

THE DESIGN, CONSTRUCTION
AND OPERATION OF A
SMELTER PLANT ON FARM 38
IN WALVIS BAY AREA –
ERONGO REGION

ENVIRONMENTAL & SOCIAL
MANAGEMENT PLAN

PREPARED BY



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LIST OF ABBREVIATIONS

Abbreviation	Full Name
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EM	Environmental Manager
ESIA	Environmental & Social Impact Assessment
ESMP	Environmental & Social Management Plan
GG	Government Gazette
GN	Government Notice
GRM	Grievance Redressal Mechanism
IFC	International Finance Corporation
MEFT	Ministry of Environment, Forestry and Tourism
OS	Operational Safeguard
SEA	Sexual Exploitation and Abuse

GLOSSARY OF TERMS

“**Competent authority**” is defined as an organ of state which is responsible, under any law, for granting or refusing and authorisation; or the competent authority identified in terms of section 30 of the EMA, Act, 2007.

“**Organ of state**” means any office, ministry or agency of State or administration the local or regional sphere of government or any other functionary or institution: exercising a power or performing a function in terms of the Namibian Constitution, or exercising a public power or performing a public function in terms of any law but does not include a court or judicial officer.

“**Proponent**” means a person who proposes to undertake a listed activity.

“**Listed activity**” means an activity listed in terms of section 27 (1) or 29 of EMA. It refers to any physical work that a proponent proposes to construct, operate, modify, decommission or abandon or and activity that a proponent proposes to undertake.

“**Public**” refers to the community or people in general.

The ‘**Stakeholders**’ – this refers to the people, organisations, NGOs that are directly or indirectly affected by the project and / or have an interest in the project.

The ‘**Environment**’ – this refers to the ecology, economy, society and politics.

DOCUMENT STRUCTURE / ROAD MAP

The ESMP is intended to meet all requirements as stipulated in environmental management Act (2007) and its Regulations of 2012. In order to provide guidance to the reader, a document roadmap is provided in Table 1 below.

Table 1: Document Roadmap

CHAPTER	TITLE	OVERVIEW
	Purpose of the Environmental and Social Management Plan (ESMP)	N / A
	Document Road Map	N / A
1	Introduction	This section contains the project background description, the objectives of the ESMP and the roles & responsibilities of parties involved.
2	Legal and policy framework	National legislation, AfDB's safeguards, ESMP requirements, and non-compliance or enforcement
3	Management of identified impacts	This section covers the description of the identified potential impacts through the various project life cycle phases and proposed management and mitigation measures.
4	Monitoring Programme	ESMP monitoring and implementation budget.
5	Emergency plans	This section covers emergency plans in case of accidents, grievance handling procedures and method statements.
6	Conclusion and Way Forward	Conclusion based on the proposed ESMP.
7	List of References	List of references quoted in the document.
8	List of Annexures	All annexed documents as presented in the document (Grievance redressal form and KIN's Environmental Code of Conduct).

1. INTRODUCTION

1.1. PURPOSE OF THE document

This document is an Environmental & Social Management Plan (ESMP). It was compiled as part of the Environmental & Social Impact Assessment (ESIA) for the design, construction and operation of a smelter plant on Farm 38 in Walvis Bay Area, Erongo Region. It describes the proposed management measures to mitigate the identified impacts, a monitoring plan, indicators and associated implementation costs. The ESMP was shared with registered Interested and Affected Parties (IAPs) and Stakeholders before submission to the competent authority and Ministry of Environment, Forestry and Tourism (MEFT) for approval. It should be read or reviewed together with the accompanying Environmental Scoping Report (ESR) compiled for this project.

1.2. Objective of the ESMP

An ESMP is a detailed plan and schedule of measures necessary to minimize, mitigate any potential impacts identified by the ESIA (Bank, World, 2011). The scope included the preparation of the ESMP with the aim to meet the requirements of the Environmental Management Act, 2007 and its Regulations, 2012 and the International Finance Corporation (IFC) policies and guidelines.

The purpose of the ESMP is to provide a general framework for the Environmental and Social Management System (ESMS) planned to be implemented for the proposed Project. It provides the necessary management tools to ensure legal compliance and environmental best practice. Besides the legal and institutional requirements for the successful implementation of the relevant management plans, ESMP also determines the roles and responsibilities of Proponent, the Consultant and the contractor / sub-contractors. Its main objectives are:

- To ensure the project is in compliance with applicable national environmental and social legal requirements and IFC's safeguards policies and procedures;
- To outline the mitigating/enhancing, monitoring, consultative and institutional measures required to prevent, minimize, mitigate or compensate for adverse environmental and social impacts, or to enhance the project's beneficial impacts; and,
- To address capacity-building requirements to strengthen the Proponent's safeguards capacities.
- To provide an overview of the environment, health and safety (EHS), socio-economic and cultural heritage policies, standards and legal legislation that the Project should comply with;

- To determine the roles and responsibilities of the Proponent, Consultant and Contractors in order to ensure compliance with EHS requirements during project implementation;
- To ensure that project activities are in compliance with EHS policies, standards and legal regulations;
- Ensure reporting systems are developed and streamlined to deliver EHS compliance performance;

1.3. Project background

The proposed project, seeks to design, construct and operate a smelter plant on Farm 38 in Walvis Bay. The smelter plant will comprise of several furnaces and manufacturing plants making use of scrap metals: steel, copper, aluminium, zinc, lead and plastics. The envisaged production capacities are presented in the following table:

TYPE OF METAL	CAPACITY (MT / MONTH)
Steel Plant	1200
Aluminium Plant	800
Copper Plant	500
Zinc and Lead	200
Plastic Plant	200

The proposed development project comprises of listed activities and may not be undertaken without environmental clearance from the Ministry of Environment, Forestry and Tourism (MEFT). As a result it requires an Environmental Impact Assessment (EIA) to be conducted and submitted to the MEFT in compliance with the Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations and, Environmental Policy (1994). This ESMP was generated from the Environmental and Social Impact Assessment (ESIA) study conducted for this proposed project.

This Environmental and Social Management Plan (ESMP), is one of the documents which will be submitted together with the ESR to support the application for an ECC from the MEFT. It describes the measures and controls developed in line with the mitigation hierarchy for the management of the impacts identified during the impact assessment process, determines the implementation schedule, roles and responsibilities, reporting and monitoring requirements. The ESMP, defines in detail the environmental and social mitigation measures and management controls to be implemented in order to ensure compliance with the relevant environmental and social issues. The project Proponent, Karam Industries Namibia (Pty) Ltd (KIN), the Consultant and all contractors / sub-contractors are responsible for the implementation of the ESMP and the general principles presented within the scope of the ESMP.

1.4. Roles and Responsibilities for ESMP Implementation

1.4.1. Institutional arrangement for ESMP Implementation

The proposed project is being undertaken by KIN, a private company established and registered in Namibia in This ESMP was compiled as part of the ESIA being undertaken for the proposed project in accordance with the requirements of the Environmental Management Act (EMA), No.7 of 2007 and the Environmental Impact Assessment Regulations, No. 30 of 2012. The EMA is implemented by various stakeholders, organs of state and agents. The Minister of the Ministry of Environment, Forestry & Tourism (MEFT) through the Environmental Commissioner (EC) is responsible for implementation of the act. The EC advises organs of state on the preparation of environmental plans, receives and records applications for Environmental Clearance Certificates and the overall management, protection, reviewing of the assessment report and enforcement of monitoring and implementation of environmental plans in accordance with the EMA.

KIN's Environmental Manager is primarily responsible for the implementation of the ESMP during the planning & design, construction, operational and decommissioning phases.

1.4.2. The Proponent (Karam Industries Namibia (KIN))

KIN, as the Proponent, will be responsible for:

- Ensuring that the objectives of the proposed ESMP are achieved at the various project lifecycle phases;
- Ensuring that all identified environmental impacts are managed according to the environmental principles of avoiding, minimizing, mitigating and rehabilitation. This will be achieved by the successful implementation of the ESMP;
- Ensuring that appropriate environmental monitoring and compliance auditing is done and that biannual reports are submitted to the MEFT;

- Ensuring that the environment is rehabilitated to its natural state as far as possible. KIN shall ensure that all employees attend an Environmental, Awareness Training Course.

This course shall be structured to ensure that delegates are capacitated with appropriate knowledge and skills to:

- Become familiar with the environmental, health, and safety controls contained in the ESMP;
- Be aware of the need to conserve water and minimise waste;
- Be aware of KIN's Code of Conduct;
- Be aware that a copy of the ESMP is readily available as a reference at the site office and that all staff are aware of the location and have access to the document;
- Are informed that employee information posters, outlining the environmental “do’s” and “don’ts” (as per the environmental awareness training course) will be placed at prominent locations throughout the site.

The Contractor and / or its agents will be responsible for environmental management on site during the construction phase of the project. For the purpose of this report:

- *“the Contractor” (and its sub-contractors) refers to construction personnel responsible for construction activities planned for this project.*

A pre-construction meeting is recommended in order to reach agreement on specific roles of the various parties and penalties for non-compliances with the ESMP. In addition surrounding communities, stakeholders and land owners must be notified in advance of any potentially disturbing activities.

An Environmental Compliance Officer (ECO) will conduct inspections of the project activities; and ESMP implementation throughout the duration of construction. After each inspection, the ECO will produce a monitoring report that will be submitted to the Environmental Manager and Ministry of Environment and Tourism (Department of Environmental Affairs) biannually as required by law. Relevant sections of the minutes of site meetings will be attached to the environmental monitoring report.

Table 1: Summary of roles and responsibilities.

Position / Title	Responsible party	Responsibility
Environmental Manager (EM)	Karam Industries Namibia (Pty) Ltd (KIN)	Overall environmental management of the project and ESMP implementation;

		Oversee project environmental work onsite in liaison with the ECO, ESO and Contractor
Environmental Control Officer (ECO)	Consultant (Outrun Consultants cc)	Implementation of the ESMP and liaison between KIN, MEFT, Contractor and Stakeholders
Environmental Site Officer (ESO)	Contractor (To be appointed)	Implementation of ESMP activities onsite in liaison with ECO, Contractor and stakeholders
Contractor	To be appointed	ESMP implementation and compliance with ECC conditions, appoints ESO and commits resources for ESMP implementation.

KIN and the Contractor shall provide resources essential for the implementation and control of their respective ESMP obligations including:

- human resources,
- technology and / or equipment, and financial resources.

The general roles and responsibilities of various parties during the various project phases are outlined below.

1.4.3. Roles of the Environmental Manager (EM)

The EM will be responsible for upholding KIN's environmental policy and has the responsibility to ensure that KIN's responsibilities are executed in compliance with the relevant legislation. Any decisions regarding environmental management are ultimately the responsibility of the EM. The EM shall assist the ECO where necessary and will have the following responsibilities in terms of the implementation of this ESMP:

- Be fully knowledgeable with the contents of this ESMP;
- Review and authorize updates to the ESMP.
- Ensure adequate and timely allocation and disbursements of resources for implementation of the ESMP requirements.
- Ensure that environmental requirements are integrated into project plans, work method statements, tender and contract documents.
- Ensure necessary support to the ESO for implementation of the ESMP.

- Undertake environmental system reviews, site inspections, audits and other verification activities to assure that the ESMP implementation is at an optimal level.
- Participate in environmental performance verification activities to verify the level of compliance with the ESMP in delivering the legal and environmental obligations.
- Assess the efficacy of the ESMP and identify possible areas of improvement or amendment required within the ESMP.
- Participate in incident investigations (as required).
- Initiate external audits (as required).

1.4.4. Roles of the Environmental Control officer (ECO)

The ECO for the site is an independent environmental consultant (Outrun Consultants CC) to monitor and review the on-site environmental management and implementation of this ESMP on the construction site.

The duties of the ECO:

- Ensure that all construction or decommissioning activities on site are undertaken in accordance with the ESMP;
- Conduct environmental compliance audits and reporting as required by law.
- Provide support and environmental advice to the project team, contractors, and all subcontractors in the implementation of environmental management procedures and corrective actions.
- Report significant incidents internally and externally as required by law and the ECC conditions.
- Ensure that ESMP performance monitoring programs are implemented.
- Assist in incidents and non-conformances investigations and implementation of effective corrective and preventive measures.
- Assess ESMP effectiveness and identify possible areas of improvement.
- Facilitate the amendment of the ESMP in liaison with the Environmental Manager.
- Provide environmental training for key project personnel (in liaison with Environmental Manager).

1.4.5. Roles of the Environmental Site Officer (ESO)

The ESO is expected to administer and control all environmental matters during the construction phase. The ESO will conduct the following:

- Ensure implementation of the ESMP.

- Ensure safe keeping and easy accessibility of correct environmental records at all times.
- Ensure accurate and timely communication of ESMP requirements to relevant project, contractor and sub-contractor personnel as required for ESMP implementation.
- Monitor compliance of ESMP implementation and compliance of all contractors and sub-contractors onsite.
- Facilitate environmental induction of all project staff and either deliver or coordinate delivery of all such training that would be required for the effective implementation of the ESMP. This includes identifying additional project training requirements and implementing the training programme.
- Update and maintain training records for all project personnel including contractors.
- Maintain environmental incidents and stakeholder complaints register.
- Undertake environmental system reviews, site inspections, audits and other verification activities to assure that the ESMP implementation is at an optimal level.
- Report significant incidents internally and externally as required by law and the conditions of authorization.
- Investigate incidents and recommend corrective and preventative actions.
- Provide support and advice to the contractor and all sub-contractors in the implementation of environmental management procedures and corrective actions.
- Ensure that monitoring programs, which assess the performance of the ESMP, are implemented.
- Ensure maintenance of site document control requirements.
- Assess the efficacy of the ESMP and identify possible areas of improvement or amendment required within the ESMP.

1.4.6. Roles of the Contractor

The Contractor will appoint an Environmental Site Officer (ESO) who will be responsible for ensuring that the ESMP requirements are implemented on-site on behalf of the Contractor. The ESO shall:

- Identify non-compliance and recommend corrective measures in consultation with the Project Manager, the EM and the ECO as required;
- Ensure that environmental problems are remedied timeously and to the satisfaction of the Project Manager, the EM and the ECO as required;
- Set up activity based method statements prior to the start of relevant construction activities and submit these to the Project Manager, the EM and the ECO as required;

- Perform ongoing environmental awareness training of the Contractor's site personnel as and when required.

The contractor shall ensure that all construction staff, sub-contractors, suppliers, etc. are familiar with, understand and adhere to the ESMP. Failure by any employee of the Contractor, Sub-contractor, Suppliers etc. to show adequate consideration to the environmental aspects of this contract shall be considered sufficient cause for the ESO to instruct the EM to have the employee removed from the site. The EM will also order the removal of equipment from the site that is causing continual environmental damage (e.g. leaking oil and diesel). Such measures will not replace any legal proceedings the KIN may institute against the Contractor.

The EM shall order the contractor to suspend part or all of the works if the contractor and/or any sub-contractor, suppliers, etc., fail to comply with both the ESMP and the construction procedures supplied by the Contractor. The suspension will be enforced until the offending procedure or equipment is corrected and/or if required remedial measures are put in place. No extension of time will be granted for such delays and all costs will be borne by the Contractor. Under the environmental obligations delegated to the Contractor through the Contract Document, all staff (including subcontractors and staff), suppliers, and service providers appointed for the project would be responsible for:

- Ensuring adherence by providing adequate staff and provisions to meet the requirements of the ESMP;
- Ensuring that Method Statements are submitted to the Environmental Manager for approval before any work is undertaken, and monitor compliance with the ESMP and approved Environmental Method Statements;
- Ensuring that any instructions issued by the ESO and/or EM are adhered to;
- Ensuring the presentation of environmental issues at each site meeting, documenting all incidents that have occurred during the period before the site meeting;
- Undertake daily, weekly and monthly inspections of the work area(s);
- Ensuring that a register of all the transgressions issued by the ESO is kept in the site office;
- Ensuring that a register of all public complaints is maintained; and
- Ensure that all employees, including those of sub-contractors receive training before the commencement of construction so that they can constructively contribute towards the success full implementation of the environmental requirements of the Contract.

- Report and record any environmental incidents caused by the Contractor or due to the Contractor's activities;
- obtain required corrective action within specified time frames and close out of environmental incidents;
- Provide weekly checklists to the EM and ESO.

2. LEGAL REQUIREMENTS

2.1. Environmental framework legislation

As an environmental framework legislation, the Environmental Management Act No. 7 of 2007 (EMA) is an important tool in terms of protection. The supporting Regulations were gazetted on the 6th of February 2012 making it operational and effectively implementable. The Act requires adherence to the principle of optimal sustainable yield in the exploitation of all natural resources. It gives effect to Article 91 (1) of the Constitution by establishing general principles for the management of the environment and natural resources. It promotes the coordinated and integrated management of the environmental and sets out responsibilities in this regard, (Ruppel-Schlichting, 2022).

2.2. Legal instruments compliance requirements and responsible authorities for enforcement

Table 2: Legal instruments compliance requirements and responsible authorities for enforcement.

Legal instrument	Compliance requirement	Enforcement authority
Environmental Management Act No.7 of 2007	All listed activities require environmental authorization and KIN should obtain an ECC before implementing the proposed project.	MEFT
Hazardous Substances Ordinance 14 of 1974	Transportation and Handling of Scrap Metal	MoHSS and MEFT
NAMCAR Part 139 08 November 2018 Government Gazette 6763 PART 139 AERODROMES	Construction of stacks / chimneys or masts within 15km from aerodromes. Project site 4km from Walvis Bay airport and Proponent should apply for consent during the design phase of the project.	Namibia Civil Aviation Authority (NCAA).

2.3. ESMP Requirements

Based on the definition of “environment” in the EMA, an ESMP should adopt a holistic approach to environmental management and encompass all components of the environment, biophysical, social, cultural, health and economic. The EMA and its regulations stipulate that an ESMP must include the following as a minimum:

- Information on any proposed management, mitigation, protection or remedial measures to be undertaken to address the effects on the environment that have been identified including objectives in respect of the rehabilitation of the environment and closure;
- As far as reasonably practicable, measures to rehabilitate the environment affected by the undertaking of the project or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principles of sustainable development;
- A description of how the applicant intends to modify, remedy, control or stop any action, activity or process which will cause pollution or environmental degradation, remedy the cause of pollution or degradation and mitigation of pollutants.

2.4. Components of Non-compliance or enforcement

The ESMP document is a legally binding document which compels the Proponent to implement a proposed mitigation measures in a manner described herein and form the set of conditions upon which an ECC will be granted by the EC. Contravention is punishable and the extent depends on severity. Environmental Officers in the MEFT are appointed to carry out the provisions of EMA. They are the main persons responsible for enforcement of the EMA. Environmental Officers not only have the specific powers such as the powers of entry and inspection, they can also issue compliance orders to any person who has violated the EMA or a condition of an ECC (sections 19 and 20). Decisions of the EC are subject to appeal to the Minister according to Sections 50 and section 25 of the Regulations. Decisions of the Minister are subject to appeal to the HIGH Court according to Section 51 (Ruppel-Schlichting, 2022).

2.5. Penalties and offences under the EMA Act (2007)

30. (1) A person commits an offence if that person:

(a) knowingly provides false or misleading information in any document submitted in terms of the Act to the EC:

(b) knowingly and without the consent of the EC makes or causes to be made any entry on a document;

(c) destroys or defaces any document; or alters or causes to be altered any entry on a document.

(2) A person who commits an offence in terms of this regulation is on conviction liable to a fine not exceeding N\$100 000.00 or to imprisonment for period not exceeding 10 years or to both the fine and imprisonment.

Components contained in this ESMP which should be implemented by the Contractor and do not do as such attract non-compliance and shall be considered sufficient ground for the imposition of a penalty. Possible offences, which should result in the issuing of a contractual penalty, include, but are not limited to:

- Unauthorized damage to natural vegetation;
- Failure to barricade work areas and prevent encroachment of domestic animals or any other unwanted guests;
- Unauthorized camp establishment (including stockpiling, storage, etc.);
- Hydrocarbons, hazardous material: negligent spills or leaks;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Insufficient solid waste management (including clean-up of litter, unauthorized dumping etc.);
- Erosion due to negligence, non-performance;
- Excessive cement, concrete spillage, contamination;
- Non-provision of adequate personal protective equipment,
- Insufficient fire control and unauthorized fires;
- Preventable damage to water courses or pollution of water bodies; and
- Non-induction of staff.

2.6. Environmental Register

An environmental register should be kept on site in which incidents related to actual impacts are recorded. This will include information related to incidents such as spillages, dust generation and stakeholders' complaints as well as information relating to remedial actions taken. It is recommended that the EM, ESO and the contractor(s) records and maintains the register.

3. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

The project activities shall be executed on the basis of the legal framework in Namibia especially in compliance with the constitution but also with due consideration of the IFC's requirements and in accordance with other international regulations to which Namibia is a signatory. The ESMP as presented in the table below summarizes the enhancement and mitigation measures proposed.

3.1. Planning and design phase

Table 3: Environmental and Social Management Plan Monitoring framework

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution - Smoke emissions from the furnaces have a potential to contain heavy metals, CO ₂ , Fluoropolymers and SO _x .	- Install wet scrubbers and fabric filters in the furnace stacks / chimneys	Design Engineers	PM	Specifications of the furnace stack / chimney equipments.	Once off at design stage	KIN
Ground water pollution from sludge and	- Size the sludge handling ponds adequately to prevent overflows; Specify waterproof	Design Engineers	PM	Specifications of the ponds	Once off during	KIN

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
electrowinning plant.	<p>pond lining to prevent infiltration into the ground;</p> <ul style="list-style-type: none"> - Ensure there is a secure fence around the ponds to prevent access; - Specify use of visible signage to discourage collection and use of concentrated sludge generated from the sludge ponds. 				design stage	
Noise and vibration pollution generated pumps and motors	<ul style="list-style-type: none"> - Specify variable frequency drives and remove control valves; - Throttle pressure-side valves until noises are eliminated; - Reduce pump speeds etc. 	Design Engineers	PM	Specifications of the pumps	Once off during design stage	KIN
Domestic solid waste management, Soil pollution, Air pollution, Noise pollution, Disruption of electricity supply,	<ul style="list-style-type: none"> - As a minimum, specify that all contractors should adopt the approved ESMP; - Manage and monitor all the identified environmental impacts as recommended in the ESMP; - All contractors should adhere to the ESMP. 	Design Engineers	PM	This ESMP should form part of the Tender documents	Once off	KIN

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Road accidents, Work place injuries	- Ensure contractors have made reasonable budget allocations for ESMP implementation and monitoring.					

3.2. Construction phase

Table 4: Environmental and Social Management Plan monitoring framework

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Domestic solid waste generated by workers from campsites	<ul style="list-style-type: none"> - Provide adequate number of bins for domestic waste disposal; - Dispose of domestic waste generated at the nearest designated waste disposal site. 	Contractors	ESO	Amount and type of waste generated	Monthly	MEFT
Soil contamination or pollution from hazardous products such as petroleum products e.g. oil and fuel as well as waste water from toilets	<ul style="list-style-type: none"> - Above ground fuel storage tanks must be bund walled with concrete that can contain can contain 200% of the stored fuel and must have water proof floors to contain and prevent seepage of spilled fuel; - Prevent spillages of any chemicals and petroleum products i.e., oils, lubricants, petrol and diesel; - Use drip trays, linings or concrete floors when evidence of leaks are observed on vehicles or equipment; 	Contractors	ESO	Observations and soil tests (Hydrocarbons)	Daily or weekly.	MEFT, MAWLR

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<ul style="list-style-type: none"> - No major servicing and maintenance of vehicles and/or equipment should be conducted at the site; - All fuelling, storage and chemical handling should be conducted on surfaces provided for this purpose;; - Drip trays, linings or concrete floors must be used when removing oil from machinery; - Spillage control procedures must be in place according to National Oil Spill contingency plan guidelines; - Waste water collection systems should be connected to conservancy tanks that are emptied using honey suckers for disposal to sewer ponds at Walvis Bay; - Should portable toilet facilities be necessary, adequate containment systems should be erected at the 					

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<p>site for use during the construction phase;</p> <ul style="list-style-type: none"> - Waste should properly be contained to avoid any leakages and/or spillages, and should regularly be disposed of at a suitable sewage disposal site; - Run-off from these toilets due to overflows should be avoided at all cost; - Proper environmental awareness and remedial response training of operators must be conducted on a regular basis; 					
Air pollution from dust, smoke etc.	<ul style="list-style-type: none"> - Soil or ground excavation works should be done when wind is calm - Dampen surfaces with water during work; - Protect stock piled soil with cover materials such as nets to protect 	Contractors	ESO	Dust count	Monthly	MEFT

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<p>loose soil from being blown away by the wind;</p> <ul style="list-style-type: none"> - It must be ensured that all vehicles entering the site and machinery used in construction activities are in good working order to prevent unnecessary emissions; - Trucks transporting sand should be covered by tarpaulin; - Vehicles should not be allowed to idle for unnecessarily long periods of time; - Excavation, handling and transport of materials must be avoided under high wind conditions; - Obey speed limitations on site, 30 km per hour for construction vehicles and 40 km per hour for light and passenger vehicles. 					

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Noise and vibration pollution	<ul style="list-style-type: none"> - Construction hours should be limited to during day (07h00 – 17h30), Mondays to Saturdays; - Turn off machinery and equipment when not in use; - Ensure regular maintenance of machinery and vehicles; - Ear plugs must be used when working in noisy areas; - Define and obey speed limitations for construction vehicles; - Carry out relevant trainings and provide instructions to drivers of construction vehicles on the driving speed limits; - Avoid driving of construction vehicles through settlements where possible; - Use of designated access roads; - Evaluate construction of access roads where required to avoid traffic 	Contractors	ESO	Allowable noise exposure in decibels: 85 dBA as an 8 hr Time Weighted Average)	Monthly	MEFT

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Disruption of electricity supply Switching / cutting off electricity supply when installing new connections	- Communicate and warn stakeholders of the scheduled work program resulting in electricity cuts.	Contractor	Business Unit North (BUN)	Number of announcements (water cuts)	Monthly	MAWLR
Road traffic accidents due to increase in traffic flow in the project area	- Drive during day only; - Adhere to speed limits on the national roads; - Adhere to speed limits on construction sites: 30 km per hour for construction vehicles and 40 km per hour for light and passenger vehicles.; - Receive deliveries during day; - Mark all construction vehicles as required;	Contractor	ESO	Number of fire road traffic accidents	Monthly	Ministry of Safety and Security

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<ul style="list-style-type: none"> - Make use of legible bright colours for signage; - Direct and control traffic flow when working along the road. 					
Injuries to employees and guests onsite / work areas.	<ul style="list-style-type: none"> - Provision of appropriate protective gears such as gloves, goggles, masks and clothes; - Provision of first aid kits and equipment; <p>All visitors to report to the Resident Engineer (RE) and be inducted/guided through the site with appropriate personal protective equipment.</p>	Contractor	ESO/RE	Lost time cases rate, calculated by the multiplying the number incidents that were lost time cases by 200 000 and then dividing that by the employee labour hours at the company.	Monthly	MLIREC
Sexual exploitation and abuse,	<ul style="list-style-type: none"> - Training of employees and awareness campaigns; 	Contractors	RE/EM	Number of GBV cases, illnesses	Monthly	MoHSS, Ministry of

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
gender-based violence and HIV/AIDS Influx of people from various areas, alcohol and drug abuse etc.	- Non-local employees should return to their original residential areas after completion of the contract.					Gender, Equality,
Fire accidents arising from sparks generated during work activities involving welding, cutting of metal or gas	<ul style="list-style-type: none"> - Provide bins for waste collection, especially at work stations that are manned daily; - Restrict smoking to designated areas; - Provide fire extinguishers; - Restrict hot work activities to designated areas; - Have an emergency fire plan for visitors and staff in place; - No open fires for heating or cooking shall be permitted on site 	Contractors	RE/EM/ESO	Number of incidences	Monthly	MEFT

Potential impact	Mitigation / Enhancement Measure (s)	Implementing Agent	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
cutting can cause fires.	<ul style="list-style-type: none"> - Maintain equipment in good working condition; - No hot work activities near flammable chemical storage area; 					

3.3. Operation phase

Table 5: Environmental and Social Management Plan monitoring framework

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	- Always keep the wet scrubbers online or running whenever the furnaces are on;	Schem Superintendent	Amount of smoke emitted	Daily every hour	MEFT
Domestic solid waste is generated by workers from control room and other work stations.	- Provide bins for waste collection, especially at work stations that are manned daily; - Dispose of domestic waste generated at the nearest designated waste disposal site.	Scheme Superintendent	Amount and type of waste generated	Weekly	MEFT
Soil contamination or pollution from hazardous chemicals or	- Prevent spillages of any chemicals and petroleum products (i.e. oils, lubricants, petrol and diesel); - Use drip trays, linings or concrete floors when evidence of leaks are observed on vehicles or equipment;	Scheme Superintendent	Observations and soil tests (Hydrocarbons)	Daily or weekly observations.	MEFT, MAWLR

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	- Always keep the wet scrubbers online or running whenever the furnaces are on;	Schem Superintendent	Amount of smoke emitted	Daily every hour	MEFT
products such as petroleum products e.g. oil and fuel, brine and water treatment chemicals as well as waste water from toilets	<ul style="list-style-type: none"> - All fuelling, storage and chemical handling should be conducted on surfaces provided for this purpose. - No major servicing and maintenance of vehicles and/or equipment should be conducted onsite; - Drip trays, linings or concrete floors must be used when removing oil from machinery; - Spillage control procedures must be in place according to National Oil Spill Contingency Plan; - Waste water collection systems should be connected to these systems; - Should portable toilet facilities be necessary, adequate containment systems should be erected at the site for use during the decommissioning phase; 				

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	<ul style="list-style-type: none"> - Always keep the wet scrubbers online or running whenever the furnaces are on; 	Schem Superintendent	Amount of smoke emitted	Daily every hour	MEFT
	<ul style="list-style-type: none"> - Waste water should properly be contained to avoid any leakages and/or spillages, and should regularly be disposed of at a suitable sewage disposal site; - Run-off from toilets due to overflows should be avoided at all cost; - Proper environmental awareness and remedial response training of operators must be conducted on a regular basis. 				
Noise and vibration pollution	<ul style="list-style-type: none"> - Check for faults when equipment is noisy; - Turn off machinery and equipment when not in use; - Ensure regular maintenance of machinery and vehicles; - Ear plugs must be used when working in noisy areas; 	Scheme Superintendent	Allowable noise exposure in decibels: 85 dBA as an 8 hr Time Weighted Average)	Monthly	MLIREC

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	- Always keep the wet scrubbers online or running whenever the furnaces are on;	Scheme Superintendent	Amount of smoke emitted	Daily every hour	MEFT
Disruption of electricity supply Switching / cutting off water supply during repairs and / or during planned maintenance or break downs.	- Communicate and warn stakeholders of the planned maintenance resulting in electricity cuts; - If decommissioning, an alternative electricity supply system should be commissioned before supply is halted.	Scheme Superintendent	Number of announcements (electricity cuts)	Monthly	MEFT
Road traffic accidents due to increase in traffic flow in	- Drive during day only; - Adhere to speed limits on the national roads; - Adhere to speed limits on construction sites: 30 km per hour for construction vehicles and	Scheme Superintendent	Number of road traffic accidents	Monthly	Ministry of Safety and Security

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	- Always keep the wet scrubbers online or running whenever the furnaces are on;	Schem Superintendent	Amount of smoke emmitted	Daily every hour	MEFT
the project area	40 km per hour for light and passenger vehicles; <ul style="list-style-type: none"> - Receive deliveries during day; - Mark all construction vehicles as required; - Make use of legible bright colours for signage; - Direct and control traffic flow when working along the road. 				
Injuries to employees working at smelter plant.	- Provision of appropriate personal protective equipment such as gloves, goggles, masks and clothes; <ul style="list-style-type: none"> - Provision of first aid kits and equipment; - All visitors to report to the Scheme superintendent on duty and be inducted / guided through the site with appropriate personal protective equipment; - First aid and safety awareness training for employees; 	Scheme Superintendent	Lost time cases rate, calculated by the multiplying the number incidents that were lost time cases by 200 000 and then dividing that by the employee labour	Monthly	MLIREC

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	- Always keep the wet scrubbers online or running whenever the furnaces are on;	Schem Superintendent	Amount of smoke emitted	Daily every hour	MEFT
	<ul style="list-style-type: none"> - Ensure the general safety and security at all times by providing day and night security guards and adequate lighting within and around the smelter plant and sludge ponds; - The employees must be properly trained on safety and health issues of the planned infrastructure during operation, repairs and maintenance; - Workers should be fully equipped with appropriate personal protective equipment. 		hours at the company.		
Fire accidents arising from sparks generated during work activities involving	<ul style="list-style-type: none"> - Provide bins for waste collection, especially at work stations that are manned daily; - Restrict smoking to designated areas; - Provide fire extinguishers; - Restrict hot work activities to designated areas; 	Contractors	RE/EM/ESO	Monthly Number of incidences	MEFT

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Air pollution	- Always keep the wet scrubbers online or running whenever the furnaces are on;	Schem Superintendent	Amount of smoke emitted	Daily every hour	MEFT
welding, cutting of metal or gas cutting can cause fires.	<ul style="list-style-type: none"> - Have an emergency fire plan for visitors and staff in place; - No open fires for heating or cooking shall be permitted on site - Maintain equipment in good working condition; - No hot work activities near flammable chemical storage area; 				

3.4. Decommissioning phase

It is assumed the project will operate optimally for a lifetime of 30 years and 50 year for mechanical and structural components of the project respectively. The sludge handling facilities will likely be upgraded then and continue operation as long as the town of Walvis Bay and the settlements in the project area continue to grow. Maintenance and upgrading may therefore be necessary in order to keep optimal functionality. After the lifespan is finished and/or no more upgrades are feasible, a decommissioning period will commence. The environmental and social impacts of decommissioning would reflect its operational history, the projected use of the site and the social and environmental conditions within the program area.

Inappropriate disposal of wastewater technology and electrorefining equipment, furnaces and infrastructure, may involve environmental harm. Recycling and disposal of waste will be done by a company with a license and experience in this type of decommissioning projects. The projected impacts and risks during this phase are expected to be limited in scope but may include:

3.4.1. Disturbance to traffic

The following activities associated with decommissioning may disturb traffic flow and these include road cuttings, excavations of trenches, temporary road closures/lane closures, heavy vehicle movement from trucks loaded with demolition material, and vehicle and pedestrian traffic deviations. These could result in traffic congestion and perhaps risks of accidents;

3.4.2. Air pollution

Emissions from the use of machines and dust production from infrastructure and equipment dismantling may result in a decrease in air quality impacting nearby residents, pedestrians and/or nearby activities;

3.4.3. Noise pollution

Noise generated through dismantling infrastructure and equipment could potentially impact on workers and neighbourhood residents;

3.4.4. Occupational health and safety

Possibility of injury to workers from onsite accidents;

3.4.5. Waste generation

Decommissioning of infrastructure and equipment may cause excess material generation. Equipment such as piping, valving, pumps, instrumentation and control equipment, can have residual values and can be sold or relocated off-site for reuse. Where recycling options are possible these will be implemented prior to the last option of landfilling. Other waste such as lubricants, oils and greases must be treated as hazardous waste and disposed accordingly.

Table 6: Environmental and Social Management Plan monitoring framework.

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Domestic solid waste generated by workers	<ul style="list-style-type: none"> - Provide bins for waste collection, especially at camp sites; - Dispose of domestic waste generated at the nearest designated waste disposal site. 	Contractor	Amount and type of waste generated	Weekly	MEFT
Soil contamination or pollution from hazardous chemicals or products such as petroleum products e.g. oil and fuel, brine and water treatment chemicals as	<p>Prevent spillages of any chemicals and petroleum products (i.e. oils, lubricants, petrol and diesel);</p> <ul style="list-style-type: none"> - Use drip trays, linings or concrete floors when evidence of leaks are observed on vehicles or equipment; - All fuelling, storage and chemical handling should be conducted on surfaces provided for this purpose. - No major servicing and maintenance of vehicles and/or equipment should be conducted onsite; 	Contractor	Observations and soil tests (Hydrocarbons)	Daily or weekly observations.	MEFT, MAWLR

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
well as waste water from toilets	<ul style="list-style-type: none"> - Drip trays, linings or concrete floors must be used when removing oil from machinery; - Spillage control procedures must be in place according to National Oil Spill Contingency Plan; - Waste water collection systems should be connected to these systems; - Should portable toilet facilities be necessary, adequate containment systems should be erected at the site for use during the decommissioning phase; - Waste water should properly be contained to avoid any leakages and/or spillages, and should regularly be disposed of at a suitable sewage disposal site; - Run-off from toilets due to overflows should be avoided at all cost; - Proper environmental awareness and remedial response training of operators must be conducted on a regular basis. 				

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
Noise generated from dismantling of infrastructure	<ul style="list-style-type: none"> - Check for faults when equipment is noisy; - Turn off machinery and equipment when not in use; - Ensure regular maintenance of machinery and vehicles; - Ear plugs must be used when working in noisy areas; 	Contractor	Allowable noise exposure in decibels: 85 dBA as an 8 hr Time Weighted Average)	Monthly	MLIREC
Disruption of water supply Switching / cutting off water supply.	<ul style="list-style-type: none"> - Communicate and warn stakeholders of the planned maintenance resulting in water cuts; - If decommissioning, an alternative water supply system should be commissioned before water supply is halted. 	Contractor and / or Business Unit North (BUN)	Number of announcements (water cuts)	Monthly	MAWLR
Injuries due to onsite accidents	<ul style="list-style-type: none"> - Provision of appropriate personal protective equipment such as gloves, goggles, masks and clothes; - Provision of first aid kits and equipment; - All visitors to report to the Scheme superintendent on duty and be inducted / 	Contractor	Lost time cases rate, calculated by the multiplying the number incidents that were lost time cases by 200 000	Monthly	MLIREC

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<p>guided through the site with appropriate personal protective equipment;</p> <ul style="list-style-type: none"> - First aid and safety awareness training for employees; - The employees must be properly trained on safety and health issues of the removal of old equipment. - All sites must be fenced off and fences maintained intact to prevent access to unauthorised persons or stray livestock from entering. 		and then dividing that by the employee labour hours at the company.		
Air pollution	<ul style="list-style-type: none"> - Soil or ground excavation works should be done when wind is calm; - Use water to suppress dust when breaking up concrete stands and slabs; - Dampen surfaces with water during work; - Protect stock piled soil with cover materials such as nets to protect loose soil from being blown away by the wind; 	Contractor	Dust count	Monthly	MEFT

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<ul style="list-style-type: none"> - It must be ensured that all vehicles entering the site and machinery used in construction activities are in good working order to prevent unnecessary emissions; - Trucks transporting sand should be covered by tarpaulin; 				
Road traffic flow disturbances leading to accidents.	<ul style="list-style-type: none"> - Drive during day only; - Adhere to speed limits on the national roads; - Adhere to speed limits on construction sites: 30 km per hour for construction vehicles and 40 km per hour for light and passenger vehicles.; - Receive deliveries during day; - Mark all construction vehicles as required; - Make use of legible bright colours for signage; 	Contractor	Number of motor vehicles accidents	Monthly	MSS
Excess material which may become waste	<ul style="list-style-type: none"> - Rubble should be disposed at a registered building waste material landfill; - Recyclable materials should be segregated and send to recycling enterprises; 	Contractor and Superintendent	Type and quantity of waste	Monthly	MEFT

Potential impact	Mitigation / Enhancement Measure (s)	Responsible Party	Indicator (S)	Monitoring Frequency	Monitoring Agent
	<ul style="list-style-type: none"> - Reusable equipment such as pipes, valves, motors can be relocated and auctioned to the public for reuse. 				

3.5. Rehabilitation management plan

The objectives of the rehabilitation exercise are as follows:

- Identify areas that must be rehabilitated to their natural state and areas that can be rehabilitated to a functional state;
- Provide a description of the procedures that should be followed for soil stabilisation and planting;
- Provide a framework for monitoring and reporting on the success of the rehabilitation exercise;
- Define roles and responsibilities for the implementation of this plan.

The “4 R” Approach should be employed for the rehabilitation of the disturbed environment. This includes:

- Restoration;
- Rehabilitation;
- Replacement / re-vegetation; and
- Reservation/conservation.

The success of rehabilitating the community/population within a designated area is dependent on the satisfactory establishment of the chosen plant species. To ensure that the process is optimised, the correct plant species in the correct densities and combinations should be utilised. Monitoring of the rehabilitation process is imperative to ensure that aggressive plant species and herbivores are controlled, and slopes remain stable. The general aim of a rehabilitation programme is to recreate a natural ecosystem. The rehabilitation will therefore be outlined in three (3) phases, which are required, namely:

- Take measures to stabilise the soil and remedy the soil, when required, through the monitoring and management of the soil composition, pH levels, nutrients, etc.;
- Re-vegetate disturbed areas using appropriate natural successional species;
- Monitor and manage the success of the rehabilitation by controlling aggressive indigenous plants, removing alien invasive plant species as soon as they are observed, and maintaining the re-vegetated areas to ensure the successful establishment of these re-vegetated areas.

The proposed Rehabilitation Plan for Ohangwena II Wellfield is applicable to the following areas:

- Areas near or bordering wetlands or water drainage channels that may have been disturbed but have not been developed;
- Road verges after temporary access roads construction is completed;

- Campsite areas when construction workers demobilize;
- Wetlands;
- Stormwater soak away features and landscaped areas; and
- Areas where large patches of indigenous or invasive Alien Plant species have been removed.

Rehabilitation starts at the beginning of the project i.e., when clearing for construction begins and is not applied retrospectively. The steps outlined in the sections below must therefore be applied during the construction phase.

3.5.1. Rehabilitation Phase 1: Soil Stabilisation And Remediation

Topsoil, which is removed during construction, must be utilised in the nursery and stored on site for rehabilitation and re-vegetation. Once construction is complete, the topsoil must be spread over the disturbed site and covered with mulch. Where necessary, the soil must be stabilised using suitable materials, such as netting or geotextiles. The plant material (grasses and herbs), which have been removed from the site, should be mixed into the topsoil to supplement the organic nutrient content of the soil. No further soil conditioning in terms of fertilising is deemed necessary at this stage.

3.5.2. Rehabilitation Phase 2: Re-Vegetation Procedure

The selection of species to be used for re-vegetation should be based on the ability of the species to successfully grow from the indigenous seeds, sods and/or slips which have been collected from the site. The table below outlines the steps which should be followed during out-planting for the revegetation procedure:

Table 7: Revegetation procedure.

Land preparation	<p>The target area should be prepared as follows:</p> <ul style="list-style-type: none"> - Prior to rehabilitation of the site, all remnants of foreign debris / liter should be removed from the site. Compacted soil should be ripped to a depth of more than 250 mm to allow easy root establishment. - The final prepared surface should not be smooth but furrowed to follow the natural contours of the land. - All target areas must be covered with topsoil. Topsoil should be manually spread evenly over the surface. Topsoil must be spread to the original depth and deeper where sufficient topsoil is available.
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	<ul style="list-style-type: none"> - Sites where concrete slabs are to be thrown must first have 20cm of the topsoil removed for later use in the rehabilitation programme. - All the target should be mulched. The flora stripped and stockpiled during site preparation must be spread in a single layer across the target areas as mulch. - All revegetation target areas should be treated with nitrogen-fixing bacteria which is important for legumes, Trichoderma sp. and mycorrhizal products as a natural form of soil remediation.
<i>Plant preparation</i>	<p>This should be done in consultation with the key stakeholders, Municipality of Walvis Bay and Dorob National Park Warden given that the project area does not have higher plants except grasses and lichens.</p>
<i>Grassing using sods</i>	<p>“Sodding” is defined as the laying of grass sods.</p> <ul style="list-style-type: none"> - Sodding may be done at any time of the year. - The soil should be uniformly wet to a depth of at least 150 mm before grass sods are planted. - Protect sods against drying out by keeping them moist from the time of harvesting until final placement. - Rake or spike the the area to create a loose surface to a depth of approximately 100 mm. - Lay two (2) rows of sods in a straight line or following a contour, starting at the bottom of a slope (if not flat), where possible. - Place the next two (2) rows of sods in the same direction, 5 m away, until the full area is covered with rows of sods. - Tightly push sods together, taking care not to stretch or overlap sods. - Where a good fit cannot be obtained, the intervening spaces should be filled with parts of sods or topsoil. - After planting, water sods to prevent drying out. - Irrigate as required until the grass is able to survive independently, i.e. until it is able to survive when receiving water from rainfall only.

<p>Grassing runners using</p>	<ul style="list-style-type: none"> - Plant grass runners evenly by hand or by mechanical means at a rate of at least 400 runners per hectare (i.e. at 250 mm centres). - Only use fresh runners, avoiding grass runners which have dried out. - Rake or spike the area to create a loose surface to a depth of approximately 100 mm. - The soil should be uniformly wet to a depth of at least 150 mm before planting of grass runners. - After planting, the runners must be given copious amounts of water and, when sufficiently dry, must be rolled with a light agricultural roller and re-watered. - Irrigate as required until the grass is able to survive independently, i.e. until it is able to survive when receiving water from rainfall only.
<p>Grassing using seeds</p>	<ul style="list-style-type: none"> - All seed should be collected from the site during vegetation clearing or from the neighbouring veld. - Seeding must be done during the summer months, when the germination rate is better. - Seeds must be sown at the rate of 0,5kg per 100m² (50kg per hectare). - The soil should be loose and uniformly wet to a depth of at least 30 cm, before any seeding commences. - Halve the seed and fertiliser mixture as specified and apply evenly in two (2) successive applications perpendicular to each other. - The seeded area must be raked over after seed application and well watered. - Irrigate as required until the grass is able to survive independently, i.e. until it is able to survive when receiving water from rainfall only.
<p>Maintenance</p>	<ul style="list-style-type: none"> - Cordon-off areas which are under rehabilitation as temporary no-go areas using danger tape and steel droppers. If

	<p>necessary, these areas should be fenced-off to prevent vehicular, pedestrian and livestock access.</p> <ul style="list-style-type: none"> - Re-vegetation of the ridges must be the same as the vegetation type which previously existed. - Water all transplanted, planted and grassed areas as specified. - Watering must commence and continue immediately after the seeds have germinated and growth begins
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3.5.3. Rehabilitation Phase 3: Rehabilitation Monitoring

KIN will implement and maintain a rehabilitation monitoring plan from the commencement date of rehabilitation activities, which should be recorded in the Environmental File. Monitoring of rehabilitation efforts must continue for a period of twelve (12) months after the rehabilitation procedure has been completed. Should any issues arise, which are not resolved through the implementation of the recommended measures, a suitably qualified horticulturist or botanist should be contacted to provide further rehabilitation/remedial measures. The ECO should monitor the rehabilitation process and record the progress in the regular audit reports using photographic evidence. This should include monitoring the establishment success (presence, percentage cover or absence) of plant cover and species composition per rehabilitated area. Monitoring must be undertaken biannually during the project cycle. Rehabilitation will be deemed successful once primary grass cover has been established, and there is no further requirement for frequent monitoring and management of the growth.

3.6. Monitoring and Evaluation

KIN will ensure that this Rehabilitation Plan is reviewed for efficacy, and any necessary changes thereto will be reflected in the periodic revisions of this document. A summary of all rehabilitation monitoring activities and outcomes will need to be reported on in the biannual reports.

3.7. Community and Stakeholder engagement

While this ESMP does not repeat details of the consultation and disclosure undertaken as part of the ESIA, it is acknowledged that consultation is an ongoing process and forms part of the life cycle of the project and the following measures are proposed:

- a. Conduct stakeholders meetings as and when needed, to ensure that the people in the community and stakeholders continue to be informed during construction and, where

required, during operation and decommissioning phases. The consultation meetings held during the environmental scoping phase marked the beginning of the early engagement with stakeholders.

3.7.1. Grievance redressal mechanism (GRM)

The grievance management mechanism will be implemented throughout the project phases in order to extend an opportunity to all the stakeholders, in particular, those affected by the project to air their views on the project. This will form a channel to allow two-way communication from the lowest level to the top and vice-versa and in a way allow access to information and also to cascade resolutions.

3.7.2. Objectives of GRM

To enable the employee to air their grievance:

- To clarify the nature of the grievance
- To investigate the reasons for dissatisfaction
- To obtain, where possible, a speedy resolution to the problem
- To take appropriate actions and ensure that promises are kept

3.7.3. Grievance processes and procedure

Grievances will be handled by KIN and will include the following steps and timelines:

- Provide a grievance registration form triplicate book onsite.
- Provide a grievance form to the concerned party or stakeholder to complete (personal details and details of the grievance) and submit one copy to KIN and two copies remain onsite;
- Open discussion of the issue by project team and proponent to formulate resolution(s);
- Provide for communication of the resolution to the concerned stakeholder(s); and
- Provide for an appeal process if the stakeholder is not satisfied with the proposed resolution of the complaint.

If the stakeholder is still unsatisfied, it is the responsibility of the EM to advise the aggrieved party of their right to legal recourse by the EM. Anonymous grievances can be raised and addressed. The grievance registration form is attached at the end of this report under Annexure 2. Several uptake channels to consider include:

- Walk-ins at focal points such as the Contractor's site office and KIN's office
- Emails

- Telephone calls

Once an issue is received it must be recorded and resolved within a specified time period. All issues should be reported on and followed up during monthly progress meetings.

3.7.4. Grievance handling procedures

The grievance handling procedures that will be followed is presented in Figure 1 below.

During the ESIA the grievances and / or concerns can be communicated through the following details:

Outrun Consultants cc: EIA Practitioner – Josiah T. Mukutiri

Email: outrungreeninfo@gmail.com

Phone number: +264 812 683 578

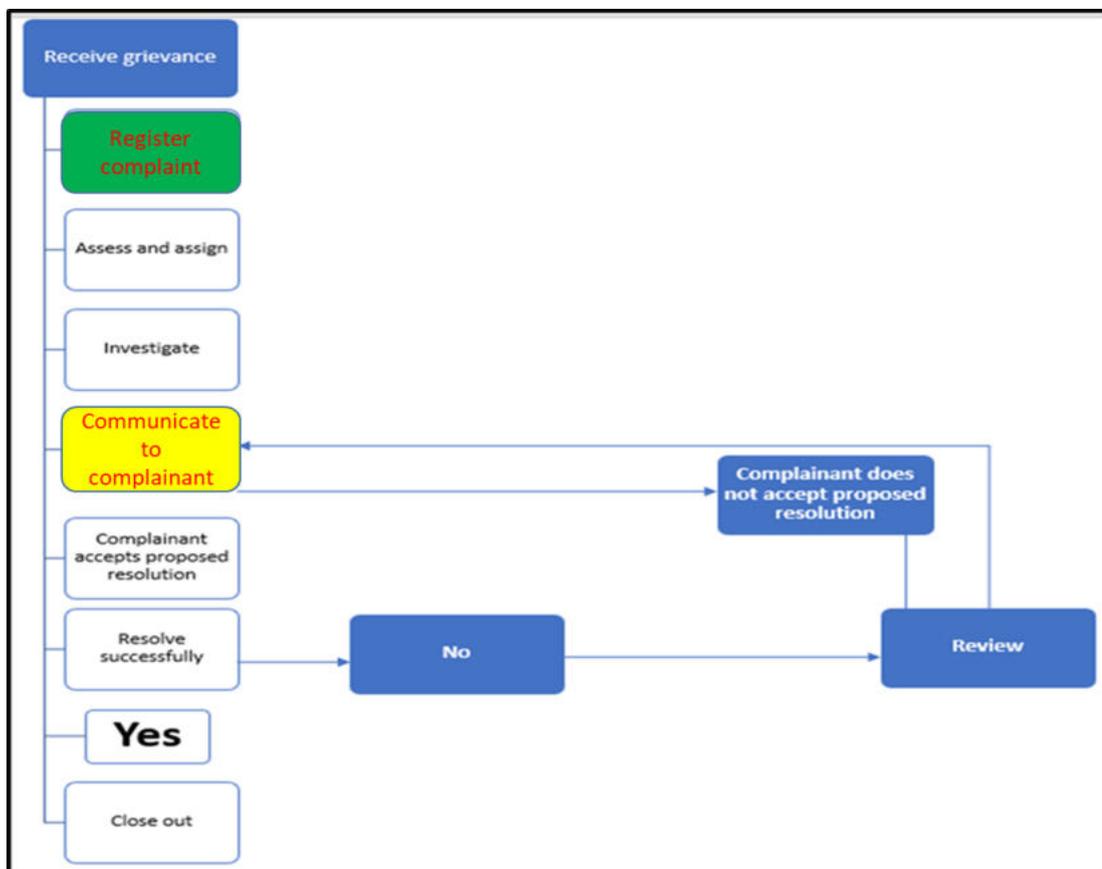


Figure 1: Grievance redressal mechanism process flow, GRM form is attached under

Annexure 1.

3.7.5. Estimated overall annual ESMP implementation budget

An estimated overall annual budget for the implementation of all environmental and social measures is provided in the table below.

Table 8: Estimated overall ESMP implementation annual budget.

Impact / activity	Estimated Cost (Nam\$)
SEA / GBV / HIV AIDS awareness training and awareness campaigns	
Development of training and awareness materials master copies	65 000.00
Facilitation	55 000.00
Road shows	30 000.00
Total annual cost	150 000.00

4. ENVIRONMENTAL MANAGEMENT ACTIONS

4.1. Accidents on Site

The Contractor shall comply with the Occupational Health and Safety Act and any other national, regional or local regulations with regard to safety on site. The Contractor shall ensure that contact details of the local medical services are available to the relevant construction personnel prior to commencing work.

4.2. Method statements

Construction Method Statements (CMS) are documents that detail exactly how to carry out work safely. The purpose of method statements is to describe the safety precautions in a high-risk work environment in order to control risks identified in the risk assessment. The CMS provides an environmental manual for use by management and construction staff involved in the works. It addresses the environmental issues that are specific to an activity and/or site. CMS's should be produced for all major activities, and will typically provide detailed descriptions of items including, but not necessarily limited to:

- Nature, timing and location of activities;
- Procedural requirements and steps;
- Management responsibilities;
- Material and equipment requirements;
- Transportation of equipment to and from site;
- Develop methods for moving equipment/material while on site;
- How and where material will be stored;
- Emergency response approaches, particularly related to spill containment and clean-up;
- Response to compliance/non-conformance with the requirements of the ESMP; and;
- Any other information deemed necessary by the EM/ECO.

The contractor shall not commence the activity until the Method Statement has been approved and shall, except in the case of emergency activities, allow a period of one week for approval of the Method Statement by the ECO and EM. Such approval shall not unreasonably be withheld.

The ECO and EM may require changes to a method statement if the proposal does not comply with the specification or if, in the reasonable opinion of the ECO and EM, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted specifications.

Approved method statements shall be readily available on the site and shall be communicated to all relevant personnel. The contractor shall carry out works in accordance with the approved method statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the contract. Based on the nature of this project and its associated environment the following Method Statement is proposed:

- Site establishment
- Solid waste management
- Waste water management
- Fire control and emergency procedure
- Hazardous substances control; and
- Site clearing

4.2.1. Site Establishment and Construction

4.2.1.1. Demarcation of the Site

The 'site' here refers to all areas required for upgrade and site alteration purposes. Prior to any such activities on site the approved site shall be demarcated for the planned works.

The site will be properly demarcated and/or temporarily fenced off as agreed with the ESO. The method of demarcation shall be determined by the contractor and agreed to by the EM or ESO prior to any work being undertaken. The contractor shall maintain the demarcation line and ensure that materials used for upgrade and alterations of the site do not blow on or move outside the site and surrounding environment, or pose a threat to people. The boundaries of the site shall be demarcated prior to any work commencing on the site. The site boundary demarcation material (fence, barricade tape, corrugated iron sheets etc) shall be removed when all construction work is completed.

The contractor shall ensure that all his plant, labour and materials remain within the boundaries of the site, unless otherwise agreed in writing with EM. Failure to do so may result in the EM requiring the contractor to fence the boundaries of the site with wire mesh at his own expense to the satisfaction of the EM and the local town council. It will be the responsibility of the contractor to decide on an appropriate system of protective measures for the site. The contractor shall be responsible to ensure that building materials such as sand is not blown away and take the necessary precautions to prevent sand from being blown by the wind.

4.2.2. Solid Waste Management

KIN (and its Contractors) shall institute a waste control and removal system for the site that is acceptable to the ESO. The Contractor shall not dispose of any waste and/or construction debris by

burning, or by burying. All waste shall be disposed offsite at an approved landfill site. Consultation with the Walvis Bay Municipality should be conducted in this regard.

Where necessary, the Contractor shall supply waste bins/skips where construction personnel are working. The bins shall be secured in such a manner as to prevent their contents blowing out. The Contractor shall ensure that all personnel immediately deposit all waste in the waste bins for removal by the Contractor. Waste shall be properly contained in a scavenger, water and wind-proof containers until disposed of at an approved landfill. Bins shall be emptied and waste removed at least once a week from the site. The bins shall not be used for any purposes other than waste collection.

Petroleum, chemical, harmful and hazardous waste throughout the site shall be stored in enclosed, bunded areas, the location of which shall be determined on site in conjunction with the ESO. The bunded areas shall be clearly marked. Such waste shall be disposed offsite at an appropriate hazardous waste disposal site.

All contaminated soils must be removed from the site and disposed of or treated at a suitable facility in Walvis Bay.

4.2.3. Waste Water Treatment

4.2.3.1. Discharge of Construction Water

Construction water in this report, refers to all water affected by construction activities. The Contractor shall construct and operate the necessary collection facilities to prevent pollution. The Contractor shall dispose of collected waste water in a manner agreed with the ESO.

The Contractor may discharge “clean” water overland and allow this water to filter into the ground. However, he shall ensure that he does not cause erosion as a result of any overland discharge. No water shall be allowed to drain onto neighboring properties or directly into any nearby surface water source. No washing of plant, equipment, concreting equipment etc. shall be permitted on site unless approved by the ESO based on a method statement which deals specifically with the issue of potential pollution of any surface water or stormwater systems.

Should it be necessary to dispose of contaminated water into the municipal sewer or storm water system, written permission is required from the relevant Walvis Bay Municipality.

The Contractor shall notify the ESO/EM immediately of any pollution incidents on Site.

4.2.3.2. Prevention of Soil, Surface-and Groundwater Pollution

The Contractor shall take all reasonable precautions to prevent the pollution of the ground and/or surface water resources on and adjacent to the site as a result of his activities. Such pollution could result from the release, accidental or otherwise, of chemicals, oils, fuels, sewage and waste products, etc. Water pollution can be reduced through the establishment of rules and regulations set by the ESO on water usage which will guide workers and visitors during operation and construction. The Contractor shall obtain oil absorbent pads, booms and spill kits, or similar designed products or materials to soak up oil, petrol and diesel. These materials shall be readily available for use wherever construction equipment is working. This should also be available at work stations where fuel and lubricants is being offloaded, stored, equipment is filled and serviced. The Contractor shall ensure that he is familiar with the correct use and disposal of any materials designed to soak up petroleum products. Environmental friendly methods will be used during construction e.g.:

- cement batching on boards,
- no wash water allowed to run off
- paint washing in containers to be removed to licensed site,
- use of environmental friendly paints with low toxicity,
- use sand filters for paint brush washing and contain cement bags,
- Waste water from paints with potential high environmental impact must be disposed of in accordance with an agreed method with the ESO.

The Contractor shall ensure that no oil, petrol, diesel, etc. is discharged onto the ground. Pumps and other machinery requiring oil, diesel, etc. that are to remain in one position for longer than two days shall be placed on drip trays or other similar suitable containment structures. These containment structures shall be watertight and shall be emptied regularly and the contaminated water disposed off-site at a facility capable of handling such waste liquid. Drip trays shall be cleaned before any possible rain events that may result in the drip trays overflowing, and before long week-ends and holidays.

The Contractor shall remove all oil, petrol, diesel-soaked soil immediately and shall dispose of it as hazardous waste.

4.2.4. Movement of Construction Personnel and Equipment

The contractor shall ensure that all construction personnel and equipment remain within the demarcated construction site at all times. Where construction personnel and/or equipment wish to move outside the boundaries of the site other than normal access to the road for loading and access purposes, the contractor shall obtain written permission from the EM and/or ESO.

4.2.5. Location of Construction Camps

Construction camps include workshops, temporary stockpile sites, temporary fuel installations, other storage and work areas, required by the contractor, sub-contractors and suppliers. All construction camps (if any) will be positioned in demarcated areas approved by the ESO where there is minimum or no trees at all.

4.2.6. Ablution Facilities

The contractor shall provide the necessary temporary ablution facilities (where required) for all site personnel. The setting of toilets shall be agreed upon with the EM. The contractor shall supply an adequate amount of sanitation and hygiene reagents to maintain the approved number of toilets throughout the site where construction personnel will be operating. As a standard:

Table 9: Number of toilets and urinaries and the respective allowable number of people it can serve.

Number of toilets	Allowable number of people served
One toilet and one urinary	1 – 15 people
Two toilets and one urinary	16 – 30 people
Two toilets and two urinary	31 – 45 people
Three toilets and two urinaries	46 – 60 people

The toilets shall be secured to prevent them from discharging liquid waste or raw sewer but should be drained by a honey sucker before the fill up. They should be fitted with doors in order to ensure privacy. Above all, they be cleaned and serviced regularly.

The contractor shall ensure that any chemicals and/or waste from the toilets is not spilled on the ground at any time. Should there be spillage of raw liquid waste, the EM shall require the contractor to place the toilets on solid base or containment structures with sumps. The contractor will be required to provide a suitable and approved and to remove accumulations of raw the raw liquid waste from the site and dispose of it at an appropriate waste disposal site or sewage plant base at his own expense.

Open defecation other than in the toilets shall not be permitted. The contractor shall be responsible for cleaning up any waste deposited by personnel.

4.2.7. Eating Areas

The contractor shall, in agreement with the EM, designate specific areas for eating and shall provide the following as a minimum:

- Walls with smooth, rust proof, non-toxic and non-absorbent & washable material;
- No open joints or seams;
- No chips, splits or cracks;
- All areas where food is prepared and stored must be clean and capable of being kept as such;
- Adequate refuse bins at all places. The refuse bins shall be cleaned regularly.

4.2.8. Provision of Water

The contractor shall be responsible for providing construction, drinking and washing water for his staff. Construction water shall be obtained from locations as agreed with the ESO and EM. As a WHO standard, the contractors should provide between 50 to 100 liters of water per person per day to meet daily basic needs including drinking.

4.2.9. Material Handling and Storage

4.2.9.1. Re-fuelling of Equipment

Where reasonably practical, plant shall be re-fuelled at a designated re-fuelling area or at the workshop as applicable. If it is not reasonably practical then the surface under the temporary re-fuelling area shall be protected against pollution with proper spill containment materials. The contractor shall ensure that there is always a supply of containment materials and absorbent material readily available to contain/absorb/breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such material shall be able to handle a minimum of 200 liters of hydrocarbon liquid spill.

4.2.9.2. Chemical, Harmful and Hazardous Materials

All project personnel and contractors shall comply with all relevant national and local legislation with regard to storage, transport, use and disposal of chemical, harmful and hazardous substances and materials. The contractor shall obtain the advice of the manufacturer with regard to the safe handling of such substances and materials.

The contractor shall provide the ESO and EM with a list of all chemical, harmful and hazardous substances and materials on site, together with storage, handling and disposal procedures for these materials.

The contractor shall ensure that information on all chemical, harmful and hazardous substances are available to all personnel on site. The contractor shall furthermore be responsible for the training and education of all personnel on site who will be handling the material about its proper use, handling and disposal. A dangerous material datasheet should be available on site.

4.2.9.3. Cement and Concrete Preparation and Handling

The contractor is advised that cement and concrete are regarded as materials that are potentially damaging to the natural environment on account of the very high pH of the material, and the chemicals contained therein. The contractor shall ensure that all operations that involve the use of cement and concrete are carefully controlled. Concrete mixing shall only take place in agreed specific areas on site.

Water and slurry from concrete mixing operations shall be contained to prevent pollution of the ground surrounding the mixing points. Old cement bags shall be placed in wind and spill proof containers as soon as they are empty. The contractor shall not allow closed, open or empty bags to lie around the site.

Where exposed aggregate finishes are specified the contractor shall collect all cement-laden water and store it in conservancy tanks for disposal off site at an approved disposal site.

All visible remains of excess concrete shall be physically removed immediately and disposed of as waste. Washing the visible signs into the ground is not acceptable. All excess aggregate shall also be removed.

All excess concrete shall be removed from site on completion of concrete works and disposed of. Washing of the excess into the ground is not allowed. No cement or concrete laden water will be permitted to be drained directly into any surface water source.

Housekeeping requirements for concrete mixers:

- Empty the mixer drum of all contents;
- While still wet, wash out with clean water;
- Allow the mixer to revolve to wash the interior and carefully clean off the exterior;
- Disconnect or switch off power source;

- Clean-up the work area;
- Return the mixer to a secure storage area.

4.2.10. Lighting Management

The Contractor shall ensure that any lighting installed on the site for his activities does not interfere with road traffic, or cause an avoidable nuisance to the surrounding properties, or other users of the area. Lighting installed shall, as far as practically possible, be energy efficient. Lighting utilized on site shall be turned off when not in use.

4.3. Emergency Procedures

The Contractor shall ensure that there is an emergency procedure on site before commencing any operations that may cause damage to the environment. The Contractor shall also ensure that site staffs are familiar with all emergency procedures to be followed. The contact details of emergency services in Annexure 2, should be printed and displayed on-site.

4.3.1. Fire

The Contractor shall take all the necessary precautions to ensure that fires are not started as a result of activities on site. The Contractor shall report all fires immediately to the relevant authorities and EM. In the event of a fire the following procedure action steps should be taken:

- Stop work immediately;
- Alert all other individuals in the work place by activating alarm if available;
- Shouting clearly and audible enough for the message to be heard by others;
- Use a fire extinguisher if manageable;
- Use nearest escape route if in a confined area;
- Walk at normal to the assembly point;
- Assist physically impaired individuals if any;
- Call the fire emergency number (Walvis Bay Fire Brigade - +264 81 922 / 0811220888 / 0811435875 / 0811220833).

The Contractor shall be liable for any expenses incurred by any organizations called to assist with fighting fires and for any costs relating to the rehabilitation of burnt areas and/or property, and/or persons should the fire be caused by activities on the site.

4.3.2. Petroleum, Chemical, Harmful and Hazardous Materials

The Contractor should be familiar with the requirements for the safe storage, handling and disposal of petroleum, chemical, harmful and hazardous materials. In the event of accidental spillage on site the following procedure should be implemented:

- Alert people or persons nearby the spill area;
- Stop and control the spill at the source first by using booms and spill berms and / or lateratively;
- Contain the spill/leakage with appropriate containers i.e., drip trays, sumps, etc., and in an approved manner to the satisfaction of the RE.
- Clean the affected area with water or an approved cleaning product (depending the spilled product: use water, or soap & water mixture if it is a non reactive chemical);
- If it is oil, use use spill kits, sorbent pads and granular oil sorbents to clean up oil;.
- The contaminated soil should be removed and disposed of at the Walvis Bay Town Council Waste Disposal Site.
- Repair vehicles or machinery with leakage.
- If it cannot be repaired, such vehicle or machinery should not be used until it is safe to do so;
- Report the incident to the RE and record it in the logbook

4.3.3. Adverse Weather Conditions

The Contractor should avoid waterflow channels and other low lying areas when siting waste receptacles to avoid runoff or flood water washing away waste although it rarely rains in the project area. The Contractor shall also protect waste receptacles from rainfall and runoff water by using a combination of roof and bund walls. Stockpiles of the fine material such as sand, topsoil material, cement, etc., must also be protected from rain, runoff and wind. The Contractor shall ensure that a procedure is established for dealing with potentially polluted rainwater.

In case of adverse weather conditions, the ESO or EM will determine if the work can continue without endangering the health and safety of the field workers. The ESO will monitor the weather during morning and afternoon hours and will document it in the field logbook.

Some of the items to be considered prior to determining the continuance of work are:

- Potential for heat/cold stress and heat/cold-related injuries,
- Dangerous weather-related working conditions (high winds, dust storms),
- Limited visibility.

5. CONCLUSION AND WAY FORWARD

5.1. Conclusion

The planned smelter can result in direct and indirect environmental and social impacts, including soil, water, air and noise pollution, waste generation and disposal, and occupational health and safety of employees. These impacts are expected to be site-specific and can be minimized by applying appropriate management and mitigation measures. The Environmental and Social Management Plan should be used as an on-site tool during all phases of the proposed development, preconstruction, construction, and operation and decommissioning. KIN and the Contractor has the overall responsibility for ESMP implementation, to continuously monitor and audit all activities during the construction and operational activities of the project and to ensure that the ESMP is fully implemented and complied with in accordance with national regulations and IFC safeguards requirements. Parties responsible for non-conformances of the ESMP will be held responsible for any rehabilitation that may need to be undertaken.

5.2. Way Forward

The draft report will be shared with the Client for approval before final submission to MEFT. This will pave the way for the application of the ECC.

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ANNEXURE 1: GRIEVANCE REDRESSAL FORM

GRIEVANCE REGISTRATION FORM

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT: THE DESIGN, CONSTRUCTION AND OPERATION OF A SMELTER PLANT ON FARM 38 IN WALVIS BAY - ERONGO REGION.

KINDLY COMPLETE THIS FORM IN DETAIL AND RETURN TO ANY OF THE FOLLOWING INSTITUTIONS EASILY ACCESSIBLE:

Karam Industries Namibia (Pty) Ltd, Contractor (Construction Foreman onsite / Site Foreman).

Date.....Name & Surname.....

Postal / Residential Address:.....Email

Town..... Phone Number

Subject of grievance

.....

Description of grievance

.....

.....

Date of receipt / acknowledge:.....Complainant reference:.....

Expected time of redressal:.....

If time not met:

Reason for delay of redressal.....

Action to be taken.....

Updated time of redressal.....

Final redressal.....

Action taken.....

If Complainant is not satisfied advise on pathway to pursue the matter

<p>SIGNATURE (s): Complainant:.....Grievance Committee Chairperson..... Date:.....Date:.....</p>

ANNEXURE 2: CONTACT DETAILS FOR EMERGENCY SERVICES

Emergency	Response Plan	Contact details
Fire outbreaks	Walvis Bay Fire Brigade	+264 81 922 / 081 1220888 /0811435875
Chemical exposure	State Hospital	+264 64 216 300
	Ambulance E Medrescue	+264 81 129 6280 / 085 9555 081 924
Hazardous Spillages (Chemical Spillages)	Walvis Bay Municipality	0811 295 017
Injuries, loss of life, theft or robbery	NAMPOL - Eehnana	+264 65 264 247
	Ambulance	+264 811 473 387
Water	Walvis Bay Municipality	+264 811288328
Sewerage		+264 811 288 324