fertilizer's personnel will likely be exposed to petty crime. Expatriate staff who are perceived as wealthy are likely to face an elevated threat.
T2	Violent crime targeting Indorama Misr Fertilizer personnel	Criminals	MEDIUM	HIGH	HIGH	The overall security environment in Egypt
T3	Theft from project site	Employees, on-site guard forces	HIGH	HIGH	HIGH	Theft from the project site will be a challenge for Indorama Misr Fertilizer. Items that are easy to re-sell or re-use, such as portable tools and equipment, are particularly attractive. Employees with easy access to project sites have been involved in theft, for example by smuggling out items at the end of the working day.
T4	Theft from project site	Criminals, local community members	MEDIUM	MEDIUM	MEDIUM	Theft from project sites by criminals and local community members will also pose a persistent threat to Indorama Misr Fertilizer. Attempted thefts can also damage equipment, as financially motivated criminals have been known to damage on-site equipment during such incidents.
Protest and unrest						
T5	Non-violent protest or unrest targets Indorama Misr Fertilizer assets or project site	General population, activists, labour unions	VERY HIGH	HIGH	HIGH	Most incidents target government facilities. Such protests will likely cause localized operational disruption, such as by exacerbating traffic congestion or preventing the movement of personnel and goods in their vicinity, as well as pose incidental security threats to nearby Indorama Misr Fertilizer's personnel and assets. Maintaining positive relations with local communities will remain vital to minimize operational disruption and security threats. Communities typically expect employment opportunities or benefits from projects.
T6	Non-violent protest or unrest causes operational disruption in vicinity of Indorama Misr Fertilizer project site	General population, activists, labour unions	HIGH	HIGH	HIGH	Localized protests and unrest, typically driven by socioeconomic grievances and disputes between local communities and operators, can lead to operational disruption, such as traffic or roadblocks, limiting personnel movement.
T7	Violent protest or unrest targets Indorama Misr Fertilizer project site	General population, activists, labour unions, security forces	MEDIUM	MEDIUM	MEDIUM	Localized incidents of unrest are unlikely to use violence to target the project site. However, disputes with local communities have the tendency to escalate into violence if demands are not addressed for a prolonged period of time.
T8	Violent protest or unrest causes operational disruption in vicinity of Indorama Misr Fertilizer project site	General population, activists, labor unions, security forces	HIGH	HIGH	HIGH	Incidents of violent unrest will likely cause localized operational disruption for Indorama Misr Fertilizer, caused by factors such as traffic or blockades.
T9	Political crisis leads to violence targeting or affecting Indorama Misr Fertilizer's personnel or assets	Local political groups, general population	LOW	HIGH	MEDIUM	Incidents of political violence often increase during the run-up to and immediately after local or national elections. Most incidents take place near locations associated with political parties or the electoral process, such as polling stations or the offices of political parties or local authorities. Although incidents of political violence will likely continue to occur, they are unlikely to lead to widespread violence, with broad political stability likely to persist in the coming years.
T10	Protest by employees disrupts Indorama Misr Fertilizer operations at project site	Employees	MEDIUM	HIGH	HIGH	Protests by workers typically result in disruption due to the associated work stoppages. Unions in the sector are influential and periodically call for industrial strike action, with demands ranging from compensation to companies' compliance with health and safety regulations. Although organized labour strikes and demonstrations are largely peaceful, they may escalate.
Security forces capabilities						
T11	Solicitation of bribe or facilitation payment	Security forces	MEDIUM	HIGH	HIGH	Security forces have been known to harass both locals and foreigners to demand or solicit bribes. Although such demands invariably go unreported, anecdotal evidence suggests that such requests are frequent. On-site guard forces have also been known to request petty bribes from visitors. Such petty corruption can pose reputational and integrity risks to Indorama Misr Fertilizer and its personnel.

Vulnerability and capability analysis

Indorama Misr Fertilizer conduct a risk assessment of its site, due to the project of the 56 hectares where the DAP /NPK fertilizer complex is being developed. To identify the risks that Indorama Misr Fertilizer likely to face while the project is ongoing.

Using information gathered during the brain storming and threat analysis processes, our team mapped out a series of high-level potential risk scenarios, to conduct a vulnerability and capability analysis.

A vulnerability and capability analysis assesses the efficiency of the risk management measures in place that will influence the likelihood of a threat materializing and the consequences if it were to occur. It also assesses the capability to respond to, and recover from, a threat or hazard event should it occur.

The specific areas covered within the assessment are as follows:

- Security management structure in place to underpin the security system
- Crisis management and emergency response planning, incident management planning, and other related security policies, processes, and procedures
- Intelligence gathering and information sharing
- Community relations
- Personnel management
- Key asset protection –physical, technical, and operational security protocols.
- Security forces – private and public forces.

The below provides a description of the vulnerability ratings used in the subsequent analysis.

Vulnerability ratings

Rating	Description
Very high	No or limited systems or processes planned in relation to the security function.
High	There are some planned systems or processes in place to manage the security function, but they are weak.
Medium	Planned systems and processes exist related to the security function that are considered adequate but would benefit from additional improvements in a number of areas.
Low	Planned systems and processes exist related to the security function that provide for a reliable level of risk management.
Very low	Planned systems and processes exist related to the security function that provide for a highly reliable level of risk management.

Security management organization

Vulnerability rating

LOW

The Indorama Misr Fertilizer security team is managed by the Head of Security. He is assisted by the Head of Section and a team of Operations Managers whose portfolios comprise security operations, material management, and project management. These functions are managed by persons who are experts in the field of security and risk management and have extensive experience in managing security at industrial sites. There is a guarding company contracted to provide an unarmed security presence at the Indorama Misr Fertilizer site. Also, provide security guards manning several beat posts within the industrial site, provides security guards for the residential complex.

Indorama Misr Fertilizer will engage former military or police officers. These will be deployed to all entry and exit points within the industrial site and act as supervisors to the unarmed security guards manning posts in these locations.

All security personnel—whether contracted or directly engaged—are required to undergo training on:

- Human rights and international standards,
- Proportionate use of force,
- Local laws and site-specific security protocols,
in alignment with the Voluntary Principles on Security and Human Rights (VPSHR) and IFC PS4.

Background checks are conducted for all security personnel to reduce risks of misconduct, complicity in illegal activities, or negligence. These checks are part of a broader due diligence process managed by the Head of Security.

Grievances may be submitted verbally, in writing, or through designated secure channels. All complaints are handled promptly, with strict confidentiality, and without risk of retaliation. The Head of Security, in coordination with the ESG and HR teams, ensures that grievances are investigated, corrective actions are implemented, and outcomes are communicated to the complainant when appropriate.

This process is a key safeguard to uphold human rights, promote accountability, and maintain trust with the workforce and surrounding communities, in line with **IFC Performance Standard 4** and the **Voluntary Principles on Security and Human Rights (VPSHR)**.

The security structure at the Indorama Misr Fertilizer site will be robust and in line with good practices adhered to by industrial facilities. The security management team will demonstrate good knowledge of the inherent threats likely to be faced within the operating environment, and will continually risk-assess the situation to identify new or emerging threats and ensure that appropriate mitigating measures are implemented.

The security department is supported by the Indorama Misr Fertilizer senior management. The Head of Security sends monthly review reports to the plant management team to brief them on the current security environment. The review report also outlines the progress of any ongoing security projects, the challenges that might be faced, and any requests for logistical or security uplifts. The management team are therefore fully aware of the nature of the operating environment and the criticality of having robust security infrastructure in place.

Consequently, security requests are prioritized, and resources are made available in a timely manner.

Of immediate importance is the Project of the 56 hectares where a DAP/NPK fertilizer complex is being developed. The security department will take a proactive approach to identifying the key assets and the security threats and risks associated with project; they have earmarked the following as critical processes to the project:

- Movement of fabrication of steel structures
- Mobilization and installation of heavy equipment
- Access of contracted workforce
- Additional expatriate accommodation

The security architecture will be tailored around the philosophy of deter, detect, delay, react, respond, and review. This strategy is based on international best practices and will prove to be efficient in managing the security at the Indorama Misr Fertilizer sites. Moreover, the security systems will be guided by the corporate Security Procedure Manual, which serves as a guiding document for all security policies, processes, and procedures.

The implementation of the security architecture at the project site will be phased, based on the operational requirements and the project's progress. The security team is confident that the resources to upscale the existing security infrastructure will be made available by the plant management.

Incident/emergency response / crisis management planning

Vulnerability rating

LOW

Due to the structure of the organization, the plant's management drives incident/emergency response / crisis management planning, with the security department playing a supporting role. Indorama Misr Fertilizer plant management has a well-established emergency response plan that captures the roles and responsibilities of relevant stakeholders, procedures for industrial-related hazards and risks, and specific processes and procedures that are to be followed in the event of an incident. Usually when an incident occurs, the role of the security department is to cordon off the incident scene and restrict access to unauthorized personnel. Afterwards, the security team will follow the direction of the incident commander, who is a member of the incident management team, and provide support as may be required.

The exception to this protocol is if the incident is security related. In this instance, the Head of Security or Head of Section will take the lead and become the incident commander. Other department might provide support as required. The focus of Control Risks' assessment was to evaluate the security department's level of preparedness if an incident were to occur.

For context, Control Risks has considered the threat landscape and the internal and external actors that pose security risks to Indorama Misr Fertilizer. Although the threat analysis provides detailed insight into the operating environment, it is important to reiterate some facts.

Aside from security threats from external actors, insider threats also pose security risks. These includes the risk of personnel engaged at the Indorama Misr Fertilizer site becoming involved in diverting materials and in the opportunistic theft of assets at the site. Given the criticality of the products produced at the site, incident planning, emergency response, and crisis management planning is pivotal to the security strategy at the Indorama Misr Fertilizer site.

The security department has implemented the **deter, detect, delay, react, respond**, and **recover** philosophy to protecting assets at the site. These will be discussed in detail within the Asset protection / physical security section of this report.

We outline an inexhaustive list of existing security measures to aid incident preparedness below:

- Intelligence gathering – from closed and open sources.
- Quick response forces – including regular patrols by the intervention team along critical assets.
- Material movement monitoring – including tracking.

The security department will also conduct mock drills, exercises, and trainings with the security operatives twice a month. For the mock drills, the security management team will develop different scenarios applicable to the work environment and conducts drills with the security operatives to enhance their readiness. Records of these drills will be maintained for audit trail. Past incidents recorded at the economic zone will also be used to train the security guards.

The security management team will implement robust mechanisms that ensure that potential sources of security incidents are regularly identified and that appropriate mitigating measures are put in place to minimize Indorama Misr Fertilizer's vulnerability to incidents. Additionally, the security team's emergency response capabilities are enhanced by the availability of resources, including but not limited to manpower, the technical capacity to detect incidents as they occur, and intervention vehicles and teams that are quickly deployed to the incident scene in response. This indicates that there is a reliable level of risk mitigation measures in place at the Indorama Misr Fertilizer site.

This strategy will be replicated in a phased manner as the project progresses and new threats and risks are identified.

Intelligence gathering and incident reporting

Vulnerability rating

MEDIUM

Intelligence gathering:

The security situation occurring within the areas of operation could directly or indirectly affect Indorama Misr Fertilizer's personnel, project activities, and/or other assets. As a mitigating measure, Indorama Misr Fertilizer will have network of closed and open sources who can provide timely notification to the security team, alerting them to recent or unfolding incidents that

might affect Indorama Misr Fertilizer's projects, assets, or personnel. The network comprises the following:

- Intelligence sources from government security agencies such as the National Security Agency and the Department of State Services.
- Intelligence sources from internal resources, such as the retainers who are former soldiers or police officers. Indorama Misr Fertilizer utilizes these individuals, who still maintain networks of sources from their time in service, for regular intelligence information.
- Workforce: there are trusted individuals within the workforce providing the security team with information on incidents of theft they might have witnessed or intelligence of planned criminal activities to which they might be privy. This enables the security team to bolster access control protocols, conduct focused searches/investigations, and take a proactive approach to mitigating risks before they materialize. The security department might also engage other business units such as the HR and Community Liaison Department, depending on the type of information that was received.
- Local communities: there are trusted informants within the local communities who provide information to the security department.

Incident reporting:

The security management team considers incident reporting and information sharing to be the responsibility of all security operatives. In the event of an incident, it is expected that any individual witnessing the event must contact either their direct reporting line, the Head of Section or Head of Security. The fluidity of the information flow channel ensures there is no rigidity that might severely impede quick information passage or incident response.

Additionally, information can be obtained by multiple sources, meaning the security team can promptly escalate any incident or information to the security management team, including to the Head of Section and Head of Security. The management team would then analyze the information received and determine the appropriate course of action.

To enhance information flows internally, redundancy has been built into the communication plan. The channels of communication are as follows:

- Two-way radio devices available at most guard beat posts or with guard supervisors.
- Landline telephones are installed at the perimeter access points, some guard beat posts, within Indorama Misr Fertilizer personnel's offices, and at the residences. The numbers for the landlines are also available at emergency contact posts at strategic locations within the.
- Company-assigned mobile telephones: Security team also mobile telephones that they can use to communicate internally or with their networks for information gathering or confirmation purposes. These mobile telephones are credited by the company so that these individuals do not have to use their personal funds.
- All Indorama Misr Fertilizer operational vehicles are fitted with radio and tracking devices that are monitored 24/7 by the SOC operators.

The Instrumentation team regularly maintains all communication channels to ensure continued functionality. Critical information passed through the aforementioned channels are backed up via emails or registered within an incident log. This enables the security management team to track reported incidents and makes it easier to resolve them. The security management team also mentioned that there have not been any major incidents in the past five years in EC zone area may have significant effect on Indorama Misr Fertilizer.

Personnel management

Vulnerability rating

MEDIUM

Personnel management is pivotal within an industrial setting, especially one that is mostly unionized. The Indorama Misr Fertilizer HR department is responsible for recruiting skilled and unskilled labor, as well as for carrying out due diligence and

vetting of applicants; pre-engagement and onboarding processes; personnel development and training; grievance mechanisms; and employment termination. Although this report will not provide in-depth information of the Indorama Misr Fertilizer HR policies and processes, it is important to highlight how the workforce is being managed, as personnel management is critical to the security environment at the plant. We will therefore provide a concise overview of the existing strategy is designed to ensure all workforce-related issues are appropriately addresses and managed that ensures all workforce-related issues are appropriately addressed and managed.

□ Recruitment: The recruitment process begins with manpower planning by the respective department. Upon management's approval, the advertisement is uploaded onto the recruitment platform, which is then publicized either internally or publicly. The same process applies for a replacement role. Indorama Misr Fertilizer currently utilizes a recruitment agency to support in the pre-employment stages.

It is worth noting that local communities are prioritized when there are employment opportunities at Indorama Misr Fertilizer. There is a quota system for skilled, unskilled, inexperienced, and experienced hires. Indorama Misr Fertilizer subcontractors are also obligated, as per their engagement contract, to adopt the quota system in place. Notwithstanding, successful employment is based on the merit of the applicant during the pre-employment assessment.

Pre-employment assessment:

- Entry-level applicants are required to write a written aptitude test. Successful applicants are then selected to undergo a training process spanning 12-18 months depending on their level of qualification. Quarterly assessments are conducted within this period to consistently appraise each candidate's progress. At the end of the training programmed, an assessment is conducted, and successful applicants are given an offer letter and proceed to the onboarding stage.
- Experienced applicants usually go straight to an oral interview. If successful, applicants are given an offer letter and proceed to the onboarding stage.

Onboarding stage: this consists of the induction, vetting, and probationary process.

- Induction is via an online/e-learning platform. The programmed includes but is not limited to: familiarization with Indorama Misr Fertilizer policies such as the gender-based violence policy, grievance procedure, and security awareness policy; information on compensation packages; a plant tour; and provision of an employee handbook and safety induction.
- Probationary period and vetting process: all successful applicants undergo a six-month probationary period. This period also runs simultaneously with the background checks conducted by a vetted agency.

Trainings: each department has ownership of its staff's training needs. In addition to professional training, the HR department regularly organizes employee-focused trainings and awareness programmers. The aim of these trainings is to promote trust between employees, identify pain points with potential to deteriorate or cause dissent within the workforce, review existing practices based on feedback received during the training engagements, and develop policies or systems that will be mutually beneficial to the organization and its employees.

The HR department realized that employees usually do not engage through formal channels such as the complaint system or anonymous grievance cards. This has led the department to develop more personalized means of obtaining feedback from the workforce. So far, the HR Manager stated that the personalized method has proved to be effective and has helped reduce conflict within the organization.

- Grievance mechanism: grievance procedures are channeled through the company disciplinary committee (CDC). The CDC comprises representatives from the workers' union, HR department, respective employee's department, and neutral management personnel. This ensures that all parties are well represented and that there is transparency in resolving matters brought against an employee. The process is underpinned by the grievance procedure and usually involves dialogue between all parties until a resolution is reached. A grievance log is also maintained; this records the type of grievance, source, actions taken, and review by top management.
- Termination: in the event of gross misconduct or any matter requiring termination of an employee, the CDC would investigate the claim brought against an employee and deliberate on the matter until an agreement is reached. If the

employment is to be terminated, the HR department will send a notice to all heads of unit within the organization. By default, all company-assigned assets will be retrieved from the relevant employee, the IT department will revoke access rights, and the security department will be notified of the termination.

The processes described above provide insight into the procedures in place to mitigate the potential risks of engaging new personnel, including those posed by engaging employees with a criminal background. The personalized approach to personnel management ensures that issues that will likely cause agitations or dissent are promptly identified and appropriate measures are taken by the relevant teams to design systems that mutually benefit the organization and the workforce. Further, Indorama Misr Fertilizer has a positive attitude to unionism, and this has helped managed a potentially polarized environment. Although no system is perfect, Indorama Misr Fertilizer has demonstrated that it is committed to finding sustainable solutions to new/emerging issues.

Community relations

Vulnerability rating

LOW

Indorama Misr Fertilizer will maintain a strong relationship with the local communities. Indorama Misr Fertilizer has a dedicated seven-member Community Liaison team, and there are plans to onboard three additional staff members .

Indorama Misr Fertilizer understands that positive community engagement is critical to the success of its operations because the community provides the first line of defense against potential saboteurs and other criminals. As such, the.

Private security forces

Vulnerability rating

MEDIUM

The guarding companies will be engaged by Indorama Misr Fertilizer

There will be guards, including guard supervisors and relievers, at the Indorama Misr Fertilizer site. The guard force operates on a 12-hour shift system.

The security management team stated that the guarding companies proactively engage with Indorama Misr Fertilizer, and any issues with the guard force are promptly addressed. The guarding companies will provide regular trainings for all the guards deployed to Indorama Misr Fertilizer, and they conduct regular supervisory visits.

In addition to the trainings provided by the guarding companies, the Indorama Misr Fertilizer security management team also conducts security trainings twice every month. The trainings cover, but are not limited to, access control and patrol duties, search protocols, threat identification and profiling, and social engineering means used by threat actors. Attendance records are also kept to help track which guards have attended which trainings and are also used as part of performance monitoring and appraisal. It also enables the security team to priorities guards who have not attended trainings during the next cycle. There are standard operating procedures (SOPs) that underpin the security guards' functions. The SOPs will cover access control instructions at the outer gate, main gate, commercial gate.

The guard force will be equipped with two-way radio devices to enhance communication between beat posts and with the SOC and the Operations Managers. There is also telephone landlines installed at the perimeter access control points. This aids communication between the guards and various business departments whom they might have to contact as part of the visitor management protocol.

Asset protection / physical security

Vulnerability rating**LOW**

The physical security measures include perimeter security, access control with biometric systems, surveillance monitoring, illumination, visitor management, patrol monitoring, emergency response procedures, and quick reaction team activation and deployment.

Perimeter protection:

The physical security at the outer perimeter includes a 3-metre-high reinforced steel and concrete wall, steel gates with rising arm barriers and watchtowers manned by officers.

Additionally, critical assets within the site are delineated from each other. For instance, the administrative buildings, Fertilizer plants have internal perimeter protection. Separate facilities within the Fertilizer plants are also delineated. The protection consists of mesh fence on all sides, mesh gates with access control points manned by security guards, surveillance cameras, and lighting.

Access control: The guards are responsible for access control checks. All staff undergo screening at the perimeter ACP. Once screened, each staff member goes through a full-body turnstile using their biometric access details. Casual or subcontracted workers are issued with identification (ID) cards. The workers present their ID to the security guards and undergo the mandatory personnel and baggage screening. The access control system at the Indorama Misr Fertilizer site will be fully automated.

All vehicles, either owned by personnel or for subcontractors, will be thoroughly searched upon entry and exit by the security guards. For material management, the logistics team is primarily responsible for managing and coordinating the inflow and outflow of all bulk trucks, though the security guards also work alongside the logistics personnel and search the vehicles for signs of sabotage. Domestic trucks are also searched for stolen or illegal items by the security team.

The guards assigned will be provided with a register called the Contractors Returnable Register. The procedure dictates that all contractors must inform the security department of materials coming onto the site. Once in, there is an approval process that must be followed before materials are allowed outside the site.

Technical surveillance and alarms: This consists of surveillance cameras. These systems are monitored by the 24/7 SOC. There will be SOC operators working on system. The team is supervised by one of the Operations Managers. The Instrumentation Manager also sits within the SOC for easy escalation and resolution of faulty systems.

The SOC operators' priorities will be monitoring the perimeter and ACPs during the day and operational areas at night. Additionally, they will track the movement of bulk carriers dispatched to and from. This will be done in co-ordination with the logistics team and security team.

The SOC also monitors the PIDSs and PLIDSs. In the event of a trigger, an SOC operator will escalate to the Operations Manager, who will activate the emergency response protocol.

Patrolling: There will be guard tour patrol devices installed at strategic locations within the site. The guard supervisors have a software installed on their company-issued mobile phones that is activated at certain periods. Once activated, the supervisors must patrol their assigned areas and touch the tour devices. A guard tour system report will be then generated. The report will be checked by the Operations Manager the following day to ascertain if the supervisors have patrolled their respective areas.

The last layer will be the patrols conducted by the Operations Managers. These layers will minimize the risk of a failure in the system and ensures that all security operatives are always alert and at their duty posts.

Overall, the asset protection strategy is centered around the philosophy of deter, detect, delay, and respond:

- Deter: potential adversaries are deterred by the perimeter walls and electric fence.
- Detect: this is achieved by the CCTV installed at strategic locations within the site, as well as the PIDS and PLIDS.

- Delay: critical assets are delineated and have their respective physical barriers. This ensures there is capacity to lock down an individual zone or zones, and thereby delay an adversary from proceeding further into the site or escaping when caught.
- Respond: there are several beat posts within the site manned by security guards and a retainer. Intervention teams conduct regular mobile patrols at the site, and there is a quick response team formed of armed GSF officers with a response time of approximately ten minutes to deploy to an incident site.

This strategy will be used at the project site. The implementation will take a phased approach and will be based on a continual risk assessment process.

Overall vulnerability and capability analysis ratings

Security management organization	Incident/emergency/crisis management	Intelligence gathering	Incident reporting	Personnel management
Low	Low	Medium	Medium	Medium
Community relations	Private security forces	Asset protection		
Low	Medium	Low		

Criticality and impact analysis

The criticality and impact analysis table describes each asset, its primary function, the considered impact to the project should a risk event occur, and comments about countermeasures and consequences observed.

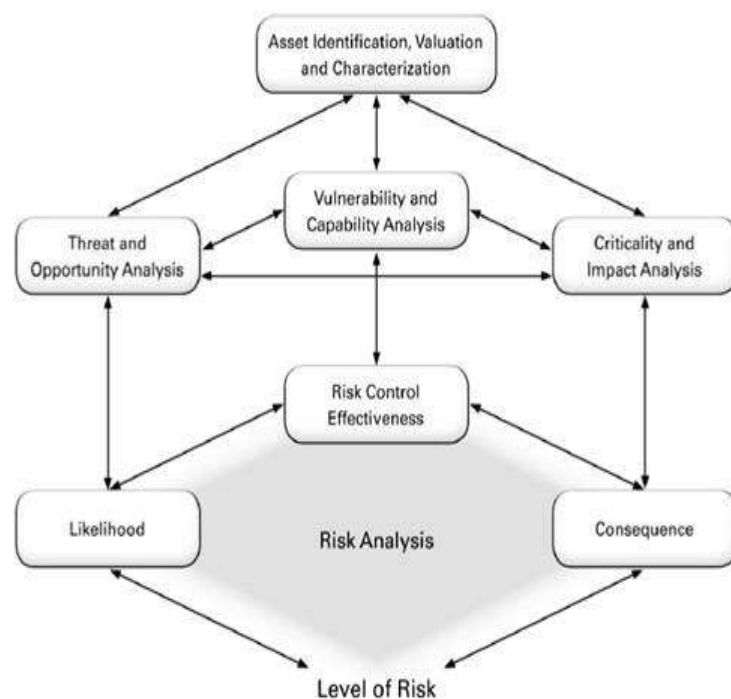
Criticality and consequence analysis

	VERY LOW	LOW	MEDIUM	HIGH	VERY HIGH
Environment	Minor environmental or social consequence that can be contained at the project site.	Environmental or social consequences that can be contained locally.	Environmental or social consequences that can be contained locally with third-party support. It requires escalation but does not require host government intervention.	Environmental or social consequences that require escalation but do not require host government intervention.	Substantial environmental or social consequences that require official / external intervention.
Capability & processes	Minimal impact on non-core business operations pertaining to the project. The impact can be dealt with by routine operations.	Some impact on business areas in terms of delay and systems quality, but able to be dealt with at operational level.	An impact on business resulting in reduced performance so that project targets are not met. The project is not threatened but could be subject to significant review or limitations on operations.	Breakdown of key activities leading to reduction in performance such as service delays, customer dissatisfaction, revenue loss, legislative breaches. Survival of the project/activity threatened.	Critical business failure, preventing core activities from being performed. The impact threatens not only the survival of the project but of the organization itself.
Financial	0.5% of project annual budget.	1% of project annual budget.	2%-5% of project annual budget.	> 5% of project annual budget.	> 10% of project annual budget.
People	Minor injury, no treatment required.	Injury requiring basic first aid treatment.	Injury requiring treatment by medical practitioner.	Major injury/hospitalization.	Single death and/or multiple deaths or multiple injuries.

Risk analysis

Control Risks has conducted the risk assessment by assessing the likelihood and impact (consequence) of a threat to determine the level of risk to the project. Control Risks has used the following process chain in the risk analysis process, identifying 20 key risks. This will likely increase as the risk assessment and crisis management process continues.

Risk analysis



Risks have been calculated and analyzed by determining the likelihood of an event occurring, and the impact if it were to occur. Impact and likelihood are established by considering the following factors:

- Likelihood = the threat/hazard level and consideration of the vulnerability and capability analysis.
- Consequence = the impact (loss of people; environmental damage; harm to reputation, capability or process; financial loss) and the preparedness, response and recovery solutions, and controls in place.
- **Risk = Likelihood x Consequence**

Risk register

ID	Event description	Gross vulnerability (V)	Gross Threat (T)	Gross likelihood (V×T=L)	Gross impact (I)	Gross risk (L×I)	Net vulnerability (V)	Net threat (T)	Net likelihood (V×T=L)	Net impact	Residual risk
Crime											
R1	Common or petty crime targeting Indorama Misr Fertilizer personnel at the site	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	HIGH	MEDIUM	LOW	LOW
R2	Armed robbery or assault against Indorama Misr Fertilizer staff or subcontractors while in transit on the highway	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM	LOW	HIGH	MEDIUM	LOW	LOW
R3	Targeted theft of construction materials by workers while at the project site	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM
R4	Targeted theft of project materials by subcontractors while at the project site	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM
Protest and unrest											
R5	Non-violent protest or unrest by employees and union workers targets Indorama Misr Fertilizer assets or project site thereby causing operational disruption	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	LOW	HIGH	MEDIUM	MEDIUM	MEDIUM
R6	Violent protest or unrest causes operational disruption in vicinity of Indorama Misr Fertilizer project site	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	LOW
R7	Protest by contractors' employees disrupts Indorama Misr Fertilizer operations at project site	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	LOW
R8	Political crisis leads to violence targeting or affecting Indorama Misr Fertilizer's personnel or assets	MEDIUM	MEDIUM	MEDIUM	MEDIUM	MEDIUM	LOW	MEDIUM	LOW	MEDIUM	LOW
Security forces											
R9	Solicitation of bribe or facilitation payment causes social and reputational risks to Indorama Misr Fertilizer	MEDIUM	HIGH	HIGH	MEDIUM	HIGH	MEDIUM	HIGH	HIGH	MEDIUM	HIGH

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Risk mitigation planning

Risk appetite

Control Risks has evaluated the identified risks against a **moderate** risk appetite, prioritizing the safety and security of personnel first and foremost, followed by the need to effectively secure other company assets.

The Indorama Misr Fertilizer will use mitigation options detailed below – **tolerate**, **treat**, **transfer**, and **terminate** – to address the risks identified. These options will be selected based on the organizational risk appetite towards complete security reworking.

- **Tolerate:** The Indorama Misr Fertilizer should determine the organization's risk appetite towards this operation. Some of the security risks highlighted may prove so insignificant in terms of likelihood or impact that the Indorama Misr Fertilizer is willing to tolerate these to successfully move forward with the proposed security reworking.
- **Treat:** The most common form of risk mitigation is to treat any identified risks through the application of a risk treatment plan. The Indorama Misr Fertilizer should determine the organization's risk appetite towards this operation and reduce the security risks identified to ensure they are aligned.
- **Transfer:** The Indorama Misr Fertilizer can choose to transfer a risk to a third party (e.g. insurance company, subcontractor, project stakeholder, etc.). This may be more cost effective than the application of security measures and removes the Indorama Misr Fertilizer responsibility.
- **Terminate:** If the Indorama Misr Fertilizer identifies a security risk that cannot be mitigated by a security risk treatment and that sits outside of its risk appetite, it can choose to discontinue the activity that attracts the risk.

Risk treatment plan

A number of risk treatment options have been set out in the risk treatment plan. Consideration is given to preventing incidents, as well as reducing threat vulnerabilities. Indorama Misr Fertilizer should review these recommendations and, if any recommendations are to be omitted, the residual (net) risk scores will need to be recalculated.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 22 of 25

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Risk mitigation table per risk register matrix

ID	Risk descriptions	Treatment objectives	Risk treatment mitigation measures	Dependencies
R1	Common or petty crime targeting Indorama Misr Fertilizer personnel at the site	To ensure personnel's security and situational awareness.	Consider personal security awareness training for all Indorama Misr Fertilizer personnel especially individuals who are at risk of petty / opportunistic crimes. Ensure staff keep a low profile and do not display company ID badges or branding materials that will attract unwanted attraction. Ensure staff do not travel during dark hours. Ensure staff remain situationally aware and maintain heightened security alertness while transiting through isolated / high-risk locations.	Develop robust security planning for personnel at risk of opportunistic criminality.
R2	Targeted theft of construction materials by workers while at the project site. #Targeted theft of project materials by subcontractors while at the project site	#To deter unauthorised activity. #To detect criminal activity. # To minimise likelihood of staff culpability in criminal activities.	# Maintain physical security barriers regularly so that they remain fit for purpose and provide strong deterrence against unauthorised entry. #Continue to implement security procedures at Indorama Misr Fertilizer sites, including. #Limiting access to the site to authorised persons and vehicles. #Conducting personnel and vehicular searches as part of the access control procedure (in case of suspicion of theft or during heightened security levels). # Ensure there is a means for detecting criminal activity as soon as it occurs by. #Conducting regular patrols of the project area. # Installing surveillance systems for prompt detection. #Procedural controls to minimise opportunities for theft. Adequate remuneration for employees and security guards to reduce the likelihood of collusion with external actors to steal project materials.	# Ensure asset protection measures are robust. #Develop an appropriate incident management plan.
R3	Non-violent protest or unrest by employees and union workers targets Indorama Misr Fertilizer assets or project site thereby causing operational disruption. # Violent protest or unrest causes operational disruption in vicinity of Indorama Misr Fertilizer project site	To bolster incident management planning and emergency response capabilities. # To minimise potential damage of property or operational disruption in affected areas.	#Activate the incident response plan/protocol in place to manage protests. #Ensure guards are trained on this response protocol and know to immediately cordon off the area. #Ensure non-confrontational approach is utilised while managing conflict situations that might have led to the protest. # In situations where GSFs may be engaged to provide quick response capabilities, ensure that the use of force is a last resort. Ensure that the Rules for the Use of Force are in line with international standards and there are no incidents of human rights infringement while GSFs are deployed with Indorama Misr Fertilizer personnel.	Ensure incident reporting / emergency response / crisis management plans are in place.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

ID	Risk descriptions	Treatment objectives	Risk treatment mitigation measures	Dependencies
R4	Protest by contractors' employees disrupts Indorama Misr Fertilizer operations at project site	To reduce the impact of operational disruption to the expansion project	# This risk can be transferred to a subcontractor. Indorama Misr Fertilizer should ensure that subcontractors take proactive measures to reduce their exposure / vulnerability to incidents of protests by their workers. #Contractors must also inform Indorama Misr Fertilizer's security team of any potential incident that may lead to protests by their workers. #If a protest were to occur, Indorama Misr Fertilizer security team must cordon the area off and activate their incident management protocols to manage protests.	Business continuity planning
R5	Political crisis leads to violence targeting or affecting Indorama Misr Fertilizer's personnel or assets	To bolster incident management planning and emergency response capabilities.	Ensure local intelligence is always accurate and passed on to the respective Indorama Misr Fertilizer team. #Ensure emergency and business continuity planning considers the disruption to project activity and personnel should there be civil unrest during a political crisis. # Develop emergency response plans detailing actions to be taken during an adverse event. # Ensure security levels within the security manual clearly define the alert levels and evacuation states that will be actioned during a deteriorating security situation. #Ensure staff are conversant with the plans and adequately prepared should an adverse event occur. #Ensure staff can safely lock down in secure locations such as hotels or residences during widespread insecurity. #Restrict movement of staff to essential travel only during widespread insecurity.	#Establish a chain of command that will monitor the security levels and appropriately escalate or de-escalate control measures as appropriate. # Pass on information to personnel that are likely to be affected by civil unrest.
R6	Solicitation of bribe or facilitation payment causes social and reputational risks to Indorama Misr Fertilizer	#To protect Indorama Misr Fertilizer's reputation both locally and internationally. # To demonstrate Indorama Misr Fertilizer's commitment to ethical principles, including the Voluntary Principles on Security and Human Rights (VPSHR	#Continue to organise regular scheduled training for all security operatives on site as a proactive measure to ensure operatives remain conversant and compliant with SOPs. #Adequate remuneration for security forces to reduce the likelihood of collusion with external actors or stealing Indorama Misr Fertilizer assets. #Ensure that private security guards' contractual working conditions are decent, focusing on working hours	#Understand the impact of social risks to the project. #Establish relations with strategic stakeholders within the GSFs. Establish company policies on the use of force, bribery, and the VPSHR.

Annex A. Security threat definitions

Methodology

Control Risks has analyzed the **intent** and **capability** of groups and individuals to pose security threats to Indorama Misr Fertilizer's operations, personnel, and other assets:

- **Intent:** We assessed any stated or implied intent to carry out a threat, the precedent for such security incidents to affect companies comparable to Indorama Misr Fertilizer, and the perpetrators' anticipated rewards for carrying out such actions.
- **Capability:** We assessed the perpetrators' access to financial, logistical, and technical resources, and any constraints they may face in realizing their threats to Indorama Misr Fertilizer, such as geographical factors or state security provision.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 24 of 25

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Security threat rating definitions

Threat rating	Definition
VERY HIGH	There is a strong possibility that the source will carry out an event with the potential to affect Indorama Misr Fertilizer's operations and personnel.
HIGH	There is a significant possibility that the source will carry out an event with the potential to affect Indorama Misr Fertilizer's operations and personnel.
MEDIUM	There is a moderate possibility that the source will carry out an event with the potential to affect Indorama Misr Fertilizer's operations and personnel.
LOW	It is unlikely that the source will carry out an event with the potential to affect Indorama Misr Fertilizer's operations and personnel.
VERY LOW	It is highly unlikely that the source will carry out an event with the potential to affect Indorama Misr Fertilizer's operations and personnel.

Security threat definitions

Rating	Capability	Intent
VERY HIGH	The threat actor has easy and direct access to critical financial, logistical, technical, and other resources necessary to carry out action. There are no significant internal or external constraints that would prevent the actor from carrying out the event.	The threat source has expressly stated its intent to carry out the event; there is an established history of such events; the actor anticipates a significant reward if the event is carried out.
HIGH	The threat actor has some direct access to the necessary financial, logistical, technical, and other resources that would allow it to carry out the event. There are very few internal or external constraints that would prevent the actor from carrying out such an event.	The threat actor has expressly stated its intent to carry out the event; there is limited precedent for such events; the actor anticipates a significant reward if the event is carried out.
MEDIUM	The threat actor has limited access to the necessary financial, logistical, technical, and other resources and, therefore, has a reasonable ability to carry out the event. There are several internal or external constraints that would prevent the actor from carrying out the event.	The threat actor has not expressly stated their intent to carry out the event, though this may be implied; there is a limited history of the actor carrying out such events; the actor anticipates a significant reward if the event is carried out.
LOW	The threat actor has a limited ability to carry out an event because they have very restricted access to the necessary financial, logistical, technical, and other resources. There are numerous internal or external constraints that would prevent the source from carrying out the event.	The threat actor has not expressly stated their intent to carry out the event, though this may be implied; there is no history of the actor carrying out such events; the actor anticipates minimal reward if the event is carried out.
VERY LOW	The threat actor is not able to carry out an event and has very limited or no access to the necessary financial, logistical, technical, and other resources. There are many significant internal and external constraints that would prevent the actor from carrying out the event.	The threat actor has not expressly stated their intent to carry out the event, and such intent is not implied; there is no previous history of such events; the source anticipates a very limited reward if the event were to be carried out.



APPENDIX I

SUPPLIER CODE OF CONDUCT

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Supplier Code of Conduct

	Prepared by	Approved by
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Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 1 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Contents

1. Ethics	5
1.1 Ethics and legal requirements.....	5
1.2 Proprietary Information	6
1.3 Animal Welfare	7
1.4 Conflict Minerals	7
2. Social	8
2.1 Fair Treatment	8
2.2 Combating Forced Labor	10
2.3 Safety	11
3. Environment.....	12
3.1 Climate Protection, Waste and Water Management.....	Error! Bookmark not defined.
3.2 Product Stewardship.....	14
4. Consequence Policy.....	14
4.1 Purpose	14
4.2 Application of corrective measures	16
4.3 Definitions.....	16
Appendix.....	18

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Supplier Code of Conduct

Indorama Misr Fertilizer is committed to conduct its business in accordance with all applicable laws, regulations and the highest ethical standards related to Ethics, Social Responsibility, Quality, Environmental, Health, Safety, and Management Systems, and a strategic approach to corporate responsibility. In order to ensure alignment across the supply chain, Indorama Misr Fertilizer expects its suppliers to adopt similar principles.

Therefore, in line with Indorama Misr Fertilizer' vision for its suppliers, Indorama Misr Fertilizer wishes to actively engage its supply chain by the adherence of all its suppliers to its supplier Responsible Sourcing Policy (collectively referred to as the Policy) (previously known as "Supplier Code of Conduct").

Scope of application

This Policy outlines the expectations of Indorama Misr Fertilizer (IMF) from all suppliers, collaborators, and service providers with whom it conducts business. It applies to their employees, parent companies, subsidiaries, affiliated entities, and sub-contractors. The scope covers all materials and services procured by IMF and includes, but is not limited to, suppliers, external collaborators, service providers, and commercial partners.

The Policy also extends to any sub-contractor(s) engaged by suppliers to provide goods or services. Suppliers are required to cascade this Policy to all sub-tier subcontractors and sub-suppliers. Suppliers remain fully accountable for ensuring that their sub-contractors comply with the Policy as though they were the supplier themselves.

Indorama Misr Fertilizer expects all suppliers to establish and maintain an appropriate management system aligned with the principles of this Policy. Suppliers must actively monitor and evaluate their operations and those of their sub-contractors to ensure ongoing compliance.

To assess supplier and sub-contractor implementation, IMF may initiate various oversight measures, such as requesting self-certification of compliance, or conducting on-site evaluations and inspections. In the event an audit identifies a violation of this Policy, suppliers are expected to take immediate corrective action to IMF's satisfaction. Failure to remedy violations may impact the supplier's eligibility for future business with IMF.

Legal compliance

The Policy sets out the standard of business behavior expected of the suppliers, which is ethical and corporately responsible and aims to ensure compliance with applicable laws and regulations. Where there are differences between the standards of the Policy and national laws or other applicable standards, suppliers shall adhere to the more stringent requirements. At the end of the documents, we have a set of compliance questions that all vendors will have to fill out.

Suppliers should adopt risk management procedures and internal audits, for finance and accounting, auditing

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 3 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

procedures and training to prevent and correct any illicit behavior or legislation non compliances. For the exports and imports services, supplier should comply with the legal requirement applicable to them and their respective country as well as international laws related to cross border trades.

This Policy requires all suppliers to conduct their business in a manner that is ethical, transparent, and corporately responsible, in full compliance with all applicable laws and regulations. Suppliers must adhere to the stricter requirement in cases where national laws diverge from the standards outlined in this Policy or from relevant international frameworks.

Specifically, suppliers must ensure compliance with, but not limited to, the following:

- Applicable national laws and regulations of the Arab Republic of Egypt, or the supplier's country of operation, relating to labor rights, health and safety, environmental protection, anti-corruption, trade, taxation, and corporate governance.
- International standards, including:
 - The International Labour Organization (ILO) Core conventions([C87,C98,C29,C105,C138,C182](#))
 - The United Nations Guiding Principles on Business and Human Rights (UNGPs)
 - The OECD Guidelines for Multinational Enterprises
 - The International Finance Corporation (IFC) Performance Standards, particularly PS2 (Labour and Working Conditions) and PS4 (Community Health, Safety, and Security)

Suppliers are required to establish robust internal governance mechanisms, including but not limited to:

- Effective risk management systems
- Internal financial and operational audits
- Anti-corruption policies and controls
- Regular compliance training for staff to prevent, detect, and remediate any violations of applicable laws or unethical conduct

For import and export activities, suppliers must comply with all relevant customs, sanctions, and cross-border trade laws of their home country, Egypt, and the countries in which they operate. This includes adherence to international trade compliance regulations such as:

- The World Trade Organization (WTO) rules
- UN and other applicable trade sanctions
- National export control laws, such as the U.S. Export Administration Regulations (EAR), where applicable

Expectations

Indorama Misr Fertilizer is committed to working with its suppliers to develop long-term and meaningful relationships based on mutual respect, trust, and understanding of each other's values.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 4 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

To deliver such commitment, Indorama Misr Fertilizer Shall:

- Clearly communicate to, negotiate with and conclude agreements with its suppliers in a professional, fair, truthful and transparent manner.
- Uphold its commitments to the terms and conditions of the agreement.
- Respect the rights of suppliers by keeping confidential all their information.
- Assist suppliers to identify activities that are not in line with the requirements and work to improve these conditions.
- Work with suppliers to improve their Ethical, Social, Quality, Environmental, Health and Safety standards.

In return, Indorama Misr Fertilizer expects its suppliers:

- To meet all necessary ethical, social, quality, environmental, health and safety standards and to report back immediately on any product safety issues.
- To adhere to the ethical standards of Indorama Misr Fertilizer' "Supplier Code of Conduct Policy."
- To respect and promote our Policy. We recognize that our suppliers are independent businesses. However, the actions of our business partners can be attributed to Indorama Misr Fertilizer, affecting the reputation we have earned from others. We therefore require that all suppliers meet the standards and promote the principles outlined in this Policy and incorporate them as part of routine improvement activities.

Selection of suppliers will be based on their environmental, social and governance performance, which will be periodically reviewed by Indorama Misr Fertilizer.

1. Ethics

1.1 Ethics and legal requirements

- Avoid conflicts of interest:** Suppliers shall comply with applicable laws and regulations concerning bribery, corruption, fraud and any other prohibited business practices. Suppliers must never make or approve an illegal payment to anyone under any circumstances. This applies regardless of whether the undue advantage is offered directly or through an intermediary.
- Gifts, hospitality and expenses:** Each business shall monitor compliance so as to not accept gifts and hospitality that are disproportionate or contrary to local laws. The same goes for the use of confidential or privileged information for the purpose of profit. Employees should notify their line managers prior to making or receiving any hospitality offer. In case of any doubts, employees should consult their line managers before accepting or promising any gift or offering hospitality. The rules for giving gifts and offering hospitality must be clearly established, implemented, and communicated, with reasonable limits being set out so that this can be done legitimately and in line with company principles.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 5 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- c. **Accurate accounting and business records:** Suppliers will keep and provide to Indorama Misr Fertilizer upon request accurate records of all matters related to the supplier's business with Indorama Misr Fertilizer, ensuring that documented information can only be shared in accordance with legal and antitrust provisions. Supplier must commit to paying taxes and not engage in tax avoidance.
- d. **Competition:** Suppliers shall under no circumstances cause or be part of any breach of general or special competition regulations, such as illegal cooperation on pricing (commercial agreements to fix price), illegal market sharing, joining of any type of cartel or any other behavior that is in breach of applicable laws.
- e. **Supply Chain Transparency:** Suppliers are expected to disclose accurate information (within the framework of business relationship) about each step of the supply chain for the raw material / service provided to INDORAMA MISR FERTILIZER. When related to critical supply chain issues, all standards related to product traceability must be met according to the norms established for each one.

1.2 Proprietary Information

- a. **Intellectual Property:** Any information, written or oral, which the suppliers receive through business dealings with Indorama Misr Fertilizer, must be kept confidential and never used for personal gain or disclosed to any third parties. In the event that suppliers are required by any competent regulatory authority, applicable law or regulation to disclose any of the confidential information, the supplier shall notify Indorama Misr Fertilizer in writing as promptly as the circumstances permit so that Indorama Misr Fertilizer may seek a protective order or other appropriate remedy and/or waive compliance with this requirement. In the event that no such protective order or other remedy is obtained, or Indorama Misr Fertilizer has not waived compliance with the applicable terms, then the supplier may disclose only so much of the confidential information as it is advised by its legal counsel to disclose and shall provide a copy of all confidential information so disclosed to Indorama Misr Fertilizer. In connection with any such disclosure, the supplier shall use its best efforts to attempt to preserve the confidentiality of such information. This includes both commercial and technical information. Appropriate non-disclosure or confidential agreements are and will continue to be used to formalize the process of protecting proprietary information.
- b. **Information Security:** Care must be taken to ensure the integrity and protection of the company's information, their responsible use, and the constant search for security vulnerabilities. Data and registrations of companies and people (clients, external representatives, business partners, suppliers, service providers, or employees) must be used responsibly, privately, and according to legal limits. Management processes, projects and product formulas are the company's intellectual property. They must be handled confidentially and protected against theft and cannot be shared without formal authorization.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- c. **Branding and Usage:** The use or reference to Indorama Misr Fertilizer Public Company Limited and its subsidiaries/affiliates, as a brand, logo, trademarks in advertisements, propaganda or public communications must only occur through formal prior consent given by Indorama Misr Fertilizer, including through external communication departments.

1.3 Animal Welfare

Animal testing must be done to the highest level of responsibility, saving animals from any unnecessary suffering. A commitment must be established to test on animals only when required by law, or if there is a scientific basis. Animal testing must be based on an ethical and scientific rationale. Only animals from breeding sites authorized and monitored by veterinary authorities may be used for testing. There may be exceptions when, for example, there are no official breeders, as in the case of livestock and fish, when animals can be acquired from selected livestock and fish farms, if permitted by specific regulations.

1.4 Conflict Minerals

There must be a transparent declaration from suppliers to ensure a supply chain free from conflict regions. Ensuring that materials supplied to Indorama Misr Fertilizer are not sourced from minerals and their derivatives originated from conflict regions, once it could directly or indirectly benefit and finance human rights abuses thorough mining or mineral trading.

Suppliers must ensure that all materials supplied to Indorama Misr Fertilizer (IMF) are sourced responsibly and are free from conflict-affected and high-risk areas (CAHRAs) as defined by international standards. In particular, minerals such as tin, tantalum, tungsten, and gold (3TG) and their derivatives must not originate—directly or indirectly—from regions where extraction and trade finance armed conflict, contribute to forced labor, or result in severe human rights abuses.

Suppliers are required to provide a clear and transparent declaration, supported by due diligence documentation, confirming that their supply chains are not linked to conflict minerals. This declaration must:

- Include details of source and chain-of-custody information for any conflict minerals used.
- Be based on the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, or equivalent recognized international standards.
- Be regularly reviewed and updated as part of an ongoing monitoring and traceability system.

IMF expects all suppliers to establish and maintain robust internal systems to trace the origin of mineral inputs and to identify and mitigate any associated risks. Suppliers must conduct ongoing due diligence, maintain records, and provide supporting documentation upon request.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 7 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

This requirement shall be cascaded to all sub-suppliers and sub-contractors involved in the supply of products or components that may include conflict minerals. Suppliers remain fully responsible for ensuring that their entire upstream supply chain is free from materials that contribute to human rights abuses or conflict financing.

Failure to comply with this policy may lead to disqualification from current or future business with Indorama Misr Fertilizer.

2. Social

2.1 Fair Treatment

A. Respect for Freedom of Association and Collective Bargaining

Suppliers must respect and uphold the rights of all workers to freely associate, join or not join trade unions, and engage in collective bargaining, as guaranteed under applicable national laws and ILO Core Conventions 87 and 98.

Suppliers must not tolerate any form of harassment, intimidation, retaliation, or discrimination against employees who:

- Choose to associate with labor organizations
- Act as employee representatives
- Participate in collective bargaining activities

Equal treatment must be extended to all employees regardless of their participation in such activities.

Where national laws restrict freedom of association or collective bargaining, suppliers must enable alternative means for employees to freely elect representatives and engage in good-faith dialogue with management, consistent with the ILO Declaration on Fundamental Principles and Rights at Work.

B. Diversity, Equality, and Inclusion

Suppliers are required to ensure equality of opportunity and treatment across their operations, regardless of an individual's:

- Race or ethnicity
- Gender or gender identity
- Religion or belief
- National origin
- Age
- Disability
- Sexual orientation

Suppliers must actively promote diversity, inclusion, and equal pay for work of equal value, and must eliminate all forms of discrimination, intimidation, or exclusionary practices.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 8 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Suppliers are encouraged to implement inclusive workplace adjustments, drawing on resources such as the ILO's "Promoting Equity" series to guide accommodation across all stages of employment.

C. Zero Tolerance for Harassment

Suppliers must provide a work environment that is safe, respectful, inclusive, and free from all forms of harassment. This includes but is not limited to:

- Verbal abuse or threats
- Physical intimidation or bullying
- Sexual harassment or unwanted attention
- Discriminatory conduct based on any protected characteristic

Suppliers shall implement clear, enforceable policies to prevent and eliminate harassment, and ensure that all personnel from leadership to subcontractors are accountable for upholding these standards.

Employees must be encouraged to report misconduct in good faith without fear, and trained to recognize and challenge harassment in all forms.

D. Grievance Mechanism and Non-Retaliation

D.1. Grievance Mechanism

Suppliers must establish and maintain a formal, accessible, and secure grievance mechanism that allows employees and other stakeholders to report concerns or violations, including:

- Harassment or discrimination
- Labor rights violations
- Health, safety, or environmental breaches
- Corruption or unethical conduct

The grievance mechanism must:

- Be confidential, culturally appropriate, and accessible in local languages
- Allow for anonymous reporting, where permitted by law
- Provide timely, fair, and impartial resolution of complaints
- Be regularly reviewed and improved for effectiveness

D.2. Non-Retaliation Guarantee

Suppliers must guarantee zero tolerance for retaliation against any employee or stakeholder who raises a concern in good faith.

This includes protection from:

- Dismissal or demotion
- Harassment or intimidation
- Reduced opportunities, blacklisting, or other adverse actions

The non-retaliation policy must be clearly communicated to all personnel and integrated into grievance training and communication programs.

Suppliers must demonstrate active enforcement of this policy through documentation, oversight mechanisms, and corrective actions where breaches occur.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 9 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

2.2 Combating Forced Labor

- a. **Appropriate work hours, wages and benefits:** Suppliers will comply with all applicable laws on work hours and overtime, as well as all applicable laws on wages and benefits. The base salary and benefits offered to employees must be fair and paid on time to provide a proper standard of living to employees and their families, and some extra income. Contractual arrangements that may harm workers, or deductions from wages as a punitive or disciplinary measure, are not allowed (except for deductions in legal provisions, stipulated by law).
- b. **Modern Slavery:** Suppliers will not knowingly, directly or as a result of their business activities, engage in Human Trafficking, Forced Labor, Descent Based Slavery, or Debt-Bonded Labor. Workers cannot have their documents withheld or be obliged to repay employers a debt through work (peonage, contractual bondage, compulsory prison work, modern slavery). A firm and clear position must be established regarding the protection of human rights. Suppliers must ensure that all workers—whether full-time, part-time, temporary, seasonal, or contract-based—are employed under conditions that respect their fundamental employment rights. All employment relationships must be governed by written contracts that are freely and voluntarily entered into by both the employer and the employee, or as otherwise provided under applicable national labor laws and must a) provided in a language the worker understands. b) Clearly specify terms and conditions of employment, including wages, working hours, benefits, and rights. C) Be in full compliance with applicable labor laws and aligned with international human rights and labor standards, including the ILO Core Conventions and the UN Guiding Principles on Business and Human Rights
Suppliers must not use misleading, coercive, or deceptive practices in the recruitment or hiring process and must ensure that no worker is subjected to forced labor, contract substitution, or employment under duress.
- c. Additionally, employees must have the right to freely terminate their employment, subject to reasonable notice periods and procedures as provided by law, without coercion, retaliation, or penalty.
- d. Additionally, employees must have the right to freely terminate their employment, subject to reasonable notice periods and procedures as provided by law, without coercion, retaliation, or penalty.
- e. All workers, be they full-time or temporary, must have employment contracts that are freely agreed and signed between employer and employee, or as provided for under local law. Likewise, these contracts can be terminated freely by workers.
- f. **Child Labor:** Child labor is not tolerated under any circumstances. The minimum age for hiring must respect the legislation in each country, or alignment with ILO Convention No. 138 (Minimum Age Convention) and ILO Convention No. 182 (Worst Forms of Child Labour Convention), , whatever is the strictest. If the supplier employs young people, their working hours must comply

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 10 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

with local laws, not interfering with or preventing their education. Employees under 18 years old must not be exposed to dangerous, unsafe or unhealthy jobs or situations.

2.3 Safety

Suppliers must ensure the health, safety, and welfare of all employees, contractors, visitors, and community members who may be affected by their activities. This obligation applies across all operations, including production units, offices, logistics, and field activities, and must extend to all subcontractors, temporary workers, and service providers.

- A. safe, hygienic, and hazard-free working environment must be provided at all times. Suppliers are required to:
 - Comply fully with applicable national Occupational Health and Safety (OHS) laws, and with international standards, including the International Labour Organization (ILO) Convention No. 155 (Occupational Safety and Health) and IFC Performance Standard 2.
 - Establish, implement, and regularly update a formal Health and Safety Management System (HSMS) appropriate to the size and risk profile of their operations.
 - Implement a comprehensive Risk Management System that identifies, assesses, and mitigates risks related to:
 - Physical hazards (e.g., machinery, confined spaces, falling objects)
 - Chemical hazards (e.g., toxic gases, flammable substances)
 - Biological hazards (e.g., exposure to infectious agents)
 - Ergonomic hazards (e.g., repetitive strain, poor workstation design)
 - Psychosocial hazards (e.g., workplace stress, harassment)
- B. **Clear and enforceable OHS policies and procedures** must be developed, documented, communicated to all employees and contractors, and reviewed periodically. These must cover incident reporting, hazard communication, PPE usage, safe chemical handling, emergency evacuation, and first aid. All employees—including supervisors, managers, and security personnel—must receive regular and documented training on workplace hazards, safe work practices, and proper response to chemical exposures. Subcontractors and service providers working on-site must be included in all health and safety briefings and training activities.
- C. **Emergency Preparedness and Response (EPRP)**
Suppliers must establish and maintain a robust Emergency Preparedness and Response Plan (EPRP) tailored to the risks associated with their operations. At a minimum, the EPRP must:
 - Identify and assess potential emergency scenarios, including fire, chemical spills, explosions, medical emergencies, and natural disasters.
 - Include clear procedures and responsibilities for each type of emergency.
 - Ensure effective communication of emergency procedures to all workers, contractors, and relevant personnel.
 - Include coordination protocols with local emergency responders, such as fire services,

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 11 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

hospitals, and environmental agencies.

- Require routine drills and simulations to test the preparedness of workers and response teams.
- Include mechanisms to report, record, and investigate incidents, and revise emergency plans based on learnings.

The EPRP must be periodically reviewed, updated, and practiced, with full participation of employees and subcontractors.

Failure to meet these OHS and emergency preparedness requirements may lead to suspension or termination of the supplier relationship.

- D. Process Security and Emergency Response:** Make data and information available on the safety of production processes, setting out the operational safety limits and the potential dangers of these processes. Guidelines for communications with employee families, government authorities, and the media must be drawn up. Security reviews and reappraisals must be carried out regularly, or after significant changes in processes. The assessment must be carried out by a competent person, documenting and registering the safety measures that have been drawn up and implemented. Have an integrated approach with external emergency services, through partnerships with specialist service providers or public service first responders, such as the local fire department. The information must be shared proactively by all parties. Multidisciplinary teams must carry out periodic monitoring and safety assessments of production processes, deciding on operating procedures for routine and non-routine operations. Concepts relating to safety must be a priority over anything else the organization has to do. Assess the potential impacts of activities on employees and the local community, taking steps to mitigate or prevent any negative impacts.

Environment

Climate Protection, Waste and Water Management.

Suppliers must comply with all applicable national environmental laws and regulations (such as Egypt's Environmental Law No. 4/1994 and its amendments), as well as relevant international standards, including:

- IFC Performance Standard 3: Resource Efficiency and Pollution Prevention
- UN Framework Convention on Climate Change (UNFCCC)
- ISO 14001: Environmental Management Systems
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

Suppliers shall take proactive steps to minimize the environmental impact of their operations and products, including:

- Reducing greenhouse gas (GHG) emissions through energy efficiency, clean energy sourcing, and

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 12 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- improved process design
- Minimizing energy consumption through conservation and process optimization
- Reducing water consumption and discharge, especially in water-stressed regions
- Preventing pollution and minimizing waste generation through reuse, recycling, and responsible disposal
- Ensuring that operational development and expansion do not negatively impact local biodiversity or ecosystems

Suppliers must adopt a precautionary approach to environmental risks and take active measures to:

- Preserve natural resources, including land, air, and water
- Promote land and water conservation practices
- Improve resource efficiency throughout their operations and value chain
- Support the development, adoption, and diffusion of environmentally friendly and low-impact technologies

All service providers involved in waste collection, transportation, treatment, and disposal (including landfills and incinerators) must:

- Be licensed or approved by the competent environmental authority
- Be periodically audited and evaluated by the supplier to ensure compliance with environmental and safety regulations

Suppliers must develop and implement emergency environmental action plans to:

- Prevent and mitigate spills, accidental releases, or environmental accidents
- Respond immediately to incidents and minimize the environmental consequences
- Install containment, leak detection, and monitoring systems where appropriate

Environmental sustainability performance must be regularly monitored and reviewed, with corrective and preventive actions implemented to support continuous improvement.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

2.4 Product Stewardship

- a. **Quality Requirements:** A Quality Management System with the appropriate scope for the product or service offered to clients, such as ISO 9001, be implemented and maintained. Quality management must be established. People who are properly trained and competent for such functions shall ensure its performance and execution. “Non-Compliant” products and services, when classified as such, must undergo an investigation process, being registered, processed, and monitored until its completion. All non-compliance analysis must be based on the investigation of its cause, immediate action, and the establishment of action plans.
- b. **Technical Specifications and Product Safety:** All products and services provided to Indorama Misr Fertilizer will have to meet Indorama Misr Fertilizer’ quality, safety and environmental standards. Suppliers shall not use any substances in their products that are against any applicable laws and regulations in the country of operation. Any product that are or will be supplied to Indorama Misr Fertilizer will have to be kept in an appropriate environment that will not put the product or personal at-risk during transit. Products and services shall be delivered in accordance with the specifications set out in contracts, purchase orders, or specific agreements, in accordance with the quality and safety criteria established. Any intention to change the technical specification of raw material, manufacturing processes or supply chain changes that may impact the products, packaging and services provided shall be announced a minimum of 30 (thirty) days in advance.
- c. **Product Spill:** Prevent and mitigate product spill events in the environment through procedures, infrastructure, and trained personnel.

3. Consequence Policy

3.1 Purpose

To define internal criteria and measures to be adopted when any occurrence of misconduct, non-compliance with the mandatory requirements or non-compliance with the Supplier Responsible Sourcing Policy are detected or reported. The Consequence Policy is subject to reviews and changes in accordance with regulations, applicable laws, policies, and internal guidelines.

This section defines the internal criteria and enforcement measures adopted by Indorama Misr Fertilizer when any misconduct, non-compliance with mandatory requirements, or breach of the Supplier Responsible Sourcing Policy is detected or reported.

The Consequence Management Policy provides a clear path for supplier improvement while ensuring robust accountability, compliance enforcement, and alignment with applicable laws, regulations, and internal policies. The policy shall be periodically reviewed and revised in response to legal developments, international standards, and internal risk assessments.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 14 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

The following measures shall apply:

a) **Corrective Action Plan (CAP) Requirement**

When non-compliance is identified, the supplier will be formally notified and required to engage in a structured corrective process, including:

- Full cooperation with internal investigations or independent third-party audits, where applicable
- Development of a Corrective Action Plan (CAP) within a defined timeframe
- Identification and remediation of root causes
- Ongoing documentation and submission of evidence of progress toward compliance
- Participation in follow-up assessments to verify effective implementation

Failure to implement the CAP adequately and within agreed timelines may lead to progressive or immediate enforcement actions.

b) **Graduated Enforcement Framework**

A tiered consequence model applies based on the severity, repetition, wilfulness, or risk level of the violation:

- Level 1: Formal Written Warning
 - Issued for initial or minor non-compliance
 - Requires immediate corrective action
 - Recorded in the supplier performance log
- Level 2: Temporary Suspension
 - May involve:
 - I. Suspension of new purchase orders
 - II. Withholding of payments
 - III. Temporary removal from the approved vendor list
 - IV. Remains in place until satisfactory closure of the CAP
- Level 3: Contract Termination and Delisting
 - Applied in cases of:
 - I. Severe or repeated violations
 - II. Non-cooperation or persistent failure to improve
 - III. Violations involving human rights abuses, fraud, corruption, serious health, safety, or environmental harm, or illegality
 - May include permanent delisting from Indorama Misr's supplier database

Note:

Indorama Misr Fertilizer reserves the right to bypass intermediate steps and impose immediate suspension or termination where the breach poses a serious or imminent threat to human life, worker safety, environmental integrity, or involves illegal activity.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 15 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

c) **Audit Rights and Compliance Monitoring**

Indorama Misr Fertilizer maintains the right to audit any supplier, subcontractor, or related facility, either:

- Announced (scheduled) or
- Unannounced (surprise audits)

Audits may include:

- Site inspections
- Document and record reviews
- Confidential worker interviews
- Third-party assessments

Suppliers must fully cooperate with audits and provide requested information accurately and in a timely manner.

d) **Accountability and Transparency**

Indorama Misr Fertilizer maintains internal documentation of all non-compliance incidents and enforcement actions. These records may be:

- Referenced during future sourcing or contract decisions
- Used to evaluate supplier eligibility for reinstatement
- Shared with internal governance teams or escalation committees as necessary

Suppliers that demonstrate meaningful corrective action, strong commitment to compliance, and successful closure of CAPs may be considered for re-engagement following formal review and verification.

3.2 **Application of corrective measures**

The application of corrective actions, administrative measures or penalties of a restrictive or sanctioning nature for suppliers and service providers begins with the

identification of irregularities in conduct, either by failure to comply with the requirements in this Supplier Responsible Sourcing Policy. The adoption and continuous improvement of remediation, administrative measures or penalties will always be designed to mitigate the risk associated with business conducted with our suppliers and service providers, so that they do not have conduct themselves in a way not consistent with our values and principles. All the efforts will be of an educational and advisory nature, aiming to identify a generating fact, with no more consequences for the said fact.

3.3 **Definitions**

CONSEQUENCES

Remediation, administrative measures, or penalties that may be sanctioned as a result of the complaints and /or breaches detected:

- Corrective actions: actions designed to improve work processes through the management of processes, systems, and people. They may be related to communication, training, and the creation, revision, and implementation of internal or other controls.
- Administrative measures: administrative consequences that suppliers and service providers

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 16 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

will be subject to for the violation of the principles or requirements established in the Responsible Supply Policy.

- Penalties: penalties suppliers and service providers will be subject to for violation of the principles or requirements established in the Supplier Responsible Sourcing Policy.

COMPLAINT

Reporting by any media or means of communication, of a breach of the principles and commitments established in the Supplier Responsible Sourcing Policy.

BREACH

Any action or omission that is contrary to the principles and commitments set out in the Supplier Responsible Sourcing Policy

The criterion for the application of remediation, administrative measures or penalties will be any failure to comply with the mandatory requirements described in the Supplier Responsible Sourcing Policy. We stress our position regarding the free expression of our suppliers, service providers, and their employees, including any error by an Indorama Misr Fertilizer' employee or any person acting on behalf of Indorama Misr Fertilizer. We request that any suspected violations or actual violations be registered.

If any unethical or illegal compliance issues arise that raise any questions, suppliers have the responsibility to bring them forward. To raise concern, suppliers can make reports to:

[INDORAMA Group Whistle Blower Policy](#)

If immediate remediation or action is necessary, the supplier must inform Indorama Misr Fertilizer' Procurement area of the plan to be implemented and executed to remedy the breach. The applicable consequences will be managed internally by Indorama Misr Fertilizer, and passed on to and discussed with the suppliers, and may be related to:

- Actions between Indorama Misr Fertilizer and the supplier to leverage performance
- Monitoring and on-site auditing of supplier production units
- Commercial restrictions and reduced volume of purchases and/or services

Indorama Misr Fertilizer reserves the right to terminate its commercial relationship and may disqualify the Supplier if the deadline established for the implementation of the actions to improve the supplier's performance has passed, or repeated breaches of any of the requirements verified by audit or other monitoring occurs, or if it is not proved that the breach has been resolved.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 17 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Indorama Misr Fertilizer' objective is to support and develop its suppliers according to best market practices by acting with respect, good faith, and dignity.

Appendix

Definitions and Acronyms

- **Bribery:** Refers to the offering, promising or giving others, or requesting, receiving or agreeing to receive from others, a financial or other advantage to perform improperly a Relevant Function or Activity. This includes facilitation payments with the purpose of expediting or facilitating the performance of a public official or routine administrative action and obtaining or retaining business or any other undue advantage as mentioned elsewhere in this policy.
- **Child:** anyone under 15 years of age, unless national or local law stipulates a higher mandatory school leaving or minimum working age, in which case the higher age shall apply
- **Child Labour:** Any work performed by a Child younger than the age(s) specified in the above definition of a Child.
- **Child Slavery:** Exploitation of children for someone's gain without allowing them their freedom.
- **Confidential Information:** Confidential information refers to information, which is not known to the public, or in the public domain. Confidential information includes, but not limit to, non-public information, financial information, commercial information, corporate structures, operations, Trade Secrets, technical know-how, designs, sales and marketing plans, market research, reports, manuals, proposal, pricing, business strategies, customer and supplier lists, assets and liabilities, analyses, forecasts, business studies and development plans, whistleblower reports whether written, transmitted orally, visually, electronically or by any other means, compilations, studies, or documents which contain or are generated from such Confidential Information.
- **Corruption:** Refers to Bribery, extortion, fraud, deception, abuse of power, embezzlement, money-laundering, and other similar activities.
- **Debt-bonded Labour:** Work done to pay off debt with little or no pay and no control over the person's debt.
- **Descent-based Slavery:** Slavery passed on through familial relations and across generations.
- **Forced Labour:** ILO, Article 2(2) of Convention No. 29 describes five situations, which constitute exceptions to the "forced labour" definition under certain conditions, Compulsory military service,

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 18 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

normal civic obligations, prison labour (under certain conditions), work in emergency, situations (such as war, calamity or threatened calamity e.g. fire, flood famine, earthquake)., Minor communal services (within the community)

- **Harassment:** Indorama Misr Fertilizer identifies the following actions as harassment:
 - Offending or humiliating someone physically or verbally.
 - Threatening or intimidating someone.
 - Making unwelcome jokes or comments about someone's differences. Sexual harassment includes, but is not limited to, behaviors that:
 - Create a sexually intimidating, unwelcome, hostile, or offensive work environment.
 - Could reasonably be thought to put sexual conditions on a person's job or employment opportunities.
- **Human Trafficking:** The use of violence and coercion to exploit people for the purpose like labour or prostitution.
- **Modern Slavery:** Modern slavery is the severe exploitation of other people for personal or commercial gain. List of topics that Modern Slavery covers are:
 - Human Trafficking
 - Forced and Early Marriage
 - Forced Labour
 - Child Slavery
 - Descent-based Slavery
 - Debt-bonded Labour
- **Product Quality:** This policy extends to raw materials and products of Indorama Misr Fertilizer and at eliminating any health or environmental impact on its employees, contractors, customers, communities, and other Stakeholders. Indorama Misr Fertilizer will ensure that its products meet the required health and safety standards and/or agreements. To this end, Indorama Misr Fertilizer will drive the implementation and continuous improvement of safety and health management through communications to the above-mentioned groups to ensure they are empowered to avoid unsafe situations and to respond rapidly to unexpected events.
- **Supply Chain:** The system of suppliers, manufacturing, transportation, distributors, and vendors that exists to transform raw materials to final products and supply these to consumers.
- **Supply Chain Transparency:** Suppliers disclose information but internally and externally about what is happening at every stage of the supply chain.
- **Work Hours:** ILO Hours of Work (Industry) Convention, 1919 (No.1) stated that working hours

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 19 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

of persons employed in any public or private industrial undertaking or in any branch thereof, other than an undertaking in which only members of the same family are employed, shall not exceed eight in the day and forty-eight in the weeks.

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Company Name:

Registered Address:

Contact Person:

Date:

Confirmation Letter – Acceptance of compliance with Indorama Misr Fertilizer Supplier Responsible Sourcing Policy

Indorama Misr Fertilizer – including, and acting on behalf of, all Indorama Misr Fertilizer’ affiliates and subsidiaries – (together defined as “the Company”), is committed to a sustainable development which includes respect for recognized standards for the environment, human rights, labour, and ethics.

Therefore, the Company seeks to ensure that all the Company’s suppliers operate in compliance with the standards of our Supplier Responsible Sourcing Policy (the “Policy”), as enclosed hereto. Please refer to the Policy for more information about the specific standards.

We ask you to sign this letter and thereby acknowledge and agree to the standards stated in the Policy and your company’s acceptance to comply herewith.

By signing this letter, the Company’s supplier agrees and binds itself to comply with the Policy which may be amended from time to time by the Company, available on our group [website](#).

Further, we would like you to disseminate the information in the Policy through your subcontractor(s), and to collect Subcontractor Verification of Compliance Form(s) for the subcontractor(s) involved in the production of the product(s) which supplied to the Company. These documents will be kept on file and made accessible to representatives of the Company upon request. Suppliers also agree to notify the Company of any changes within the supply chain and will ensure that this supply chain meets or exceeds the Policy.

If you have any questions regarding this letter or the Policy, please contact the Company through your concerned Indorama Misr Fertilizer’ executive.

Kind regards,

We, the undersigned, hereby acknowledge and agree to the standards stated in the Policy and hereby accept to comply herewith.

Place:

Date:

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 21 of 22

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

..... Signature

Clarification of Name:



APPENDIX J SUPPLY CHAIN MANAGEMENT POLICY

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

Supplier Chain Policy

	Prepared by	Approved by
Name	Manish Mishra	Rakesh Sharma
Department	Mechanical	Sr. VP Procurement

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 1 of 6

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Indorama Misr Fertilizer ("IMF" or "the Company") is in the business of production of phosphatic fertilizer as main product and phospho gypsum and FSA as biproduct. IMF is a value driven organisation.

Risk-Based Due Diligence Approach

IMF adopts a risk-based due diligence (DD) approach across its supply chain, in alignment with the OECD Due Diligence Guidance for Responsible Business Conduct and IFC Performance Standards. This includes:

- Identifying and prioritizing actual and potential environmental, social, labor, and human rights risks.
- Applying enhanced due diligence for high-risk Material suppliers, including those located in conflict-affected areas or with histories of labor violations or environmental infractions.
- Integrating risk criteria into prequalification, onboarding, and ongoing supplier evaluation.

Supplier Remediation Obligations

All suppliers, contractors, and service providers must:

- Cooperate fully in remediation efforts in the event of any identified adverse environmental, social, or human rights impacts connected to their operations.
- Submit a Corrective Action Plan (CAP) within a specified timeline.
- Accept that continued engagement is contingent on demonstrable progress and cooperation in resolving issues.

Failure to engage in good-faith remediation may result in contract suspension or termination.

Roles and Responsibilities

The following departments hold key responsibilities for policy implementation:

Role	Responsibilities
Procurement Department	Conduct supplier screening and prequalification; include E&S clauses in contracts.
EHS & Sustainability Unit	Lead risk assessments, define high-risk indicators, support remediation efforts.
Legal & Compliance	Ensure legal enforceability of obligations and track regulatory compliance.
Operations/Plant Managers	Monitor contractor behaviour and escalate non-compliances.
Third-Party Auditors	Conduct independent assessments where needed.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 2 of 6

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

Auditing, Monitoring, and Third-Party Assessments

- Indorama shall conduct periodic audits of suppliers, with frequency based on risk level:
 - ❖ Low/Moderate Risk: Desktop reviews every 2–3 years.
 - ❖ High Risk: Annual on-site audits and third-party verification.
- Indorama reserves the right to engage independent third-party experts to:
 - ❖ Evaluate suppliers against E&S performance benchmarks.
 - ❖ Verify implementation of corrective actions.
 - ❖ Assess alignment with IFC PSs and relevant national regulations.
 - ❖ Results from audits will be tracked in an internal Supplier Compliance Register and inform future procurement decisions.

Alignment with Legal and International Standards

This Policy is an integral part of Indorama Misr Fertilizer's broader Responsible Sourcing and Supply Chain Code of Conduct, and it applies to all suppliers, contractors, agents, and service providers engaged in any business with the company.

All supply chain partners are expected to conduct their operations in accordance with:

a. National Legal Requirements

- All applicable Egyptian labor, environmental, occupational health and safety, and commercial laws and regulations.
- Any relevant local authority permits, licenses, and environmental clearances.

b. Key International Standards and Frameworks

IMF commits to upholding the following international norms and requires its suppliers to do the same:

- ILO Core Conventions on forced labor, child labor, freedom of association, non-discrimination, and decent working conditions.
- UN Guiding Principles on Business and Human Rights (UNGPs) – ensuring respect for human rights throughout the value chain.
- OECD Guidelines for Multinational Enterprises and OECD Due Diligence Guidance for Responsible Business Conduct – supporting a risk-based approach to supply chain governance.
- IFC Performance Standards – particularly PS1 (Risk and Impact Assessment), PS2 (Labor and Working Conditions), PS6 (Biodiversity and Natural Resources), and PS8 (Cultural Heritage).
- UN Global Compact Principles, where applicable.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 3 of 6

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

IMF acknowledges the significance of establishing a robust and sustainable supply chain to support business growth and continuity. IMF continuously optimises its performance by prioritising the enhancement of relationships and collaboration with suppliers, purchasers, and consumers ("stakeholders"). This commitment to Responsible Stewardship is integral to the company's operations. IMF is committed to ensuring minimal disruption to its business by maintaining a resilient value chain that shall withstand internal and external headwinds.

Furthermore, the company's focus on procuring sustainable goods and services extends beyond seeking competitive prices. IMF aims to ensure high quality, timely delivery, and incorporation of cutting-edge technology in the products and services it sources. This approach aligns with the company's dedication to sustainability and resilience in its operations.

This Policy shall be applicable to all business units, operations, and functional entities of Indorama Misr Fertilizer, including:

- All sites, offices, manufacturing plants, warehouses, and project locations within Egypt.
- Any international offices or operations wholly or partially owned, controlled, or managed by Indorama Misr Fertilizer or its subsidiaries.
- All business functions, including procurement, production, logistics, sales, HR, EHS, and administration.
- Supplier and Third-Party Scope, All suppliers, including:
- Tier 1 vendors supplying raw materials, chemicals, or services directly to Indorama Misr.
- Subcontractors and contractors performing work at Indorama Misr sites.
- Agents, intermediaries, and consultants representing the company.
- Logistics service providers, including transporters and freight forwarders.
- Outsourced service providers, including facility management, IT services, and security.
- Joint venture partners where Indorama Misr holds a majority stake or operational control.

All covered parties are required to adopt and comply with the provisions outlined in this Policy, ensuring alignment with Indorama Misr Fertilizer's ethical, environmental, and operational standards.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 4 of 6

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

IMF shall continue to endeavour to:

- Ensure compliance with local, national, and international legislation within the supply chain, conformance to the ABG Sustainability Framework requirements by at least tier-one suppliers.
- Create a supply chain that is resilient and viable amidst the risks and opportunities that may arise from the geo-political, external legal, technical, environmental, and societal megatrends, as part of our business future-proofing program.
- Build capabilities within the supply chain and strive to create best-in-class supply chain solutions.
- To ensure transparency regarding the origin of goods and their environmental impact, it is important to adhere to the principle of traceability throughout the supply chain.
- Promote resource conservation, the use of alternative materials and renewable energy, water stewardship, safety, health, respect for human rights, and the elimination of child and forced labour across the supply chain.
- Proactively communicate our approach and achievements to the suppliers.
- Select suppliers through a competitive and transparent process including requests for proposals (RFPs), requests for quotations (RFQs), or other appropriate methods.
- Support, promote and develop suppliers from marginalised or vulnerable groups as a business partner while also promoting local procurement and supporting small and medium suppliers (MSME) through their development and engagement in business activities.
- Influence and promote our suppliers to collaborate or support Grasim's sustainability initiatives to promote environmental responsibility by encouraging responsible sourcing practices, reducing the environmental impact of transportation, and fostering transparency and accountability in supplier relationships.
- Guide our suppliers to set in place internal policies, governance structures, systems, and processes and take any other relevant measures to ensure adherence with this Policy.
- Regularly monitor supplier performance to ensure compliance with sustainable practices, contractual terms, quality standards, and delivery schedules.
- Communicate the Supply Chain Management Policy and Guidelines and cascade it through training programs, conferences, and other appropriate channels to its directors,

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 5 of 6

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

management, and staff. The effectiveness of such training and communications programs shall be evaluated on a regular basis.

Grievance Redressals:

All stakeholders can report non-compliance under the policy without any risk in the form of retribution or retaliation and may directly report to the Company through an email to rakesh.sharma@indorama.com

This policy shall be reviewed periodically for its suitability and updated as necessary.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 6 of 6



ERM

APPENDIX K

SUPPLY CHAIN MONITORING
PROCEDURE

INDORAMA	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Supply Chain Monitoring Procedure

	Prepared by	Approved by
Name	Manish Mishra	Rakesh Sharma
Department	Mechanical	Sr. VP Procurement

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Contents

1. Purpose & Scope	3
2. Policy Statement	3
3. Objectives	3
4. Supplier Management Framework	3
4.1 Supplier Segmentation	3
4.2 Supplier Identification, Assessment & Selection.....	4
4.3 Supplier Onboarding & Contracting.....	4
4.4 Supplier Risk Management	4
5. ESG Monitoring & Due Diligence	5
5.1 ESG Risk Classification.....	5
5.2 Due Diligence Requirements.....	5
5.3 Monitoring Tools.....	5
6. Corrective Actions & Enforcement.....	5
7. Waste Contractor Oversight & Hazardous Material Chain of Custody.....	6
8. Grievance Mechanisms	6
9. Governance, Audit & Sustainability	6
11. Exception Handling	7
12. Change Management.....	7
13. Data Retention	7
14. Policy Communication & Training.....	7

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 2 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

1. Purpose & Scope

The purpose of this policy is to establish a comprehensive framework and define the procedure for managing all suppliers, contractors, service providers, logistics operators, and waste handlers who provide goods or services to Indorama Misr Phosphate, Egypt. This policy integrates supplier engagement with Environmental, Social, and Governance (ESG) due diligence, IFC Performance Standards, UN Guiding Principles on Business and Human Rights (UNGP), and ILO Core Conventions.

It applies across the supply chain of the following operational units:

- A. Sulphuric Acid Plant (SAP): 3,100 TPD
- B. Phosphoric Acid Plant (PAP): 1,000 TPD
- C. DAP/NPK Plant: 1,935 TPD
- D. Ammonia Storage: 10,000 MT
- E. Utilities and Offsites (O&U)

2. Policy Statement

This Supplier Management Policy provides an integrated operating framework encompassing procurement governance, supplier qualification, ESG screening, performance monitoring, and non-compliance handling. It establishes a transparent and accountable system for identifying, mitigating, and reporting supplier-related risks, aligned with global best practices in sustainable supply chain management.

3. Objectives

Minimize the impact of supplier risks on operational continuity, business performance, and corporate reputation

Ensure confidentiality, legal compliance, and ESG alignment across all supplier engagements

Promote sustainable procurement through ethical sourcing, human rights protection, and robust oversight

Enhance resilience to supply chain disruptions and drive continuous improvement across all tiers of suppliers

4. Supplier Management Framework

4.1 Supplier Segmentation

Suppliers are segmented into:

- Business-Critical Suppliers: Directly impact production, safety, or compliance
- Non-Critical Suppliers: Ancillary or indirect impact

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 3 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Segmentation is conducted before onboarding and revalidated upon any change in scope. Business-critical suppliers must undergo full ESG, technical, and financial evaluations annually. Exceptions must be approved jointly by the Manufacturing Head.

4.2 Supplier Identification, Assessment & Selection

- Identification: SMT identifies at least three potential suppliers per request
- Assessment Criteria:
 - ESG due diligence (see section 6)
 - Technical capability and operational track record
 - Financial soundness
 - Information security and data protection
 - Labour rights and human rights performance
- Selection is based on a combined technical–commercial–ESG score matrix, reviewed by a cross-functional team

4.3 Supplier Onboarding & Contracting

- Supplier onboarding in ERP (SAP, SharePoint)
- Contract to include:
 - ESG compliance clauses (aligned to IFC PS, ILO, UNGP)
 - Commitment to Supplier Code of Conduct
 - Audit rights and grievance compliance
 - Obligations to cascade ESG standards to Tier 2 and beyond
- Contract must be signed by authorized signatories on both sides

4.4 Supplier Risk Management

- A. Pre-Onboarding Risk Assessment
 - Identify risks in environmental impact, forced labor, safety, corruption, sanctions exposure, etc.
 - Conduct sector-specific risk screening (e.g., sulphur, rock phosphate, logistics, waste handling)
- B. Post-Onboarding Risk Monitoring
 - Performance Evaluation: Semi-annual reviews of delivery, quality, compliance
 - Financial Risk Review: Annual review by Finance Team
 - Information Security Risk: Re-assessment annually or when scope changes
 - ESG Risk Reclassification: Reassessment based on audit outcomes or material incidents
- C. Risk Mitigation & Contingency Plans
 - Alternative suppliers for all critical goods and services

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 4 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- CAPs (Corrective Action Plans) for non-compliance
- Escalation triggers and termination protocols

5. ESG Monitoring & Due Diligence

5.1 ESG Risk Classification

Suppliers are classified into ESG Risk Tiers:

- High-Risk: Based on geography, sector (e.g., extractives, logistics), or previous non-compliance
- Medium/Low-Risk: Lower exposure, but still monitored

5.2 Due Diligence Requirements

- Self-declaration: On ESG, human rights, and grievance policies
- ESG Assessment Form: Evaluating carbon footprint, labor policies, community impact
- Acceptance of:
 - Supplier Code of Conduct
 - Commitment to uphold UNGP, ILO Conventions, and national laws
- Tier 2+ Oversight:
 - Suppliers contractually obligated to flow down ESG compliance
 - Random spot-checks on Tier 2 suppliers and documentation trail

5.3 Monitoring Tools

- ESG Scorecards
- Site audits (pre-announced and surprise)
- Anonymous worker interviews
- Monitoring of grievance case closure rate
- Integration of ESG performance into overall supplier score

6. Corrective Actions & Enforcement

- CAPs issued for all medium/high-risk ESG non-compliance
- Time-bound remediation required
- Non-compliance with CAP or material violation may lead to:
 - Suspension
 - Blacklisting

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 5 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- Contract termination

7. Waste Contractor Oversight & Hazardous Material Chain of Custody

- Mandatory vetting and licensing review
- Signed hazardous waste handling agreements
- Chain-of-custody documents, waste manifests
- Periodic reconciliation and audits (waste volumes vs. logbooks)
- Use of GPS-logged transport for hazardous materials (where applicable)

8. Grievance Mechanisms

Internal & External Accessibility

- Anonymous reporting via hotline, complaint boxes, and web portal
- Access for:
 - Workers (including subcontractor and supplier employees)
 - Community stakeholders
- All grievances logged in centralized register

Resolution & Follow-Up

- Acknowledgement within 5 days, resolution within 30
- CAPs linked to recurring issues
- Monthly grievance reports reviewed by ESG Team

9. Governance, Audit & Sustainability

- Governance: Employees and suppliers accountable to Codes of Conduct
- Audits: Annual compliance audit for top-tier suppliers
- Continuous Improvement: ESG capacity-building sessions for suppliers
- Sustainable Procurement Mandate:
 - Track supplier carbon emissions and circularity practices
 - Encourage greener logistics and packaging
 - Offer ESG workshops for Tier 1 and selected Tier 2 suppliers

10. Policy Reviews & Updates

- Annual review by SMT Head
- CXO-level approval of updates
- Triggered updates allowed after significant ESG/operational events

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 6 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

11. Exception Handling

- Procurement bypass cases must be reported to Governance, Risk, and Compliance (GRC)
- GRC to investigate and recommend remedial actions

12. Change Management

- Changes in process or system to be implemented with stakeholder consultation
- Change log maintained in policy appendix

13. Data Retention

- Supplier data retained for 7 years post contract expiration or termination
- Includes ESG audit reports, contracts, grievance records

14. Policy Communication & Training

Internal Communication

- Available on Indorama Misr intranet
- Awareness sessions during onboarding and annual refreshers

External Communication

- Supplier Code of Conduct and ESG requirements published on company website
- Suppliers notified of policy changes via formal communication
- Periodic supplier workshops for ESG standards and compliance

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 7 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Appendix - Supplier ESG Evaluation Checklist and Audit Sheet

Aligned with IFC Performance Standards, EBRD ESP 2019, and UNGPs

1. Human Rights & Labour Standards

1.1.1 Forced Labor & Human Trafficking

Suppliers shall strictly prohibit all forms of forced, bonded, indentured, or involuntary labor in accordance with ILO Conventions, IFC PS2, and UNGPs.

Employment must be based on voluntary consent. Workers must not be coerced or subjected to physical or psychological threats.

Suppliers shall provide regular training in local languages to all employees and subcontractors to raise awareness and reporting mechanisms for any instance of modern slavery or human trafficking.

Suppliers must conduct human rights due diligence to assess and address forced labor risks in their operations and Tier 1+ supply chain.

1.1.2 Child Labour

Child labor, as defined by ILO Convention 138 and 182, is strictly prohibited. Suppliers must comply with minimum age laws in all jurisdictions of operation.

Suppliers must verify age documentation for all workers and ensure that young workers (if legally allowed) are not exposed to hazardous tasks or overtime.

1.1.3 Anti-Discrimination & Humane Treatment

Suppliers must provide equal employment opportunity and must not discriminate on the basis of race, nationality, ethnicity, religion, caste, gender, age, disability, marital status, sexual orientation, political opinion, or social origin.

Humane treatment of workers is required at all times. Harassment, abuse, threats, or intimidation (physical, verbal, or psychological) are strictly prohibited.

Suppliers must conduct risk-based assessments of sourcing practices to avoid procurement from regions or entities linked to systemic human rights abuses.

1.1.4 Working Hours, Wages & Benefits

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 8 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Suppliers must comply with applicable national labor laws on minimum wages, benefits, and working hours, and ensure alignment with IFC PS2 on fair treatment.

All wages, benefits, and deductions must be transparently communicated and documented.

Overtime must be voluntary, documented, fairly compensated, and should not exceed legal limits.

1.1.5 Freedom of Association & Collective Bargaining

Suppliers shall respect the rights of workers to freely associate, form or join trade unions, and engage in collective bargaining, in line with IFC PS2 and ILO Convention 87 and 98.

Suppliers shall not retaliate against workers for union activity or peaceful protest.

An accessible grievance redressal mechanism, aligned with UNGPs effectiveness criteria (legitimate, accessible, predictable, equitable, transparent), must be in place.

2. Environment

2.1 Environmental Management Systems (EMS)

Suppliers must have an Environmental and Social Management System (ESMS) consistent with IFC PS1 and EBRD PR1 to identify, manage, and mitigate E&S risks and impacts.

All required permits, licenses, and consents must be up to date and accessible.

Suppliers must monitor and disclose (when material) their significant environmental impacts, particularly in sensitive or protected areas.

2.2 Hazardous Substances

Suppliers must ensure proper identification, storage, labelling, use, and disposal of hazardous substances in line with national regulations and best international practices.

Suppliers shall maintain a hazardous materials risk register, implement spill control measures, and conduct periodic emergency response drills.

2.3 Waste Management & Circular Economy

Suppliers must manage solid and liquid waste in accordance with national regulations and IFC PS3, focusing on waste minimization and circularity.

Recycling, segregation, substitution of hazardous materials, and safe disposal must be actively implemented and monitored.

2.4 Greenhouse Gas (GHG) Emissions & Climate Risk

Suppliers must measure and report GHG emissions (Scope 1, 2, and where feasible Scope 3) and align with national NDCs and science-based targets.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 9 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Emissions reductions programs and energy efficiency initiatives must be developed.

Suppliers shall not use banned or regulated ozone-depleting substances (ODS) and HFCs.

Suppliers must assess and mitigate climate-related physical and transition risks (e.g., heatwaves, storms, flooding) as per IFC PS4 and EBRD climate adaptation guidance.

3. Occupational Health & Safety

3.1 Worker Health & Safety

In accordance with IFC PS2 and national law, suppliers shall ensure safe and healthy working conditions for all workers (employees and contractors).

Risk assessments must be conducted for chemical, physical, and biological hazards; mitigation measures shall include engineering controls and provision of PPE.

Occupational illnesses and injuries must be tracked, investigated, and corrective actions implemented.

Workers handling hazardous materials must receive regular, documented training.

3.2 Emergency Preparedness & Response

Suppliers must prepare and maintain emergency plans and evacuation procedures for fire, chemical release, natural disaster, or other incidents.

Adequate signage, clear exits, alarms, fire-fighting systems, and safe assembly points are mandatory.

Emergency response teams must be trained and regularly drilled.

4. Governance & Business Ethics

4.1 Business Integrity, Conflict of Interest & Fair Competition

Suppliers must comply with applicable legal obligations regarding business conduct, antitrust laws, and fair competition.

Business records must be maintained honestly and accurately.

Any actual or perceived conflict of interest must be disclosed and addressed.

4.2 Bribery, Kickbacks, and Corruption

Suppliers shall have a zero-tolerance policy for bribery or corrupt practices in line with the UN Convention Against Corruption.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 10 of 11

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Suppliers shall not offer or accept anything of value to obtain undue advantage.

Internal training and controls must be in place to mitigate corruption risk. Any violations must be reported to the buyer immediately.

4.3 Privacy, Data Protection & Cybersecurity

Suppliers must protect intellectual property rights, business secrets, and personal data in accordance with applicable data protection laws (e.g., GDPR if applicable).

Suppliers must implement robust cybersecurity protocols and disclose any breach or data leak promptly to the relevant parties.

4.4 Compliance Monitoring & Whistleblower Protection

Suppliers must maintain internal compliance systems, conduct periodic audits, and keep documented evidence.

An anonymous, confidential, and accessible whistleblower system must be in place to report any ethical, human rights, or safety violations.

Whistleblowers must be protected against retaliation.

5. Community Engagement

5.1 Community Engagement & Social Responsibility

Suppliers should foster constructive engagement with affected communities, aligned with IFC PS1 and EBRD PR10.

Community concerns must be documented, addressed, and resolved promptly using a formal grievance mechanism.

In case of significant environmental or social risks, Free, Prior and Informed Consultation (FPIC) must be sought for Indigenous Peoples and vulnerable groups, where applicable.

Rev: 00	INDORAMA MISR FERTILIZER EGYPT	Page: 11 of 11



APPENDIX L GREENHOUSE GAS EMISSIONS TO IFC

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15th July 2025

Sustainability Linked Loan

KPI & Project Proposal

Rev: 00	Sustainability linked loan Proposal	Page: 1 of 5

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Proposal on Sustainability linked loan

Overview

Indorama Corporation is setting up Fertilizer complex at Ain Sokhna Egypt for producing DAP and aspires to establish one of the lowest GHG emissions DAP plants globally. This vision is aligned with Indorama's vision of creating sustainable business models across its business units globally, which are based on best in class currently available technologies.

The Indorama Misr Phosphate proposed fertilizer plant would have 600,000 TPA capacity of DAP which is 1820 tons per day @ 330 onstream days per year. The complex would also have intermediate production plants of Sulfuric Acid (SA Plant) capacity is 3100 Tons per day and Phosphoric Acid (PA plant) is designed to produce 1000 Tons per day. The SA plant technology is supplied by MECS and the DAP plant technology is supplied by DAP and LOA has already been issued for these plants. The PAP plant is still being evaluated between Prayon and Technip but the heat and mass balance of both these technologies are similar. At this stage, as capacities, the technologies and process has been mostly decided, there is a very good visibility of energy balance for the fertilizer complex. The mass and energy balance of plant is calculated based on the engineering data supplied by the licensors and is expected to be in similar range during the plant operations and can be considered as preliminary "Baseline".

Most of the energy requirements of the complex including the steam and power requirements of DAP, SA and PAP plants would be met from the waste heat energy recovery. The SA plant would generate 160 Tons per hour of steam at 62 bar and 480 Deg C from the waste heat recovery. This would be used to generate 27 MWh power and it will also be adequate for all the steam requirements of the complex including the PA and DAP plants. In the overall balance, there is 3 MWh power that is expected to be imported from the national grid.

The PA plant is based on low grade rock containing 26% of P₂O₅ and high level of impurities. In the PA plant, we expect to achieve the efficiency of 92.5% in the reaction and filtration processes after the commissioning and stabilization. The loss of P₂O₅ is primarily due to in complete reaction, improper crystallization and retaining of water soluble P₂O₅ in Gypsum during washing in filter. The lost P₂O₅ is carried over to Gypsum.

Indorama's proposed Sustainability-Linked Loan (SLL) projects aim to reduce the environmental impact of its phosphate fertilizer operations. The primary focus is on reducing Greenhouse Gas (GHG) emissions and improving P₂O₅ recovery efficiency. These projects are part of a broader initiative to align financial mechanisms with environmental performance, thereby enhancing long-term sustainability.

Rev: 00	Sustainability linked loan Proposal	Page: 2 of 5

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

Proposed Key Performance Indicators (KPIs)

KPI	Proposed baseline range	Target at observation point	Mid-term target	Proposed long-term ambition
Year	2028 at Commissioning & Startup	2030	2032	2034
Primary KPI				
GHG Intensity (tCO ₂ e/t-DAP)	0.07-0.075	0.046	0.041	0.037
% Reduction	-	(Expected design parameters for Indorama Egypt)	(11% reduction)	(20% reduction)
Project	-	-	By Energy optimisation in the plant Equipment	Installation/Import of renewable energy (3-5 MUSD)
Secondary KPIs				
P2O ₅ Recovery efficiency in Reaction-Filtration Process (%)	80%	92.50%	93.50%	94%
% Improvement	-	-	(1% improvement)	(1.5% improvement)
Project	-	Process Optimisation & Improvement	Process Optimisation & Improvement	Process Optimisation & Improvement

Primary KPI: GHG Emissions Reduction

Baseline:

The baseline GHG emissions are established considering the startup and commissioning phase of the plant. Emissions include Scope 1, Scope 2, and vehicle-related emissions. The plant is expected to reach its intended capacity and serve as the observation point in 2030. The expected baseline of GHG emission is 0.046 tCO₂e/t-DAP

Mid-Term Target (2032):

To achieve the mid-term target, Indorama proposes the following actions:

In the baseline case, Indorama steam and power balance is developed based on the heat and mass balance and Process Flow Diagram provided by Licensors.

- Increase capacity utilization to 110% of design. The DAP plant nameplate capacity is 600,000 MT per annum and it is designed to run at 110% load (6,60,000 Tons pa). Similarly, there is excess capacity in PA plant and SA plant to match the corresponding requirements of DAP plant in terms of intermediate products.

Rev: 00	Sustainability linked loan Proposal	Page: 3 of 5

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- When the plants are run at higher capacity, their energy consumptions, particularly electrical energy consumption does not increase in the same proportion. We estimate that we would be able to save below power in respective plants:

- SAP = 2651 MWh
- PAP = 2524 MWh
- DAP = 1136 MWh

Together at the site level, the consumption would come down by 6312 MWh and that would lead to reduction of 0.005 tCO₂e/t-DAP, which is 11% reduction in the net GHG emissions per ton of DAP.

With these optimization measures, an estimated 11% reduction in GHG emissions is expected.

Long-Term Target (2034):

Further GHG reduction requires replacing imported power with renewable energy. Indorama plans to:

- Import electricity from a renewable energy supplier,
- Install an owned renewable energy facility (2 to 3 MW 24*7 renewable energy capacity)

This project is expected to require an investment of approximately USD 3–5 million and could result in a 20% reduction in GHG emissions from the baseline. By import/installation of the RE power, our net energy import from the Grid would be reduced to near “0”. Post these improvement, the total fertilizer complex would be working on Waste Heat Recovery and Renewable energy for Power and Steam. The Natural gas and vehicle fuel use would still be remaining components contributing to GHG emissions, which will constitute the balance 0.037 tCO₂e/t-DAP.

Secondary KPI: Improvement in P₂O₅ Recovery Efficiency

Baseline:

Phosphoric acid production involves multiple stages: reaction, filtration, concentration, and clarification. Since productivity depends heavily on rock quality and the efficiency of the reaction and filtration stages, P₂O₅ recovery efficiency is a critical KPI.

During commissioning and startup, a typical recovery efficiency of around 80% is expected.

The expected efficiency from Reaction+ Filtration processes after plant stabilization is 92.5%

Mid-Term Target (2032):

To improve recovery efficiency, Indorama plans internal process optimization initiatives such as:

- Stabilizing and fine-tuning parameters based on operational data and trials. This would be done by adjusting the reaction conditions for the maximum extraction of P₂O₅. The design of experiments (DOE) would involve modelling of Temperature, Acid Concentration, Flash Cooling systems. In addition, there would be optimization of the recycle streams to reaction system from the filtration system.

Rev: 00	Sustainability linked loan Proposal	Page: 4 of 5

	INDORAMA MISR FERTILIZER EGYPT Fertilizer Business	Date: 15 th July 2025

- The PA plant operation involves frequent cleaning the filters and changing the filtration media. The Filtration media and frequency of cleaning/replacement would be optimized to get the best overall efficiency of the plant..

These improvements are expected to increase recovery efficiency by approximately 1%

Long-Term Target (2034):

Long-term improvements aim to achieve a recovery efficiency of 94% by:

- Improving the productivity of the plant by improving reaction/filtration section productivity.
- For further improvement of 0.5% efficiency, below steps would be taken:
 - Developing better filtration media for higher washing efficiency in association with vendors
 - Grinding section particle size optimization by changing the configuration of milling section
 - Partial recycling of concentrated waste into the reaction/filtration process to recover part of P₂O₅ lost in concentration section.
 - Optimize the washing cycles of Gypsum Filter

Conclusion

The proposed KPIs are well-aligned with the core objectives of SLL frameworks, offering clearly defined, actionable paths toward operational sustainability. These improvements would be done by Indorama team and by taking inputs from Licensors and technology suppliers. The minor capex involved would be financed through Maintenance capex and any large capex requirements are not foreseen to achieve these targets.

The mid term targets would be achieved before 2032 and Longterm targets would be achieved before 2034 by working on proposed action plan and closely monitoring the performance..

By addressing both GHG emissions and P₂O₅ recovery, Indorama enhances its environmental performance and unlocks financial advantages tied to sustainability achievements.

Absolute and Relative Emissions from IFC's project*

IFC Counterfactual or baseline scenario is the scenario where the project operations would have happened in BAU / existing ways (i.e. without the project interventions).

Absolute and Relative Emissions		
IFC's project total emissions (actual / Absolute)	tons of CO2e or GHG, annually	27,521.42
IFC's project counterfactual emissions (Baseline)	tons of CO2e or GHG, annually	118,447.14
IFC's project net emissions (Absolute - Baseline)	tons of CO2e or GHG, annually	(90,925.71)

Absolute and Relative Emissions Intensity		
IFC's project emissions intensity (Actual / Absolute)	tons of CO2e or GHG per ton of production	0.046
IFC's project counterfactual emissions intensity (Baseline)	tons of CO2e or GHG per ton of production	0.197

	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Annual Net Emissions Reduction		(90,925.71)	(90,925.71)	(90,925.71)	(90,925.71)	(90,925.71)	(90,925.71)	(90,925.71)	(90,925.71)	(90,925.71)
Average annual emissions reduction	-90925.71									
Total net emissions reduction for IFC's loan tenor (6-7 years)	-818,331.42									

Absolute Annual Scope-1 Emissions (tCO2e)	22,397.48
Absolute Annual Scope-2 Emissions (tCO2e)	5,123.95
Total Annual Scope-1 + Scope-2 Emissions (tCO2e)	27,521.42



APPENDIX M TRAFFIC ASSESMENT

INDORMA FACTORY- AL-AIN ALSOKHNA, EGYPT

TRAFFIC IMPACT STUDY

CL-RP-001-Rev.02

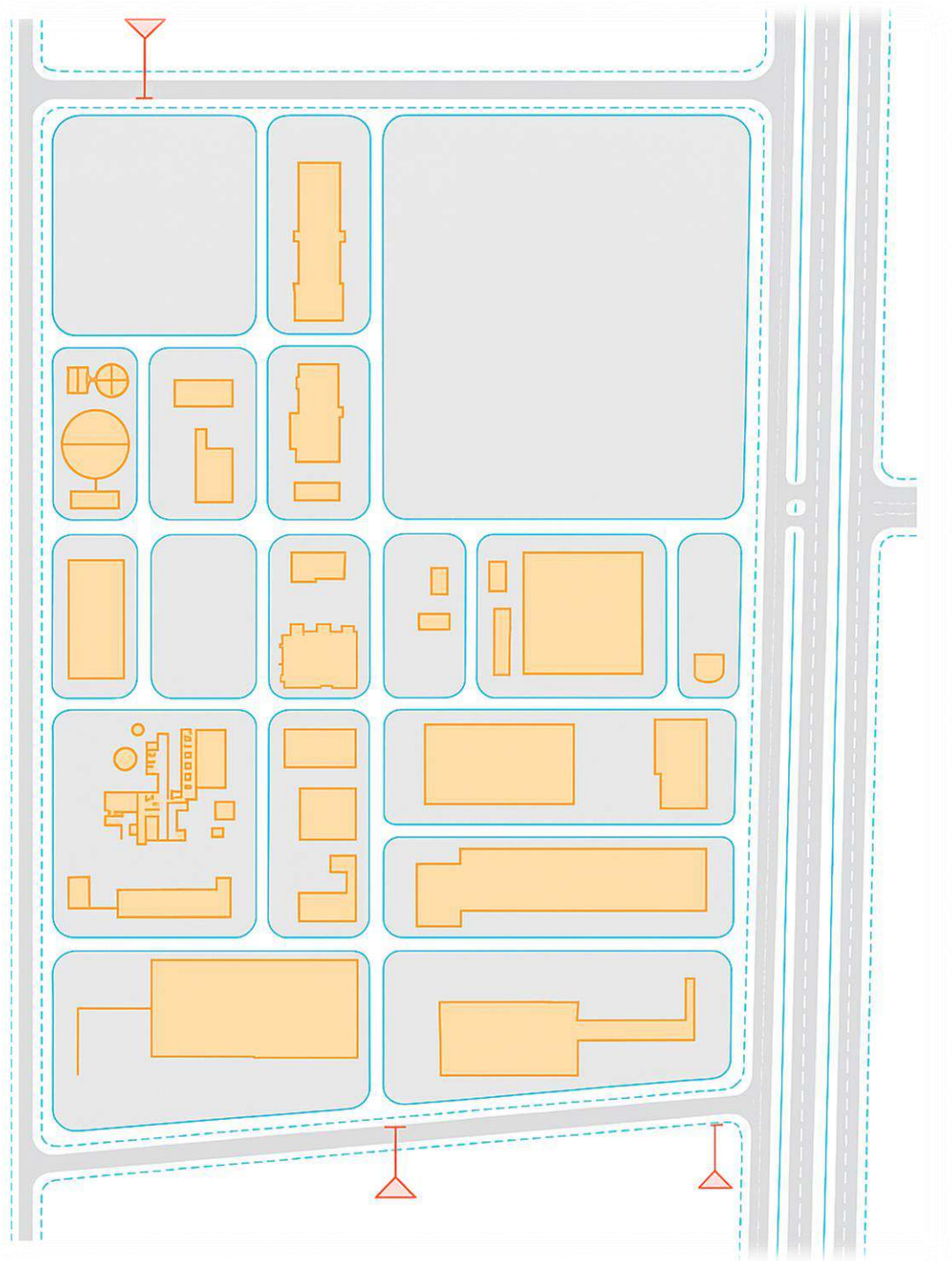


Table of Contents

1. Introduction	10
1.1 Document purpose	10
1.2 General Description of the Works	10
1.2.1 Location of the Project	10
1.2.2 Project Background	13
1.2.3 TRAFFIC STUDY OBJECTIVES	16
1.2.4 APPLICABLE GUIDANCE AND DATA SOURCES	16
1.2.5 Project Operational Components	16
1.2.6 REPORT STRUCTURE	17
2. CHAPTER 1: STUDY METHODOLOGY	19
2.1 ANALYSIS APPROACH	19
2.2 General layout	21
2.3 TRANSPORTATION NETWORK	22
3. CHAPTER 2: EXISTING CONDITION	25
3.1 STUDY AREA	26
3.2 PUBLIC TRANSPORTATION FACILITIES	27
3.3 TRAFFIC COUNT DATA	27
3.3 TRAFFIC COUNT ANALYSIS	30
4. CHAPTER 3: INDORMA DEVELOPMENT LAND USE AND TRAVEL CHARACTERISTICS	44
4.1 LAND USE DATA	45
4.2 TRAVEL CHARACTERISTICS	45
4.2 ACCESS AND CIRCULATION STRATEGY	45
5. CHAPTER 4: FUTURE CONDITIONS	48
5.1 INTRODUCTION	48
5.2 TRIP GENERATION	48
Vehicle Conversion to Passenger Car Units (PCU)	50
Transportation Assumptions	52
5.3 TRIP DISTRIBUTION	53
5.4 MODE CHOICE	56
5.5 TRIP ASSIGNMENT	58
6. CHAPTER 5: PARKING ASSESSMENT STUDY	66
6.1 PARKING DEMAND	66
Truck Berths (guided by trip generation)	66
Final statement	67
7. CHAPTER 6: GATES ANALYSIS	69

8. CHAPTER 7: CONCLUSION 72

 Network Improvement **Error! Bookmark not defined.**

 Gate and Access Management 73

 Parking and Internal Circulation 73

 Safety and Operations..... 73

 Future Monitoring..... 73

 Construction Phase 74

 Operation Phase 75

List of Figures

Figure-1 : Regional location plan showing the project within the Northern Egypt Zone	11
Figure-2 : Detailed site location relative to Al Sokhna and Adabiya port	12
Figure-3 : Detailed site location relative to Al Sokhna and Adabiya port	13
Figure-4 : Land use Plan	15
Figure 5 : Roads layout plan	21
Figure 6 : Internal & External road detail	24
Figure 7 : Study area limit	26
Figure 8 : <i>Traffic count survey locations</i>	28
Figure 9 : <i>Sample of Traffic count survey works</i>	29
Figure 10 : <i>Traffic count data @ Point-1</i>	30
Figure 11 : <i>Traffic count data @ Point-2</i>	31
Figure 12 : <i>Traffic count data @ Point-3</i>	32
Figure 13 : <i>Traffic count data @ Point-4</i>	33
Figure 14 : <i>Traffic count data @ Point-5</i>	34
Figure 15 : <i>Traffic count data @ Point-6</i>	35
Figure 16 : <i>Traffic count data @ Point-7</i>	36
Figure 17 : <i>Traffic count data @ Point-8</i>	37
Figure 18 : <i>Traffic count data @ Point-11</i>	38
Figure 19 : <i>Traffic count data @ Point-12</i>	39
Figure 20 : <i>Max traffic volumes on existing road network @ 2025</i>	41
Figure 21 : <i>Max V/C Ratio and LOS on existing road network @ 2025</i>	43
Figure 22 : <i>Accessibility and gates layout plan</i>	46
Figure 23 : <i>Generated Traffic Volumes on road network</i>	58
Figure 24 : <i>Traffic volumes on external road network @ 2028</i>	59
Figure 25 : <i>Max V/C Ratio and LOS on existing road network @ 2028</i>	60
Figure 26 : <i>Traffic volumes on external road network @ ٢٠٢٨</i>	61
Figure 27 : <i>Max V/C Ratio and LOS on existing road network @ ٢٠٢٨</i>	62
Figure 28 : <i>External Freight Routes and Travel Times to Major Egyptian Ports</i>	63
Figure 29 : <i>External Freight Routes and Travel Times from Al-Sibaya to the project</i>	64

List of Tables

Table 1 : Traffic study scenarios	20
Table 2 : Description of LOS	22
Table 3 : Road Lane Capacity	23
Table 4 : Intersection characters	23
Table 5 : Roads capacity details	24
Table 6 : Specifications of traffic count data	27
Table 7 : summery for the traffic count data	40
Table 8 : V/C Ratio and LOS for each road @2025	42
Table 9 : Project Land use data	45
Table 10 : <i>Trip generation / Day Calculations</i>	49
Table 11 : <i>Trip generation / Peak Hours Calculations - Trucks</i>	49
Table 12 : <i>Trip generation / Peak Hours Calculations - Staff</i>	51
Table 13 : <i>Trip generation / Peak Hours Calculations - Trucks & Staff</i>	52
Table 14 : <i>Inbound Trip distribution - Day</i>	53
Table 15 : <i>Outbound Trip distribution - Day</i>	54
Table 16 : <i>Inbound Trip distribution - Peaks</i>	55
Table 17 : <i>Outbound Trip distribution - Peaks</i>	56
Table 18 : <i>Transit Modes Sharing Percentage</i>	57
Table 19 : <i>Final generated trips @ AM and PM Peaks</i>	57
Table 20 : <i>Parking Demand</i>	6 ^v
Table 20 : <i>Gates Queuing Analysis</i>	69

Review Comments and Consultant Responses

During the revision process of the Traffic Impact Study Report, the client and reviewers provided several comments to enhance the clarity and accuracy of the study. The consultant has reviewed all comments and incorporated the necessary modifications accordingly.

This section summarizes all received comments and the actions taken by the consultant.

Ref. No.	Section	Reviewer Comment	Consultant Response / Action Taken
C-01	1.1 Document Purpose	Add the transportation of Rock Phosphate from Sebaya to Ain Sokhna	Added in logistics transportation description and port trips analysis
C-02	1.2.1 Project Description	Change Gypsum Storage area to 290,000 m ²	Updated as requested
C-03	1.2.1 Project Description	Change Plant area to 280,000 m ²	Updated as requested
C-04	2.3 Transportation Network	Split tables to show lanes, speeds, and capacity	Clarified that tables are HCM-based; full details included in Table (6)
C-05	Table 10: Material Logistics	Include analysis for Rock Phosphate route	Fully considered and presented in related tables
C-06	Table 15: Inbound Trips	Sulphur shall come only from Adabiya Port	Trip distribution updated accordingly
C-07	Page 49	1- define what is meant by inbound and outbound trips in page 49 (just add that outbound for the finished good and inbound for the raw material)	Noted and modified
C-08		add a clear definition for the LOS to include mainly the V/C ranges for every LOS and what does it mean, in other words, is LOS A good or bad and so on for all the categories	Noted and modified
C-09		any arabic text in the study including charts shall be converted to english	Noted and modified
C-10		adding Map for Al-Sibaya to the site	Noted and modified
C-11		provide a reply for the query raised in page 49 regarding the reason of why we are not considering the inbound vehicles to accomodate outbound trips in the same time	The estimation of inbound and outbound truck trips has been conducted considering the operational capacity of the facility , including:- the scheduled production output, raw material consumption rates, and the loading and unloading time required for heavy vehicles at the plant.

Ref. No.	Section	Reviewer Comment	Consultant Response / Action Taken
			Moreover, inbound raw material deliveries primarily occur during the AM operational period, while outbound shipments of finished products are concentrated during the PM period. Therefore, both movements do not peak simultaneously, which ensures that the internal roadway system and gate operations are not subjected to overlapping maximum demand. This approach provides a realistic traffic representation that aligns with industrial operational practices and avoids overstating the pressure on the external road network.

Executive Summary

This Traffic Impact Study (TIS) evaluates the transportation impacts associated with the development and future operation of the Indorama Fertilizer Complex located within the Sokhna Industrial Zone (SCZone), Egypt. The study assesses current conditions, forecasts future traffic performance, and identifies necessary improvements to ensure safe and efficient transport operations.

Project Overview

The industrial complex will serve as a major hub for the production of DAP, NPK fertilizers, and intermediate products including phosphoric and sulphuric acid. The facility requires continuous inbound and outbound logistics through Ain Sokhna Port and Adabiya Port, along with daily workforce commuting.

Methodology

The assessment followed a systematic approach in line with international standards:

- ✓ Manual traffic surveys at key external road links
- ✓ Trip generation calculations for freight and workforce travel
- ✓ Trip distribution based on distance-to-port and operational logistics
- ✓ Traffic assignment and **Synchro** capacity analysis for peak-hour performance
- ✓ Future demand forecasting using **3% annual traffic growth** (up to year 2038)
- ✓ Parking and gate queuing assessment

Key Findings

Parameter	Result
Total daily truck trips	≈ 280 trips/day (225 inbound (raw materials) / 55 outbound (finished goods))
Peak hour demand	AM: 60 veh/h – PM: 53 veh/h
Staff daily trips	58 veh/day (mainly buses/minibuses)
Gate performance	LOS A with queue < 4 sec
External road corridors (2025–2038)	LOS A–D (acceptable)
Critical point	Industrial U-turn to Ain Sokhna Rd → LOS F

Identified Issue

The **U-turn movement** at Ain Sokhna Road is operating under heavy congestion (**LOS F**) due to limited turning capacity and high future traffic pressure from industrial expansion in the future scenario 2038.

✓ Recommendations

To maintain safe and efficient network performance, the following measures are proposed:

1. Gate & Access Management

Maintain current 3-gate system (segregated trucks vs. employees).

Minimum queue storage for **3 vehicles (≈ 20 m)** at entry points.

2. Parking & Internal Circulation

Provide 14 car parking spaces to meet employee parking requirements.

Provide a minimum of 24 truck bays based on dwell time and peak hour truck demand (with additional reserve capacity to avoid on-street queuing).

Ensure safe and well-organized truck routing, supported with appropriate internal signage, road markings, and visibility standards to minimize conflict points and maintain smooth circulation.

3. Safety & Operational Measures

Install high-visibility signs, road markings, & lighting.

Maintain emergency access lanes.

✓ Final Conclusion

With the recommended improvements, the surrounding road network will continue operating at **acceptable Levels of Service** throughout the **2038 horizon year**, ensuring reliable logistics movement and safe daily operational traffic.

1. Introduction

1.1 Document purpose

The objective of this document is to present the Traffic Impact Study for the Indorama Fertilizer Complex located within the Sokhna Industrial Zone (SCZone), Egypt.

This study aims to evaluate the potential traffic impacts of the proposed industrial development on the surrounding road network. The report covers the site layout, internal circulation, access points, road connections, and logistics movements between the project site and the external road network, including Ain Sokhna and Adabiya Ports.

The main goal is to ensure that the proposed development operates efficiently and safely within the existing and planned transportation network, with appropriate recommendations for improvement where necessary.

1.2 General Description of the Works

1.2.1 Location of the Project

Indorama Misr Fertilizers Company S.A.E. (currently under incorporation) is one of the subsidiaries of Indorama Group Ltd., which operates several phosphate fertilizer plants in different countries such as Senegal, Brazil, Uzbekistan, and India. Indorama is planning to establish a phosphate fertilizer complex in Sokhna, Egypt.

The project will produce Di-Ammonium Phosphate (DAP) and Nitrogen, Phosphorus, and Potassium (NPK) fertilizers as the main products. Sulphuric acid and phosphoric acid will be produced as intermediate products, while phosphogypsum will be generated as a byproduct of the industrial process.

The project is located within the Sokhna Industrial Zone, affiliated with the Suez Canal Economic Zone (SCZone), in Sokhna – Suez Governorate. The complex includes the main production site, phosphogypsum storage areas, and ammonia pipelines. Additionally, the project logistics include transporting Rock Phosphate from Al-Sebaya mines to Ain Sokhna as part of the inbound raw material supply chain.

The project plots are summarized as follows:

Plot No. 1 – Gypsum Storage Area: Total area of approximately **290,000 m²**

Plot No. 2 – Plant Area: Total area of approximately **280,000 m²**

The Indorama Development is located to the west of Al-Ain Al Sokhna Port, in the southeastern area of Egypt, within the designated Sokhna Industrial City (part of SCZone).

The project site is approximately 5 km from Al Sokhna Port. and It lies about 27 km from Adabiya Port.

The site benefits from direct access to regional corridors linking the industrial zone with the national road and port network.

Figure 1: Regional location plan showing the project within the Northern Egypt Zone.

Figure 2: Detailed site location relative to Al Sokhna and Adabiya ports.

Figure 3: Detailed site location relative to the industrial area and Regional roads.



Figure-1 : Regional location plan showing the project within the Northern Egypt Zone



Figure-2 : Detailed site location relative to Al Sokhna and Adabiya port

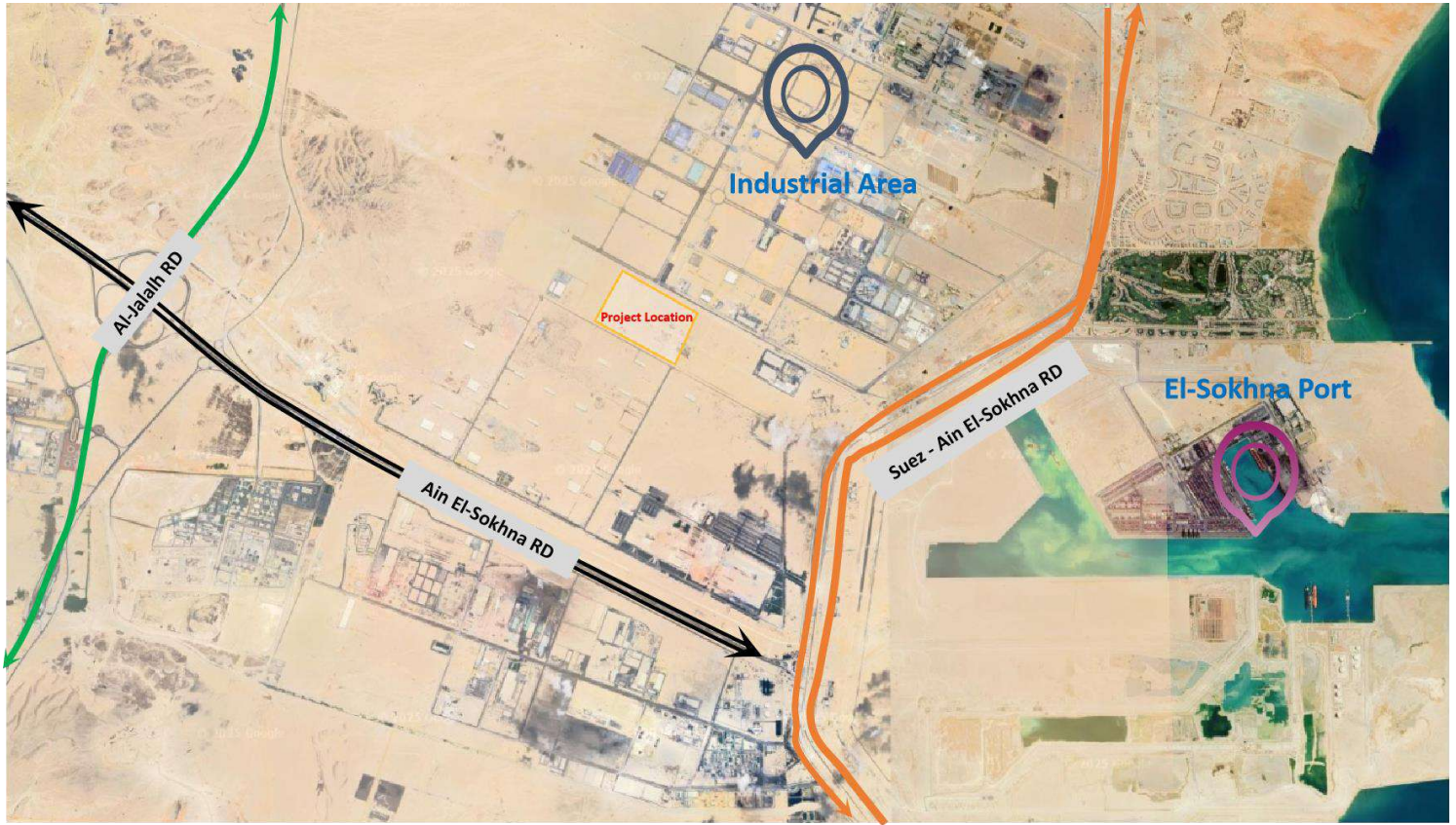


Figure-3 : Detailed site location relative to Al Sokhna and Adabiya port

1.2.2 Project Background

The Indorama Fertilizer Complex is a major industrial development located within the Sokhna Industrial Zone (SCZone), west of Ain Sokhna Port, and approximately 27 km from Adabiya Port. The project includes several main production facilities and supporting infrastructure designed for the manufacturing of phosphate-based fertilizers. The complex consists of the following main components:

Production Units: for the manufacture of DAP, NPK fertilizers, and intermediate products such as phosphoric and sulphuric acid.

Storage and Handling Areas: including bulk material storage, phosphogypsum yard, and loading/unloading zones.

Utilities and Service Areas: such as power supply, water treatment, and maintenance facilities.

Administrative and Support Buildings: for plant management and staff operations.

The overall development requires the continuous transport of raw materials, finished products, and workforce movements, which necessitates a comprehensive assessment of the expected traffic generation and its impact on the surrounding road network.

Figure (4) illustrates the general layout plan of the proposed Indorama Fertilizer Complex.

Traffic Impact Study
CL-RP-001-Rev.02 NOV-2025

1.2.3 TRAFFIC STUDY OBJECTIVES

This Traffic Impact Study (TIS) report has been prepared for the Client and relevant authorities with the objective of outlining the development details, assessing the expected traffic impact of the Indorama Fertilizer Complex, and identifying any mitigation measures deemed necessary to ensure that adequate transport provisions are available to accommodate the project's operations without causing negative impacts on the surrounding road network.

The report aims to provide a clear understanding of the existing traffic conditions, the anticipated traffic generated by the project during both construction and operational phases, and the necessary recommendations to maintain safe and efficient traffic operations in the study area.

1.2.4 APPLICABLE GUIDANCE AND DATA SOURCES

The following documents have been used for the purposes of this study: -

- [D1]. Project Briefing Documents
- [D2]. ITE Trip Generation Manual 2017
- [D3]. ABD Trip Generation Manual 2012
- [D4]. Egyptian Parking Code 2024
- [D5]. NCHRP synthesis 298 – issued from Transportation Research Board for Truck Trip Generation Data.

1.2.5 Project Operational Components

Based on the scope of work and project requirements, the Consultant will carry out the Traffic Impact Study (TIS) through the following sequential stages:

■ Step -1

- a) Review and collect available traffic and planning data provided by the Client.
Conduct manual traffic counts on the main access roads and intersections surrounding the project site.
- b) Analyze existing traffic conditions including traffic volumes, Level of Service (LOS), and network performance.
- c) Identify critical access points and evaluate the connectivity between the project site and the existing external network.

■ Step -2

- a) Estimate the generated trips for both construction and operational phases based on project land use data and logistics requirements.
- b) Perform trip distribution and assignment to evaluate the routing and loading of generated traffic on the surrounding road network.
- c) Assess potential impacts on nearby intersections and corridors.

■ Step -3

- a) Evaluate the performance of the surrounding road network after adding the project-generated traffic.
- b) Identify potential constraints or capacity issues.
- c) Propose improvement or mitigation measures, if necessary, to maintain acceptable Levels of Service.

■ Step -4

- a) Prepare the draft Traffic Impact Study report including all findings, analysis, and recommendations.
- b) Incorporate Client feedback and prepare the final report for submission to the authorities.

1.2.6 REPORT STRUCTURE

Following the Introduction, the remainder of this report consists of the following sections:-

- Chapter 1: Study Methodology
- Chapter 2: Existing Conditions
- Chapter 3: Development Land use and Travel Characteristics
- Chapter 4: Future Conditions
- Chapter 5: Parking Assessment Study
- Chapter 6: Gates Analysis
- Chapter 7: Conclusions

STUDY METHODOLOGY

2. CHAPTER 1: STUDY METHODOLOGY

This section summarizes the methodology adopted for the Indorama Fertilizer Complex Traffic Impact Study. It presents a description of the study area, the approach for data collection and analysis, the trip generation and modeling framework, the proposed access strategy, and the assessment scenarios developed to evaluate the traffic performance for both the existing and post-development conditions.

The methodology is designed to ensure that the study accurately reflects real traffic conditions and provides reliable results to support planning and decision-making for the project.

2.1 ANALYSIS APPROACH

The traffic impact assessment for the Indorama Fertilizer Complex is designed to evaluate the existing and future traffic conditions based on manual analysis and Synchro software for capacity assessment. The purpose is to quantify the additional traffic generated by the project and to evaluate its impact on the surrounding road network and intersections.

The process includes the following main steps:

Existing Traffic Conditions:

Manual traffic count surveys will be conducted on the main external roads and intersections surrounding the project site. The collected data will be processed to determine **current traffic volumes, movement patterns, and Levels of Service (LOS)** for the existing network.

Traffic Estimation and Assignment:

The **generated trips** from the project (inbound and outbound) will be estimated and **manually distributed** to the surrounding road network based on the project's operational characteristics, access points, and major connections (mainly **Ain Sokhna** and **Adabiya Ports**).

Intersection Capacity Analysis:

The total traffic volumes (existing + generated) will be analyzed using **Synchro 11 software** to evaluate the **capacity, delays, queues, and Levels of Service (LOS)** for key intersections and roundabouts within the study area.

Level of Service Evaluation:

The performance of the analyzed intersections and road segments will be evaluated following the **Highway Capacity Manual (HCM)** methodology. The **LOS classification** will be determined based on **Volume-to-Capacity (V/C) ratios**, as summarized in **Table (1)**.

The following table presents the traffic impact study scenarios that will be followed in this study to assess the network performance under different conditions.

For the capacity analysis, the Level of Service (LOS) for the road segments has been evaluated following the methodology recommended in the Highway Capacity Manual (HCM).

The evaluation is based on the Volume-to-Capacity (V/C) ratios, which represent the relationship between traffic demand and the available roadway capacity.

Table 1: Traffic study scenarios

Analysis Period	AM Peak		PM Peak	
	WITHOUT DEVELOPMENT	WITH DEVELOPMENT	WITHOUT DEVELOPMENT	WITH DEVELOPMENT
Current Year 2025	Base year (the existing traffic count survey will be used for the assessment of the road network and intersections)			
Opening Year 2028	*		*	
	The growth factor 3% will be used to determine the future traffic volumes			
Horizon Year 2038	*	*	*	*
		*		*
	The growth factor 3% will be used to determine the future traffic volumes after adding the project trip generation			

2.2 General layout

The general layout of the Indorama Fertilizer Complex and its connection roads within the Sokhna Industrial Zone (Concept Development Stage) is illustrated in the figure below.

This figure presents the overall site arrangement, internal circulation network, and proposed access points connecting the complex to the surrounding road system.

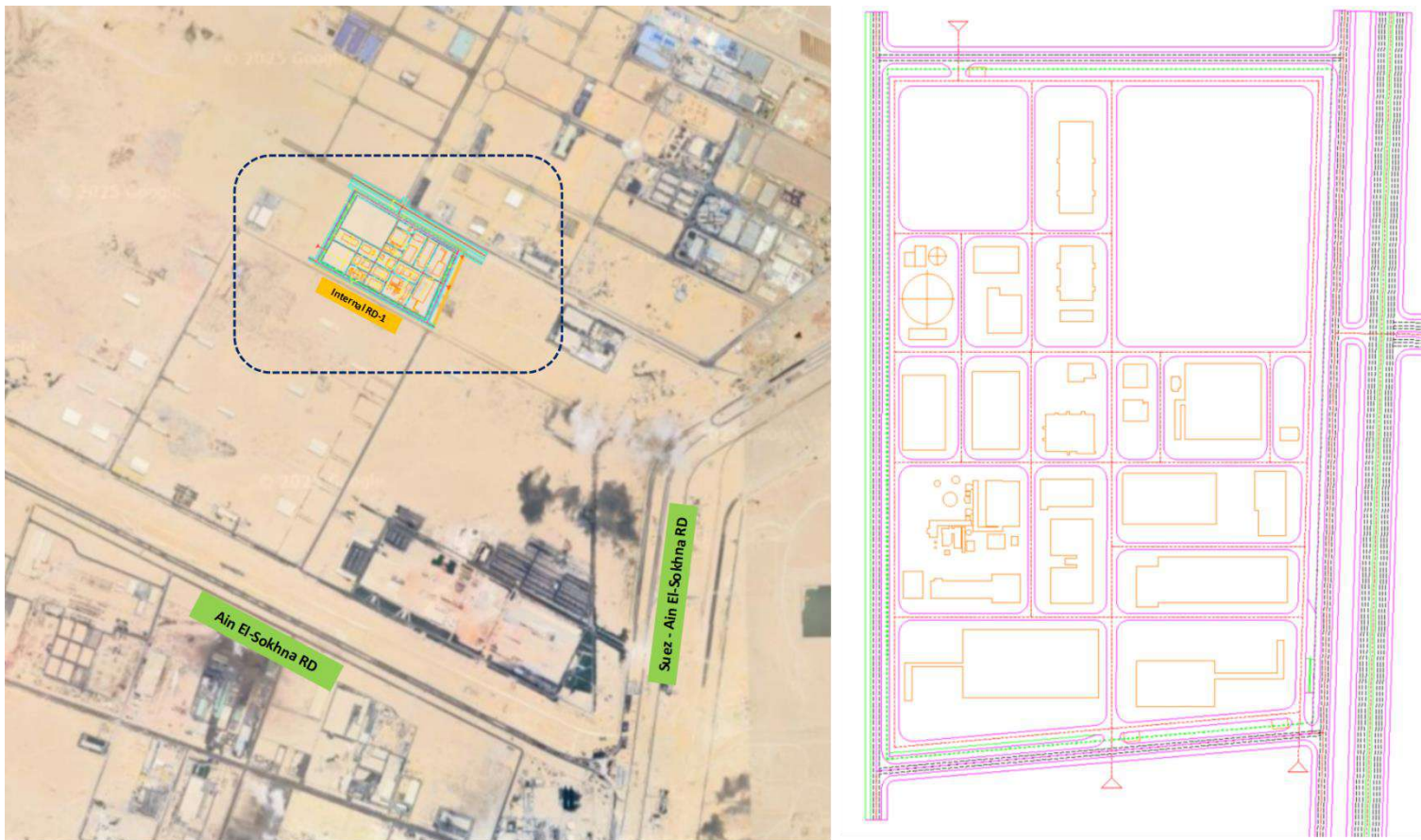


Figure 5: Roads layout plan

2.3 TRANSPORTATION NETWORK

The road network within and around the Indorama Fertilizer Complex includes a hierarchy of internal and external roads serving different traffic functions. The network consists of main access roads, collector roads, and internal service roads that connect production, storage, and administrative zones.

The external network includes the main industrial corridors and port access routes connecting the site to Ain Sokhna Port and Adabiya Port, which accommodate the inbound and outbound logistics movements of raw materials and finished products.

Tables (3, 4, 5) present the classification and key attributes of the road links, including their function, number of lanes, design speed, and typical cross-section, as extracted from the site layout and surrounding road characteristics.

Table 2: Description of LOS

LOS	Description	V/C
A	Free flow with low volumes and high speeds.	< 0.35
B	Reasonable free flow, but speeds are beginning to be restricted by traffic conditions.	0.36 – 0.55
C	In stable flow zones, most drivers are restricted in the freedom to select their own speeds.	0.56 – 0.77
D	Approaching unstable flow; drivers have little freedom to select their own speeds.	0.78 – 0.93
E	Unstable flow may be short stoppages.	0.94 – 1.0
F	Unacceptable congestion; stop-and-go; forced flow.	> 1.0

Source: AASIDRA User Guide, September 2004 and Highway Capacity Manual (HCM 2010).

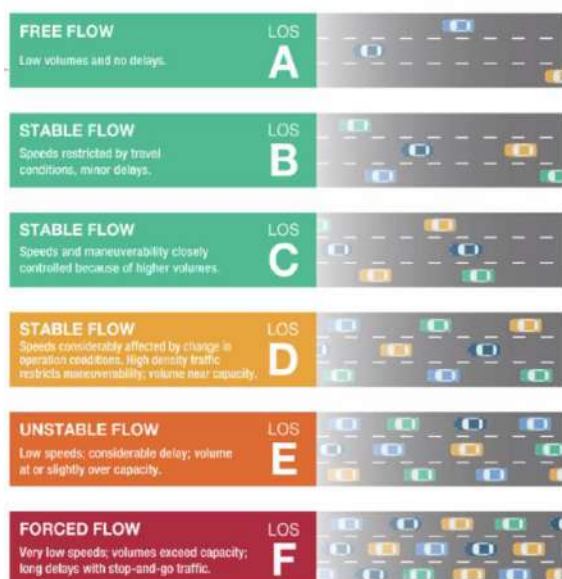


Table 3: Road Lane Capacity

Road Type	Capacity / Vehicle / Hour / Lane
Major Arterial Road	1300 – 1500
Secondary Arterial Road	1100 – 1300
Collector Road	700 – 900
Local Road	400 – 600
Service Road	700 – 900
Loops & Ramps	1900 – 2000

Source: Egyptian Road Design Manual (EG 2021).

Table 4: Intersection characters

LOS	Delay Time	
	Signalized Intersection	Un-Signalized Intersection
A	< 10 sec	< 10 sec
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	> 80 sec	> 50 sec

Source: Highway Capacity Manual (HCM 2010).

Based on the concept master plan and the existing road network, the road classification and lane configuration within the study area have been established manually according to the available layout drawings and site data provided by the Client.

The following figures illustrate the road link types and the number of lanes for the external, internal, and proposed roads surrounding and serving the Indorama Fertilizer Complex.

These figures represent the coded layout used for traffic assessment and capacity analysis within the study area.

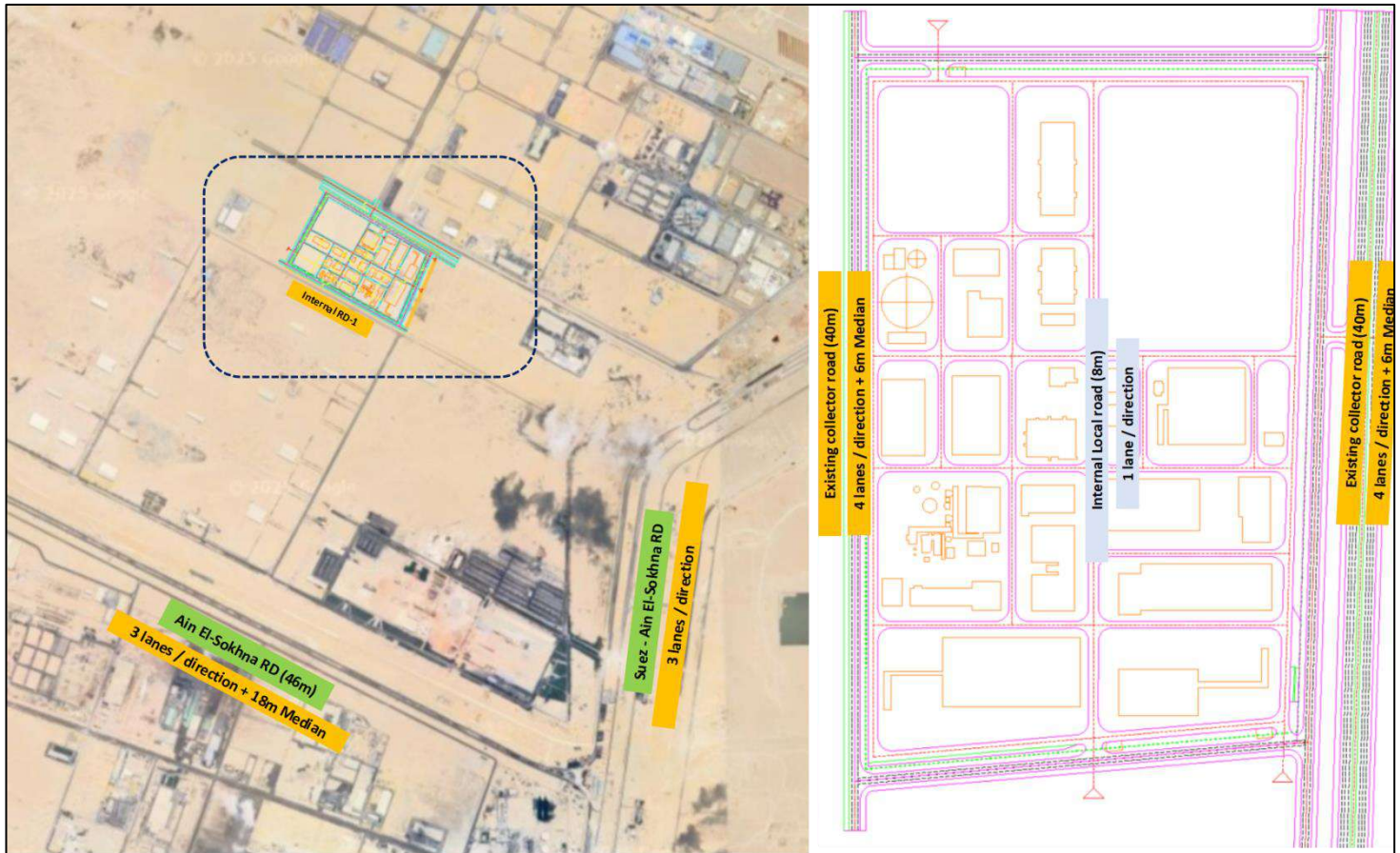


Figure 6: Internal & External road detail

Table 5: Roads capacity details

Road	Speed (KM/H)	No.Of.Lanes/ Dir	Capacity vehicle/ Hour/ lane	Total Capacity
Ain El-Sokhna	80	3	1500	4500
Suez - Ain El-Sokhna	80	3	1500	4500
Collector (industrial city - 40m)	60	2	600	1200
Internal roads	30	1	400	400

CHAPTER 2: EXISTING CONDITION

3. CHAPTER 2: EXISTING CONDITION

3.1 STUDY AREA

In this part of the report, the Consultant presents the defined study area for assessing the traffic impact of the Indorama Fertilizer Complex in Sokhna. The study area covers the immediate project site, its main access points, and the surrounding road network including Ain Sokhna Port and Adabiya Port. Figure 7 illustrates the study area boundary.

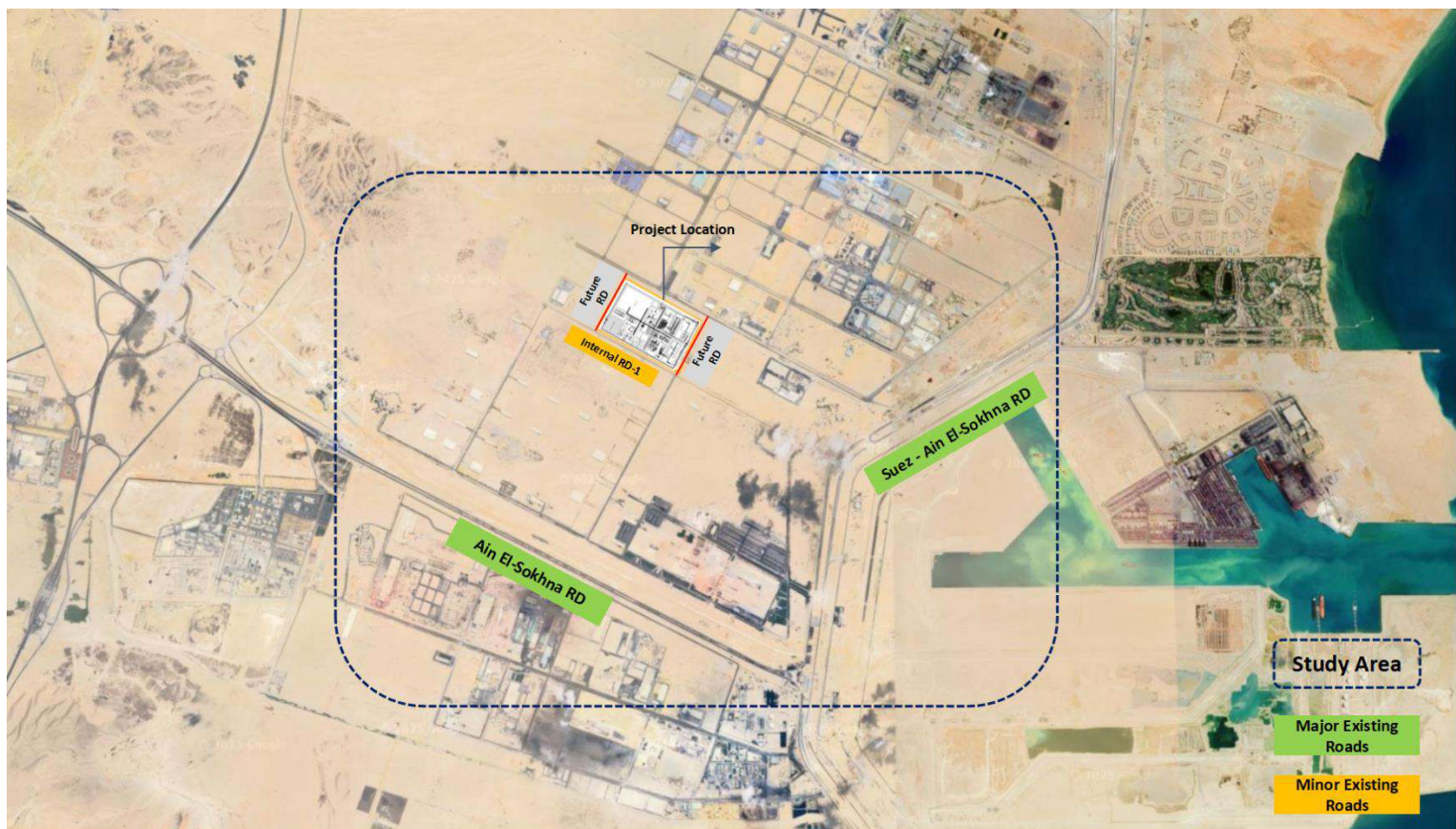


Figure 7: Study area limit

3.2 PUBLIC TRANSPORTATION FACILITIES

There are no public transportation services currently available within or around the project area.

The Indorama Fertilizer Complex is located inside the Sokhna Industrial Zone, which is primarily served by private vehicles and freight transport trucks.

Accordingly, all commuting and material movements related to the project are expected to rely on private transport modes, including staff buses, light vehicles, and heavy trucks for raw material and product logistics.

3.3 TRAFFIC COUNT DATA

To establish the traffic conditions for the proposed scenario, manual traffic data collection was carried out during the Traffic Impact Study (TIS) for the Indorama Fertilizer Complex.

The data collection included both link traffic counts and turning movement counts (TMCs) at the main intersections surrounding the project site. The selected locations were identified to represent the key access points and road links that influence the project's traffic circulation.

For this study, the manual counts were conducted over one consecutive day, covering weekdays, to capture the variations in traffic patterns. The surveys recorded traffic movements for the external road network surrounding the project.

The details and specifications of the traffic survey locations and duration are summarized in Table (6), while the corresponding count locations are illustrated in the following figure.

Table 6: *Specifications of traffic count data*

Specifications	Links	Intersection
Dates and Days	Sunday 11 Oct-2025	
Duration	11 Hours from 7 AM – 6 PM	Two periods AM Peak (7:00 to 9:00) PM Peak (4:00 to 6:00)



Figure 8: Traffic count survey locations

The traffic survey covered a total of 12 count locations within the project area, representing the main road links and intersections serving the Indorama Fertilizer Complex.

During the survey period, it was observed that locations No. 9 and No. 10 were closed and not operational, as the connecting road segment is currently under construction and not open to traffic. The surveys were conducted manually by field staff, as illustrated in the following figure, which shows a sample of the on-site traffic counting activity.



Figure 9: Sample of Traffic count survey works

3.3 TRAFFIC COUNT ANALYSIS

In this part of the report, the consultant presents the traffic count data analysis for the count locations to determine the traffic volumes on existing road networks. The following figures (10-19) show the traffic data for each count point location.

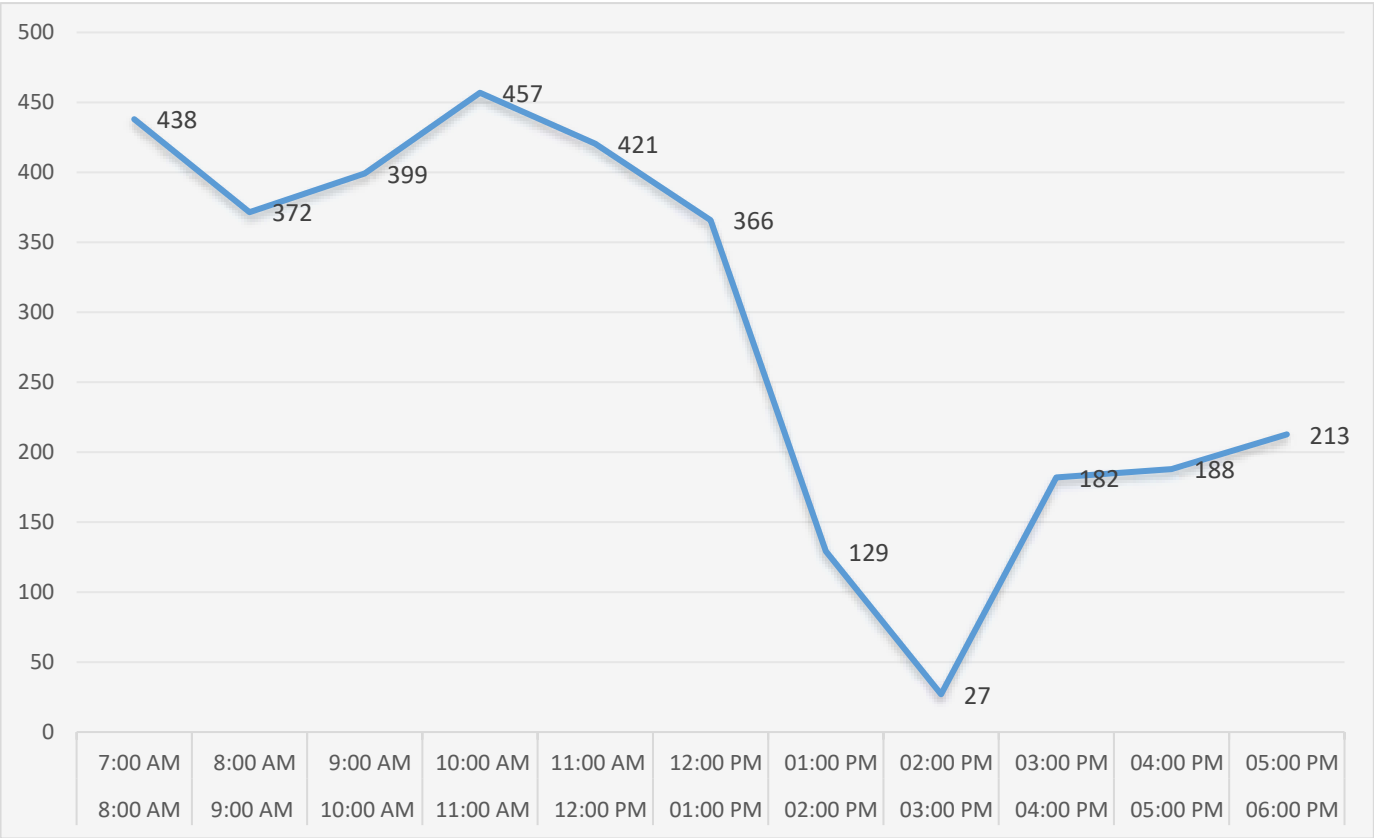


Figure 10: Traffic count data @ Point-1

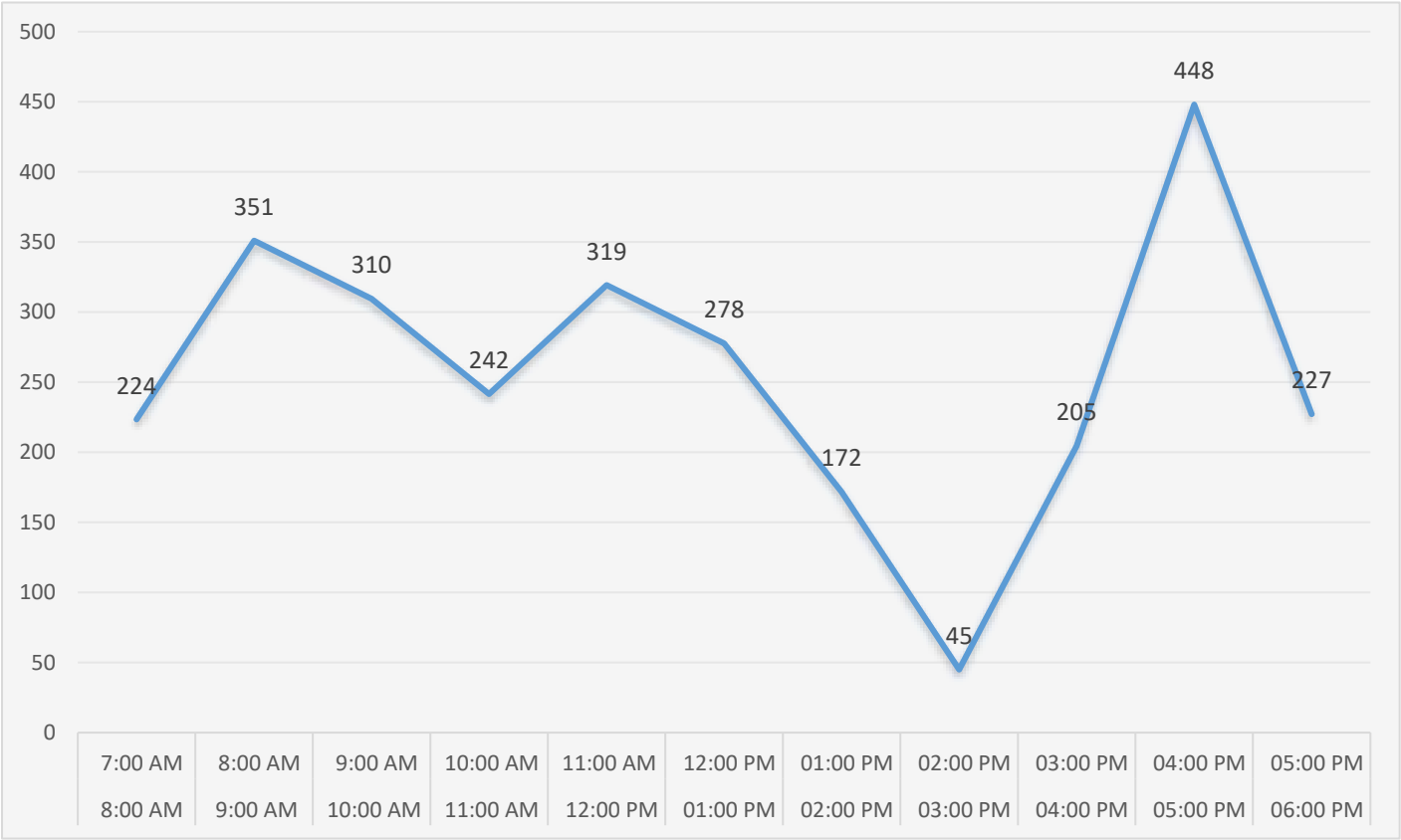


Figure 11: Traffic count data @ Point-2

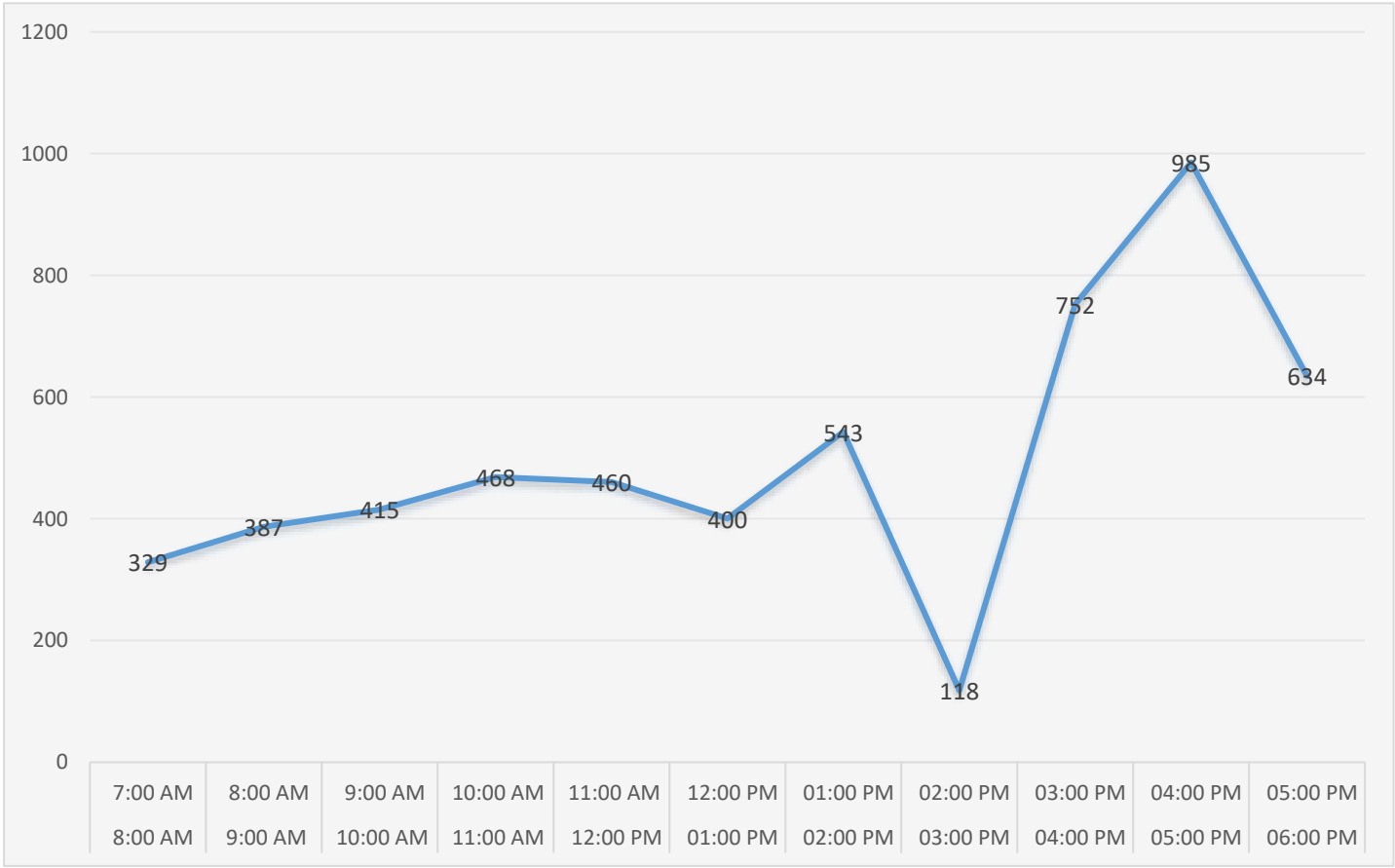


Figure 12: Traffic count data @ Point-3

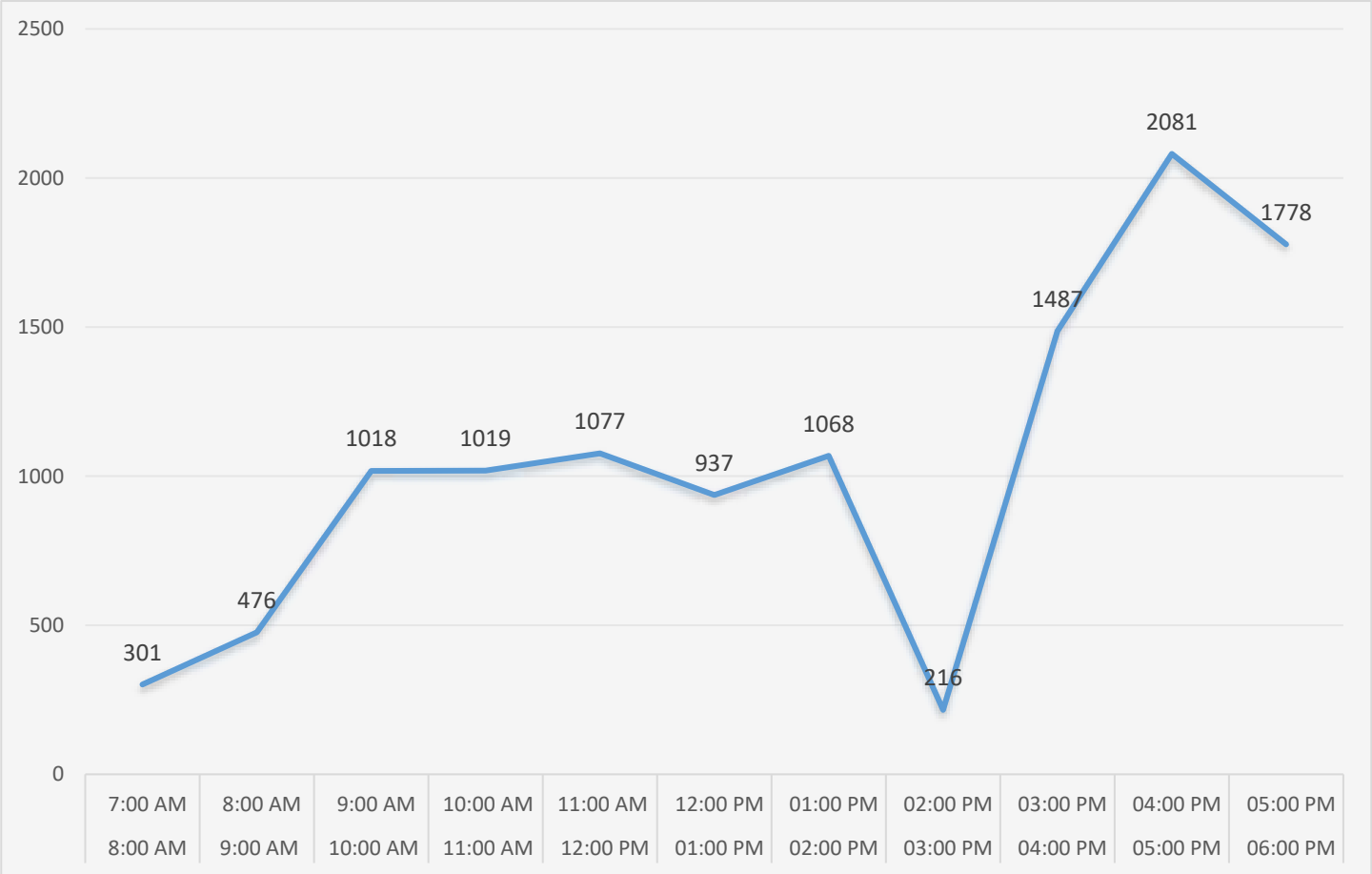


Figure 13: Traffic count data @ Point-4

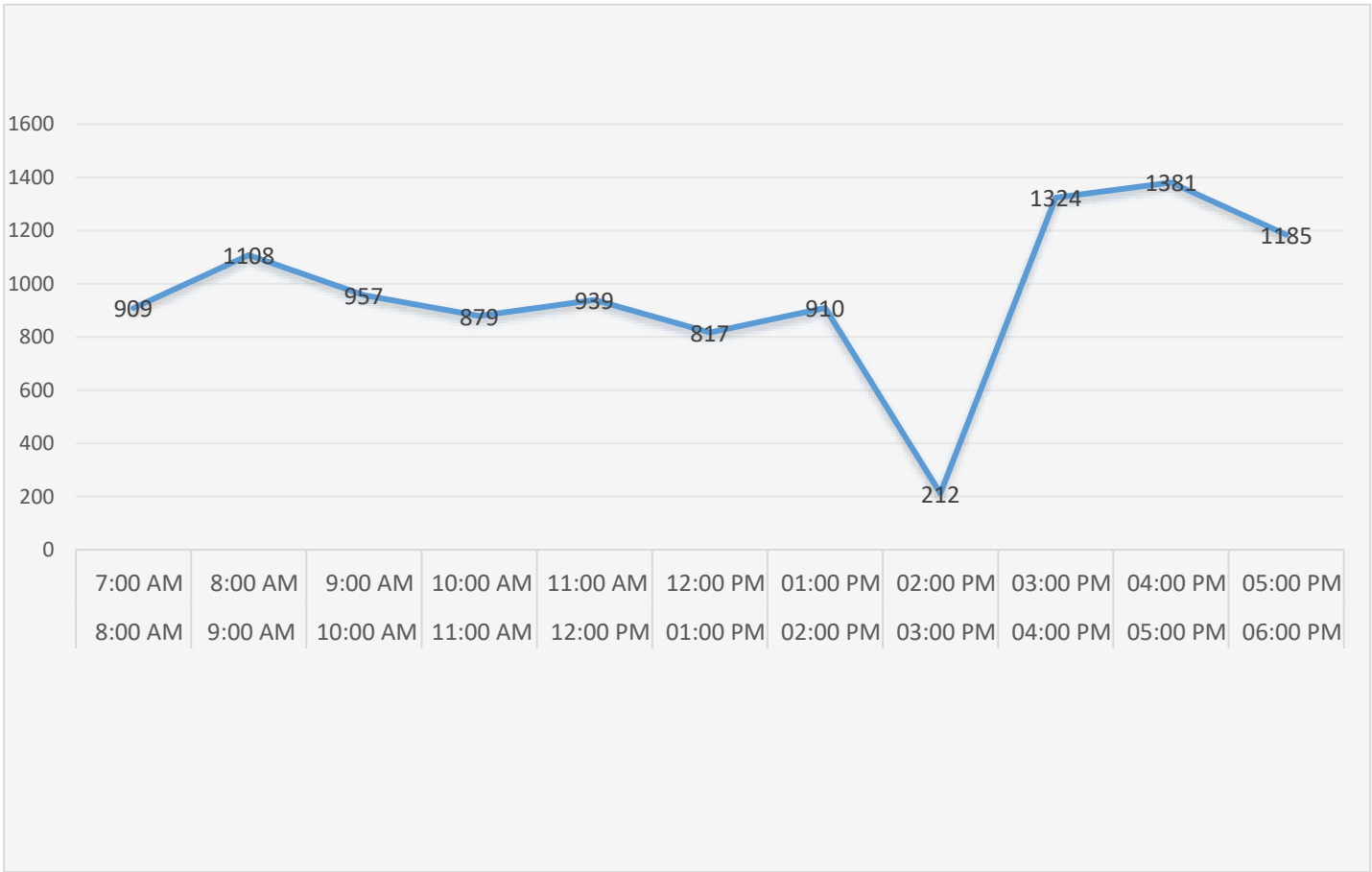


Figure 14: Traffic count data @ Point-5

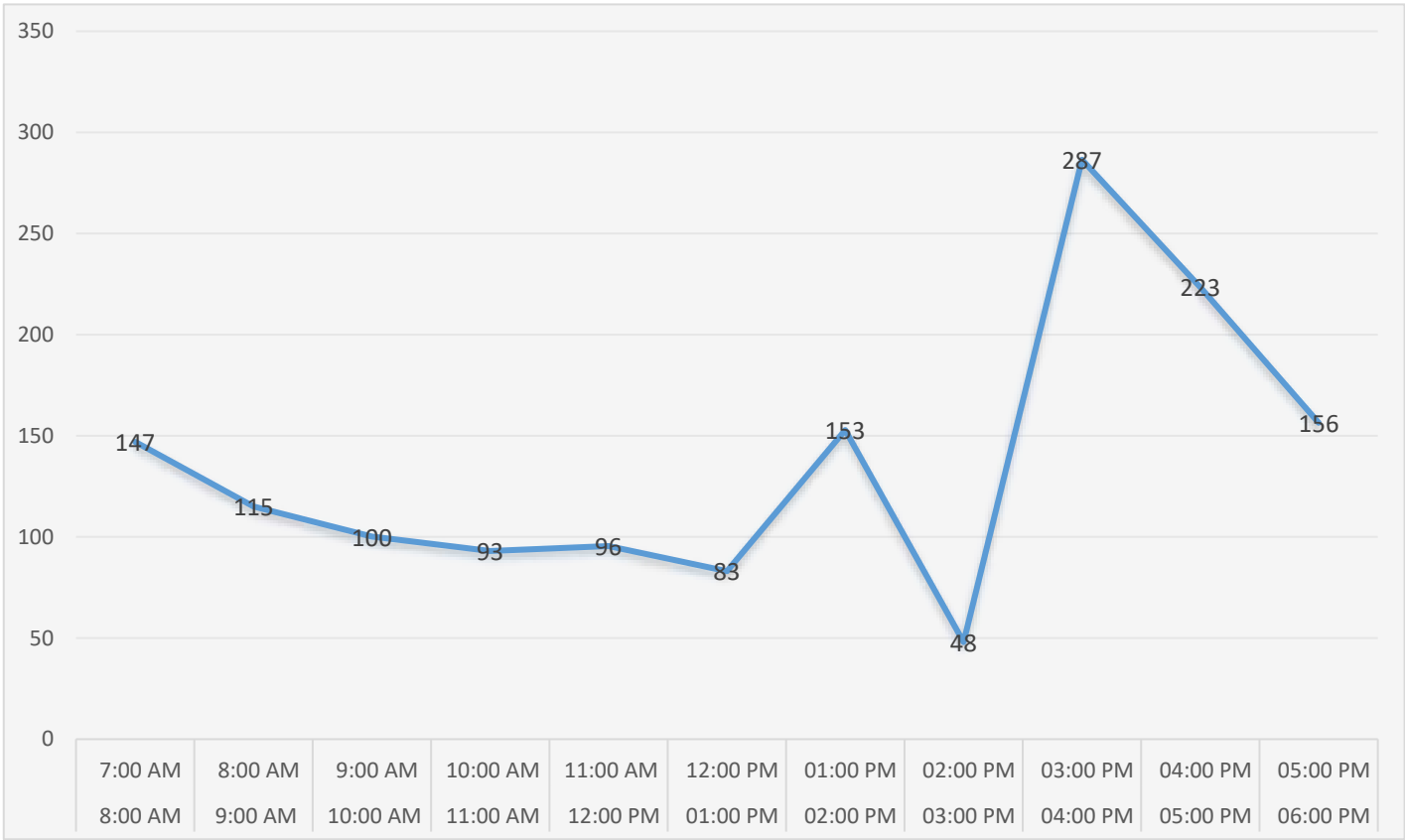


Figure 15: Traffic count data @ Point-6

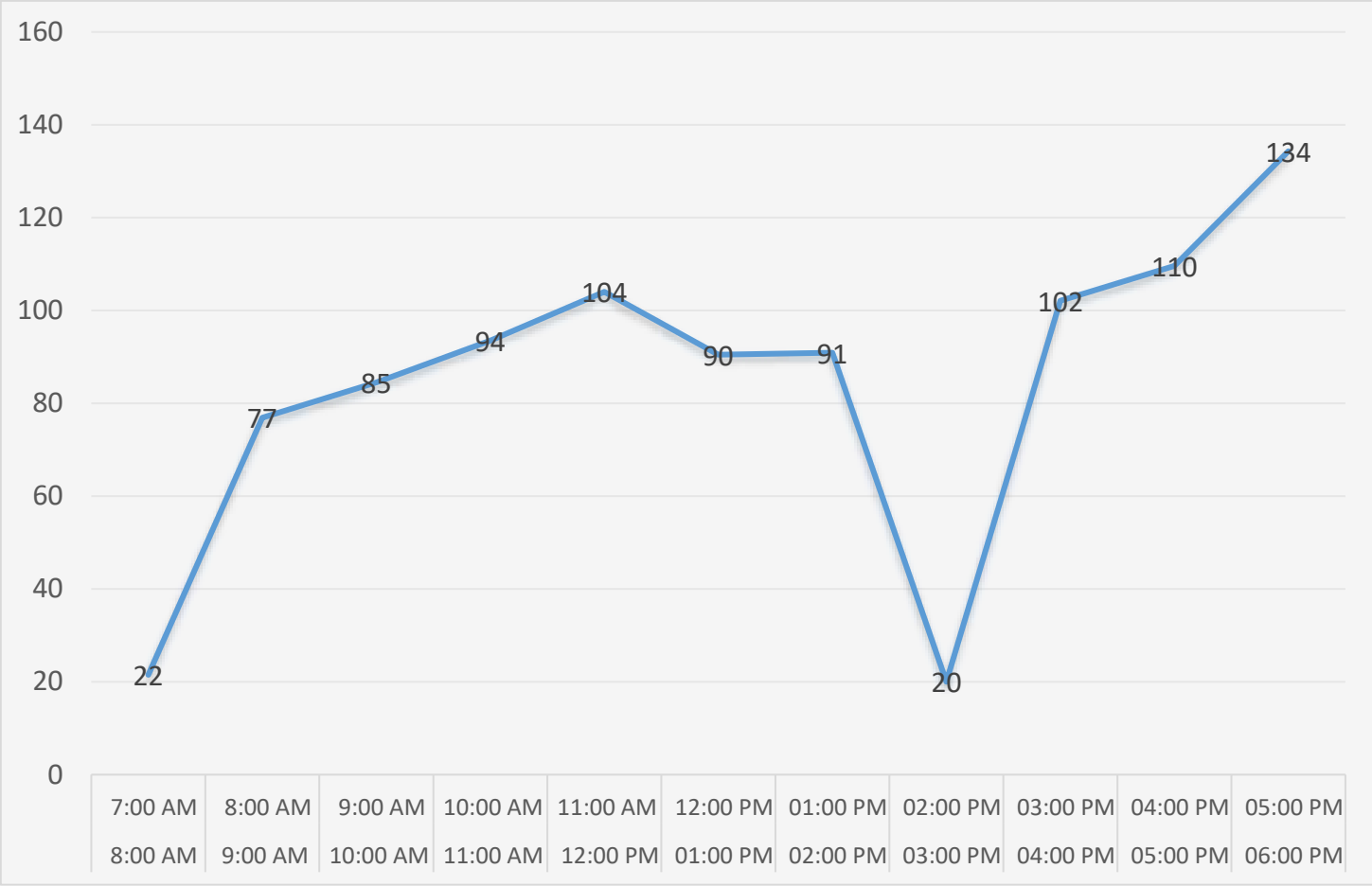


Figure 16: Traffic count data @ Point-7

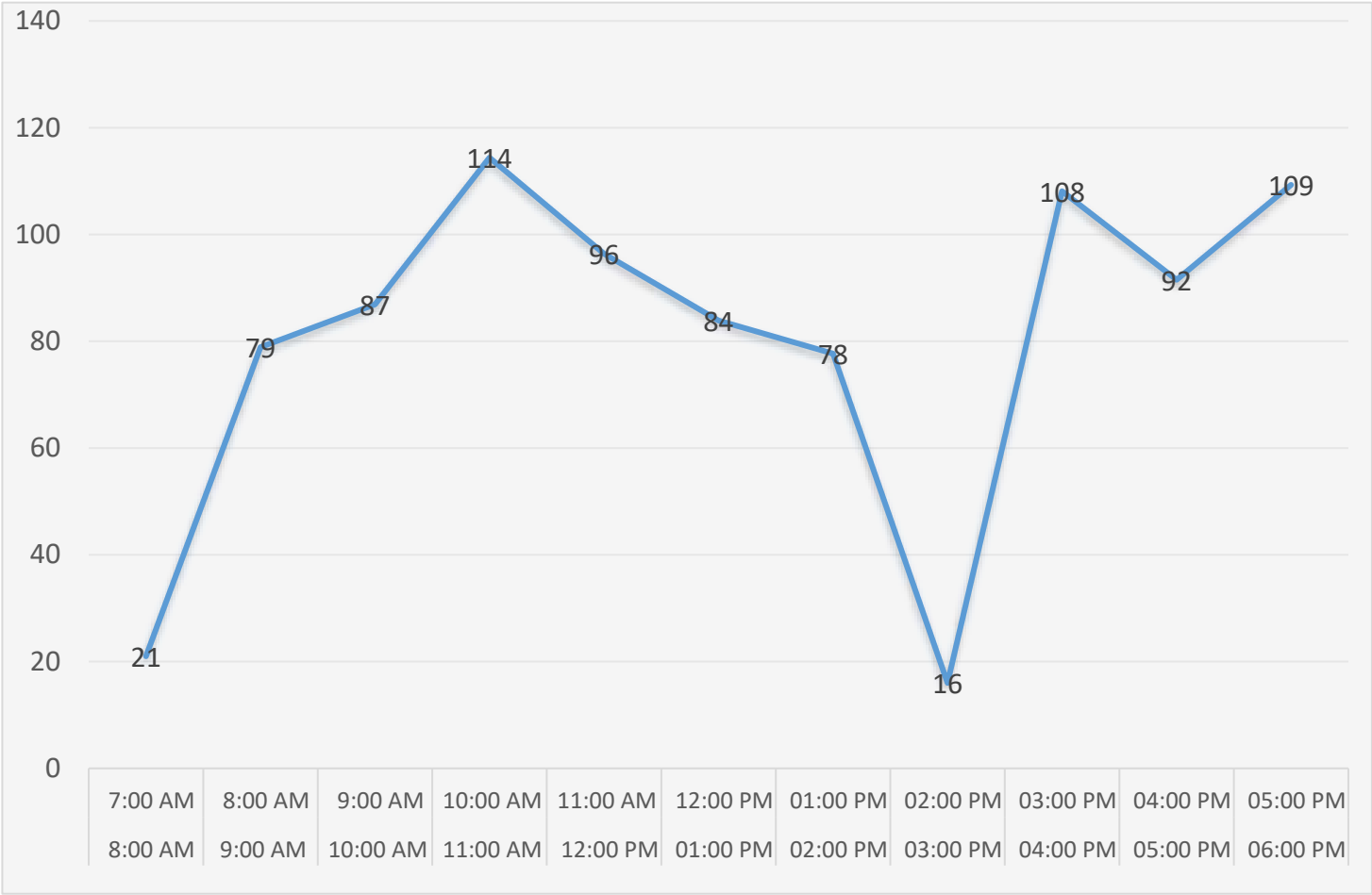


Figure 17: Traffic count data @ Point-8



Figure 18: Traffic count data @ Point-11

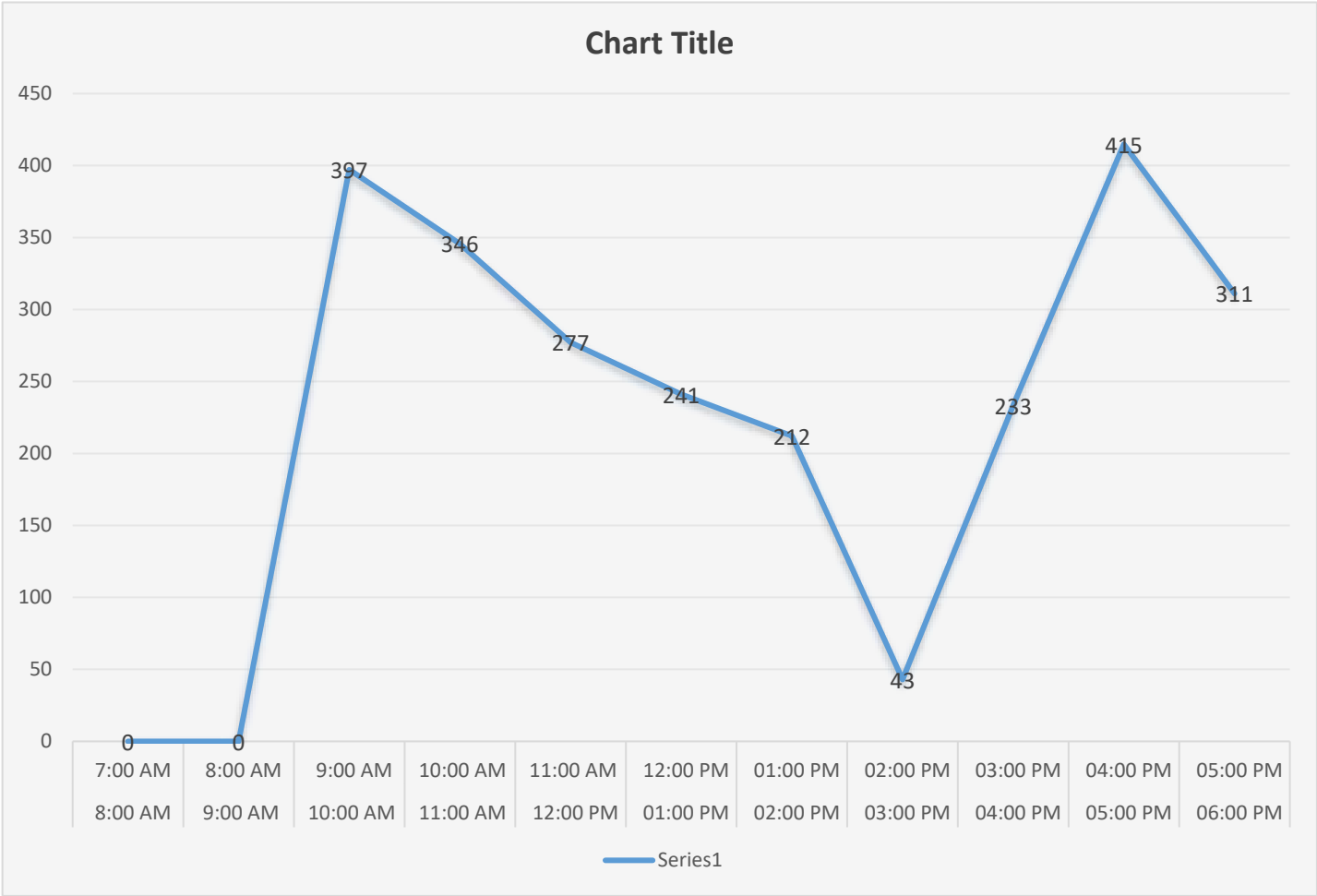


Figure 19: Traffic count data @ Point-12

Based on the previous figures, the following table (7) shown data collection summary for the traffic count points.

Table 7: summary for the traffic count data

Street Name	Direction	Point No.	AM Peak Hour	AM Volume	PM Peak Hour	PM Volume
Cairo - Ain Sokhna Road	From Cairo to Ain Sokhna	1	10:00 - 11:00	457	12:00 - 1:00	366
	From Ain Sokhna to Cairo	2	8:00 - 9:00	351	5:00 - 6:00	448
Suez - Ain Sokhna Road (U-turn)	To Suez	3	10:00 - 11:00	468	4:00 - 5:00	985
Suez - Ain Sokhna Road	To Suez	4	11:00 - 12:00	1077	4:00 - 5:00	2081
	To Ain Sokhna	5	8:00 - 9:00	1108	4:00 - 5:00	1381
Suez - Ain Sokhna Road (U-turn)	To Ain Sokhna	6	8:00 - 9:00	115	3:00 - 4:00	287
Ain Sokhna Port Road	To Port	7	11:00 - 12:00	104	5:00 - 6:00	134
	From Port	8	10:00 - 11:00	114	5:00 - 6:00	109
Adabiya Port Road	From Port	11	8:00 - 9:00	694	4:00 - 5:00	675
	To Port	12	9:00 - 10:00	397	4:00 - 5:00	415

Based on the existing traffic count data the consultant will use the Max traffic volumes to determine the road network LOS, the following figure (20) shown the traffic volumes on road network and table (8) and figure (21) shown the V/C ratio for the project existing road network.

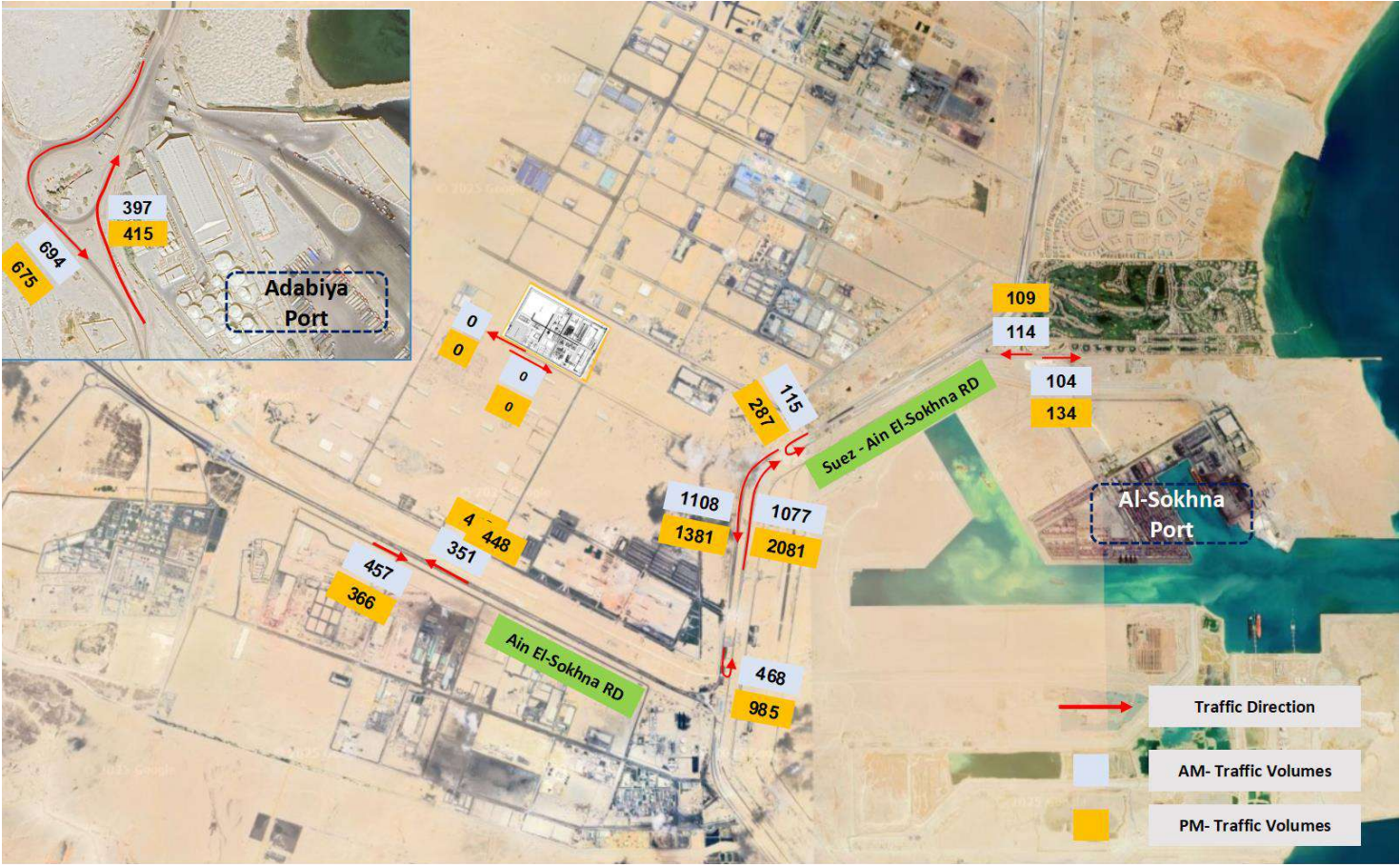


Figure 20: Max traffic volumes on existing road network @ 2025

Table 8: V/C Ratio and LOS for each road @2025

Street Name	Direction	AM Volume	PM Volume	Capacity	V/C (AM)	V/C (PM)	LOS (AM)	LOS (PM)
Cairo - Ain Sokhna Road	From Ain Sokhna to Cairo	457	366	4500	0.10	0.08	A	A
	From Cairo to Ain Sokhna	351	448	4500	0.08	0.10	A	A
Suez - Ain Sokhna Road (U-turn)	To Suez	468	985	1200	0.39	0.82	B	D
Suez - Ain Sokhna Road	To Suez	1077	2081	4500	0.24	0.46	A	B
	To Ain Sokhna	1108	1381	4500	0.25	0.31	A	A
Suez - Ain Sokhna Road (U-turn)	To Suez	115	287	1200	0.10	0.24	A	A
Ain Sokhna Port Road	To Port	104	134	1200	0.09	0.11	A	A
	From Port	114	109	1200	0.10	0.09	A	A
Adabiya Port Road	From Port	694	675	1200	0.58	0.56	C	C
	To Port	397	415	1200	0.33	0.35	A	B

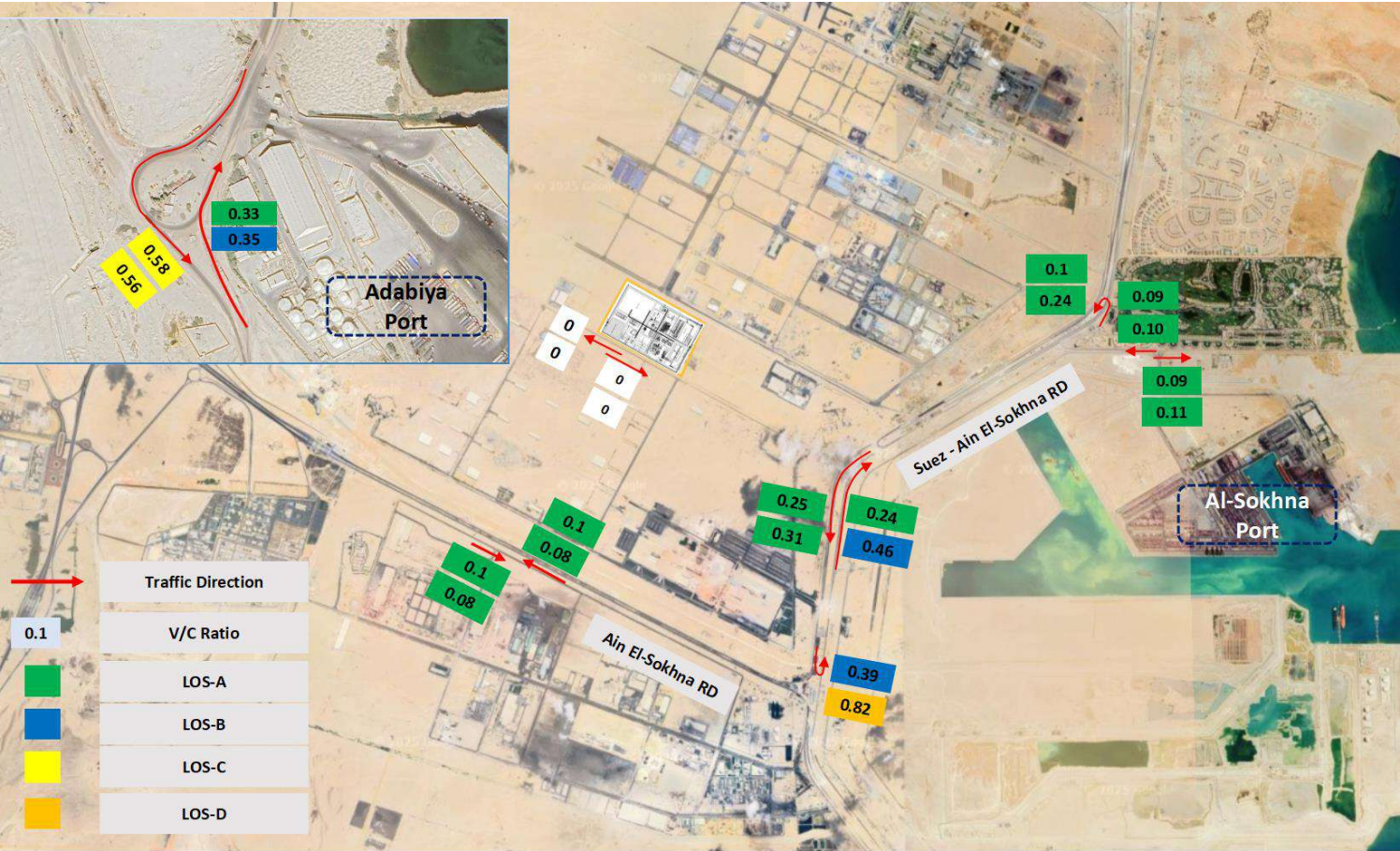


Figure 21: Max V/C Ratio and LOS on existing road network @ 2025

According to the previous items, the consultant found that LOS for all existing external road networks is working with acceptable LOS (A-D) at all peaks.

CHAPTER 3:

INDORMA DEVELOPMENT LAND USE AND TRAVEL CHARACTERISTICS

4. CHAPTER 3: INDORMA DEVELOPMENT LAND USE AND TRAVEL CHARACTERISTICS

This section describes the Indorma New Development, trip generation estimates, parking demand and strategy as well as the overall transportation strategy.

4.1 LAND USE DATA

The summary of land use program as received from master planner in September 2025 is presented in Tables below.

Table 9: Project Land use data

Project Material Logistics										
	Material	Annual Quantity	Monthly	No of Days	Truck Capacity	No of Trips /Shipment	No of Trips /day	Frequency	From	To
Raw material	Sulphur (Solid Granules)	344,788	31,344	6	60	522	87	Once a month	Adabiya	Indorama Site
	Rock Phosphate (Solid Powder)	1,386,000	126,000	30	60	2,100	70		Al Sebay	Indorama Site
	Ammonia (Liquid)	135,000	12,273	30	35	351	12		Ain sokhna Port	Indorama Site
	Other Solid raw material (Solid)	50,000	16,667	5	60	278	56	3 times a year	Ain sokhna Port	Indorama Site
Product	DAP (Solid Granule)	600,000	54,545	20	60	909	45		Indorama Site	Ain Sokhna /Adabiya/Damiette/Alexandria
	Phosphoric acid (As Solution)	200,000	18,182	30	60	303	10		Indorama Site	Ain Sokhna Port

4.2 TRAVEL CHARACTERISTICS

According to the nature of the Indorama Fertilizer Complex, which is an industrial project primarily focused on the production, storage, and transportation of raw materials and finished products, most of the traffic generated by the site will be related to logistics movements and staff transportation.

The primary mode of transport serving the project is expected to be heavy trucks for material supply and product distribution, in addition to private vehicles and staff buses for employee commuting.

There are currently no public transportation services available in the Sokhna Industrial Zone; however, the site benefits from direct access to Ain Sokhna Port, Adabiya Port, and the main industrial corridors, which are designed to accommodate heavy vehicle traffic and freight movements efficiently.

4.2 ACCESS AND CIRCULATION STRATEGY

The transportation strategy for the Indorama Fertilizer Complex considers the internal and external circulation of both heavy vehicles (for raw materials and product transport) and light vehicles (for staff and service movements).

According to the concept master plan, the project includes multiple access points connecting directly to the surrounding industrial road network. These access points are functionally divided into:

- Main gates for heavy trucks, connected to Ain Sokhna and Adabiya Port routes,
- Separate staff and service entrances, designed to ensure safety and smooth operation within the plant,
- Internal circulation routes linking production units, storage areas, and utility zones.

The following figure illustrates the access locations and the internal circulation plan for the project.

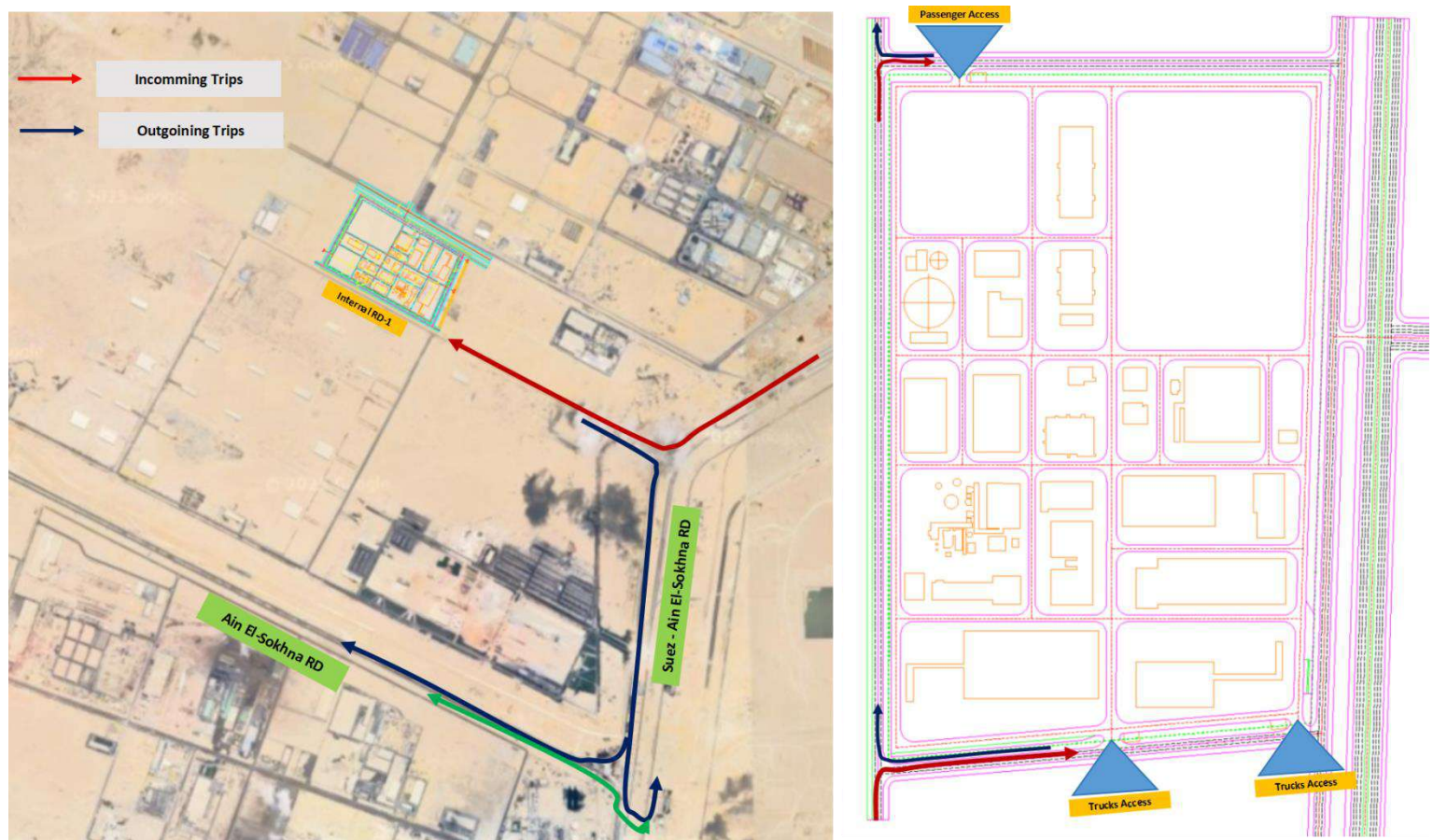


Figure 22: Accessibility and gates layout plan

CHAPTER 4: FUTURE CONDITIONS

5. CHAPTER 4: FUTURE CONDITIONS

5.1 INTRODUCTION

As part of the Traffic Impact Study for the Indorama Fertilizer Complex, a simplified analytical approach has been adopted to estimate and evaluate the traffic impact generated by the project.

The methodology focuses on the three key steps relevant to industrial developments:

Trip Generation – estimating the number of vehicle trips associated with raw material deliveries, product distribution, and employee commuting.

Trip Distribution – identifying the expected routing of generated trips between the project site and the main connection points such as Ain Sokhna Port and Adabiya Port.

Trip Assignment – allocating the estimated trips to the surrounding external and internal road network based on the shortest and most direct routes for each trip type (raw material, product, and staff movements).

This approach serves as the foundation for evaluating the traffic volumes and impacts of the project on the surrounding transportation network.

5.2 TRIP GENERATION

Trip generation represents the first step in the conventional four-step transportation planning process, used to forecast the number of trips generated or attracted by a development.

For the Indorama Fertilizer Complex, trip generation is divided into two main categories:

- A. Freight and Material Movements (Industrial Traffic)
- B. Staff and Service Trips (Commuter Traffic)

A- Freight and Material Trips

The generated trips are calculated based on the Project Material Logistics provided by the client.

The following parameters are considered:

- Monthly quantity (tons/month)
- Truck capacity (tons/truck)
- Number of working/shipping days per month

$$\frac{\text{Monthly Quantity}}{\text{Truck Capacity} \times \text{Shipping Days}} = \text{Trips per day}$$

Table 10: Trip generation / Day Calculations

Material	Monthly Quantity (tons)	Truck Capacity (tons)	Shipping Days/Month	Trips/Day	Direction	From	To
Sulphur (Granules)	31344	60	6	87	Inbound (raw material)	Adabiya	Indorama Site
Rock Phosphate (Powder)	126000	60	30	70	Inbound (raw material)	Al-Sebaya	Indorama Site
Ammonia (Liquid)	12273	35	30	12	Inbound (raw material)	Ain Sokhna Port	Indorama Site
Other Solids	16667	60	5	56	Inbound (raw material)	Ain Sokhna Port	Indorama Site
DAP (Granules)	54545	60	20	45	Outbound (Finished goods)	Indorama Site	Ports (Ain Sokhna, Adabiya, Damietta, Alexandria)
Phosphoric Acid (Solution)	18182	60	30	10	Outbound (Finished goods)	Indorama Site	Ain Sokhna Port

Table 11: Trip generation / Peak Hours Calculations - Trucks

Flow	Daily Trips	AM Peak (veh/h)	PM Peak (veh/h)
Sulphur (Inbound)	87	10	7
Rock Phosphate (Inbound)	70	8	6
Ammonia (Inbound)	12	2	1
Other Solids (Inbound)	56	7	5
DAP (Outbound)	45	4	6
Phosphoric Acid (Outbound)	10	1	1

Based on the calculated values, the total generated traffic volumes for the Indorama Fertilizer Complex are summarized as follows:

The total inbound traffic (raw materials) represents approximately 225 truck trips/day, distributed mainly from Al-Sebaya and Adabiya ports toward the site.

The major contributors are Sulphur (87 trips/day) and Rock Phosphate (70 trips/day).

The total outbound traffic (finished products) accounts for about 55 truck trips/day, primarily transporting DAP and Phosphoric Acid to various export ports including Ain Sokhna, Adabiya, Damietta, and Alexandria.

The overall total traffic volume generated by the project during operation is approximately 280 truck trips/day, divided as:

- **Inbound (Raw Materials):** 225 trips/day (80%)
- **Outbound (Finished Goods):** 55 trips/day (20%)

During the peak operational hours, the estimated traffic demand reaches about:

- **32 trucks/hour during the morning peak period (inbound dominated)**
- **25 trucks/hour during the evening peak period (outbound dominated)**

Note:-

- Inbound Trips refer to the incoming truck movements carrying raw materials to the factory site for processing.
- Outbound Trips refer to the outgoing truck movements transporting the final products from the factory to external destinations such as ports and industrial distribution centers.

Vehicle Conversion to Passenger Car Units (PCU)

To ensure a consistent and comparable representation of traffic volumes across different vehicle types, all generated trips were converted into Passenger Car Units (PCU) according to the local design standards adopted in Egypt.

Based on the Egyptian Highway Design Manual, the equivalent conversion factors are as follows:-

Passenger cars / taxis / pickup vehicles = 1.0 PCU

Minibus = 1.5 PCU

Bus = 2.5 PCU

Heavy trucks = 2.5 PCU

Since the generated trips for the Indorama project are mainly heavy trucks for transporting raw materials and products, a factor of 2.5 PCU per vehicle was used in all calculations.

Using this conversion, the total daily and peak-hour volumes were converted into equivalent passenger car units for use in capacity and level-of-service analysis.

The results indicate that:-

- ❖ The **Total equivalent daily traffic** is approximately **700 PCU/day**.
- ❖ The **AM peak-hour flow** is around **67 PCU/h** inbound & **13 PCU/h** outbound
- ❖ The **PM peak-hour flow** is around **47 PCU/h** inbound & **18 PCU/h** outbound

These converted volumes will be used in subsequent analysis to evaluate the performance of intersections and the overall traffic impact on the surrounding road network.

These volumes represent the heavy vehicle movements related to industrial logistics. Staff movements (buses and cars) will add additional but relatively minor traffic impact compared to freight trips.

B- Staff Trip Generation

The workforce trip generation is derived from the Influx Management – Manpower Plan provided by the client, which defines the expected number of workers during each construction stage.

The workforce distribution is summarized as follows:

Table 12: *Trip generation / Peak Hours Calculations - Staff*

Year	Stage	Total Workers	Remarks
2025	Construction Start	65	Site preparation
2026	Civil Works	1,170	Peak manpower demand
2027	Installation	1,230	Mechanical & process works
2028	Commissioning	70	Final testing

During the peak construction stage (2026–2027), the total number of workers will reach approximately 1,200 persons/day.

The daily transportation of workers is expected to rely mainly on buses and minibuses for labor groups, and private cars for management and engineering staff.

Note:

The total number of workers (≈1200 persons/day) represents the average peak workforce derived from the manpower plan provided by the client, which indicates 1,170 workers during the Civil Works Stage (2026) and 1,230 workers during the Installation Stage (2027).

Accordingly, this rounded value has been used to estimate the daily commuting trips of staff during the peak construction period.

If detailed information on work shifts or on-site accommodation becomes available at a later stage,

the calculations will be updated to reflect the actual manpower distribution.

Transportation Assumptions

Average bus occupancy: 25 workers/bus

Average car occupancy: 1.2 person/car

Mode split:

90% of trips by **buses/minibuses**

10% of trips by **private cars**

Trip distribution:

80% of daily trips during **AM and PM peaks** (arrival and departure)

20% spread across non-peak hours

PCU conversion factors:

Bus / Minibus = 2.5 PCU

Private Car = 1.0 PCU

- ❖ Total daily staff trips: ≈ 58 vehicles/day (≈ 130 PCU/day).
- ❖ AM peak: about 70 PCU/h inbound (workers' arrival).
- ❖ PM peak: about 70 PCU/h outbound (workers' departure).

Staff movements are relatively minor compared to truck traffic but are still included in the intersection capacity analysis to ensure an accurate representation of total site traffic demand.

Table 13: Trip generation / Peak Hours Calculations - Trucks & Staff

Category	AM Peak Inbound (veh/h)	AM Peak Outbound (veh/h)	PM Peak Inbound (veh/h)	PM Peak Outbound (veh/h)	AM Peak (PCU/h)	PM Peak (PCU/h)
Freight Trucks	27	4	18	7	≈ 78 PCU/h	≈ 63 PCU/h
Staff Vehicles	29	0	0	29	≈ 70 PCU/h	≈ 70 PCU/h
Total Combined	56	4	18	36	≈ 148 PCU/h (AM)	≈ 133 PCU/h (PM)

5.3 TRIP DISTRIBUTION

Since no transportation model will be developed for this study, the trip distribution between the project site and the external zones has been prepared manually, based on the travel distance and accessibility of each origin and destination.

This approach provides a practical and transparent method to define the share of trips between the main logistic gateways surrounding the Indorama Fertilizer Complex.

Inbound Trips (Raw material to the Site)

The inbound trips represent the transport of raw materials to the project site from the main supply sources and ports.

The trip distribution has been estimated based on the travel distance between the site and each origin, as shown below:

Table 14: *Inbound Trip distribution - Day*

Origin	Distance (km)	Material Type	Trips/Day	Share (%)
Ain Sokhna Port	5	Ammonia, Other Solids,	68	30%
Adabiya Port	27	Sulphur (100%)	87	38%
Al-Sebaya Mines	—	Rock Phosphate	70	32%
Total Inbound	—	—	225	100%

Outbound Trips (final product from the Site)

The outbound trips represent the transport of finished products (DAP and Phosphoric Acid) to the export ports.

The allocation is defined according to distance-based weighting between the major ports, giving higher shares to closer destinations:

Table 15: *Outbound Trip distribution - Day*

Destination	Distance (km)	Product Type	Trips/Day	Share (%)
Ain Sokhna Port	5	DAP (80%), Phosphoric Acid (100%)	46	84%
Adabiya Port	27	DAP	7	13%
Port Said Port	180	DAP	1	2%
Damietta Port	210	DAP	1	1%
Alexandria Port	285	DAP	1	1%
Total Outbound	—	—	55	100%

Peak Hour Trip Distribution

To determine the expected traffic load during the critical peak hour, the DHV is calculated using a percentage factor (K-factor) applied to the ADT:

$$\text{DHV} = \text{ADT} \times \text{K} \quad \text{DHV} = \text{ADT} \times \text{K}$$

Where:

ADT = Average Daily Traffic

K = Peak Hour Factor (represents the ratio of peak hour volume to daily traffic)

Typical industrial K-values range between **8% and 12%**

This method ensures that the roadway design and performance analysis are based on the **most critical operational hour** rather than the full-day average. The selected **K-factor** depends on:

Land use type (industrial, commercial, residential)

Road classification

Local traffic characteristics

In this study, the adopted K-factors reflect the operational nature of industrial activities where:

Inbound trips increase in the AM peak

Outbound trips increase in the PM peak

Thus, the applied peak-hour distribution provides a realistic representation of network loading during the busiest periods.

Table 16: *Inbound Trip distribution - Peaks*

Origin (Distance)	AM Peak (veh/h)	AM (PCU/h)	PM Peak (veh/h)	PM (PCU/h)
Ain Sokhna (5 km)	8	20	5	13
Adabiya (27 km)	10	25	7	18
Al-Sebaya (Rock Phosphate)	9	23	6	17
Total Inbound	27	68	18	45

Table 17: *Outbound Trip distribution - Peaks*

Destination (Distance)	AM Peak (veh/h)	AM (PCU/h)	PM Peak (veh/h)	PM (PCU/h)
Ain Sokhna (5 km)	4	9	6	14
Adabiya (27 km)	1	1	1	2
Port Said (180 km)	0	0	0	0
Damietta (210 km)	0	0	0	0
Alexandria (285 km)	0	0	0	0
Total Outbound	5	11	7	17

5.4 MODE CHOICE

According to the previous sections, which explained the basis for calculating the trip generation in the transportation analysis, the following reduction factors were applied to account for the availability of public transport and shared mobility options in the study area.

Since the Indorama Fertilizer Complex is located within an industrial zone where no public transport services are currently operating, only limited reductions were considered for internal mobility and staff transportation efficiency.

The reduction factors were applied as follows:

Table 18: Transit Modes Sharing Percentage

Trip Category	Description	Reduction Factor (%)	Adjusted Share %	Remarks
Freight Trips (Trucks)	Raw materials & product transport	0%	100 %	No reduction – essential logistic movements
Staff Trips (Buses / Cars)	Employee commuting trips	5%	95%	Based on potential use of shared buses and internal carpooling
Visitor / Service Trips	Occasional light vehicles	10%	90%	Assumed limited frequency

These factors were used to slightly adjust the generated trip volumes before proceeding to the traffic assignment and capacity analysis.

The reduction ensures that the estimated traffic reflects the realistic operational conditions considering internal coordination and staff transport management systems, the following tables presented the total AM & PM peak trips.

Table 19: Final generated trips @ AM and PM Peaks

Direction	Trucks (veh/h)	Staff (veh/h)	Total (veh/h)	Trucks (PCU/h)	Staff (PCU/h)	Total (PCU/h)
Inbound	27	28	55	68	67	134
Outbound	5	0	5	13	0	13
AM Total	32	28	60	80	67	147

Direction	Trucks (veh/h)	Staff (veh/h)	Total (veh/h)	Trucks (PCU/h)	Staff (PCU/h)	Total (PCU/h)
Inbound	18	0	18	45	0	45
Outbound	7	28	35	18	67	84
PM Total	25	28	53	63	67	129

5.5 TRIP ASSIGNMENT

As the final stage of the four-step process, the calculated trips were distributed and assigned to the proposed internal and external road network.

The distribution of traffic flows followed the main access connections and expected travel directions to and from the project site, based on the previously defined trip distribution and reduction factors. Given that the study does not include a transport model (such as VISUM), the trip assignment was carried out manually, reflecting realistic routing patterns between the project gates and the surrounding regional roads leading to Ain Sokhna and Adabiya ports.

The assigned traffic volumes were then used to evaluate the Level of Service (LOS) and capacity performance of the network at both AM and PM peak hours.

The following figures illustrate the traffic volumes along the main road corridors and intersections included in the study area during the AM and PM peak periods, respectively.

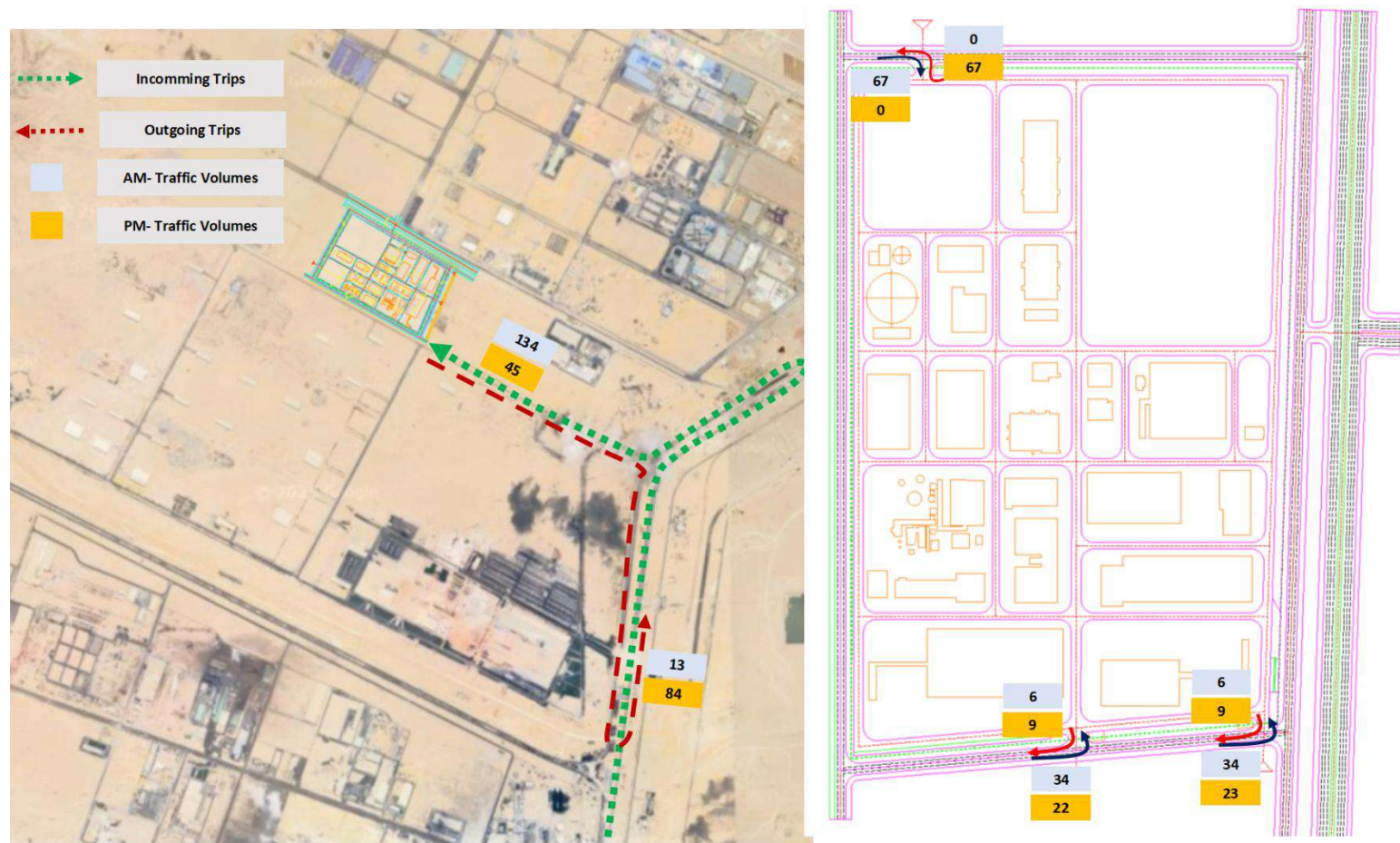


Figure 23: Generated Traffic Volumes on road network

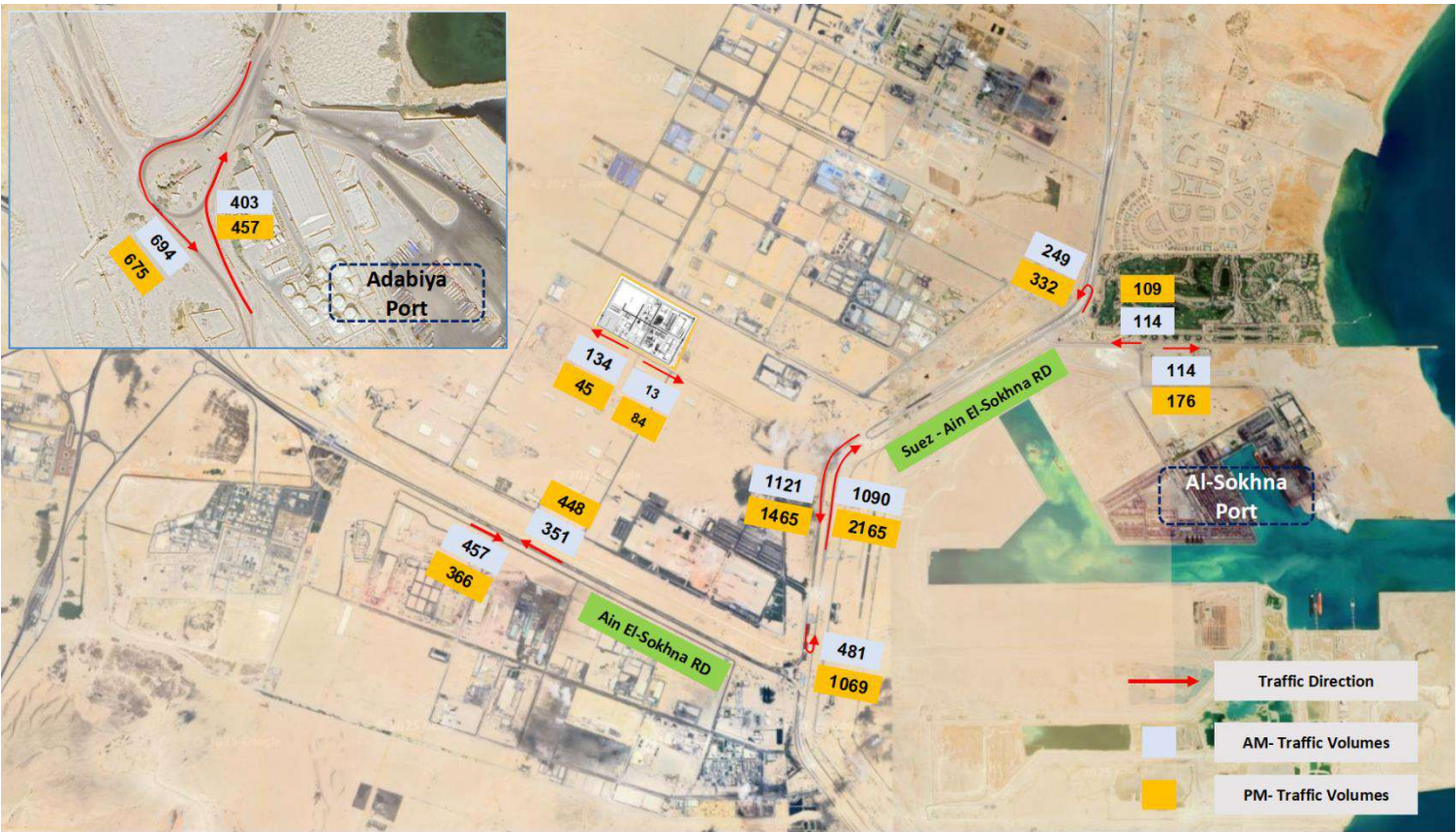


Figure 24: Traffic volumes on external road network @ 2028



Figure 25: Max V/C Ratio and LOS on existing road network @ 2028

Future 2038

To estimate the future traffic conditions within the study area, the existing traffic volumes have been projected to the design year 2038, considering an annual growth rate of 3%.

This rate represents the expected increase in traffic demand due to the continuous development and industrial activities around Ain Sokhna and Adabiya Ports, as well as the anticipated increase in logistics and staff movements associated with the Indorama Fertilizer Complex.

The forecasted traffic volumes were calculated using a compound growth formula as follows:

$$\text{Future Volume} = \text{Base Volume} \times (1 + 0.03)^{10}$$

$$\{\text{Future Volume}\} = \{\text{Base Volume}\} \times (1 + 0.03)^{10}$$

$$\text{Future Volume} = \text{Base Volume} \times (1 + 0.03)^{10}$$

Accordingly, all traffic volumes were increased by a growth factor of 1.34, representing the cumulative increase over a 10-year period (from 2028 to 2038).

The resulting volumes were used to evaluate the Level of Service (LOS) and network performance under future operational conditions during both AM and PM peak hours.

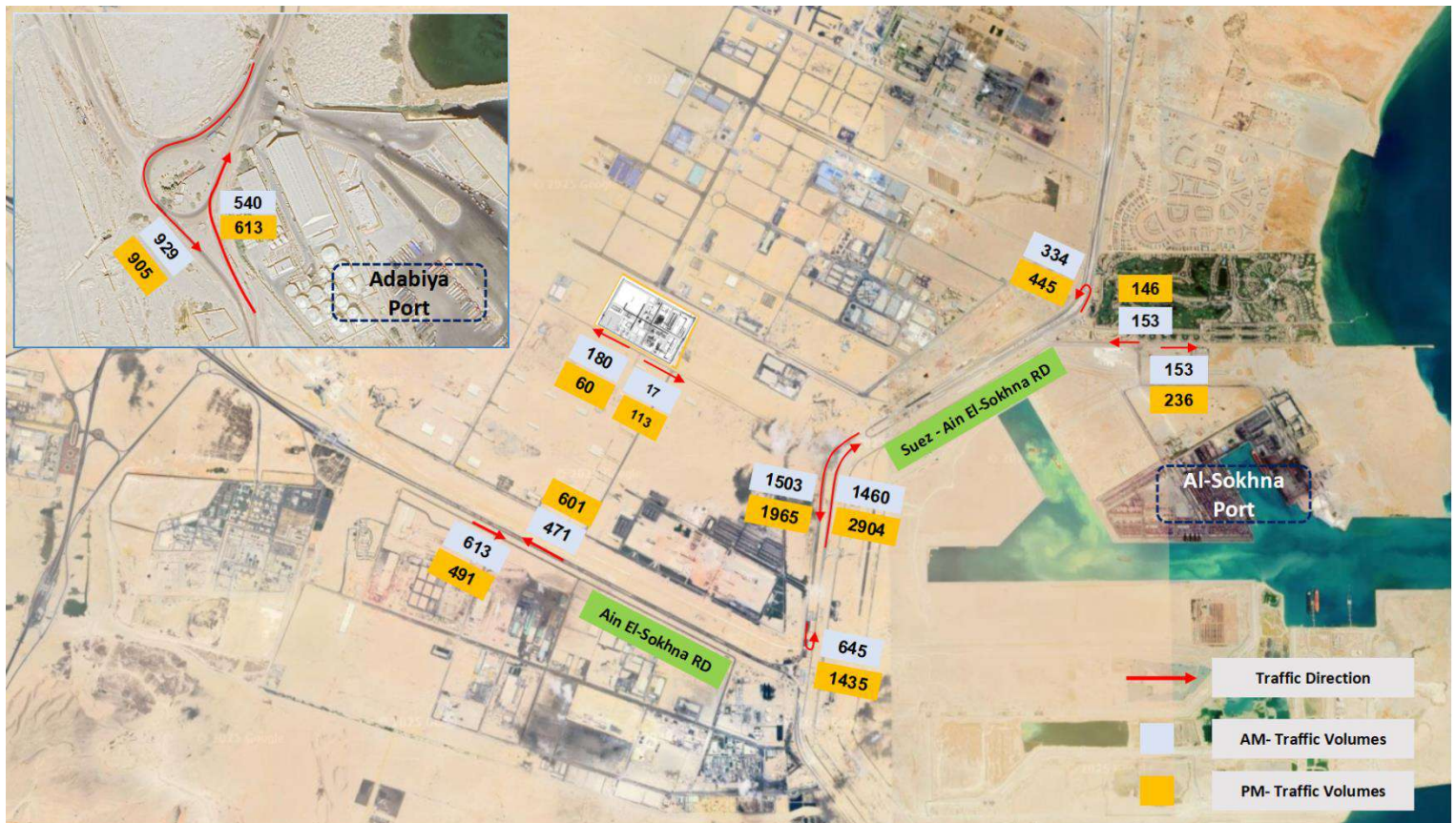


Figure 26: Traffic volumes on external road network @ 2038

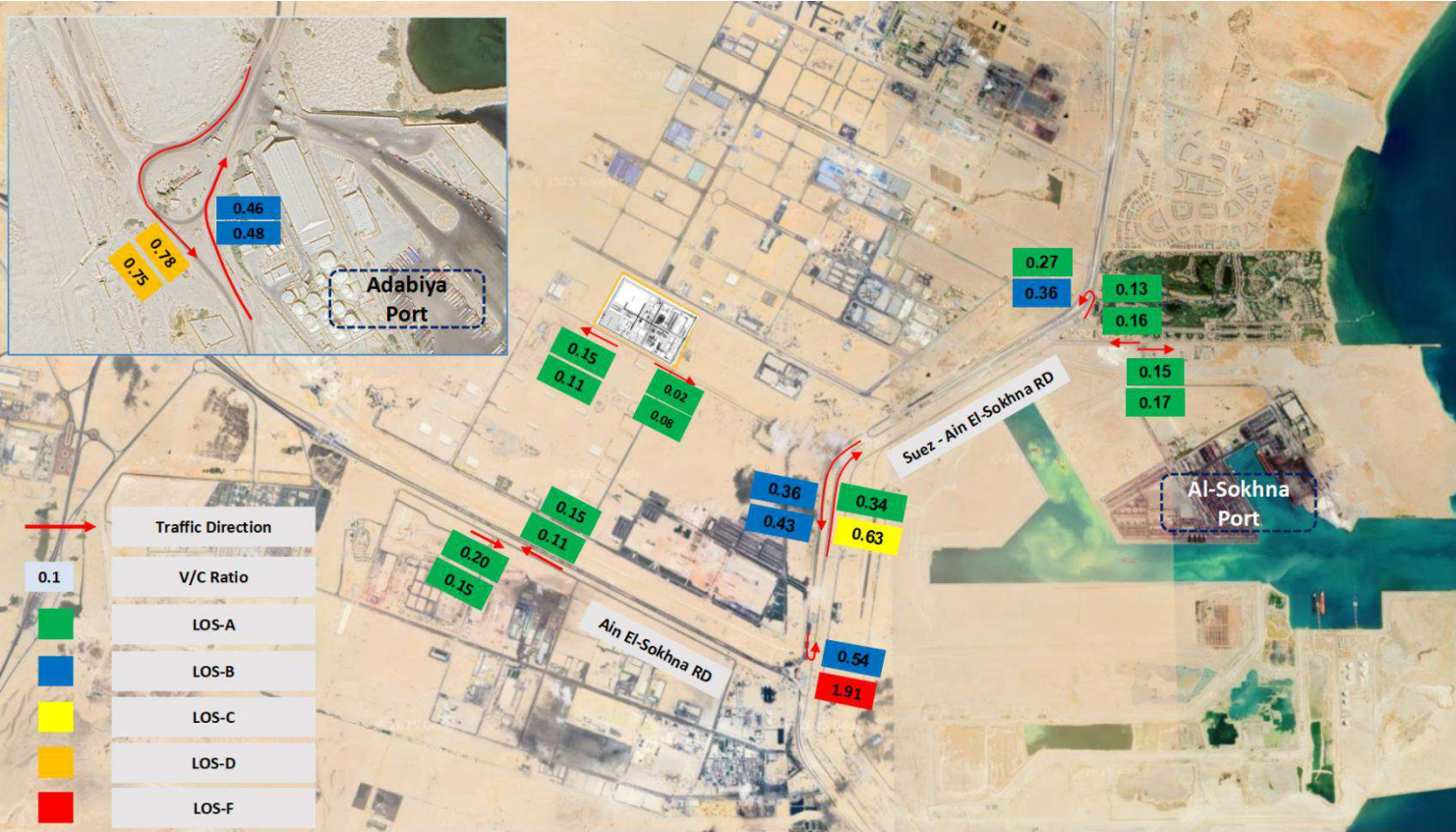


Figure 27: Max V/C Ratio and LOS on existing road network @ 2038

As observed from the previous figures, the consultant concluded that the road network is generally operating at an acceptable Level of Service (LOS D or better) under the future traffic condition (year 2038).

However, the U-turn movement from the industrial area toward Ain Al-Sokhna Road is currently operating under undesirable conditions (LOS F) due to heavy turning volumes and limited manoeuvring space.

External Freight Transportation to Main Ports

According to the project logistics plan, the outbound and inbound freight movements from Indorama Fertilizer Complex are distributed among several national ports based on the shipment type and destination. The external road connections from the project to the main ports are illustrated in Figure (28).

The project location benefits from its proximity to major industrial corridors connecting to the national port system. The following table and description summarize the main routes and travel characteristics for the project's logistics movements.

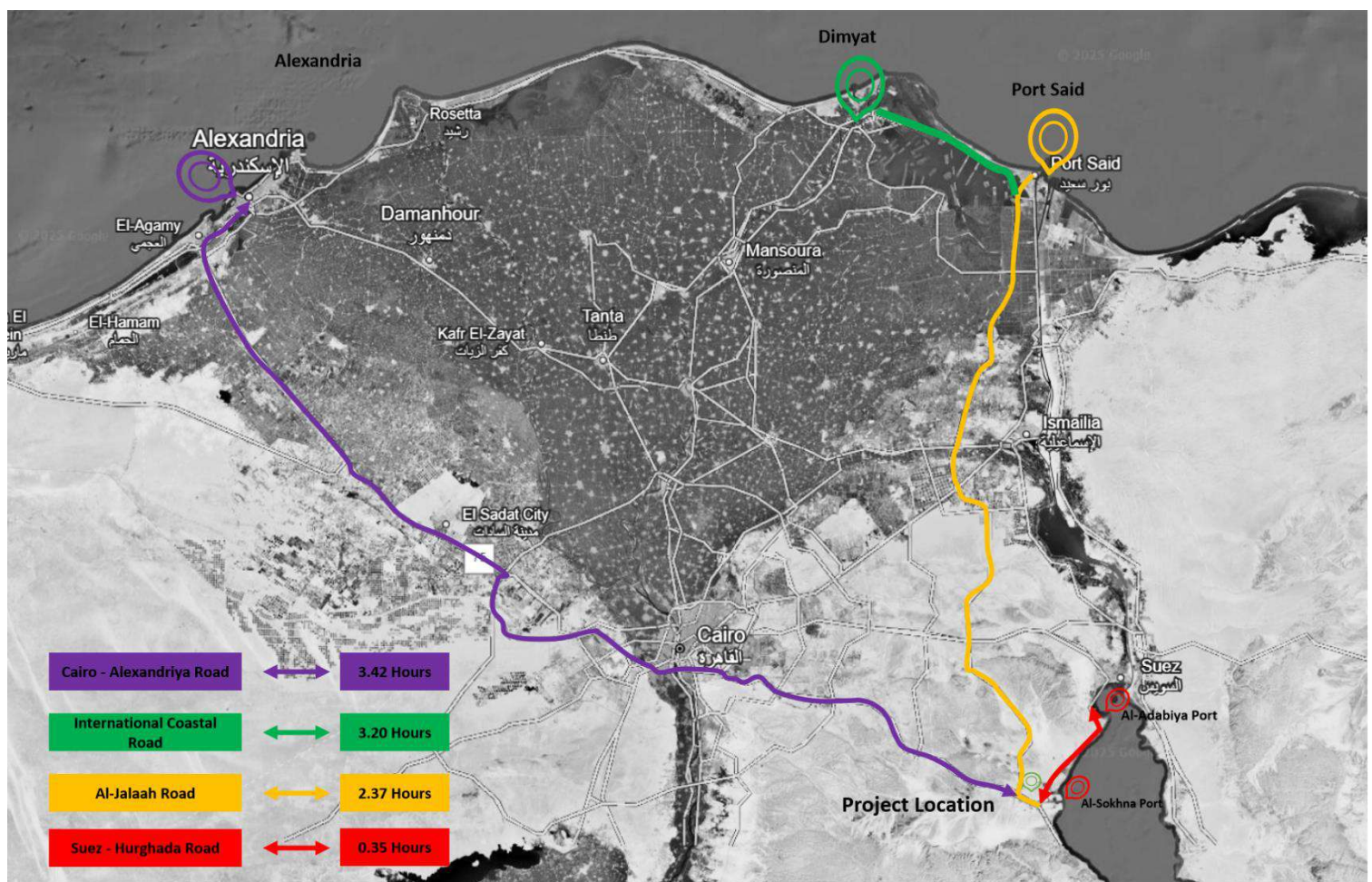


Figure 28: External Freight Routes and Travel Times to Major Egyptian Ports

On the other hand, the raw materials originating from the Al-Sibaya mining site will be transported to the Indorama project through the most efficient route. The selected primary route is illustrated in Figure (29), which demonstrates the optimal connection between the mining area and the project site considering travel distance, accessibility, and existing road network conditions.

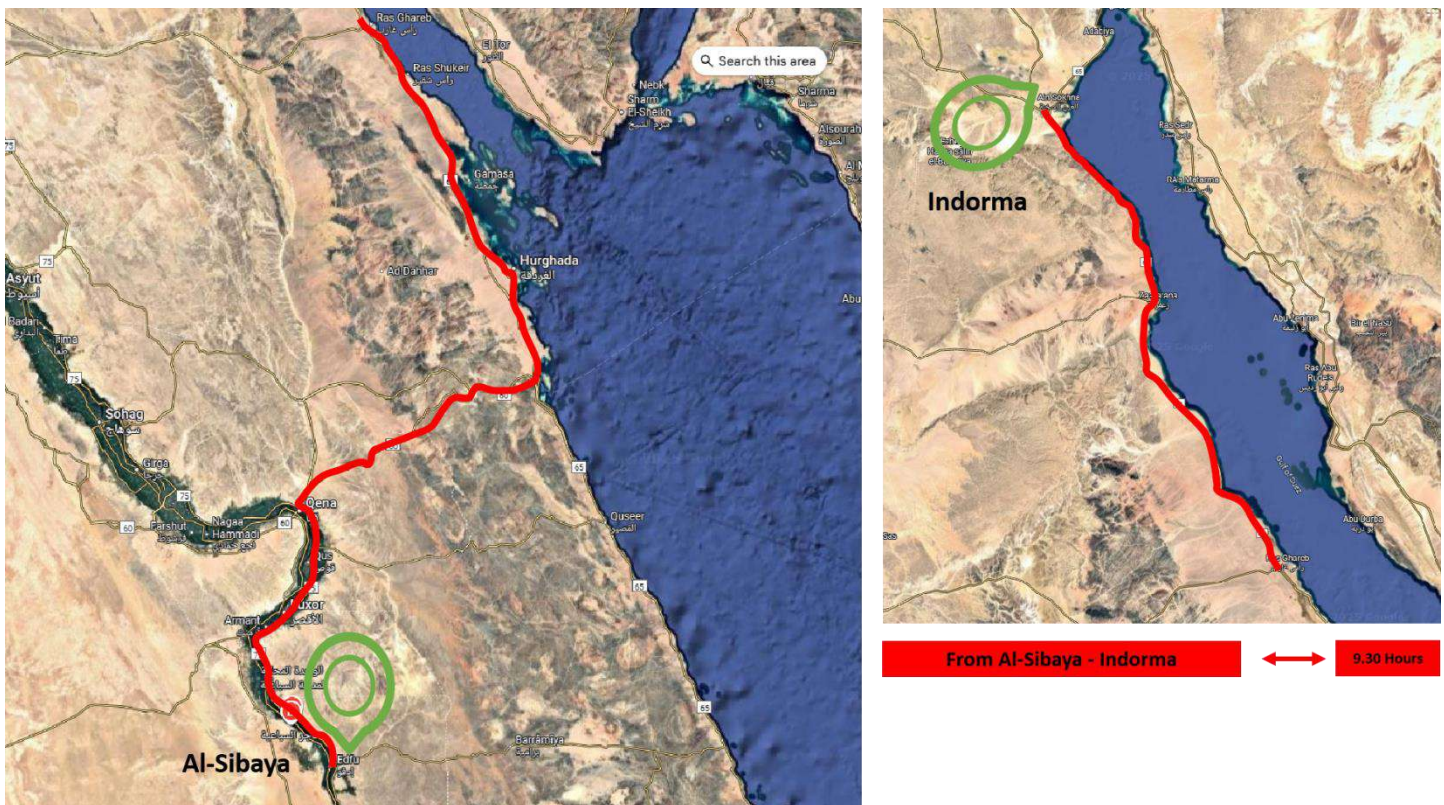


Figure 29: External Freight Routes and Travel Times from Al-Sibaya to the project

Observations and Recommendations

The project has strategic multimodal access through the national highway network, allowing the flexibility to dispatch shipments through multiple ports depending on operational needs.

Al-Sokhna and Adabiya are the primary ports serving most incoming raw materials (Sulphur, Ammonia, Phosphate).

Port Said, Damietta, and Alexandria will mainly handle export logistics of finished products (DAP and Phosphoric Acid).

The travel times shown represent typical truck speeds (70–80 km/h) under normal conditions; peak-hour or checkpoint delays may extend total time by ~15–20%.

It is recommended to establish a truck scheduling and tracking system to optimize trips, especially for long-haul routes to Damietta and Alexandria.

CHAPTER 5: PARKING ASSESSMENT STUDY

6. CHAPTER 5: PARKING ASSESSMENT STUDY

Since parking is an essential element of the planning and design process, an adequate number of parking spaces will be provided within the development to accommodate the anticipated parking demand generated by the project.

The parking supply will be designed to meet the current and future operational requirements of the Indorama Fertilizer Complex, ensuring convenient and safe access for employees, visitors, and service vehicles.

The parking layout will be planned in compliance with the applicable local standards and industrial design guidelines, considering both on-site circulation efficiency and emergency vehicle accessibility.

6.1 PARKING DEMAND

Code (Factory): Per the Egyptian standard 1 space / 500 m² (Factory GFA), the available data for the plant area 280,000 SQM and the GFA can be estimated as 30% of the plant area.

Plant GFA = 84,000 m² → Required car parking = 84,000 / 500 = 168 spaces.

Note:

The storage area will be designed as part of the Indorama Fertilizer Complex. The raw materials transported from external sources will not be stored or parked within the project area; they will only be transferred directly to the process units for unloading and internal handling.

Engineering evidence (Trucks only): We will use the trip-generation results for trucks as a guide to size the truck standing/parking (loading/queuing) areas—not to override the code car-parking requirement.

Truck Berths (guided by trip generation)

Daily truck trips = **280 veh/day** (Inbound 225, Outbound 55).

Peak hour (site-generated): **AM = 32 veh/h, PM = 25 veh/h** (trucks).

Design assumption (average dwell time per truck at bay):

30 min → Required bays $\approx$ AM $32 \times 0.5 = 16$, PM $25 \times 0.5 = 13$ → adopt ≥ 16

45 min → Required bays $\approx$ AM $32 \times 0.75 = 24$, PM $25 \times 0.75 = 19$ → adopt ≥ 24

Recommendation: Provide 24 truck bays (conservative, based on 45-min dwell) + ~10% contingency for staging/overflow.

Parking Requirement for Employees

Based on the expected mobility pattern of workers and staff, the number of required parking spaces has been calculated considering that employee transportation will mainly rely on buses and that only a limited proportion of employees are expected to use private vehicles.

A total of 70 employees will access the site during the operational phase 2028. If 20% of the workforce will arrive by private cars, while the remaining will use buses or collective transportation, the required parking spaces are summarized as follows:

Table 20: Parking demand

Parking Type	Calculation Basis	Required Spaces
Private Cars	$70 \times 20\% \approx 14$ employees	14 car parking spaces
Staff Buses	1 bus per 35 employees → 2 buses	2 bus bays
Minibus (Optional future use)	One bay for operational flexibility	1 minibus bay

Final statement

*“In line with the project operational requirements, **employee parking** will be provided based on the expected mobility pattern of the workforce, resulting in **14 car parking spaces, 2 bus bays, and 1 minibus bay** to accommodate staff arrival and departure during operational hours.*

*Furthermore, the provision of **truck parking/standing bays** will be guided by the traffic trip-generation results; based on the peak-hour truck demand and typical dwell times, a **minimum of 24 truck bays** (with ~10% contingency) is recommended to ensure efficient loading/unloading operations and to avoid on-street queuing.”*

CHAPTER 6: GATES ANALYSIS

7. CHAPTER 6: GATES ANALYSIS

The project includes three access gates: one northern gate for employees (light vehicles) and two southern gates for trucks (heavy vehicles). Each gate consists of one entry lane and one exit lane, with an entry lane service capacity of 300 veh/hr.

a. Traffic Volumes

Based on the trip generation and circulation plan, the estimated peak-hour inbound volumes are as follows:

Gate 2 (South – Trucks): 23 veh/hr

Gate 3 (South – Trucks): 22 veh/hr

Gate 1 (North – Employees): 67 veh/hr

b. Queuing Analysis (M/M/1 Model)

The queuing parameters were evaluated using the standard M/M/1 formula, assuming an exponential arrival pattern and a service rate of 300 veh/hr (~12 sec/vehicle).

Table 21: Gates Queuing Analysis

Gate	λ (veh/hr)	μ (veh/hr)	ρ	L_q (veh)	W_q (sec)	LOS
North (Employees)	67	300	0.22	0.064	3.5	A
South 1 (Trucks)	23	300	0.08	0.006	1	A
South 2 (Trucks)	22	300	0.07	0.006	0.9	A

c. Interpretation

All gates operate well below their design capacity (utilization < 25%).

Average waiting time (**Wq**) is less than **4 seconds**, corresponding to **Level of Service A** for all gates.

The average queue length is less than one vehicle, indicating smooth flow and no significant queuing.

d. Recommendations

Maintain the **current configuration** of one entry and one exit lane per gate.

Provide **queue storage for at least 3 vehicles** (≈ 20 m) before each checkpoint for operational flexibility.

Ensure **separate circulation** between employee and truck gates to avoid internal conflicts.

Install **clear signage** and **markings** for each gate to guide vehicles efficiently.

CHAPTER 7: CONCLUSION AND RECOMMENDATION



8. CHAPTER 7: CONCLUSION

a. Summary of Findings

The Traffic Impact Study for the Indorama Fertilizer Complex assessed the existing and future traffic conditions for freight and staff movements. The key outcomes are:

Existing external corridors (Ain Sokhna, Suez, Adabiya) operate at LOS A–D under current (2025) and future (2038) conditions.

The project generates approximately 280 truck trips/day (225 inbound (raw materials), 55 outbound(finished goods)) plus 58 staff vehicle trips/day.

During peak hours:

AM: 60 veh/h ($\approx$ 147 PCU/h)

PM: 53 veh/h ($\approx$ 129 PCU/h)

Gates Performance: North Gate 67 veh/h (employees) and two South Gates (22–23 veh/h trucks) operate $\leq 25\%$ of capacity ($\mu = 300$ veh/h) with LOS A and $Wq < 4$ s.

Parking Requirements:

A total provision of 14 car parking spaces for employees, 2 bus bays, and 1 minibus bay, in addition to 24 truck standing/loading bays (+10% reserve) is required to support daily operational logistics and avoid on-street queuing.

b. Recommendations

Gate and Access Management

Retain one entry/exit per gate; provide 20 m (≈ 3 vehicles) of queuing storage.

Segregate truck and staff movements with clear signage and markings.

Parking and Internal Circulation

To ensure safe and efficient internal circulation and to support the continuous industrial operation of the facility, the following provisions are recommended:

A minimum of 24 truck bays shall be provided to accommodate loading/unloading operations and peak-hour truck demand, with an additional 10% spare capacity to avoid truck queuing on external roads.

A minimum internal lane width of 7.0 meters shall be maintained to allow safe truck maneuvering, uninterrupted circulation of heavy vehicles, and emergency access always.

Safety and Operations

Apply high-visibility markings, reflective signs, and lighting at gates and intersections.

Conduct a pre-opening safety audit to verify clear circulation and sight distance.

Future Monitoring

The 2028–2038 forecast (3 % annual growth) remains within LOS A–C for all links after mitigation.

Any future expansion should trigger an updated TIS to re-validate access and capacity.

c. Traffic Management Plan (TMP)

The Traffic Management Plan (TMP) aims to ensure safe and efficient movement of vehicles and personnel during both construction and operation phases of the Indorama Fertilizer Complex project. The TMP will mitigate potential traffic conflicts, reduce congestion, and maintain accessibility to the site and surrounding network.

Construction Phase

During the construction phase, traffic management focuses on maintaining safety for workers and road users, minimizing disruptions to surrounding roads, and managing heavy vehicle movements.

Objectives:

- I. Organize and control construction traffic entering and exiting the site.
- II. Prevent conflicts between construction vehicles, public traffic, and pedestrians.
- III. Maintain access to adjacent facilities and existing industrial areas.

Key Measures:

- I. Designate separate gates for construction vehicles and staff entry to avoid queuing on public roads.
- II. Implement clear directional signage and temporary markings to guide vehicles safely.
- III. Limit heavy truck movements to off-peak hours to reduce interference with local traffic.
- IV. Assign traffic marshals at the gates to control movement during peak delivery times.
- V. Provide temporary holding areas inside the site for trucks waiting to load/unload.
- VI. Establish coordination with traffic police and port authorities for major deliveries.
- VII. Prepare a contingency plan for road closures, emergency access, and accidents.

Operation Phase

After completion, the TMP ensures the long-term efficiency and safety of all transport activities related to plant operations and product dispatching.

Objectives:

- I. Ensure smooth access and exit flow for employees, trucks, and visitors.
- II. Maintain safe circulation within the site and at connection points with the main road network.
- III. Optimize parking, loading, and unloading operations.

Key Measures:

- I. Continue to segregate access gates for trucks and light vehicles (staff, visitors).
- II. Implement internal circulation signs and lane markings to ensure one-way movement in key zones.
- III. Provide dedicated waiting and parking areas for trucks to prevent queue spillover onto external roads.
- IV. Conduct regular monitoring of vehicle movements and update traffic control measures as operations expand.
- V. Coordinate with local authorities in case of planned maintenance or traffic diversion requirements.
- VI. Ensure emergency access routes remain clear and properly always signed.



ANNEX 3: ANNEX- EXECUTIVE SUMMARIES V2



TABLE OF CONTENTS

APPENDIX A	CUMULATIVE IMPACT ASSESSMENT OF WATER MANAGEMENT.....	872
APPENDIX B	ESMS CONTRACTOR MANAGEMENT.....	880
APPENDIX C	HAZARDOUS MATERIALS MANAGEMENT.....	890
APPENDIX D	HAZID RISK ASSESSMENT REPORT.....	898
APPENDIX E	HUMAN RESOURCES PLANS AND PROCEDURES.....	906
APPENDIX F	INFLUX MANAGEMENT PLAN.....	915
APPENDIX G	SECURITY MANAGEMENT PLAN & POLICY.....	924
APPENDIX H	SECURITY RISK ASSESSMENT.....	932
APPENDIX I	SUPPLIER CODE OF CONDUCT.....	941
APPENDIX J	SUPPLY CHAIN MANAGEMENT POLICY.....	950
APPENDIX K	SUPPLY CHAIN MONITORING PROCEDURE.....	958
APPENDIX L	TRAFFIC ASSESMENT.....	966



APPENDIX A

CUMULATIVE IMPACT ASSESSMENT OF WATER MANAGEMENT



Executive Summary - Cumulative impact assessment on water uses in SCZone

Updated ESIA Supplementary
Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone,
Solihua

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Executive Summary - Cumulative impact assessment on water uses in SCZone

Updated ESIA Supplementary Disclosure Package: Phosphate Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – CUMULATIVE IMPACT ASSESSMENT ON WATER USES IN SCZONE	1
DISCLAIMER / INTRODUCTORY NOTE	1
PROJECT OVERVIEW	1
WATER DEMAND	1
CUMULATIVE IMPACT ANALYSIS	1
POTENTIAL RISKS	1
MITIGATION MEASURES	2
CONCLUSION	2

EXECUTIVE SUMMARY – CUMULATIVE IMPACT ASSESSMENT ON WATER USES IN SCZONE

DISCLAIMER / INTRODUCTORY NOTE

This Executive Summary has been prepared by ERM based on documentation provided by Indorama. Please note that ERM has not authored the original content of the source documents. The purpose of this summary is to provide a concise overview of the key points and findings as presented in the original materials, without altering or interpreting their substance.

PROJECT OVERVIEW

Indorama Investments Limited (hereinafter Indorama) is developing a phosphate fertilizer complex in the SCZone, requiring significant volumes of industrial-grade water for operations. The primary source will be the SCZone's centralized seawater desalination plant, which already supplies existing industries in the area.

WATER DEMAND

- **Estimated Requirement:** 600-700 m³/hour (industrial water)
- **Daily Demand:** ~16,800 m³/day (at peak)
- **Annual Demand:** ~5.5 million m³

CUMULATIVE IMPACT ANALYSIS

- **Current Capacity:** SCZone's desalination plant has a capacity of 100,000 m³/day.
- **Future Expansions** (will be owned by SCZone)
 - Second plant (240,000 m³/day) operational in 18–24 months from now.
 - Third plant (250,000 m³/day, expandable to 1,000,000 m³/day) planned for decision by end of 2025.
- **Impact of Indorama's Demand:** Marginal increase; expected to be absorbed by planned expansions.

POTENTIAL IMPACTS

- Reduced water availability for other users.
- Operational strain on desalination infrastructure.
- Environmental concerns from increased intake and brine discharge.
- Risk of allocation delays if regional demand surges.
- Risk of delays or constraints in water allocation for Indorama if demand surges unexpectedly.

MITIGATION MEASURES

- Early engagement with SCZone for water allocation. Indorama has applied for the supply of water from SCZone and submitted the master plan for the requirement of the water and other utilities as per the Annex 1 of the documents.
- Optimization of water usage through efficient technologies and recycling.
- On-site reuse of reject water.
- Monitoring of water demand in Ain Sokhna region and participation in regional water impact forums.
- Alignment with SCZone's staged capacity expansion plans.

CONCLUSION

The cumulative water demand from Indorama's project is expected to have **insignificant impact** on the overall water supply in the SCZone. Strategic planning and collaboration with SCZone will ensure sustainable water management and uninterrupted supply.



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APPENDIX B ESMS CONTRACTOR MANAGEMENT



Executive Summary - ESMS Contractor management

Updated ESIA Supplementary
Disclosure Package : Phosphate
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Executive Summary - ESMS Contractor management

Updated ESIA Supplementary Disclosure Package : Phosphate Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – ESMS CONTRACTOR MANAGEMENT	1
BACKGROUND	1
SCOPE OF APPLICATION	1
HSE POLICY AND TARGETS	1
HSE ORGANIZATION AND RESPONSIBILITIES	1
COMMUNICATION AND COORDINATION	2
EDUCATION AND TRAINING	2
HSE MANAGEMENT IN DESIGN AND PROCUREMENT	2
SITE HSE MANAGEMENT	2
EMERGENCY MANAGEMENT	2
ACCIDENT MANAGEMENT	2
SMART SITE HSE MANAGEMENT	3
SUBCONTRACTOR SELECTION AND SITE CONSTRUCTION MANAGEMENT	3
PRE-COMMISSIONING HSE MANAGEMENT	3
HSE EXPENSE MANAGEMENT	3
ENVIRONMENTAL MANAGEMENT	3
OCCUPATIONAL HEALTH MANAGEMENT	3
WORKER CONDITIONS AND RELATIONSHIPS	3
COMMUNITY HEALTH AND SAFETY	3
SECURITY MANAGEMENT	4
HSE INSPECTION, AUDIT, AND REPORTING	4



EXECUTIVE SUMMARY – ESMS CONTRACTOR MANAGEMENT

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BACKGROUND

The Indorama Investments Limited (hereinafter Indorama) project involves the development of an integrated phosphate fertilizer complex within the Sokhna Industrial Zone, part of the Suez Canal Economic Zone. The facility will produce Di-Ammonium Phosphate (DAP) and NPK fertilizers for domestic and international markets. The project is designed to meet high standards of environmental and resource efficiency, aligned with IFC Performance Standards, World Bank EHS Guidelines, and EU BAT conclusions. The contractor for the project is East China Engineering Science and Technology Co., Ltd.

SCOPE OF APPLICATION

This ESMS Management Plan applies to all personnel entering or engaged with the project site, including contractors, subcontractors, suppliers, technical service providers, and visitors. It extends to off-site activities with potential environmental, social, labor, or safety implications, such as logistics and temporary accommodations. The plan ensures compliance with Egyptian laws and international standards, including ISO 45001 and ILO conventions.

HSE POLICY AND TARGETS

The contractor commits to a policy of “safety first, prevention crucial; protecting environment, continuous improvement.” Compliance with Egyptian Environmental Law 4/1994, Labor Law 12/2003, and relevant decrees is mandatory. The project targets zero accidents, injuries, and pollution. Specific performance indicators include:

- ≤0.10 recordable incidents per 200,000 man-hours
- 100% legal disposal of hazardous waste
- Zero reportable spills
- 100% safety training coverage
- Timely resolution of worker grievances

HSE ORGANIZATION AND RESPONSIBILITIES

A detailed HSE organizational structure is established, with clear responsibilities assigned to project managers, HSE managers, construction and design managers, procurement and start-



up managers, engineers, subcontractors, and individual employees. Each role is accountable for implementing and monitoring HSE measures, ensuring compliance, and promoting a culture of safety and environmental stewardship.

COMMUNICATION AND COORDINATION

Effective communication is central to achieving HSE objectives. Multiple channels—including meetings, reports, posters, and anonymous feedback mechanisms—are used to disseminate safety information and encourage participation. Regular toolbox talks, weekly and monthly HSE meetings, and a dedicated HSE committee ensure continuous dialogue and performance review.

EDUCATION AND TRAINING

Comprehensive HSE training is mandatory for all personnel. Induction training is tailored for long-term, short-term, and temporary visitors. Specialized training covers high-risk operations such as confined space entry, electrical safety, and working at heights. Experiential safety education and leadership training are also provided. All training is documented and audited.

HSE MANAGEMENT IN DESIGN AND PROCUREMENT

HSE considerations are integrated into design and procurement processes. Supplier selection is based on qualifications, ethical sourcing, and compliance with safety standards. Equipment and materials must meet defined safety criteria and be accompanied by relevant documentation (e.g., MSDS, licenses). On-site service personnel must adhere to HSE protocols.

SITE HSE MANAGEMENT

Hazard identification and risk assessment are conducted regularly. Job Safety Analysis (JSA) and Permit-to-Work (PTW) systems are enforced. A comprehensive HSE manual outlines standards for various operations, including excavation, scaffolding, confined space entry, and hazardous chemical handling. Change management procedures ensure safe implementation of project variations.

EMERGENCY MANAGEMENT

An emergency response system is established, including muster points, evacuation protocols, and medical facilities. Drills are conducted biannually, and emergency plans are revised based on evaluations. A fully equipped ambulance and agreements with local hospitals ensure rapid medical response.

ACCIDENT MANAGEMENT

All incidents, including near misses, must be reported immediately. A structured investigation and reporting process is followed, with root cause analysis and corrective actions. Records are maintained and shared with the owner. Incentives are provided to encourage reporting.



SMART SITE HSE MANAGEMENT

A digital platform integrates access control, behavior analysis, inspection management, and training. Real-time monitoring and AI-based analytics enhance safety oversight. A real-name labor system ensures transparency in workforce management.

SUBCONTRACTOR SELECTION AND SITE CONSTRUCTION MANAGEMENT

Subcontractors are selected based on HSE qualifications. Pre-commencement reviews cover site conditions, construction plans, and equipment. Work permits are required for high-risk activities. Equipment and PPE are inspected regularly. Detailed protocols govern operations such as hoisting, welding, and excavation.

PRE-COMMISSIONING HSE MANAGEMENT

Pre-commissioning activities involve high-risk operations. Safety plans and condition confirmation forms are required. Specific procedures are outlined for cleaning, purging, electrical testing, and rotating equipment. Coordination between construction and commissioning teams is critical.

HSE EXPENSE MANAGEMENT

HSE costs are budgeted and tracked separately. Subcontractors must allocate 1–3% of their budget to HSE. Monthly declarations and audits ensure compliance.

ENVIRONMENTAL MANAGEMENT

Environmental controls address dust, noise, sewage, hazardous chemicals, solid waste, and emissions. Measures are aligned with Egyptian law and IFC guidelines. Sensitive receptors, such as nearby hotels, are considered in mitigation planning.

OCCUPATIONAL HEALTH MANAGEMENT

A robust Occupational Health Management System (OHMS) is implemented, covering medical surveillance, workplace monitoring, PPE, sanitation, and emergency preparedness. Training and audits ensure continuous improvement. Subcontractors must comply with occupational health requirements.

WORKER CONDITIONS AND RELATIONSHIPS

HR policies comply with Egyptian law and international standards. Workers have the right to form organizations and access grievance mechanisms. Living camps are managed with attention to hygiene, safety, and gender-sensitive facilities. Child and forced labor are strictly prohibited.

COMMUNITY HEALTH AND SAFETY

A Community Health and Safety Plan addresses disease prevention, sanitation, and vector control. Engagement with local health authorities and communities ensures transparency and



collaboration. Site access controls and traffic safety measures protect both workers and residents.

SECURITY MANAGEMENT

Security personnel are vetted and trained in human rights and emergency response. Risks are assessed and documented. Grievance mechanisms are available for affected communities. Female and local security staff are employed to enhance inclusivity and community relations.

HSE INSPECTION, AUDIT, AND REPORTING

A tiered inspection system includes daily, weekly, and monthly reviews. Non-conformances are tracked and rectified. Subcontractor performance is evaluated using ISO 45001 metrics. Regular audits and detailed reporting ensure accountability and continuous improvement.



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APPENDIX C HAZARDOUS MATERIALS MANAGEMENT



Executive Summary - Hazardous Material Management during construction

Updated ESIA Supplementary
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Executive Summary - Hazardous Material Management during construction

Updated ESIA Supplementary Disclosure Package : Phosphate Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – HAZARDOUS MATERIAL MANAGEMENT.	1
INTRODUCTION	1
OBJECTIVE	1
REGULATORY FRAMEWORK	1
DEFINITION OF HAZARDOUS MATERIALS	1
KEY HAZARDOUS MATERIALS AND MITIGATION MEASURES	1
SPILL CONTROL	2
WASTE MANAGEMENT	2
TRAINING	2
MONITORING & CONTROL	2

EXECUTIVE SUMMARY – HAZARDOUS MATERIAL MANAGEMENT.

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INTRODUCTION

This plan provides a comprehensive framework for managing hazardous materials during construction of the phosphate fertilizer complex in Egypt developed by Indorama Investments Limited (hereinafter Indorama). This plan integrates international standards, regulatory compliance, and practical mitigation strategies to ensure the safety of workers, the community, and the environment. Detailed risk assessments and SOPs (Standard operating procedures) will be finalized in coordination with the EPC contractor during the engineering phase.

OBJECTIVE

This document outlines the strategy for managing hazardous materials during the construction phase of the Indorama complex. It aims to ensure safe handling, storage, and disposal of hazardous substances in compliance with Egyptian regulations, IFC Performance Standards, and international best practices. The plan is designed to mitigate risks to health, safety, and the environment throughout the construction lifecycle.

REGULATORY FRAMEWORK

The hazardous material management plan is aligned with:

- IFC General EHS Guidelines (2007)
- IFC PS3 (Resource Efficiency) and PS4 (Community Health & Safety)
- Environmental, Health and Safety Guidelines for Phosphate Fertilizer Manufacturing (2007)
- Egyptian Law No. 4/1994 and Law No. 202/2020
- ISO 14001 and ISO 45001 standards

DEFINITION OF HAZARDOUS MATERIALS

Hazardous materials are defined per IFC guidelines as substances that pose risks due to their chemical, physical, or biological properties. These include fuels, chemicals, compressed gases, construction materials, and specialized substances used during commissioning.

KEY HAZARDOUS MATERIALS AND MITIGATION MEASURES

Fuels & Combustibles

Materials such as diesel, gasoline, and LPG pose fire and explosion risks. Storage will follow IFC and NFPA standards, with fire-rated, ventilated areas, secondary containment, and access

control. Material safety data sheets (MSDS), labeling, and temperature control will be enforced.

Chemicals & Solvents

Paints, thinners, adhesives, and cleaning agents are flammable or corrosive. They will be stored in bunded enclosures with proper ventilation and PPE requirements. MSDS will be displayed at all storage locations.

Compressed Gases

Oxygen, acetylene, nitrogen, argon, and LPG are used in cutting and welding. Cylinders will be secured, leak-tested, and handled only by trained personnel under hot work permits. Fire extinguishers and flashback arrestors will be mandatory.

Construction Materials

Cement, sand, and steel pose risks of respiratory irritation and injury. Dust suppression, PPE use, and mechanical cutting tools will be employed to minimize exposure.

Specialized Materials for Commissioning

Ammonia, phosphoric acid, sulphuric acid, and battery acids are highly toxic and corrosive. These will be transported in dedicated tankers, stored in engineered tanks, and handled with specialized PPE. Emergency showers and eyewash stations will be installed. HAZID/Risk assessment is prepared for each of the material which contains the risk, mitigation plan & PPE requirement.

A detailed HIRA (Hazard Identification and Risk Assessment) will guide mitigation planning.

SPILL CONTROL

SOPs will be developed for each hazardous material. Spill kits, secondary containment, and emergency response protocols will be in place. Acid spills will be neutralized and routed to effluent treatment facilities.

WASTE MANAGEMENT

Hazardous and non-hazardous waste will be segregated. Disposal will be managed through authorized contractors, with documentation in line with IFC and Egyptian regulations. Cross-references to waste management SOPs are included.

TRAINING

All personnel involved in handling hazardous materials will receive training tailored to the type of chemical (toxic, corrosive, flammable). SOPs will be developed for each category, and mandatory PPE use will be enforced.

MONITORING & CONTROL

Safety supervisor would be appointed for every group of people (1 supervisor for every 25-40). His responsibility will be to implement the procedure, continuous monitoring, compliance and audits, providing training & take corrective action wherever required.



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APPENDIX D HAZID RISK ASSESSMENT REPORT



Executive Summary - HAZID process safety assessments

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Executive Summary - HAZID process safety assessments

Updated ESIA Supplementary Disclosure Package : Phosphate Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – HAZID PROCESS SAFETY ASSESSMENTS	1
DISCLAIMER / INTRODUCTORY NOTE	1
INTRODUCTION	1
PURPOSE AND SCOPE	1
METHODOLOGY AND RISK EVALUATION	1
KEY FINDINGS AND RISK SCENARIOS	2
MITIGATION MEASURES AND RECOMMENDATIONS	2
HAZID WORKSHEETS	2



EXECUTIVE SUMMARY – HAZID PROCESS SAFETY ASSESSMENTS

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INTRODUCTION

Indorama Investments Limited (hereinafter Indorama) is developing a state-of-the-art phosphate fertilizer complex in the Sokhna Industrial Zone, part of the Suez Canal Economic Zone. The facility is designed to produce Di-Ammonium Phosphate (DAP) and NPK fertilizers for both domestic and international markets.

The HAZID study successfully identifies and addresses key safety and environmental risks associated with the fertilizer complex. The implementation of recommended controls will significantly enhance the safety, reliability, and sustainability of the facility. This proactive approach ensures compliance with international standards and supports the long-term operational integrity of the project.

PURPOSE AND SCOPE

The primary objective of the HAZID (Hazard Identification) study is to proactively identify and assess potential hazards associated with the design and operation of the fertilizer complex. This includes risks related to chemical handling, emissions, dust generation, high-pressure systems, and emissions. The scope of the study encompasses critical areas such as sulphur handling, acid production and storage, rock phosphate processing, emission control systems and DAP/NPK granulation and drying. Ammonia-related risks and laboratory activities were excluded from this study and addressed separately through Quantitative Risk Assessment (QRA) and standard lab safety protocols.

METHODOLOGY AND RISK EVALUATION

The HAZID study was conducted through a structured workshop held in Cairo, involving a multidisciplinary team of experts. The methodology followed ISO 31000:2018 and CCPS guidelines, using guidewords to systematically identify hazards. Risks were evaluated using a 5x5 matrix based on likelihood and severity, and categorized under impacts to people, environment, assets, and reputation.



KEY FINDINGS AND RISK SCENARIOS

Twelve major hazard scenarios were identified across the sulphuric acid plant, phosphoric acid plant, and DAP/NPK units. These included:

- Sulphur dust explosions
- Toxic gas releases (SO_2 , HF, NH_3)
- Acid leaks and spills
- Heavy dust formation during rock handling
- Stack downwash effects
- Flooding and leachate dispersion from gypsum storage

Initial risk levels ranged from medium to high. Each scenario was analyzed for causes, consequences, and existing controls.

MITIGATION MEASURES AND RECOMMENDATIONS

To reduce risk levels, the study proposed a comprehensive set of mitigation strategies, including:

- Install dust suppression systems, enforce ATEX compliance.
- Install multi-point fire detection covering all hazardous areas.
- Install Gas Detectors in plant with Alarm System.
- Design bunded acid-resistant containment.
- Overfill alarms, safe overflow divergence system and corrosion monitoring.
- Integrate toxic gas detection, auto-shutdown valves, and wind-direction indicators.
- Use dispersion modelling and apply GEP for stack height.
- Perform hydrodynamic modelling for runoff and containment.
- Design suitable lining for Gypsum storage.
- Structured training program be developed and implemented for personnel involved in project & Operation.

HAZID WORKSHEETS

For each node, the HAZID worksheets include: Hazards, Causes, Consequences, Existing Controls and Risk Level (Before & After).



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APPENDIX E

HUMAN RESOURCES PLANS AND PROCEDURES



Executive Summary - Human Resources Plans and Procedures

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Executive Summary - Human Resources Plans and Procedures

Updated ESIA Supplementary Disclosure Package : Phosphate Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – HUMAN RESOURCES PLANS AND PROCEDURES	1
PURPOSE AND SCOPE	1
ORGANIZATIONAL PHILOSOPHY AND VALUES	1
KEY HR POLICIES AND PROCEDURES	1
GROUP-WIDE POLICIES	2

EXECUTIVE SUMMARY – HUMAN RESOURCES PLANS AND PROCEDURES

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PURPOSE AND SCOPE

This comprehensive HR manual outlines the policies, procedures, and ethical standards governing the employment practices of Indorama Investments Limited (hereinafter Indorama) and its contractors and sub-contractors. It serves as a foundational document to ensure legal compliance, ethical conduct, and alignment with international labor standards, including those of the ILO and IFC. The manual is designed to promote fair labor practices, safeguard human rights, and foster a safe, inclusive, and productive work environment across all phases of project execution and operations.

ORGANIZATIONAL PHILOSOPHY AND VALUES

Indorama's corporate ethos is built around its Compass—a framework comprising Purpose, Vision, Capabilities, and Values. The company exists to produce essential materials that improve lives, including fertilizers, medical gloves, and textiles. Its vision is to be the materials company of choice, driving scale, sustainability, and growth. Core values include acting like owners, being adaptable, caring deeply, and delivering excellence, all of which are reflected in its HR policies.

KEY HR POLICIES AND PROCEDURES

Employment Standards and Working Conditions

- Contractors must comply with Egyptian labor laws and ILO conventions.
- Employment terms must be clearly documented and communicated in a language understood by workers.
- Workers are entitled to fair wages, benefits, rest periods, and safe working conditions.
- Oversight mechanisms are in place to audit compliance and enforce corrective actions.

Child and Forced Labor Prohibition

- Zero tolerance for child labor (under 18) and any form of forced or bonded labor.
- Age verification and documentation are mandatory for all employees and contractors.

Human Rights and Dignity

- Policies are aligned with the Universal Declaration of Human Rights and Egypt's National Human Rights Strategy.

- Rights include freedom of association, expression, religion, privacy, and protection from harassment and discrimination.

Independent Contractors

- Contractors must adhere to Indorama's HR standards despite operating independently.
- Risks associated with external contractors are mitigated through mandatory compliance with internal policies.

Gender-Based Violence and Harassment (GBVH)

- A robust GBVH policy includes risk identification, grievance mechanisms, and capacity building.
- Special committees, ombudspersons, and women's cells are established to address and monitor GBVH incidents.
- Confidentiality, protection from retaliation, and disciplinary procedures are clearly defined.

Local Recruitment

- Priority is given to hiring local community members for both skilled and unskilled roles.
- Contractors must document recruitment efforts and engage with local stakeholders.

Workforce Management

- All workforce engagements must comply with national labor laws and ILO standards.
- Contractors are responsible for third-party compliance, fair working conditions, and worker welfare.
- Regular audits and performance evaluations are conducted.

Retrenchment and Dismissals

- Retrenchment must be planned, transparent, and aligned with IFC guidelines and ILO Convention 158.
- Workers must be notified, compensated, and supported through grievance channels.

Oversight of Contractor HR Policies

- Contractors must submit HR policies for review and demonstrate ongoing compliance.
- Violations may result in penalties or termination of contracts.

Worker Grievance Redress Mechanism (GRM)

- Contractors must establish accessible, confidential grievance systems.
- Escalation procedures, training, and periodic reviews are mandated.
- Indorama reserves the right to intervene in unresolved grievances.

GROUP-WIDE POLICIES

Code of Conduct

- Covers ethical behavior, supervision, disciplinary actions, and reporting mechanisms.
- Emphasizes honesty, integrity, and conflict-of-interest avoidance.

Community and Stakeholder Engagement

- Focuses on sustainable development, stakeholder consultation, and grievance management.
- Avoids involuntary resettlement and promotes long-term community benefits.

Environmental and Climate Policy

- Commits to reducing environmental impact, conserving resources, and mitigating climate risks.
- Includes biodiversity protection and carbon reduction strategies.

Responsible Business Practices

- Enforces anti-bribery, anti-corruption, and fair competition standards.
- Implements whistleblower protections and ethical supplier engagement.

Health and Safety

- Aims for zero harm through safe systems, training, and surveillance.
- Promotes a culture of safety and continuous improvement.

Intellectual Property

- Protects company and third-party IP rights.
- Defines ownership of work created during employment and enforces confidentiality.

Social Media Use

- Regulates personal and corporate social media activity to protect company reputation.
- Provides guidelines for responsible posting and disciplinary consequences for violations.



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APPENDIX F INFLUX MANAGEMENT PLAN



Executive Summary - Influx Management Plan (IMP)

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Executive Summary - Influx Management Plan (IMP)

Updated ESIA Supplementary Disclosure Package: Phosphate Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – INFLUX MANAGEMENT PLAN (IMP)	II
PROJECT CONTEXT AND PURPOSE OF THE PLAN	II
BASELINE ENVIRONMENT AND DEMOGRAPHIC PROFILE	II
PROJECT ACTIVITIES AND WORKFORCE REQUIREMENTS	II
DRIVERS AND NATURE OF INFLUX	III
SETTLEMENT TRENDS AND SENSITIVE RECEPTORS	III
POTENTIAL IMPACTS OF INFLUX	III
MITIGATION AND MANAGEMENT MEASURES	III
MONITORING INDICATORS	IV
COMPLIANCE AND CONCLUSION	IV

EXECUTIVE SUMMARY – INFLUX MANAGEMENT PLAN (IMP)

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PROJECT CONTEXT AND PURPOSE OF THE PLAN

Indorama Investments Limited (hereinafter Indorama) is developing a large-scale phosphate fertilizer complex in Ain Sokhna, Egypt, within the Suez Canal Economic Zone (SCZone). This strategic industrial investment is expected to bring significant socio-economic benefits, including job creation, infrastructure development, and regional economic stimulation. However, it also presents challenges related to population influx—particularly the arrival of migrant workers and job seekers—which could impact local communities, services, and infrastructure.

The Influx Management Plan has been developed to anticipate, assess, and mitigate the potential impacts of this demographic shift. It outlines the drivers of influx, the nature and scale of expected migration, and the strategies to manage associated risks in alignment with international standards, including IFC Performance Standards.

BASELINE ENVIRONMENT AND DEMOGRAPHIC PROFILE

Ain Sokhna is a rapidly growing industrial and logistics hub on the Gulf of Suez. Its population, estimated at around 45,552 in 2025, has grown significantly over the past decades. The area is characterized by a youthful demographic, with a median age of 23.9 years, and a gender distribution of approximately 53% male and 47% female.

Urban development in Ain Sokhna includes high-end residential compounds, resort-style housing, and planned infrastructure such as Galala University and desalination plants. Healthcare and education services are expanding, though disparities exist between newer developments and older neighborhoods. Water and sanitation infrastructure is robust, supported by large-scale desalination and sewage treatment systems.

PROJECT ACTIVITIES AND WORKFORCE REQUIREMENTS

The fertilizer complex will include several industrial units: sulfuric acid, phosphoric acid, DAP/NPK fertilizer plants, a power plant, ammonia storage, gypsum storage facilities, phosphoric acid storage system in port, ammonia unloading arm at port jetty and an ammonia pipeline from jetty to site. During the construction phase, the workforce is expected to peak at 1,500–2,000 workers over 15–18 months. Approximately 70% of these workers will be recruited locally, while the remaining 30% will come from other Egyptian governorates and abroad.

In the operational phase, the facility will employ around 600 full-time workers, split evenly between company employees and contractors. Local hiring is prioritized, with a target of 70% recruitment from Ain Sokhna and surrounding areas.

DRIVERS AND NATURE OF INFLUX

Influx is categorized into two types:

- **Direct Influx:** Workers employed directly by the project, including construction labor, operational staff, and subcontracted service providers (e.g., catering, cleaning, logistics).
- **Indirect and Induced Influx:** Individuals drawn by secondary economic opportunities, such as informal traders, transport operators, family members of workers, NGO staff, and public service providers.

The cumulative effect of both types of influx is expected to increase population density, place pressure on housing and public services, and alter the socio-economic dynamics of the region.

SETTLEMENT TRENDS AND SENSITIVE RECEPTORS

Satellite analysis from 2002–2022 shows significant urban expansion in Ain Sokhna, particularly near industrial corridors. Informal housing clusters have emerged, indicating challenges in planning enforcement. The SCZone has centralized control over the area, but infrastructure capacity may be strained by further influx.

The project site is surrounded by industrial facilities and vacant land, with no immediate residential or community-sensitive receptors. However, informal settlements or service hubs may emerge near the site, potentially leading to friction with neighboring industries and environmental risks.

POTENTIAL IMPACTS OF INFLUX

The influx of workers and job seekers may lead to several risks:

- **Social Risks:** Gender-based violence, child labor, school dropouts, cultural friction, and social tension.
- **Economic Pressure:** Rising housing costs, displacement, and competition for jobs and services.
- **Public Services Strain:** Increased demand for healthcare, education, sanitation, and security.
- **Environmental Impact:** Higher waste generation and resource consumption (water, electricity).

MITIGATION AND MANAGEMENT MEASURES

The plan outlines a series of mitigation strategies to reduce the impact of influx:

- **Labor Accommodation:** Worker camps will be constructed on a 28-hectare gypsum storage area, with facilities meeting IFC PS2 standards for health, hygiene, and safety.
- **Local Hiring Framework:** Prioritize recruitment from Ain Sokhna to minimize external influx.

- **Vendor Management:** Formalize and train informal vendors to ensure safe and regulated service provision.
- **Stakeholder Engagement:** Maintain regular communication with SCZone, industrial neighbors, and local communities.
- **Monitoring and Surveillance:** Use field teams and GIS mapping to track settlement growth and demographic changes.
- **Grievance Mechanism:** Implement procedures for workers and communities to report concerns, with regular inspections and compliance checks.

Post-mitigation, the residual impact of influx is assessed as “**Insignificant**”, provided that all measures are effectively implemented.

MONITORING INDICATORS

Key indicators will be tracked regularly:

- Number of incoming job seekers (monthly)
- Growth of informal settlements (quarterly)
- Pressure on local services (semi-annually)
- Grievances related to influx (monthly)
- Ratio of local vs. external hires (bi-monthly)

The indicators will be tracked and reviewed periodically. Perception surveys will be conducted for the stakeholders.

The key KPIs will be the % of the Grievances received for the month, % of the Grievances closed after the required action.

Based on the feedbacks from the survey and indicators data corrective actions will be taken wherever required.

COMPLIANCE AND CONCLUSION

The Influx Management Plan complies with IFC Performance Standards 1, 2, 4, and 5, as well as applicable Egyptian labor and urban planning regulations. It reflects a proactive approach to managing demographic changes associated with large-scale industrial development.

In conclusion, the Project in Ain Sokhna represents a major industrial investment that will generate wide-ranging socio-economic benefits. However, the potential for influx of migrant workers and job seekers poses challenges that require early planning, stakeholder coordination, and active monitoring. By adopting international best practices and through responsible local integration and workforce management strategies, the Project can mitigate risks while contributing positively to the sustainable development of the Ain Sokhna region.



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APPENDIX G

SECURITY MANAGEMENT PLAN & POLICY



Executive Summary - Security Management Plan & Policy

Updated ESIA Supplementary
Disclosure Package: Phosphate
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Executive Summary - Security Management Plan & Policy

Updated ESIA Supplementary Disclosure Package: Phosphate Fertilizer Complex Project, SCZone, Sokhna
0774474



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CONTENTS

EXECUTIVE SUMMARY –SECURITY MANAGEMENT PLAN & POLICY	II
DISCLAIMER / INTRODUCTORY NOTE	II
INTRODUCTION AND OBJECTIVES	II

EXECUTIVE SUMMARY – SECURITY MANAGEMENT PLAN & POLICY

DISCLAIMER / INTRODUCTORY NOTE

This Executive Summary has been prepared by ERM based on documentation provided by Indorama. Please note that ERM has not authored the original content of the source documents. The purpose of this summary is to provide a concise overview of the key points and findings as presented in the original materials, without altering or interpreting their substance.

INTRODUCTION AND OBJECTIVES

The Security Management Plan & Policy outlines the comprehensive framework adopted by Indorama Investments Limited (hereinafter Indorama) to ensure the safety and security of its personnel, assets, and surrounding communities during both construction and operational phases of its fertilizer complex in Ain Sokhna, Egypt.

The plan is grounded in international standards, including the **Voluntary Principles on Security and Human Rights**, **IFC Performance Standard 4**, and **EBRD PR4**, and emphasizes a **rights-based, proactive, and context-sensitive approach** to managing security risks.

OVERVIEW OF SECURITY SITUATION

The site in Ain Sokhna is currently stable and secure. Identified risks include community unrest, labor disputes, petty theft, and external threats—all rated low to very low. Mitigation measures include CSR programs, grievance mechanisms, and active engagement with local authorities.

PHYSICAL SECURITY

Security is structured across three layers: core IMF team, internal security team, and contracted personnel. Measures include perimeter fencing, CCTV, biometric access control, and leak detection systems. All personnel are vetted and trained in human rights and emergency response.

SECURITY OPERATING PROCEDURES

Standard procedures cover convoy management, access control, logistics, patrolling, emergency response, and site access for project personnel and vehicles.

SECURITY SUPERVISION AND CONTROL

IMF applies a systematic framework for asset protection, combining technology and personnel. Audits, compliance checks, and dynamic controls ensure alignment with corporate standards and stakeholder expectations.

SECURITY FORCE MANAGEMENT

Security staff are equipped with communication tools and trained in emergency scenarios. Local hiring is prioritized, with background checks and regular training. Guards rotate duties to enhance skills and maintain vigilance.

MANAGING RELATIONS WITH PUBLIC SECURITY

IMF maintains regular contact with Egyptian security forces. Roles are divided between strategic oversight by IMF and operational implementation by local teams. Coordination ensures compliance with IFC PS4, EBRD PR4, and UN VPSHR.

INCIDENT REPORTING AND INQUIRY

A Critical Incident Management Plan (CIMP) outlines structured responses to high-impact events. The R-A-C-E-R framework (Recognize, Assess, Contain, Engage, Recover) ensures rapid containment and recovery. Incidents are documented, investigated, and integrated into system improvements.

COMMUNITY ENGAGEMENT AND GRIEVANCE MECHANISM

Community engagement is central to the security strategy. A dedicated Community Relations team manages grievances and fosters trust. Local representation in grievance handling ensures responsiveness and transparency.



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APPENDIX H

SECURITY RISK ASSESSMENT



Executive Summary - Security Risk Assessment

Updated ESIA Supplementary
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Executive Summary - Security Risk Assessment

Updated ESIA Supplementary Disclosure Package : Phosphate

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CONTENTS

EXECUTIVE SUMMARY – SECUTIRY RISK ASSESSMENT	1
BACKGROUND	1
THREAT ASSESSMENT	1
THREAT ENVIRONMENT – EGYPT (2025)	1
RISK ASSESSMENT	2
RISK TREATMENT PLAN	2
VULNERABILITY AND CAPABILITY ANALYSIS	2
ANNEX A: SECURITY THREAT DEFINITIONS	3

EXECUTIVE SUMMARY – SECUTIRY RISK ASSESSMENT

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BACKGROUND

Indorama Investments Limited (hereinafter Indorama), is in the process of establishing a large-scale phosphate fertilizer complex in Ain Sokhna, Egypt. The facility will produce Di-Ammonium Phosphate (DAP) and Nitrogen-Phosphorus-Potassium (NPK) fertilizers, with sulphuric and phosphoric acid as intermediate products and phosphogypsum as a byproduct. The site spans 56 hectares, divided into two plots approximately 600 meters apart—one designated for production and the other for phosphogypsum storage. The project is strategically located within the Sokhna Industrial Zone, part of the Suez Canal Economic Zone, and is connected to Sokhna Port via a 13-kilometer ammonia pipeline.

This development represents a significant investment in Egypt's industrial infrastructure and is expected to contribute to both local employment and regional fertilizer supply chains. However, given the scale and nature of the operations, the project faces a range of security challenges that must be proactively managed.

THREAT ASSESSMENT

The security risk assessment identifies a spectrum of potential threats that could impact the construction and operation of the fertilizer complex. These threats include petty crime, theft, civil unrest, insider sabotage, and corruption. While the risk of terrorism is considered low in the industrial zones of Egypt, the possibility of criminal activity—particularly theft of materials and equipment—is more pronounced. Civil unrest, often driven by economic grievances or labor disputes, poses a risk of operational disruption. Insider threats, including unauthorized access and data breaches, are also flagged as significant concerns, especially given the sensitive nature of the materials and infrastructure involved.

The assessment emphasizes that these threats are not static; they evolve with changes in the political, social, and economic landscape. Therefore, a dynamic and responsive security strategy is essential.

THREAT ENVIRONMENT – EGYPT (2025)

Egypt's security environment in 2025 is characterized by relative stability in industrial zones, but with persistent risks in other areas. Petty crime remains a moderate concern, particularly in regions with economic hardship. Terrorist activity is largely confined to remote areas such as Sinai, and is not expected to directly impact the Sokhna site. Civil unrest, however, can arise unpredictably, often linked to labor issues or broader economic dissatisfaction. The assessment

also notes the potential for insider threats, which may manifest through sabotage, theft, or unauthorized data access.

RISK ASSESSMENT

The assessment identifies nine strategic security risks, each evaluated based on its likelihood and potential impact. These include theft by employees or external actors, protests by workers or community members, solicitation of bribes by security forces, and operational disruptions caused by unrest or political instability. While none of the risks are rated as “very high,” several are considered “high” or “medium,” indicating a need for ongoing vigilance and mitigation.

The report stresses that risk assessment is an iterative process. As the project evolves and new threats emerge, the security strategy must be continuously updated to reflect the changing landscape.

RISK TREATMENT PLAN

To address the identified risks, the report outlines a comprehensive mitigation strategy. This includes strengthening physical security measures such as perimeter fencing, biometric access controls, and surveillance systems. Staff are provided with security awareness training, and contingency plans are in place to manage operational disruptions.

The company also emphasizes the importance of maintaining reliable intelligence networks and ensuring that all security personnel are adequately trained and equipped. Social risks associated with private security forces are addressed through improved working conditions and clear conduct protocols. Collaboration between the security team, HR, and other business units is essential to ensure a coordinated response to emerging threats.

Community engagement is a cornerstone of the risk treatment plan. By fostering positive relationships with local stakeholders and maintaining transparent communication, the company aims to prevent misunderstandings and reduce the likelihood of conflict.

VULNERABILITY AND CAPABILITY ANALYSIS

The report provides a detailed analysis of the organization’s vulnerabilities and its capacity to manage and mitigate security risks. Indorama has established a robust security management structure, led by experienced professionals and supported by contracted guard services. The security team is well-integrated into the broader operational framework and is actively involved in risk assessment, incident response, and strategic planning.

Emergency response and crisis management protocols are in place and regularly tested through drills and simulations. Intelligence gathering is conducted through a network of internal and external sources, including government agencies, former security personnel, and trusted community informants. While this system is generally effective, the report notes that intelligence capabilities could be further strengthened to ensure timely and accurate threat detection.

Personnel management is another critical area. The company employs rigorous vetting procedures for all staff, including background checks and training on security protocols. A structured grievance mechanism is in place to address employee concerns and prevent

escalation. Community relations are proactively managed through a dedicated liaison team, recognizing the importance of local engagement in maintaining site security.

ANNEX A: SECURITY THREAT DEFINITIONS

The assessment follows international best practices and is guided by a philosophy of being dynamic, integrated, and tailored to the specific operating environment. It involves identifying critical assets—such as personnel, infrastructure, processes, and reputation—and evaluating the threats posed to these assets.

Threat actors are analyzed based on their intent and capability, and risks are calculated using a formula that considers both likelihood and consequence. Mitigation options are categorized into four approaches: tolerate, treat, transfer, or terminate, depending on the organization's risk appetite.

The methodology ensures that the security strategy is not only reactive but also proactive, enabling the company to anticipate and prepare for potential threats before they materialize.



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APPENDIX I

SUPPLIER CODE OF CONDUCT



Executive Summary - Supplier Code of Conduct

Updated ESIA Supplementary
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Executive Summary - Supplier Code of Conduct

Updated ESIA Supplementary Disclosure Package : Phosphate

Fertilizer Complex Project, SCZone, Sokhna

0774474



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CONTENTS

EXECUTIVE SUMMARY – SUPPLIER CODE OF CONDUCT	1
PURPOSE AND SCOPE	1
CORE PRINCIPLES AND REQUIREMENTS	1
SOCIAL RESPONSIBILITY STANDARDS	2
HEALTH, SAFETY, AND ENVIRONMENTAL STANDARDS	2
PRODUCT STEWARDSHIP	2
CONSEQUENCE MANAGEMENT FRAMEWORK	3
REPORTING AND WHISTLEBLOWER PROTECTION	3
CONFIRMATION AND COMPLIANCE	3

EXECUTIVE SUMMARY – SUPPLIER CODE OF CONDUCT

DISCLAIMER / INTRODUCTORY NOTE

This Executive Summary has been prepared by ERM based on documentation provided by Indorama. Please note that ERM has not authored the original content of the source documents. The purpose of this summary is to provide a concise overview of the key points and findings as presented in the original materials, without altering or interpreting their substance.

PURPOSE AND SCOPE

Indorama Misr Fertilizer Egypt (IMF) is committed to conducting business ethically, responsibly, and in full compliance with applicable laws and international standards. This Supplier Code of Conduct—also referred to as the Responsible Sourcing Policy—establishes the expectations IMF has for all suppliers, subcontractors, service providers, and commercial partners across its global supply chain.

The policy applies to all entities and individuals involved in supplying goods or services to IMF, including sub-tier suppliers. Suppliers are required to cascade these standards throughout their supply chains and remain fully accountable for compliance.

CORE PRINCIPLES AND REQUIREMENTS

Ethics and Legal Compliance

- Suppliers must avoid conflicts of interest, bribery, fraud, and corruption.
- Gifts and hospitality must be proportionate and legally compliant.
- Accurate accounting and transparent business records are mandatory.
- Suppliers must not engage in anti-competitive practices such as price-fixing or market collusion.
- Supply chain transparency is required, especially for critical materials.

Proprietary Information and Branding

- Intellectual property and confidential information must be protected.
- Data security and responsible use of company information are essential.
- Use of IMF branding or trademarks requires formal approval.

Animal Welfare

- Animal testing must be minimized and conducted only when legally required or scientifically justified.
- Ethical sourcing of animals from authorized breeders is mandatory.

Conflict Minerals

- Suppliers must ensure materials are free from conflict-affected and high-risk areas (CAHRAs).

- Minerals such as tin, tantalum, tungsten, and gold (3TG) must be sourced responsibly.
- Due diligence and traceability documentation are required.

SOCIAL RESPONSIBILITY STANDARDS

Fair Treatment

- Respect for freedom of association and collective bargaining is mandatory.
- Suppliers must promote diversity, equality, and inclusion.
- Zero tolerance for harassment, discrimination, or intimidation.

Grievance Mechanism and Non-Retaliation

- Suppliers must implement secure, accessible grievance systems.
- Anonymous reporting and protection against retaliation are required.
- Complaints must be resolved fairly and promptly.

Combating Forced Labor and Child Labor

- Suppliers must ensure fair wages, benefits, and working hours.
- Employment must be voluntary, with contracts in a language workers understand.
- Child labor is strictly prohibited; minimum age must comply with ILO standards.

HEALTH, SAFETY, AND ENVIRONMENTAL STANDARDS

Occupational Health and Safety (OHS)

- Suppliers must provide safe, hygienic, and hazard-free workplaces.
- A formal Health and Safety Management System (HSMS) is required.
- Risk management must address physical, chemical, biological, ergonomic, and psychosocial hazards.

Emergency Preparedness

- Suppliers must maintain Emergency Response Plans (EPRPs) for fire, spills, disasters, and medical emergencies.
- Regular drills, training, and coordination with local responders are required.

Environmental Protection

- Compliance with Egypt's Environmental Law and international standards (e.g., ISO 14001, IFC PS3) is mandatory.
- Suppliers must reduce emissions, conserve resources, and prevent pollution.
- Waste management must be handled by licensed providers and audited regularly.

PRODUCT STEWARDSHIP

- Suppliers must implement Quality Management Systems (e.g., ISO 9001).
- Products must meet IMF's safety, environmental, and technical specifications.
- Changes to product specifications must be communicated at least 30 days in advance.
- Procedures must be in place to prevent and respond to product spills.

CONSEQUENCE MANAGEMENT FRAMEWORK

Corrective Action Plan (CAP)

- Non-compliance triggers a formal CAP process, including root cause analysis and follow-up audits.

Graduated Enforcement

- Level 1: Written warning
- Level 2: Temporary suspension (e.g., withholding payments, removal from vendor list)
- Level 3: Contract termination and permanent delisting for severe or repeated violations

Audit Rights

- IMF reserves the right to conduct announced or unannounced audits, including site visits and worker interviews.

Transparency and Accountability

- All enforcement actions are documented and may influence future sourcing decisions.

REPORTING AND WHISTLEBLOWER PROTECTION

Suppliers are encouraged to report violations or concerns via the Indorama Group Whistleblower Policy. IMF guarantees protection against retaliation and expects suppliers to act in good faith.

CONFIRMATION AND COMPLIANCE

Suppliers must sign a formal Compliance Confirmation Letter, acknowledging their commitment to the policy. They are also responsible for ensuring subcontractors comply and for notifying IMF of any supply chain changes.



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APPENDIX J SUPPLY CHAIN MANAGEMENT POLICY



Executive Summary - Supply chain management policy

Updated ESIA Supplementary
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Executive Summary - Supply chain management policy

Updated ESIA Supplementary Disclosure Package: Phosphate
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CONTENTS

EXECUTIVE SUMMARY – SUPPLY CHAIN MANAGEMENT POLICY	1
DISCLAIMER / INTRODUCTORY NOTE	1
PURPOSE AND SCOPE	1
KEY PRINCIPLES	1
IMPLEMENTATION AND COMMUNICATION	2

EXECUTIVE SUMMARY – SUPPLY CHAIN MANAGEMENT POLICY

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PURPOSE AND SCOPE

The Supply Chain Management Policy of Indorama Investments Limited (hereinafter Indorama) establishes the company's strategic approach to building a resilient, ethical, and sustainable supply chain. Indorama adopts a risk-based due diligence approach across its supply chain, in alignment with the OECD Due Diligence Guidance for Responsible Business Conduct and IFC Performance Standards.

Indorama recognizes that a robust supply chain is essential for business continuity, growth, and stakeholder trust. The policy emphasizes the importance of collaboration with suppliers, purchasers, and consumers to ensure responsible stewardship across all operations.

This policy is mandatory for all business units and must be adopted by every site and office owned, controlled, or managed by Indorama. It serves as a guiding framework for procurement practices, supplier engagement, and sustainability initiatives throughout the organization.

The policy includes the roles and responsibilities for policy implementation.

KEY PRINCIPLES

The policy is built around a set of guiding principles that reflect Indorama's commitment to sustainability, ethical business practices, and operational excellence across its supply chain:

Legal and Regulatory Compliance:

Indorama ensures that all supply chain activities comply with applicable local, national, and international laws.

Sustainability and Resilience:

The company prioritizes sourcing goods and services that are not only competitively priced but also sustainable, high-quality, and technologically advanced. The supply chain is designed to be resilient against geo-political, legal, environmental, and societal risks.

Ethical and Responsible:

Indorama is committed to upholding the highest standards of ethics and responsibility throughout its supply chain. This includes safeguarding human rights, ensuring safe and healthy working conditions, and actively eliminating child labor and forced labor. The company also promotes environmental stewardship with renewable energy, sustainable materials, and responsible water management practices.

Transparency and Traceability:

Indorama emphasizes traceability throughout the supply chain to ensure transparency regarding the origin of goods and their environmental impact.

Inclusive Procurement:

Indorama fosters inclusivity in its procurement strategy by supporting local suppliers, small and medium-sized enterprises, and businesses owned by marginalized or vulnerable groups. This approach not only strengthens community engagement but also contributes to economic development and diversity within the supply chain.

Supplier Engagement and Development

Indorama engages suppliers through transparent and competitive selection processes, such as requests for proposals (RFPs), requests for quotations (RFQs), and works closely with them to build capabilities aligned with the company's sustainability goals. Suppliers are encouraged to adopt robust governance structures and participate in initiatives that reduce environmental and social risks.

Performance Monitoring:

To ensure consistent performance and compliance, Indorama conducts regular evaluations of its suppliers. These assessments cover adherence to sustainability practices, fulfillment of contractual obligations, and delivery standards. In high-risk cases, third-party audits and assessments may be employed to reinforce accountability and transparency.

Communication and Training:

The policy is communicated across the organization through training programs, conferences, and other channels. The effectiveness of these initiatives is evaluated periodically.

IMPLEMENTATION AND COMMUNICATION

Indorama ensures the effective rollout of its Supply Chain Management Policy through structured implementation and continuous communication. Suppliers are expected to align their internal governance, policies, and operational systems with the principles outlined in the policy, and to actively participate in sustainability initiatives and remediation processes when adverse impacts occur.

Indorama also supports supplier capacity building by offering guidance on compliance, sustainability, and risk management. Supplier performance is monitored regularly to assess adherence to ethical standards, contractual obligations, and delivery expectations, with third-party audits conducted in high-risk scenarios. A confidential grievance mechanism is in place, allowing stakeholders to report non-compliance without fear of retaliation, via direct email to the company.

Finally, this policy shall be reviewed periodically to maintain its relevance and effectiveness in a dynamic business environment.



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APPENDIX K

SUPPLY CHAIN MONITORING
PROCEDURE



Executive Summary - Supply chain monitoring procedure

Updated ESIA Supplementary
Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone,
Sokhna

PREPARED FOR



Indorama

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Note: This document is part of the Updated ESIA Supplementary Disclosure Package assigned by Indorama to ERM in order to ensure compliance with International Standards International Finance Corporation (IFC) and European Bank for Reconstruction and Development (EBRD).

Executive Summary - Supply chain monitoring procedure

Updated ESIA Supplementary Disclosure Package: Phosphate
Fertilizer Complex Project, SCZone, Sokhna
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CONTENTS

EXECUTIVE SUMMARY – SUPPLY CHAIN MONITORING PROCEDURE	II
DISCLAIMER / INTRODUCTORY NOTE	II
SCOPE AND PURPOSE	II
KEY OBJECTIVES	II
CORE COMPONENTS	II
IMPLEMENTATION & OVERSIGHT	III

EXECUTIVE SUMMARY – SUPPLY CHAIN MONITORING PROCEDURE

DISCLAIMER / INTRODUCTORY NOTE

This Executive Summary has been prepared by ERM based on documentation provided by Indorama. Please note that ERM has not authored the original content of the source documents. The purpose of this summary is to provide a concise overview of the key points and findings as presented in the original materials, without altering or interpreting their substance.

SCOPE AND PURPOSE

The purpose of this procedure is to establish a comprehensive framework and define the procedure for managing all suppliers, contractors, service providers, logistics operators, and waste handlers who provide goods or services to Indorama Misr Phosphate, Egypt. This policy integrates supplier engagement with Environmental, Social, and Governance (ESG) due diligence, IFC Performance Standards, UN Guiding Principles on Business and Human Rights (UNGP), and ILO Core Conventions.

It applies across the supply chain of the following operational units:

- Sulphuric Acid Plant (SAP) – 3,100 TPD
- Phosphoric Acid Plant (PAP) – 1,000 TPD
- DAP/NPK Plant – 1,935 TPD
- Ammonia Storage – 10,000 MT
- Utilities and Offsite (O&U) infrastructure

The Supply Chain Monitoring Procedure provides an integrated operating framework encompassing procurement governance, supplier qualification, ESG screening, performance monitoring, and non-compliance handling. It establishes a transparent and accountable system for identifying, mitigating, and reporting supplier-related risks, aligned with global best practices in sustainable supply chain management.

KEY OBJECTIVES

- Minimize supplier-related risks to operations and reputation.
- Ensure legal and ESG compliance across all supplier engagements.
- Promote ethical sourcing and sustainable procurement.
- Enhance resilience and continuous improvement throughout the supply chain.

CORE COMPONENTS

Supplier Management Framework:

Segmentation into business-critical and non-critical suppliers.

Rigorous assessment and selection based on ESG, technical, and financial criteria.

Onboarding includes ESG clauses and obligations to cascade standards to Tier 2+ suppliers.

Ongoing risk monitoring and contingency planning.

ESG Monitoring & Due Diligence:

Classification of suppliers by ESG risk tier.

Mandatory self-declarations and ESG assessments.

Use of scorecards, audits, and grievance tracking to monitor compliance.

Corrective Actions & Enforcement:

Issuance of Corrective Action Plans (CAPs) for non-compliance.

Enforcement measures include suspension, blacklisting, or termination.

Waste & Hazardous Materials Oversight:

Licensing, chain-of-custody documentation, and GPS tracking for hazardous waste.

Grievance Mechanisms:

Anonymous reporting channels for workers and communities.

Structured resolution process with oversight by the ESG team.

Governance & Sustainability:

Annual audits, ESG training, and sustainable procurement initiatives.

Supplier workshops and carbon tracking encouraged.

Operational Controls

Exception handling via GRC

Change management and data retention (7 years)

Internal and external policy communication and training

Appendix: ESG Audit Checklist

Covers human rights, labor standards, environmental management, health & safety, business ethics, data protection, and community engagement. Aligned with IFC Performance Standards, EBRD ESP 2019, and UNGPs.

IMPLEMENTATION & OVERSIGHT

- Annual reviews and updates by senior management.
- Supplier data retained for 7 years post contract expiration or termination.
- Internal and external communication of policy and training requirements..



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APPENDIX R TRAFFIC ASSESMENT

Executive Summary

This Traffic Impact Study (TIS) evaluates the transportation impacts associated with the development and future operation of the Indorama Fertilizer Complex located within the Sokhna Industrial Zone (SCZone), Egypt. The study assesses current conditions, forecasts future traffic performance, and identifies necessary improvements to ensure safe and efficient transport operations.

Project Overview

The industrial complex will serve as a major hub for the production of DAP, NPK fertilizers, and intermediate products including phosphoric and sulphuric acid. The facility requires continuous inbound and outbound logistics through Ain Sokhna Port and Adabiya Port, along with daily workforce commuting.

Methodology

The assessment followed a systematic approach in line with international standards:

- ✓ Manual traffic surveys at key external road links
- ✓ Trip generation calculations for freight and workforce travel
- ✓ Trip distribution based on distance-to-port and operational logistics
- ✓ Traffic assignment and **Synchro** capacity analysis for peak-hour performance
- ✓ Future demand forecasting using **3% annual traffic growth** (up to year 2038)
- ✓ Parking and gate queuing assessment

Key Findings

Parameter	Result
Total daily truck trips	≈ 280 trips/day (225 inbound (raw materials) / 55 outbound (finished goods))
Peak hour demand	AM: 60 veh/h – PM: 53 veh/h
Staff daily trips	58 veh/day (mainly buses/minibuses)
Gate performance	LOS A with queue < 4 sec
External road corridors (2025–2038)	LOS A–D (acceptable)
Critical point	Industrial U-turn to Ain Sokhna Rd → LOS F

Identified Issue

The **U-turn movement** at Ain Sokhna Road is operating under heavy congestion (**LOS F**) due to limited turning capacity and high future traffic pressure from industrial expansion in the future scenario 2038.

✓ Recommendations

To maintain safe and efficient network performance, the following measures are proposed:

1. Gate & Access Management

Maintain current 3-gate system (segregated trucks vs. employees).

Minimum queue storage for **3 vehicles (≈ 20 m)** at entry points.

2. Parking & Internal Circulation

Provide 14 car parking spaces to meet employee parking requirements.

Provide a minimum of 24 truck bays based on dwell time and peak hour truck demand (with additional reserve capacity to avoid on-street queuing).

Ensure safe and well-organized truck routing, supported with appropriate internal signage, road markings, and visibility standards to minimize conflict points and maintain smooth circulation.

3. Safety & Operational Measures

Install high-visibility signs, road markings, & lighting.

Maintain emergency access lanes.

✓ Final Conclusion

With the recommended improvements, the surrounding road network will continue operating at **acceptable Levels of Service** throughout the **2038 horizon year**, ensuring reliable logistics movement and safe daily operational traffic.