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ENVIRONMENTAL MANAGEMENT PLAN

PROPOSED CONSTRUCTION OF A 66 KV POWERLINE AND ASSOCIATED INFRASTRUCTURE



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DEFINITIONS AND ABBREVIATIONS

BFD	Bird Flight Diverters
ECC	Environmental Compliance Consultancy
ESMP	Environmental Management Plan
MET	Ministry of Environment and Tourism
MSDS	Material Safety Data Sheet
PPE	Personnel Protective Equipment
PVC	Polyvinyl
LDPE	Low-Density Polyethylene pipe

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The proposed project is a construction of a 66 kV powerline and associated infrastructure through an offtake from the existing NamPower substation for AfriTin Mining Ltd, Erongo Region, Namibia. The proposed project aims to supply power to the tin mine in Uis, which currently has no constant power supply to its trial processing plant, therefore necessitating network strengthening, which involves the establishment of a powerline and associated infrastructure to ensure continuous power quality and reliability, also when demand will continue to increase.

The proposed project location is shown in Figure 1.

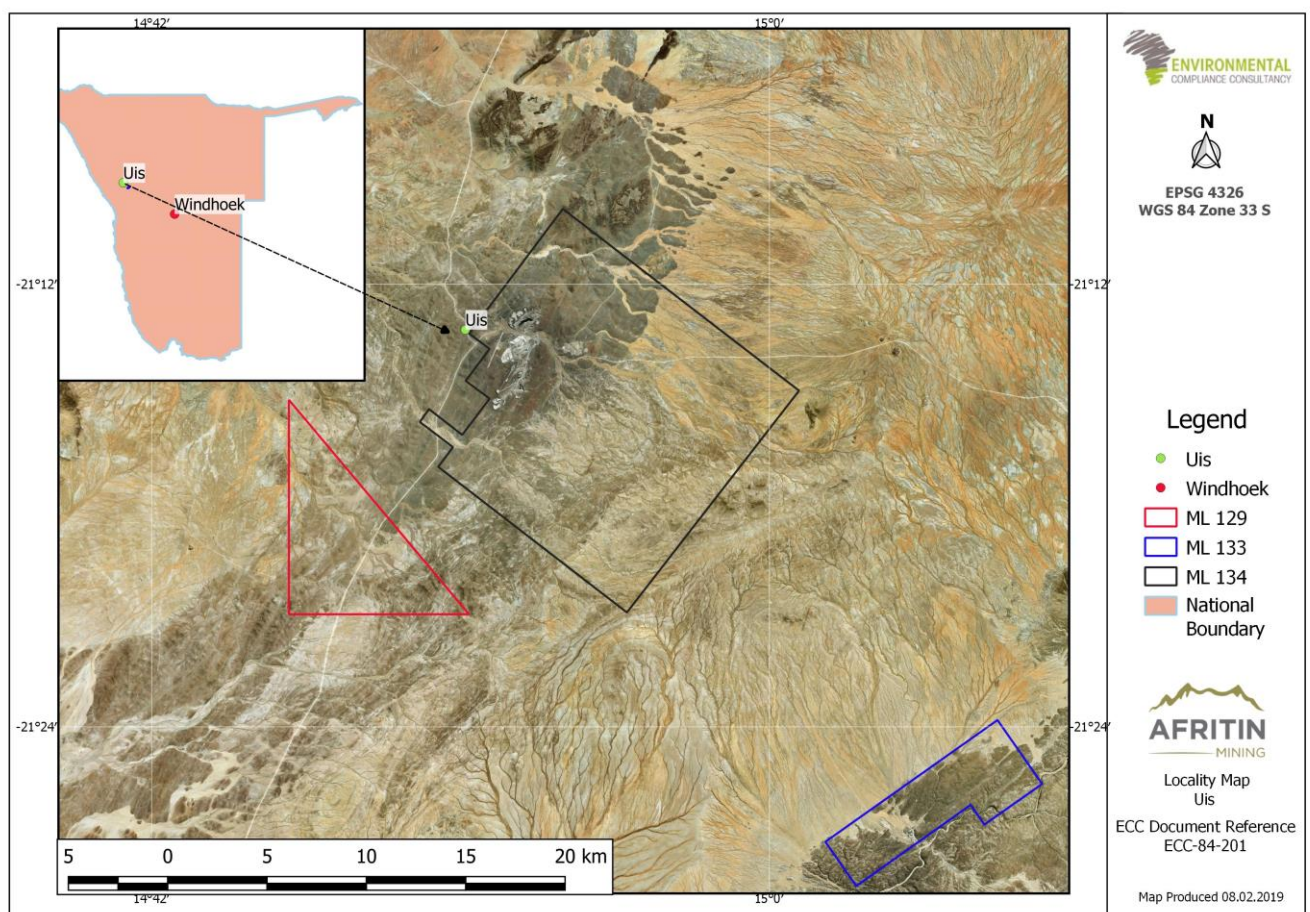


FIGURE 1 – PROPOSED PROJECT LOCATION

1.2 ENVIRONMENTAL REGULATORY REQUIREMENTS

The proposed project has been identified to trigger listed activities as set out in the Environmental Management Act, 2007 (Act No. 7 of 2007) and the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2011) gazetted in terms of the Environmental Management Act, (EMA), 2007 (Act No. 7 of 2007). As a listed activity an application for an Environmental Clearance Certificate is required, which includes an Environmental Scoping Report and an Environmental Management Plan (EMP). This report comprises the EMP.

1.3 PURPOSE AND SCOPE OF THIS REPORT

Environmental Compliance Consultancy (ECC) has been engaged by Afritin Mining (Namibia) (PTY) Ltd (herein referred to as Afritin or the proponent) on behalf of NamPower to compile an EMP in terms of the Environmental Management Act, of 2007.

The purpose of this EMP is to provide a management framework for the planning and implementation of the construction and operation activities for the proposed project so that the potential environmental impacts are mitigated, prevented and minimised as far as reasonably practicable, and that statutory requirements and other legal obligations are fulfilled.

This EMP also presents protocols and procedures, and roles and responsibilities to ensure the management arrangements are appropriately and effectively implemented. This EMP forms an appendix to the Environmental Scoping Report and has been based on the findings of the assessment; therefore, the Environmental Scoping Report should be referred to for further information on the proposed project, assessment methodology, applicable legislation, and assessment findings.

- **Construction Phase:** The construction phase includes activities such as:
 - o Vegetation removal (as and when required)
 - o Connection to the existing substation
 - o Installation of prefabricated standard substation components
 - o Minor ground preparation (trenches and levelling) of the site, for the installation of wooden poles
 - o Construction of bunds and oil holding dams (for the emergency holding of transformer oil in the event of a spill) and safety walls
 - o Concrete casting
 - o Redirecting the existing lines to enter and leave the new metering station, and
 - o Construction of parameter fencing and lighting.
- **Operational phase:** Once operational, monthly inspection is usually scheduled at the powerline and the associated infrastructure. The only exception is periodic inspections and vegetation management. Inspections will be frequently conducted by the site manager, typically on foot due to the small area of the powerline. Monthly inspections at the substations are usually scheduled. Yearly maintenance takes place during working hours and can last from one day to two weeks. Rarely is maintenance work done at night, outside working hours.

1.4 MANAGEMENT OF THIS EMP

The proponent (NamPower) will hold the Environmental Clearance Certificate for the proposed project and shall be responsible for the implementation and management of this EMP. Prior to the construction works commencing, this EMP shall be reviewed, amended as required and approved ready for implementation. The implementation and management of this EMP and thus the monitoring of compliance shall be undertaken through daily duties and activities and monthly inspections.

This EMP shall be circulated to all contractors and shall be made available on ECC's website.

1.5 LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS OF THIS EMP

This EMP does not include measures for compliance with statutory occupational health and safety requirements.

Where there is any conflict between the provisions of this EMP and any contractor's obligations under their respective contracts, including statutory requirements (such as licences, project approval conditions, permits, standards, guidelines, and relevant laws), the contract and statutory requirements are to take precedence.

The information contained in this EMP has been based on the project description as provided in the Environmental Scoping Report. Where the design or construction methods alter, this EMP may require updating and potential further assessment to be undertaken.

1.6 ENVIRONMENTAL CONSULTANCY

Environmental Compliance Consultancy (ECC), a Namibian consultancy with registration number 2013/11401, has prepared this ESMP on behalf of the proponent. ECC operates exclusively in the environmental, social, health and safety fields for clients across Southern Africa, in the public and private sector. ECC is independent of the proponent and has no vested or financial interest in the proposed project.

1.7 STRUCTURE OF THIS EMP

The following structure has been adopted for this Report:

- Chapter 1 – Introduction
- Chapter 2 – Environmental Management Framework
- Chapter 3 – Communications and Training
- Chapter 4 – Reporting, Compliance, and Enforcement
- Chapter 5 – Environmental Management
- Chapter 6 – Implementation of the EMP

2 ENVIRONMENTAL MANAGEMENT FRAMEWORK

2.1 NAMPOWER (PTY) LTD

The proponent (NamPower (PTY) Ltd (herein referred to as NamPower or the proponent) shall provide a project team to oversee and undertake the preparation and construction works, which shall be composed of the proponent's personnel and contractors. A nominated role shall be identified to ensure maintenance of the proposed project is undertaken through the operations phase and prior to the project moving into the decommissioning / rehabilitation phase.

2.2 ORGANISATIONAL STRUCTURE, ROLES, AND RESPONSIBILITIES

The proponent shall be responsible for:

- Ensuring all members of the project team, including contractors, comply with the procedures set out in this EMP
- Ensuring that all persons are provided with sufficient training, supervision, and instruction to fulfil this requirement, and
- Ensuring that any persons allocated specific environmental responsibilities are notified of their appointment and confirm that their responsibilities are clearly understood.

Contractors shall be responsible for ensuring and demonstrating that all personnel employed by them are compliant with this EMP, and meet the responsibilities listed above.

The key personnel and environmental responsibilities of each role are presented in Table 1.

TABLE 1 – KEY ROLES AND RESPONSIBILITIES

ROLE	RESPONSIBILITY & DUTIES
Proponent	<ul style="list-style-type: none"> - Overall responsibility for the implementation and management of this EMP. - Ensure environmental policy is communicated to all personnel throughout the proposed project. - Responsible for providing the required resources (including financial and technical) to complete the required tasks.
Project Manager	<p>Responsible for ensuring compliance with this EMP including overseeing the construction works, day to day activities during operations, and routine and non-routine maintenance works during operations, as well as the decommissioning of the development.</p> <ul style="list-style-type: none"> - Ensuring all personnel are aware of the commitments made in this EMP and any other relevant regulatory requirements applicable to the project - Responsible for the management, maintenance and revisions of this EMP - Ensuring adequate resources are made available for implementation of this EMP - Maintain the community issues and concern register, and keep records of complaints; - Ensuring all employees and contractors participate in a site induction process prior to commencing work on the project; - Maintain up to date register of employees who have completed the site induction - Provisioning of environmental awareness/management training and inductions for all employees

ROLE	RESPONSIBILITY & DUTIES
	<ul style="list-style-type: none"> - Ensuring that best environmental practice is undertaken throughout the duration of the project, and - Report any non-compliance or accidents to the regulatory authority.
Site manager/contractors	<p>Appointed to manage the performance of the construction and operational maintenance activities. Responsible for the implementation of this EMP and ensuring all activities are compliant with this EMP, as well as:</p> <ul style="list-style-type: none"> - Managing the preparation and implementation of method statements for certain activities, and ensuring the Environment Manager reviews all method statements and the relevant environmental protocols are incorporated - Reporting any non-compliance or accidents to the project manager and environment manager; - Ensuring that all staff have attended a site induction session before the commencement of any work on site and that they are adequately informed of the requirements of this management plan - Ensuring that all contract workers, sub-contractors and visitors to the site are conversant with the requirements of this EMP, relevant to their roles on site and adhere to this EMP at all times, and - Receiving, responding to and recording complaints.
Employees/contractor employees	<p>Responsible for being compliant with this EMP throughout the construction work, in addition to:</p> <ul style="list-style-type: none"> - Ensuring they have undertaken a site induction and are conversant with the requirements of this EMP, - Ensuring appropriate briefings for certain activities have been provided and fully understood - Adherence to this EMP at all times, and - Reporting of any operations and conditions that deviate from the EMP or any non-compliant issues or accidents to the Environment Manager and Site Manager/Contractor.

2.3 CONTRACTORS

Any contractors hired during the construction works or maintenance activities during the operational phase shall be compliant with this EMP, and shall be responsible for the following:

- Undertaking activities in accordance with this EMP as well as relevant policies, procedures, management plans, statutory requirements, and contract requirements
- Implementing appropriate environmental and safety management measures
- Reporting of environmental issues, including actual or potential environmental incidents and hazards, to the site manager and/or project manager, and
- Ensuring appropriate corrective or remedial action is taken to address all environmental hazards and incidents reported by employees and subcontractors.

2.4 EMPLOYMENT

The proponent and all contractors shall comply with the requirements of the Republic of Namibia Regulations for Labour, Health and Safety, and any amendments to these regulations. The following shall be complied with:

- In liaison with local government and community authorities, the proponent shall ensure that local people have access to information about job opportunities and are considered first for construction and maintenance contract employment positions
- The number of job opportunities shall be made known together with the associated skills and qualifications
- The maximum length of time the job is likely to last for shall be clearly indicated
- Foreign workers with no proof of permanent legal residence shall not be hired, and
- Every effort shall be made to recruit from the pool of unemployed workers living in the local area.

3 COMMUNICATIONS AND TRAINING

3.1 COMMUNICATIONS

During construction, the project manager and site manager shall communicate site-wide environmental issues to the project team through the following means (as and when required):

- Site induction
- Audits and site inspections
- Toolbox talks, including instruction on incident response procedures, and
- Briefings on key project-specific environmental issues

This EMP shall be distributed to the construction project team, including contractors, to ensure that the environmental requirements are communicated effectively. Key activities and environmentally sensitive operations shall also be briefed to workers and contractors.

During the construction phase, regular communications between the management team shall include discussing any complaints received and actions to resolve them; any inspections, audits or non-conformance with this EMP and any objectives or target achievements.

3.2 COMPLAINTS HANDLING AND RECORDING

Any complaints received verbally or in writing by any personnel on the project site shall be recorded by the receiver, including the name and contact details of the complainant, date and time of the complaint, and the nature of the complaint. The information shall be given to the project manager who is overall responsible for the management of complaints and will provide a written response to the complainant. The project manager shall inform the site manager of issues, concerns or complaints.

The project manager shall maintain a complaints register that will detail the name and contact details of the complainant, date and time of the complaint, nature of the complaint, action taken to resolve issues, and date of complaint handover. The project manager shall be responsible for nominating the correct personnel to coordinate and resolve the issue.

The workforce shall be informed about the complaints register, its location and the person responsible, in order to refer local residents or the general public who wish to lodge a complaint. The complainant shall be informed in writing of the results of the investigation and action to be taken to rectify or address the matter(s). Where no action is taken, the reasons are to be recorded in the register.

The complaints register shall be kept for the duration of the project and will be available for government or public review upon request.

3.3 TRAINING AND AWARENESS

All personnel working on the project shall be competent to perform tasks that have the potential to cause an environmental impact. Competence is defined in terms of appropriate education, training, and experience.

All personnel involved in the project shall be inducted to the site with specific environmental and social awareness training, and health and safety issues. The environment and social awareness training shall ensure that personnel is familiar with the principles of this EMP, the environment and social aspects and impacts associated with their activities, the procedures in place to control these impacts and the consequences of departure from these procedures.

The project manager shall ensure a register of completed training is maintained.

The site induction should include, but not limited to the following:

- A general site-specific induction that outlines:
 - o What is meant by “environment” and “social”
 - o Why the environment needs to be protected and conserved
 - o How construction activities can impact on the environment
 - o What can be done to mitigate against such impacts
- The inductee’s role and responsibilities with respect to implementing the EMP
- The site environmental rules
- Details of how to deal with, and who to contact if environmental problems should occur;
- Basic vegetation clearing principals and species ID sheets
- The potential consequences of non-compliance with this EMP and relevant statutory requirements, and
- The role of responsible people for the project.

4 REPORTING, COMPLIANCE, AND ENFORCEMENT

4.1 ENVIRONMENTAL PERFORMANCE MANAGEMENT

4.1.1 SUMMARY OF ENVIRONMENTAL RISKS AND MITIGATION MEASURES

Chapter 5 provides a register of environmental risks and issues, which identifies mitigation and monitoring measures, as well as roles responsible. This register will be subject to regular review by the project manager and updated when necessary.

The project manager and site manager will use this register to undertake monthly inspections (see next section) to ensure the project is compliant with this EMP.

4.1.2 CONSTRUCTION: ENVIRONMENTAL INSPECTIONS & COMPLIANCE MONITORING

4.1.2.1 DAILY COMPLIANCE MONITORING

A copy of this EMP shall be on site throughout the construction works and shall be available upon request. It is the responsibility of the project manager and site manager to ensure this EMP is complied with through their daily roles. Daily inspections will be undertaken by the site manager (or nominated site supervisor). Any environmental problems or risks identified shall be notified to the project manager and actioned as soon as is reasonably practicable.

4.1.2.2 MONTHLY COMPLIANCE MONITORING

Monthly inspections shall be undertaken by the site manager to check that the standards and procedures set out in this EMP are being complied with and pollution control measures are in place and working correctly. Any non-conformance shall be recorded, including the following details: a brief description of non-conformance; the reason for the non-conformance; the responsible party; the result (consequence); and the corrective action is taken and any necessary follow up measures required.

4.1.3 OPERATIONS: ENVIRONMENTAL INSPECTIONS AND, COMPLIANCE MONITORING

Annual inspections of the associated infrastructure will be managed and undertaken by the project manager. All infrastructure will be inspected to ensure that the equipment is operating as per specification, no damage has been caused, and no leaks or spills have occurred. Any non-conformance shall be recorded, including the following details: a brief description of non-conformance; the reason for the non-conformance; the responsible party; the result (consequence); and the corrective action is taken and any necessary follow up measures required.

4.2 REPORTING

There shall be a requirement to ensure that any incident or non-compliance, including any environmental issue, failure of equipment or accident, is reported to the project manager.

4.3 NON-COMPLIANCE

4.3.1 NON-COMPLIANCE EVENT

Where it has been identified that works are not compliant with this EMP, the project manager shall employ corrective actions so that the works return to being compliant as soon as possible. In instances where the requirements of the EMP are not upheld, a non-conformance and corrective action notice shall be produced. The notice shall be generated during the inspections and the project manager shall be responsible for ensuring a corrective action plan is established and implemented to address the identified shortcoming.

A non-compliance event/situation, for example, is considered if:

- There is evidence of the contravention of this EMP and associated indicators or objectives
- The site manager and/or contractor have failed to comply with corrective or other instructions issued by the project manager or qualified authority, or
- The site manager and/or contractor fail to respond to complaints from the public

Works shall be stopped in the event of a non-compliance until corrective action(s) has been completed.

4.3.2 DISCIPLINARY ACTION

This EMP is a legally binding document and non-compliance with it shall result in disciplinary action being taken against the perpetrator/s. Such action may take the form of (but is not limited to):

- Fines / penalties
- Legal action
- Monetary penalties imposed by the proponent on the contractor
- Withdrawal of license/s, and
- Suspension of work.

The disciplinary action shall be determined according to the nature and extent of the transgression/non-compliance, and penalties are to be weighed against the severity of the incident.

5 ENVIRONMENTAL AND SOCIAL MANAGEMENT

5.1 OBJECTIVES AND TARGETS

Environmental objectives for the project are as follows:

- Zero pollution incidents
- Minimise waste being sent to the landfill
- minimal interruption to the community, and
- Protect local flora and fauna.

5.2 REGISTER OF ENVIRONMENTAL RISKS AND ISSUES

An environmental review of the proposed project has been completed to identify all the commitments and agreements made within the environmental scoping report. From this, a schedule of environmental commitments and risks has been produced (Tables 2 and 3), which details deliverables including measures identified for the prevention of damage to the environment during the construction and operational phase.

TABLE 2 – CONSTRUCTION: ENVIRONMENTAL RISKS AND ISSUES, AND MITIGATION AND MONITORING MEASURES

ASPECT	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
Having screened all potential impacts and having assessed those applicable to the criteria, a few points relevant to the impacts and corresponding mitigation measures are summarized below. Given that the proposed site is located within an already disturbed footprint, there is a low potential of additional disturbance.				
Fauna and fauna	<ul style="list-style-type: none"> - Loss of habitat, or habitat destruction and clearing, or damage to vegetation - Destruction of vertebrate fauna 	<ul style="list-style-type: none"> - Use existing tracks where possible - Minimise the disturbance and removal of topsoil - Identify and mark important tree species and clearly highlight to construction workers so that they are avoided - Select site location to determine the shortest route in order to minimize earthworks and vegetation clearing - Apply speed restrictions (< 30 km/h), and - Avoid off-road driving. 	Daily observations	<ul style="list-style-type: none"> - Project manager - Site manager, and - Employees
Avifauna	<ul style="list-style-type: none"> - Disturbance due to construction - Increase bird collision due to the powerline and associated infrastructure 	<p>The powerline and associated infrastructure have no major impacts despite the likely occurrences of some re-listed bird species including the Ludwig's Bustard and Kori Bustard, and various eagles. However, should any concerns arise during the powerline and associated infrastructure monitoring in the future the following should apply:</p> <ul style="list-style-type: none"> - Using a combination of double loop Bird Flight Diverters (BFDs) and "flight diverter flags", these are fitted to the top conductor at 5-10 m intervals (alternating black and white) - Mark and monitor sections to help provide more scientific confirmation of collision data (rates, sites and associated weather conditions) and thereby increase the future predictability of such occurrences as a basis for marking - Future power lines should include bird avoidance measures (flappers/coils/anti perching devices, etc.) - Further mitigation measures to prevent electrocutions should also be incorporated: Earthing on wooden power line poles should stop 300 mm below the lowest phase to provide an "air space safety 	Daily observations	<ul style="list-style-type: none"> - Project manager - Site manager, and - Employees

ASPECT	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		<p>gap", in order to reduce electrocution risk (a procedure known as "gapping")</p> <ul style="list-style-type: none"> - Transformer/switchgear structures should be designed in such a way that they are not as attractive as bird perches/nesting sites. Selected live components should be insulated (e.g. using PVC piping or low-density polyethylene pipe (LDPE). For more advice, NamPower can be contacted - On strain structures where "jumper" wires are used in a horizontal configuration, the two outer jumpers should be suspended below the cross arm and the third/centre jumper should be insulated, or offset; or all jumpers insulated. Should bird electrocutions occur, safe alternative perching areas/platforms may be provided - Should collisions still take place after mitigation, other methods should be considered. More stringent and regular monitoring is recommended, and - Mitigation should take place during the construction stage, rather than the operational stage; regular monitoring would be important during the operational stage. 		
Soil	<ul style="list-style-type: none"> - Soil pollution - Soil erosion - Loss of topsoil 	<ul style="list-style-type: none"> - A 'good housekeeping' policy shall be adopted across the construction and maintenance working areas - Under no circumstances should oil or other substances be disposed of on-site - Ensure minimal vegetation clearance and exposure of soils through selecting the shortest route for access track construction and incorporating design elements which reduce the need for vegetation clearance - In areas where the risk of erosion is evident, measures may be necessary to prevent erosion, and 	Daily visual inspection of operations	Project manager

ASPECT	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		<ul style="list-style-type: none"> Minimise the disturbance and removal of topsoil. 		
Watercourses	<ul style="list-style-type: none"> Pollution of ground/surface water Stormwater runoff 	<ul style="list-style-type: none"> Hazardous substances should be stored away from any water bodies Spilled oil should be treated as hazardous waste Drip trays for trucks to avoid oil leakages and to be used when refueling Raw sewage disposal on or near the site is not allowed Protect the area from erosion due to stormwater drainage Collect and use stormwater whenever possible Spill containment apparatus must be kept on site to minimise the scale of impact should there be an accident. 	Daily inspection of operations	<ul style="list-style-type: none"> Project manager, and Site manager
Waste management	<ul style="list-style-type: none"> Visual impacts Waste pollution 	<ul style="list-style-type: none"> Training and Toolbox Talks Good housekeeping across the site All working areas shall apply good house-keeping Marked bins should be provided across the site, and Littering by the construction workers shall not be allowed 	<ul style="list-style-type: none"> Daily observations Weekly checks 	<ul style="list-style-type: none"> Project Manager Employees
Noise	<ul style="list-style-type: none"> Disturbance to wildlife A nuisance to nearby communities 	<ul style="list-style-type: none"> Noise should be minimised as much as possible during construction works. The following measures should apply: Limit working hours to 7 am to 6 pm weekdays and 7 am until 1 pm on Saturday Regular maintenance of equipment All equipment to be shut down or throttled back between periods of use Noise suppression measures must be applied to construction and equipment where practical, and Hearing protection should be provided to employees operating equipment which produces excessive noise. 	Daily observations	<ul style="list-style-type: none"> Project manager Employees
Health and Safety	Accidents	<ul style="list-style-type: none"> Any accidents or incidents should immediately be reported to the 	Daily inspections	Project manager

ASPECT	POTENTIAL IMPACTS	MANAGEMENT/MITIGATION MEASURES	MONITORING REQUIREMENTS	RESPONSIBILITY
		project manager. All incidents should be recorded in an incident register.		

5.3 ENVIRONMENTAL EMERGENCY AND RESPONSE CONTACTS

NamPower will be the primary contact person in the event of an environmental emergency. NamPower has the authority and independence to request reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse environmental impact be anticipated.

In the event of an incident that requires the emergency services, the services that should be contacted are listed in TABLE 3.

TABLE 3 - EMERGENCY SERVICES CONTACT TELEPHONE NUMBERS

AMBULANCE (OMARURU)	POLICE	FIRE BRIGADE	CLINIC
+264 (64) 57-0037	+264 (64) 1-0111	+264 (64) 57-0028	+264 (64) 57-0037

For large-scale spills and other significant environmental incidents, the fire services shall be contacted as required and the Ministry of Environment and Tourism (MET) office informed of the incident (telephone +264 61 284 2111). All correspondence with MET should be undertaken by the project manager.

For the clean-up of smaller spills, the relevant Material Safety Data Sheet (MSDS) should be obtained online and be consulted to determine the appropriate clean-up procedure. Basic spill response training will be provided as part of the site environmental induction, spill response equipment, including relevant MSDS copies, will be provided in areas where potentially environmentally hazardous chemicals may be used.

All environmental incidents, regardless of their size or significance, should be recorded and reported to either the project manager or environmental officer.

6 IMPLEMENTATION OF THE EMP

This EMP:

- Has been prepared pursuant to a contract with the proponent
- Has been prepared on the basis of information provided to ECC up to October 2018
- Is for the sole use of the proponent, for the sole purpose of an EMP
- Must not be used (1) by any person other than the proponent or (2) for a purpose other than an EMP, and
- Must not be copied without the prior written permission of ECC.

ECC has prepared the EMP on the basis of information provided by the proponent and the Environmental Scoping Report