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Namibia Rare Earth
Environmental Management Plan for Water Supply Pipeline for the
Proposed Lofdal Rare Earth Mine
SLR Project No.: 734.14013.00005

Report No.: 006

June 2016

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ENVIRONMENTAL MANAGEMENT PLAN FOR WATER SUPPLY PIPELINE FOR THE PROPOSED LOFDAL RARE EARTH MINE

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ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used for the Lofdal Project (however, not all of these appear in this document).

| Acronyms / Abbreviations | Definition |
|--------------------------|---|
| AC | Alternating current |
| ART | anti-retroviral treatment |
| asl | above sea level |
| ASTM | American Society for Testing and Materials |
| BID | Background Information Document |
| Bq/kg | Becquerel per kilogram |
| CaCl₂ | Calcium Chloride |
| CDT | Constant Discharge Test |
| CZ | Central Zone |
| dBA | Decibels |
| DC | Direct current |
| DEA | Directorate of Environmental Affairs |
| DPM | Diesel Particulate Matter |
| EAP | Environmental Assessment Practitioner |
| EAPAN | Environmental Assessment Professionals Association of Namibia |
| ECC | Environmental Clearance Certificate |
| EIA | Environmental Impact Assessment |
| EMP | Environmental Management Plan |
| EPL | Exclusive Prospecting License |
| FOE | frequency of exceedance |
| GAL | Gangue acid Leach |
| GROWAS | (national groundwater databse) |
| GWh | Gigawatt hour |
| GWD | Groundwater devide |
| ha | hectares |
| IBA | Important Bird Area |
| HREE | Heavy Rare Earth Enrichment |
| HDPE | High-density polyethylene |
| HCL | Hydrochloric acid |
| HSE | Health and Safety |
| IAMA | Institute of Environmental Management and Assessment, UK |
| IAEA | (Radiology) |
| IAPs | Interested and Affected Party |
| ICP-MS | Inductively Coupled Plasma Mass Spectrometry |
| ICRP | International Commission on Radiological Protection |
| IFC | International Finance Corporation |
| IUCN | International Union for Conservation of Nature |
| km | kilometre |
| Km² | Kilometre squared |
| KOPs | Key observation points |

| | |
|-------------------------|--|
| kWh | Kilowatt hour |
| kWp | Kilowatt peak |
| kV | kilovolt |
| LOM | Life of Mine |
| MAP | Mean Annual Precipitation |
| mSv/a | Millisieverts per year |
| m³/h | Cubic Metres per Hour |
| MAP | mean annual precipitation |
| MAWF | Ministry of Agriculture, Water and Forestry |
| MET | Ministry of Environment and Tourism |
| MHSS | Ministry of Health and Social Services |
| ML | Mining License |
| mm | Millimetre |
| MME | Ministry of Mines and Energy |
| msl | Mean sea level |
| MVA | Megavolt amperes |
| MWp | Megawatt Peak |
| MW | Megawatt |
| NACOMA | Namibian Coast Conservation and Management project |
| NAMCOL | Namibian College |
| NBC | Namibian Broadcasting Commission |
| NBR | Natural Background Radiation |
| NGO | Non-Governmental Organisation |
| NGO | Non-Governmental Organizations |
| NHCN | National Heritage Council of Namibia |
| NMZ | Northern Margin Zone |
| NRE | Namibia Rare Earths |
| NSRs | Noise sensitive receptors |
| NWR | Namibia Wildlife Resort |
| NZ | Northern Zone |
| PAP | Project Affected People |
| PEA | Preliminary economic assessment |
| PM_{2.5} | Inhalable particulate matter with an aerodynamic diameter of less than 2.5µm |
| PM₁₀ | Thoracic particulate matter with an aerodynamic diameter of less than 10µm |
| PPE | Personal Protective Equipment |
| PPP | Public Participation Process |
| PV | Photo Voltaic |
| RAP | Resettlement Action Plan |
| REE | Rare Earth Element |
| REO | rare earth oxides |
| RGM | Radon Gas Monitor |
| RMP | Radiation Management Plan |
| ROM | Run-of-mine |
| RWL | Rest water level |
| SCZ | Mentioned in Geology section 4.2.2, but not written out. |
| SEA | Strategic Environmental Assessment |
| SLR | SLR Environmental Consulting (Namibia) (Pty) Ltd |

| | |
|----------------|--|
| SME | small and medium enterprises |
| SOP | Standard Operating Procedure |
| TGM | Thoron Gas monitor |
| TREO | total rare earth oxide |
| TSF | Tailings Storage Facility |
| TSP | total suspended particulates |
| UNSCEAR | United Nations Scientific Committee on the Effects of Atomic Radiation |
| VOC | Volatile organic compound |
| WRD | Waste Rock Dump |
| WSS | Water supply scheme |
| XRF | x-ray fluorescence sorting technology |
| XRT | x-ray transmission sorting technology |
| %HREE | % heavy rare earth enrichment |

ENVIRONMENTAL MANAGEMENT PLAN FOR WATER SUPPLY PIPELINE FOR THE PROPOSED LOFDAL RARE EARTH MINE

1 INTRODUCTION

Namibia Rare Earths (NRE) plans to develop an open-pit mine and processing plant that will produce a concentrate consisting mainly of 'rare earths'. The principal rare earth mineral of economic interest that will be produced at Lofdal is xenotime. The proposed mine, processing plant and associated infrastructure is hereinafter referred to as the "Lofdal Project".

This Environmental Management Plan (EMP) documents a series of individual management and mitigation plans (MMPs) which are designed to meet legal requirements and avoid or minimise the impacts associated with the implementation of Lofdal Mine Water Supply Pipeline.

The MMPs have been compiled based on a review of the findings and recommendations of the "EIA Report for the Water Supply Pipeline for the proposed Lofdal Rare Earth Mining Project" (SLR, 2016a) and associated specialist studies.

Two separate EMPs were developed for the proposed Lofdal Mine and associated powerline to the mine (SLR, 2016b and SLR, 2016c).

TABLE 1-1: SUMMARY OF ISSUES IDENTIFIED IN THE EIA AND CORRESPONDING MANAGEMENT AND MITIGATION PLANS

| Environmental component (reference to Section 7 of the EIA report for the water supply pipeline) | Issue (reference to Section 7 of the EIA) | Relevant MMP (reference to Section 0 of the EMP) |
|---|--|---|
| Biodiversity (7.3) | Direct physical destruction of biodiversity and their habitats, particularly sensitive and restricted habitats. Section 7.3.2 | MMP7.2 – Biodiversity |
| | General disturbance of biodiversity Section 7.3.3 | MMP7.2 – Biodiversity |
| Archaeology (7.4) | Damage to archaeological sites Section 7.4.1 | MMP7.9 - Archaeology |
| Visual (7.5) | Visual impact on tourism and residents Section 7.3.1 | MMP7.6 - Visual |

| Environmental component (reference to Section 7 of the EIA report for the water supply pipeline) | Issue (reference to Section 7 of the EIA) | Relevant MMP (reference to Section 0 of the EMP) |
|--|---|---|
| The following environmental components were not considered significant in terms of potential impacts and were therefore not assessed in detail. However, management and mitigation measures have been included in this EMP in order to ensure the avoidance/minimization of any potential impacts. The relevance of these potential impacts is discussed (screened) in Table 7-1 in Section 7 of the Water Supply Pipeline EIA Report. | | |
| Surface water and groundwater (7.1) | Pollution of surface water and groundwater Section 7.1 | MP7.3 – Surface water and groundwater MP |
| Air quality (7.1) | Air pollution Section 7.1 | MP7-4 – Air quality |
| Soil and Land Capability (7.1) | Loss of soil resources from pollution Section 7.1 | MP7.5 – Soil management and mitigation plan |
| | Loss of soil resources through physical disturbance Section 7.1 | |
| Visual (7.1) | Visual impact. Section 7.1 | MP7-6 – Visual |
| Noise (7.1) | Noise Pollution Section 7.1 | MP7-7 - Noise |
| Socio-economic (7.1) | Job creation and skills development. Section 7.1 | MP7-8 – Socio-economic |
| The following environmental components were not addressed in the EIA. However, management's measures have been included in this EMP in order to ensure the avoidance of any potential impacts. | | |
| Safety and security Capability | Impacts on safety and security of 3 rd parties, as well as fauna | MP7.1 – Safety and security |
| Waste | Address, control and mitigate waste-related impacts | MP7-10 – Waste |

1.1 KEEPING EMPs UP TO DATE

It is the intention that this EMP should be seen as a “living document” which will be amended during the operation, as the activities might change or new ones be introduced.

Should a listed activity(s) as defined in the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) be triggered (as a result of future modifications/changes at the mine), this EMP will be updated as a result of another EIA process as stipulate in the regulations.

1.2 DETAILS OF THE PERSONS WHO PREPARED THIS EMP

SLR Namibia (Pty) Ltd (SLR), the independent firm of consultants who undertook the 2016 EIA has also compiled this EMP.

Werner Petrick, with the assistance of Marvin Sanzila who are both Environmental Practitioners from SLR, prepared this EMP.

Werner Petrick, the EIA project manager has over seventeen years of relevant experience in conducting/managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems. Marvin Sanzila has six years of experience in the environmental management discipline with four years' experience in the mining industry dealing with environmental management systems implementation, coordination and implementation of EMPs, legal compliance and two year with EIAs.

2 SCOPE OF EMP

The components of the EMP are included in table 2-1 below.

TABLE 2-1: CONTENT OF THE EMP

| EIA Regulation requirement | Reference in the EMP |
|---|-----------------------------|
| Details of the persons who prepared the EMP and the expertise of those persons to prepare an environmental management plan. | Section 1.2 |
| Project overview | Section 4 |
| Overall objectives | Section 6 |
| Information on any proposed management or mitigation measures to address the environmental impacts that have been identified in a report contemplated by these regulations, including environmental impacts or objectives in respect of – <ul style="list-style-type: none"> i. Planning and design ii. Construction activities iii. Operation or undertaking of the activity iv. Rehabilitation of the environment v. Closure, where relevant | Section 7 |
| A detailed description of the aspects of the activity that are covered by the EMP. | Sections 4 & 5 |
| An identification of the persons to be responsible for the implementation of the mitigation measures. | Sections 5 & 8 |
| Where appropriate, time frames within which the measures contemplated in the EMP must be implemented. | Section 8 |
| Proposed mechanisms for monitoring compliance with the EMP and reporting on it. | Sections 7 & 9 |

3 ENVIRONMENTAL LEGISLATION

3.1 INTRODUCTION

Section 2 of the EIA Report provides a detailed description of all Namibian legislation that is relevant to the Lofdal Water Supply Pipeline project.

3.2 PERMITS

Table 3-1 provides a summary list of the relevant permits required by NRE.

TABLE 3-1: LIST OF RELEVANT ENVIRONMENTAL PERMITS/APPROVALS REQUIRED BY NRE

| Aspect | Permits/Certificates/Authorizations | Regulator |
|-------------------------------------|---|-----------|
| Construction of the pipeline | Environmental Clearance for the proposed water supply pipeline to the Lofdal Mine | MET |
| Vegetation | Forest permit-Tree harvesting - Protected trees | MAWF - DF |
| Archaeological | Heritage permit/ to disturb and transport archaeological materials | NHC |

4 PROJECT OVERVIEW

4.1 WATER SUPPLY

During the operational phase, water will be required for the offices and change houses, as well as for the processing and mining operation. It is estimated that approximately 1,000,000 m³ of water (150 m³/h on a 20 hrs/day pump cycle.) will be required on an annual basis for the Lofdal Project.

SLR conducted a water supply study in conjunction with NamWater (See Appendix H for the Water Supply Investigation Report). There are a number of water supply schemes operated by NamWater that can potentially be utilised for the purposed of water supply. Further details regarding the water supply options are presented in the “EIA Report for the Proposed Lofdal Mining Project” (SLR, 2016a).

4.1.1 WATER PIPELINE

Water will be supplied to the mine via a pipeline with a diameter of ±200 to 250 mm (inner diameter) depending on selection of steel vs high-density polyethylene (HDPE).

Various route alternatives for the water pipeline between Khorixas and the Lofdal Project were initially considered (refer to SLR 2016b). The two preferred water pipeline route options that were further assessed in this report are shown in Figure 4-1 below. The total height of the pipeline (on the pedestals) is estimated at ±400-500 mm.

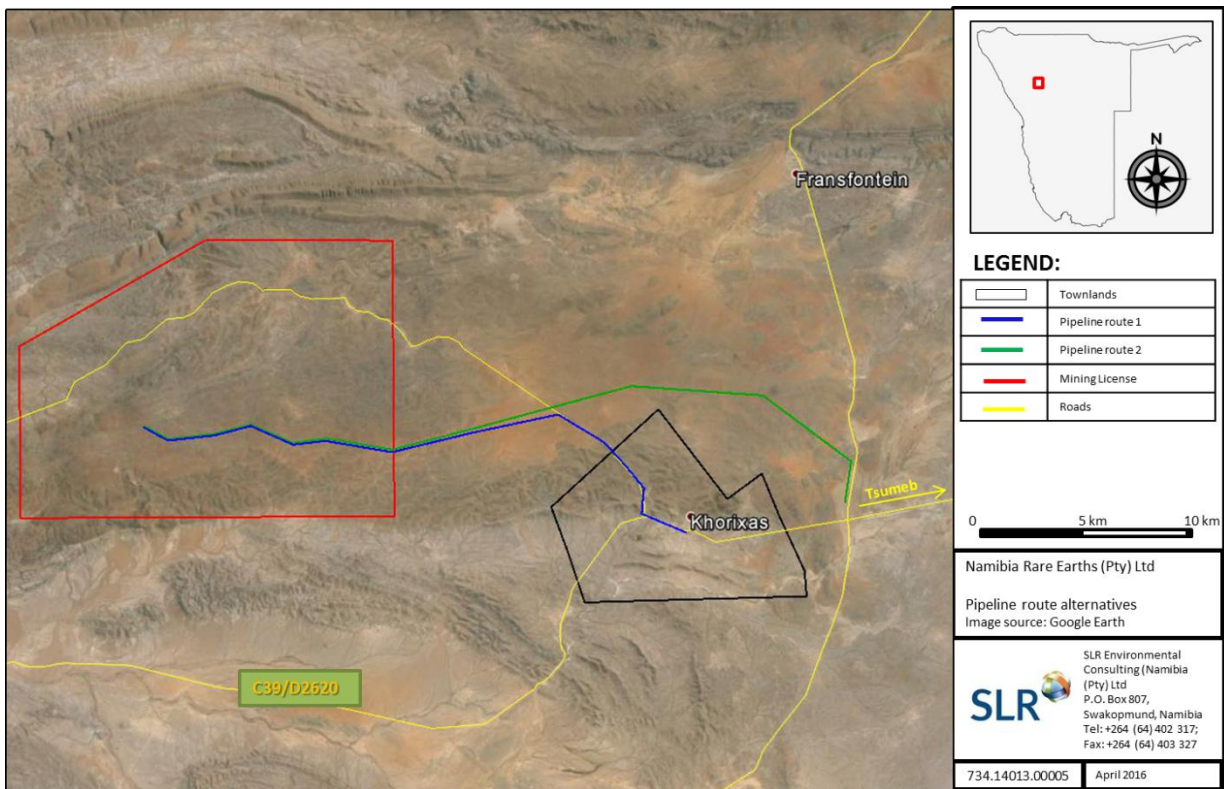


FIGURE 4-1: FINAL PIPELINE ROUTE OPTIONS 1 AND 2.

The first option (Pipeline Route 1) follows the same route as the preferred powerline route from the mine up to the D2625, at which point it turns southeast along the D-road until it joins the D2620 road going south-eastward towards Khorixas. At this point the water pipeline will connect to the existing water distribution network coming from the NamWater supply scheme (to the crossing of the Fransfontein and Tsumeb roads). The second optional route (Pipeline Route 2) follows the same route as the preferred powerline route (refer to SLR, 2016b). Route option 2 is 9 km longer than route option 1. The final pipeline route will however, only be determined once the route has been surveyed and pegged. Furthermore, as part of the detailed engineering study, topography, drainage etc. has to be further studied before the final selection can be made.

5 ENVIRONMENTAL MANAGEMENT SYSTEM (ASPECTS AND IMPACTS)

Understanding the biophysical and human environment in which the water supply pipeline will be constructed and operated is the first step to understanding environmental impacts. The next and possibly more important step is to identify the environmental aspects that give rise to the impacts. All of these aspects have the potential to cause impacts on the environment in a different way. Successful management will be gauged by how well the applicant avoids, minimises or mitigates all the impacts associated with each environmental aspect.

As part of the EIA process for the Lofdal Mine and associated infrastructure (pipeline and powerline), environmental aspects and potential environmental impacts associated with the activities and facilities were identified. The full suite of activities, associated with the construction, operation, decommissioning, and closure phases are described in the 2016 EIA Reports (SLR, 2016a, b and c) and summarized in section 4 of this EMP. Table 5-1 provides a description of the significant environmental aspects that are associated with water supply pipeline and how they impact the biophysical and human environments, respectively.

TABLE 5-1: DESCRIPTION OF SIGNIFICANT ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS ASSOCIATED WITH LOFDAL RARE EARTHS MINE WATER SUPPLY PIPELINE

| Environmental aspects | Potential impact | Management Plan |
|-----------------------|---|----------------------|
| Biodiversity | Direct physical destruction of biodiversity and their habitats, particularly sensitive and restricted habitats. | MP7.2 – Biodiversity |
| | General disturbance of biodiversity, including the physical obstruction to movement of animals. | MP7.2 – Biodiversity |
| Archaeology | Damage to archaeological sites. | MP7.9 - Archaeology |
| Visual | Visual impact on tourism and residents. | MP7.6 - Visual |

6 OVERALL ENVIRONMENTAL OBJECTIVES FOR THE EMP

The following overall environmental objectives have been set for the Lofdal Mine Project and associated infrastructure, relevant to the water supply pipeline:

- To comply with national legislation and standards for the protection of the environment.
- To limit potential impacts on biodiversity through the minimisation of the footprint (as far as practically possible) and to prevent unacceptable disturbance of biodiversity.
- To keep surrounding communities informed of mining (and associated) activities through the implementation of forums for communication and constructive dialogue.
- To limit contaminated effluent discharge into the environment through the containment, recycling or removal of contaminated water.
- To protect soils and groundwater resources through the implementation of measures for spill prevention and clean-up.
- To ensure the legal and appropriate management and disposal of general and hazardous waste, through the implementation of a strategy for the minimisation, recycling, management, temporary storage and removal of waste.
- To minimise the potential for dust emissions through the implementation of dust control measures.
- To minimise the potential for noise disturbance in surrounding areas.
- To protect cultural heritage by thorough documentation and the obtaining of necessary legal approvals thereof prior to destruction, where relevant.
- To undertake rehabilitation wherever possible during the life of the mine.
- To incorporate final closure objectives in construction and mine planning.
- To develop, implement and manage monitoring systems to ensure good environmental performance.
- To ensure the health and safety of surrounding communities through access control.
- To support and encourage environmental awareness and responsibility amongst all employees and service providers.
- To provide appropriate environmental education and training for all employees and service providers.
- Prevent and minimise pollution.
- To incorporate the relevant requirements stipulated in this EMP into the design and planning.
- To ensure the all the contractors adhere to the construction related management commitments.
- Ensure compliance to the EMP.

7 MANAGEMENT AND MITIGATION PLANS

The management and mitigation plans (MMPs), listed in the table below, are applicable to all the relevant activities and facilities of the Lofdal Mine Water Supply Pipeline. (The MMPs follow in the subsequent sections).

TABLE 7-1: VARIOUS MMPS AND NUMBERS

| Number | Management and Mitigation Plan (MMP) |
|--------|--------------------------------------|
| 7.1 | Safety and Security MMP |
| 7.2 | Biodiversity MMP |
| 7.3 | Surface water and groundwater MMP |
| 7.4 | Air Quality MMP |
| 7.5 | Soil MMP |
| 7.6 | Visual MMP |
| 7.7 | Noise MMP |
| 7.8 | Socio-Economic MMP |
| 7.9 | Archaeology MMP |
| 7.10 | Waste MMP |

7.1

Safety and Security MMP

7.1 SAFETY AND SECURITY MANAGEMENT AND MITIGATION PLAN

It is essential that safety and security measures are defined and implemented to ensure that the construction site cannot be accessed by unauthorized people.

7.1.1 COMPONENTS

This plan is made up of the following components:

- a. General (third party) safety and security.

7.1.2 MANAGEMENT

7.1.2.1 General (third party) safety and security

The objective of the measures is to limit the impacts on third parties of any excavations and surface infrastructure.

Actions (commitments)

TABLE 7-1: ACTIONS (COMMITMENTS) RELATING TO GENERAL (THIRD PARTY) SAFETY AND SECURITY

| No | Issue | Management commitment |
|--|--|---|
| These commitments apply to <u>construction/decommissioning phase</u> | | |
| 1 | Animals and 3rd parties falling into open trenches. | All trenches/excavations are marked whilst open and closed as soon as possible. |
| 2 | Emergency | Injury that may result from construction activities will follow emergency response procedure by NRE. |
| These commitments apply to <u>construction & operational phases</u> | | |
| 3 | Access of unauthorised people to the construction sites and lay down area(s) | The laydown area should be fenced and should display appropriate warning signs. No unauthorized access to construction sites is allowed. |
| 4 | Communication with landowners | At least 14 days before work commences, inform all affected landowners, communities and relevant authorities about the project. |

| | | |
|--|--------------------------|---|
| 5 | | The contractor shall meet with the landowner / representative of the conservancies/Traditional Authority, at a reasonable time before work commences to introduce himself and the company he represents and explain the scope of the work. The landowner / representative of the conservancies/Traditional Authority must have knowledge of the planned route and duration of work on the property prior to the commencement of the work. This shall be done in due courtesy to the owner / representative of the conservancies/Traditional Authority. |
| 6 | General 3rd party safety | The rights of the landowner/communities shall be respected at all times and all staff shall be sensitised to the fact that they are working on communal property, which is managed by Government, Traditional Authority and/or Conservancies. |
| 7 | | The contact between personnel and permanent residents of the area will be limited and controlled |
| 8 | | Personnel will be properly educated about the impact of HIV / AIDS. |
| 9 | | Any person making himself guilty of violence, harassment or any other activity deemed inappropriate by the landowner/Traditional Authority or Conservancy, must immediately be removed from the site. |
| 10 | | The distribution or supply of intoxicating liquor or drugs of any kind by the employees of the contractor or any contractor is strictly prohibited. |
| 11 | | Contractors and labourer should stay in Khorixas or Fransfontein as far is possible and be transported to site on a daily basis. |
| These commitments apply to construction phase | | |
| 12. | Blasting | <p>The blast design, implementation and monitoring will, as a general rule, ensure that:</p> <ul style="list-style-type: none"> • Fly rock is contained within a maximum of 500m of the blast site and no 3rd party structures allowed within this area; • Prior to each blast the blast area will be cleared of third parties to a safe distance determined by appropriate legislation and safe working procedures. Prior to each blast an audible warning will be sounded; • ground vibration at the closest third party structures is less than 12mm/s peak particle velocity; • air blast at the closest third party structures is less than 115dB; and • all registered complaints will be documented, investigated and efforts made to address the area of concern where possible. |

7.2 Biodiversity MMP

7.2 BIODIVERSITY MANAGEMENT AND MITIGATION PLAN

To understand biodiversity one must appreciate all of its components. It is not just about the species of plants and animals and the different habitats in which they live (biodiversity patterns) but the way that factors, such as wind, water, steepness of slope and presence of pollinators, affect the habitats and the species living in them (ecosystem processes).

The commitments derived from the EIA Report (SLR, 2016a) with regards to Biodiversity forms the basis of this MMP.

7.2.1 COMPONENTS

This plan is made up of the following components:

- Managing the physical destruction of biodiversity.
- Managing general disturbance.

7.2.2 MANAGEMENT

7.2.2.1 Physical destruction of biodiversity

Objectives

The objective of the management measures is to prevent or limit the unacceptable loss of biodiversity and related functionality through physical disturbance.

Actions

TABLE 7-2: ACTIONS RELATING TO THE PHYSICAL DESTRUCTION OF BIODIVERSITY

| No | Issue | Management commitment |
|---|--------------------------------------|--|
| These commitments apply to the design / construction phases | | |
| 1 | Physical disturbance of biodiversity | Both route alternatives presented in section 4 of this EMP are considered acceptable and were therefore assessed as part of the EIA Report. Option 1 is however preferred from an environmental perspective. |
| 2 | | Avoid all sensitive and very sensitive habitats by selecting the route that causes least destruction to sensitive habitats and species. Therefore, should route option 2 be implemented, the variation around a sensitive area (green line) is preferred (refer to Figure 4-1). |
| 3 | | A strip, only wide enough to allow for vehicular movement, shall be cleared for access roads. Trim out or clear the minimum number of trees and bush necessary for the safe operation of the pipeline. The possibility of using the same access roads (or section thereof) for the mine, water pipeline- and powerline maintenance roads must be investigated. NRE to liaise with both NamPower and NamWater in this regard. |
| These commitments apply to the construction/decommissioning phases | | |

| No | Issue | Management commitment |
|----|-------|--|
| 4 | | Avoid disturbance of areas outside the designated footprint of the pipeline corridor. |
| 5 | | Construction and maintenance staff should be educated and informed of their environmental obligations. Meaningful penalties for damages should be stipulated, and the main contractor should be held responsible for all transgressions. |
| 6 | | Use areas that are already disturbed or will definitely be disturbed in the near future for any temporary construction camps or lay-down areas. |
| 7 | | Where relevant, commence rehabilitation immediately after impact has ceased. |
| 8 | | Identify breeding structures (dens and nests) of animals and ensure that these are avoided if possible during construction operations |
| 9 | | Raise awareness through awareness campaigns and training of key staff. |

7.2.2.2 Managing general disturbance

Objectives

The objective of the management measures is to prevent unacceptable disturbance of biodiversity.

Actions

TABLE 7-3: ACTIONS RELATING TO THE GENERAL DISTURBANCE TO BIODIVERSITY

| No | Issue | Management commitment |
|---|--|---|
| These commitments apply to <u>design phase</u> | | |
| 1 | Avoid/Minimize impacts on biodiversity | <p>Previous investigations in the Namib have shown that the effect of pipelines is highly species-specific, with zebras and oryx reluctant to cross a 40cm-high pipe, while springbok were not affected. It is unknown which species may be affected in the study area, but the precautionary principle should apply.</p> <p>Construct overpasses on the pipeline or bury the pipeline. The exact number and location of the overpasses/buried pipeline should be confirmed by a biodiversity specialist during the construction phase. However, as a general rule, overpasses or placing the pipeline underground should be ~200m wide at intervals of approximately every 2 km.</p> |
| 2 | | Monitor use of overpasses by mammals by counting spoor once a month. |
| 3 | | Sensitise staff to the importance of avoiding impacts to wildlife populations. |

| No | Issue | Management commitment | |
|--|--|--|---|
| 4 | | Collection of plants or parts of plants (including fuelwood) is forbidden unless done by members of the local communities with appropriate permits. Other staff is expressly forbidden to collect any plant material, dead or alive for any purpose whatsoever and will be provided with fuel (preferably gas) for both heating and cooking. | |
| 5 | | Launch awareness campaigns amongst the staff as well as amongst ancillary populations (people that may have moved into areas around the mine). | |
| These commitments apply to <u>construction phase</u> | | | |
| 6 | Avoid/Minimize impacts on biodiversity | Number and size of turning circles will be minimised as much as is possible. This can be achieved by example demarcating the turning circles. | |
| These commitments apply to <u>construction//operation/decommissioning phase</u> | | | |
| 7 | Avoid/Minimize impacts on biodiversity | To limit pipeline infrastructure, activities and related disturbance to those specifically identified and described in this EIA report | |
| 8 | | Use existing access road as far (as possible) for vehicle movements | |
| 9 | | Enforce site speed limits – i.e. 20 km/h on construction sites. | |
| 10 | | Ensure all relevant rules are regularly communicated to workers and visitors | |
| 11 | | Enforce no hunting and no collecting policies and inspect construction sites | |
| 12 | | Construction teams that live on-site should be limited to a contained and fenced area and their access to the area should be controlled. | |
| 13 | | Regularly inspect areas adjacent to operations for signs of litter, wood collection and hunting | |
| 14 | | Only allow construction personnel and registered visitors on site | |
| 15 | | Construction and maintenance staff should be educated and informed of their environmental obligations. Meaningful penalties for damages should be stipulated, and the main contractor should be held responsible for all transgressions. | |
| 16 | | Where relevant, commence rehabilitation immediately after impact has ceased. | |
| 17 | | Off-road driving and the creation of tracks, other than those approved by this EIA are prohibited and will be regarded as unwanted tracks and unwarranted disturbed areas. All unwanted tracks and unwarranted disturbed areas must be rehabilitated. | |
| 18 | | Risk of field fires | Fires are to be limited to the campsite only. All fires must be extinguished when there is not someone supervising it and all ash must be cleaned up. |
| 19 | | | Firefighting equipment must be kept in close proximity to the where work is taking place, at all times during construction. |

| No | Issue | Management commitment |
|--|----------------|---|
| These commitments apply to Decommission / Closure phase | | |
| 20 | Rehabilitation | Develop restoration and rehabilitation plan as soon as possible during construction of the pipeline. Refer to the Lofdal Mine EMP for further commitments regarding to rehabilitation. |
| 21 | | Monitor rehabilitation and restoration as per restoration plan. |
| 22 | | Rehabilitation and restoration should commence immediately after disturbance due to construction has ceased. A critical aspect of restoration is the availability of source areas – these are areas from where colonising organisms must come and which will serve as benchmarks for restoration. Often the protection of such areas has as much of an impact on the success of restoration as active measures do. |

Emergency situations

Certain instances of injury to animals may be considered emergency situations. These will be managed by NRE as appropriate.

7.3
Surface Water and Groundwater
MMP

7.3 SURFACE WATER AND GROUNDWATER MANAGEMENT AND MITIGATION PLAN

There are a number of sources in the construction/decommissioning phases that have the potential to pollute surface- and groundwater particularly in the unmanaged scenario. These potential pollution sources are temporary in nature, usually existing for a few weeks to a few months. Although these sources may be temporary, the potential pollution may be long term.

7.3.1 COMPONENTS

This plan is made up of the following components:

- a. Pollution of surface water and groundwater
- b. Flood flow divergence due to pipeline infrastructure

7.3.2 MANAGEMENT

7.3.2.1 Impacts on surface water and groundwater quality - general

Objectives

The objective of the management measures is to prevent pollution of surface water run-off and groundwater.

Actions

TABLE 7-4: ACTIONS RELATING TO THE MANAGEMENT OF SURFACE WATER AND GROUNDWATER

| No | Issue | Management commitment |
|---|---------------------------------------|---|
| These commitments apply to <u>construction/decommissioning</u> phase | | |
| 1 | Pollution of surface- and groundwater | Refer to the Lofdal Rare Earths Mine EMP |
| 2 | | Implement containment and clean-up measures relating to hazardous substance spillages (including hydrocarbons) |
| 3 | | Implement containment and clean-up measures relating to sewage spillages |
| 4 | | Adequate fuel containment facilities to be used during construction phase. |
| 5 | | The use of all materials, fuels and chemicals which could potentially leach into groundwater must be controlled. |
| 6 | | All materials, fuels and chemicals will be collected, safely stored in sealed drums on impermeable surfaces within bunded and secured areas. These areas will be designed to contain 110% of the volume of one or the largest (in a multi drum setup) drum and will be equipped with traps and oil separators to contain spilled hydrocarbons. The used hydrocarbon liquid waste will be provided to third parties for recycling. Related records will be kept. |
| 7 | | All hazardous chemicals (new and used), dirty water, mineralised wastes, concrete |

| No | Issue | Management commitment |
|----|-------|--|
| | | batching activities and non-mineralised wastes are handled in a controlled manner (e.g. handled over drip-trays) so that they do not contaminate surface water run-off and soil. |
| 8 | | All vehicles and machines must be maintained properly to ensure that oil spillages are kept at a minimum. |
| 9 | | Spill trays must be provided if refuelling of construction vehicles is done on site. |
| 10 | | Chemical sanitary facilities must be provided for construction workers. Construction workers should only be allowed to use temporary chemical / permanent toilets on the site. Chemical toilets shall not be within close proximity of any drainage system. Frequent maintenance should include removal without spillages. |
| 11 | | Chemical storage areas should be sufficiently contained, and the use of chemicals should be controlled. |
| 12 | | Maintain and implement spill management procedure, including the clean-up of hydro-carbon spills. |
| 13 | | Ad hoc spills will be cleaned up/remediated immediately in line with spillage management procedure. |
| 14 | | Place spill kits in all areas where hazardous substances are dispensed and stored and train staff to use it. |
| 15 | | The remediation options to enable fast reaction to contain and remediate pollution incidences include in situ treatment or disposal of contaminated soils as hazardous waste. The former is generally considered to be the preferred option because with successful in situ remediation the soil resource will be retained in the correct place. The in situ options include bioremediation at the point of pollution, or removal of soils for washing and/or bio remediation at a designated area after which the soils are replaced. |
| 16 | | All vehicles and machines must be maintained properly to ensure that oil spillages are kept at a minimum. Verify fuel transport company's spill containment (emergency clean up) plan and spill clean-up agreement are in place. Ensure that fuel transporting companies adhere to the Petroleum Products and Energy Act (13 of 1990) and Regulations |

7.3.2.2 Flood flow divergence due to pipeline infrastructure

Objectives

The objective of the management measures is to avoid construction of the pipeline in drainage lines where potential flood diversion.

| No | Issue | Management commitment |
|--|---------------------------------------|---|
| These commitments apply to <u>design / construction</u> | | |
| 1 | Flood flow Divergence due to pipeline | Where the pipeline route encounters significant drainage lines, the infrastructure will be routed/constructed such that significant floods will be able to pass without causing damage to the infrastructure, so will not have significant impact on the runoff volumes. |
| 2 | infrastructure | Where Pipeline 1 route (refer to section 4) crosses the relatively large drainage lines just before entering Khorixas and to the west of Khorixas just before the turn to the D2625 district road, flood protection shall be designed using the C39 road crossing design just to the south as an example of suitable sizing and elevations. |

7.4

Air Quality MMP

7.4 AIR QUALITY MANAGEMENT AND MITIGATION PLAN

The construction/decommissioning related activities have the potential to impact on the existing air quality environment with short term temporary dust impacts of low significance.

7.4.1 COMPONENTS

This plan is made up of the following components:

- Fall-out dust

7.4.2 MANAGEMENT

Objectives

The objective of the management measures is to prevent unacceptable air quality related pollution impacts.

Actions

TABLE 7-5: ACTIONS RELATING TO FALL-OUT DUST

| No | Issue | Management commitment |
|---|-----------------|---|
| These commitments apply to <u>construction and decommissioning</u> | | |
| 1 | Dust generation | Dust suppression techniques such as spraying water on cleared and graded areas, will be in place when required, specifically where construction activities will take place in close proximity to residents. |

7.5

Soil MMP

7.5 SOIL MANAGEMENT AND MITIGATION PLAN

The physical loss of soils and/or the loss of soil functionality are important issues because as an ecological driver, soil is the medium in which most vegetation grows and a significant range of vertebrates and invertebrates exist.

7.5.1 COMPONENTS

This plan is made up of the following components:

- Loss of soil resources – pollution.
- Loss of soil resources – physical disturbance.

7.5.2 MANAGEMENT

7.5.2.1 Loss of soil resources - pollution

Objectives

The objective of the management measures is to prevent pollution of soils.

Actions

TABLE 7-6: ACTIONS (COMMITMENT) RELATING TO LOSS OF SOIL RESOURCES DUE TO POLLUTION

| No | Issue | Management commitment |
|---|----------------------|--|
| These commitments apply to <u>construction/decommissioning</u> phase | | |
| 1 | Soil pollution | Refer to the Surface Water and Groundwater MMP |
| 2 | | Pollution prevention through basic infrastructure design and proper education and training of workers (permanent and temporary) |
| 3 | | Fast reaction to contain and remediate pollution incidents. In this regard the remediation options include treatment or disposal of contaminated soils as hazardous waste. The former is generally considered to be the preferred option because with successful remediation the soil resource will be retained in the correct place. The treatment includes removal of soils for washing at a designated area after which the soils are replaced. |
| 4 | Emergency situations | Major spillage incidents will be handled in accordance with the NRE emergency response procedure. |

7.5.2.2 Loss of soil resources – physical disturbance

Objectives

The objective of the management measures is to prevent the loss of soils and related functionality through physical disturbance, erosion and compaction.

Actions**TABLE 7-7: ACTIONS (COMMITMENT) RELATING TO LOSS OF SOIL RESOURCES DUE TO PHYSICAL DISTURBANCE**

| No | Issue | Management commitment |
|--|---------------------------------|--|
| These commitments apply to <u>construction and decommissioning</u> phases | | |
| 1 | Soil disturbance/ management | Limit the disturbance of soils to what is absolutely necessary both in terms of site clearing and in terms of project development and use of vehicles. |
| 2 | | Where soils have to be disturbed (where relevant) the soil will be stripped, stored, maintained and replaced in accordance with the specifications of the NRE Soil Management Plan. |
| 3 | | Manual bush clearing is preferable (as opposed to clearing using a bulldozer) in order to minimise vegetation loss and hence reduce the risk of soil erosion. |
| 4 | | Where there are no real obstacles, where vehicles can simply drive over an area, or where obstacles can simply be removed by hand, blading shall not be used. When manual bush clearing is impractical, blading shall be used, but the blade shall be kept approximately ten centimetres from the soil surface to minimise the impacts to the soil surface and top layer, small plants and the root systems of larger plants. |
| 5 | | The contractor shall be responsible for any reasonable for prevention of soil erosion in mountainous / rough terrain (towards the western side of the routes), |
| 6 | | Erosion and drainage problems must be minimised by avoiding tracks crossing contours at right angles. |
| 7 | | Measures must be put in place to avoid erosion at river and stream channel crossings, and at places where existing erosion scars and dongas are encountered to avoid any further erosion at these points. |
| 8 | | In areas of low rainfall vehicle tracks must be restricted to the width of the servitude or recognised access routes. All unnecessary tracks should be rehabilitated at the contractor's expense. |

7.6

Visual MMP

7.6 VISUAL MANAGEMENT AND MITIGATION PLAN

The proposed new water supply pipeline will change the visual landscape.

7.6.1 COMPONENTS

This plan is made up of the following components:

- Visual disturbance.

7.6.2 MANAGEMENT

7.6.2.1 Visual disturbance

Objectives

The objective of the measures is to limit the visual impact on tourism and residents as much as possible.

Actions

TABLE 7-8: ACTIONS RELATING TO VISUAL DISTURBANCE

| No | Issue | Management commitment |
|---|------------------------------|--|
| These commitments apply <u>design / construction phase</u> | | |
| 1 | Aesthetics or visual impacts | Clearing of vegetation along the route should be kept to an absolute minimum, but still maintaining a suitable protective distance to reduce the risk from fire. |
| 2 | | The construction and maintenance access road should preferably be as small as possible, routing around significant vegetation or rocky outcrops. The possibility of using the same access roads (or section thereof) for the mine, water pipeline- and powerline maintenance roads must be investigated. NRE to liaise with both NamPower and NamWater in this regard. |
| 3 | | Erosion prevention measures need to be implemented to ensure that erosion is not caused by the tracks. |
| 4 | | The pipe needs to be dark (black, dark brown or grey) in colour and mounded on either side with earth to reduce visibility (as much as possible). |
| 5 | Pipeline route | Prior to construction the pipeline route should be designed that prominent hill features are excluded to minimise the visibility from far away. |
| 6 | | Additionally the pipeline should be 100m away from any homestead. |
| 7 | | Relevant to route option 1 (refer to section 4): The sections along the C39 and the town of Khorixas should be buried under the ground to reduce visual intrusion. Relevant to route option 2 (refer to section 4): The section where the pipeline crosses the D2625 should be buried under the ground within 20 m on either side |

| | | |
|---|------------------|---|
| | | of the road. |
| These commitments apply <u>construction /operation phase</u> | | |
| 8 | Monitoring | Monitoring will need to be undertaken by the ECO on a regular basis to ensure that erosion controls are adequately managed. |
| 9 | Waste management | Littering is to be strictly controlled. (Refer to MMP10). |

7.6 Noise MMP

7.7 NOISE MANAGEMENT AND MITIGATION PLAN

The project will introduce new noise sources to the existing noise environment during the construction/decommissioning phases of the project. These impacts will be short term and temporary.

7.7.1 COMPONENTS

This plan is made up of the following components:

- Noise pollution

7.7.2 MANAGEMENT

7.7.2.1 Noise Pollution

Objectives

The objective of the management measures is to limit excessive noise pollution

Actions

TABLE 7-9: ACTIONS RELATING TO NOISE POLLUTION

| No | Issue | Management Commitment |
|---|-------------------------------------|--|
| These commitments apply to <u>construction and decommissioning</u> | | |
| 1 | Impact of noise on the environment/ | Document and investigate all registered complaints and make efforts to address the area of concern where possible. |
| 2 | sensitive receptors | Communication channels are established to ensure prior notice to the sensitive receptor if work is to take place close to them. Information that should be provided to the potential sensitive receptor(s) include: <ul style="list-style-type: none"> • Proposed working times; • how long the activity is anticipated to take place; • what is being done; • contact details of a responsible person where any complaints can be lodged should there be an issue of concern. |
| 3 | | Ensure that plant and equipment is well-maintained and fitted with the correct and appropriate noise abatement measures. |

7.8

Socio-economic MMP

7.8 SOCIAL AND ECONOMIC MANAGEMENT AND MITIGATION PLAN

Several measures could be implemented to allow for off-takes from a bulk pipeline. These need to be further investigated. However, due to the large scale of the water pipeline, tapping off of this infrastructure can be very costly and therefore not feasible for the low levels of use that would be required for the local residents in the area.

This section focuses on the tourism and economic development impacts associated with the proposed project.

7.8.1 COMPONENTS

This plan is made up of the following components:

- a. Tourism and recreation impacts
- b. Economic development and job creation

7.8.2 MANAGEMENT

7.8.2.1 Tourism and recreation impacts

Objectives

The objective of the management measures is to minimise the impacts on tourism.

Actions (commitments)

Refer to the noise- air quality- visual MPs.

7.8.2.2 Economic Impact

Objectives

The objective of the management measures is to enhance the positive impacts associated with job creation and investment.

Actions

TABLE 7-10: ACTIONS RELATING TO ECONOMIC IMPACT

| No | Issue | Management commitment |
|---|--|---|
| These commitments apply to <u>construction, operation and decommissioning</u> phases | | |
| 1 | Employment opportunities and development benefits. | <ul style="list-style-type: none"> • All supply of good and services will be in accordance with NRE's procurement policy. • In general supply of good and services should include: <ul style="list-style-type: none"> ○ Weighting tender selection is weighted in favor of suppliers of goods and services which use local suppliers down the supply chain (assuming that the vendor is qualified and that they can deliver the requested product of the required standard in the requested time with their requested quality); |

| No | Issue | Management commitment |
|--|-------|--|
| | | <ul style="list-style-type: none"> ○ Procurement policies that promote the use of small and medium enterprises; ○ A human resources policy which prioritises the selection of women for training and recruitment and which supports women to perform well in the workplace; ○ Skills development strategies and programmes are in place prior to construction to maximise use of the local labour force. |
| These commitments apply to <u>operation</u> phase | | |
| 2 | | <ul style="list-style-type: none"> • Support employees and community members to continue learning and developing skills so they too benefit from being able to offer labour flexibility and productivity; • Promote continuous learning programmes to diversify and upgrade skills; • Ensure skills upgrading during employment at mine is documented and accredited where possible so skills are recognised with future employers. |

7.9

Archaeology MMP

7.9 ARCHAEOLOGY MANAGEMENT AND MITIGATION PLAN

The proposed Pipeline has the potential to damage the land surface and associated archaeological resources through physical disturbance of the land. The main activities that could cause this disturbance are the placement of surface infrastructure and vehicle movement.

7.9.1 COMPONENTS

This plan is made up of the following components:

- a. Damage to archaeological sites and landscapes from proposed Pipeline.

7.9.2 MANAGEMENT

7.9.2.1 Chance archaeological finds

Objectives

To ensure that the correct actions are taken to preserve or document chance archaeological finds.

Actions

TABLE 7-11: ACTIONS RELATING CHANCE ARCHAEOLOGICAL FINDS

| No | Issue | Management commitment |
|--|-------------------------------------|--|
| These commitments apply <u>all phases</u> | | |
| 1 | Disturbance of archaeological sites | It is recommended that contractors working on the site are made aware that under the National Heritage Act any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council. |
| 2 | | The project footprint should be kept as small as possible and confined to that described in the EIA. |
| 3 | Chance Finds Procedure | <p>Areas of proposed mining and related activity are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found in the course of development work. The personnel and contractor heritage induction process is intended to sensitize people so that they may recognize heritage “chance finds” in the course of their work. The procedure set out here covers the reporting and management of such finds.</p> <p>The “chance finds procedure covers the actions to be taken from the discovery of a heritage site or item, to its investigation and assessment by a trained archaeologist or other appropriately qualified person.</p> <ul style="list-style-type: none"> • Operator - To exercise due caution if archaeological remains are found • Foreman - To secure site and advise management timeously • Superintendent -To determine safe working boundary and request inspection • Archaeologist -To inspect, identify, advise management, and recover remains |

| No | Issue | Management commitment |
|----|--------------------|--|
| | | <p><u>Action by person identifying archaeological or heritage material:</u></p> <ul style="list-style-type: none"> • If operating machinery or equipment stop work • Identify the site with flag tape • Determine GPS position if possible • Report findings to foreman <p><u>Action by foreman:</u></p> <ul style="list-style-type: none"> • Report findings, site location and actions taken to superintendent • Cease any works in immediate vicinity <p><u>Action by superintendent:</u></p> <ul style="list-style-type: none"> • Visit site and determine whether work can proceed without damage to findings • Determine and mark exclusion boundary • Site location and details to be added to project GIS for field confirmation by archaeologist <p><u>Action by archaeologist:</u></p> <ul style="list-style-type: none"> • Inspect site and confirm addition to project GIS • Advise NHC and request written permission to remove findings from work area. • Recovery, packaging and labelling of findings for transfer to National Museum <p><u>In the event of discovering human remains:</u></p> <ul style="list-style-type: none"> • Actions as above; and • Field inspection by archaeologist to confirm that remains are human • Advise and liaise with NHC and Police <p>Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.</p> |
| 4 | Legal requirements | <p>The “chance finds procedure is intended to ensure compliance with the relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): “ a person who discovers any archaeological object must as soon as practicable report the discovery to the Council”. The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.</p> |

7.10

Waste Management MMP

7.10 WASTE MANAGEMENT AND MITIGATION PLAN

Waste is generated primarily during construction and decommissioning (if required). This MMP deals with solid waste management.

7.10.1 COMPONENTS

This plan is made up of the following components:

- Non-hazardous solid waste (non-mineralised).
- Hazardous solid waste (non-mineralised).

Waste Inventory list:

| Waste type | Waste specifics (example of waste types) | Source |
|---|---|---|
| Non-hazardous solid waste (non-mineralised) | Metal Cut offs, rubber, wood, product packaging, organic materials, glass, plastics, food scraps, cardboard/paper, used PPE, etc. | Across site |
| Hazardous solid waste (non-mineralised). | Batteries, hydrocarbons (oils, grease), fluorescent bulbs, etc. | Laydown areas, temporary workshops, equipment |

7.10.2 MANAGEMENT

7.10.2.1 Non-hazardous solid waste (non-mineralised)

Objectives

The objective of the management measures is to ensure proper storage, recycling, re-using, removal, transportation and disposal of non-hazardous solid waste.

Actions

TABLE 7-7-12: ACTIONS RELATING TO NON-HAZARDOUS SOLID WASTE (NON-MINERALISED)

| No | Issue | Management commitment |
|--|---------------|--|
| These commitments apply <u>construction, operation and decommissioning</u> phases | | |
| 1 | General | The waste management procedure must cover the recycling, re-use, storage, handling, transportation and disposal of waste to a licenced landfill facility. Ensure that the contractor's responsible are made aware of these procedures. |
| 2 | Collection of | Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate |

| No | Issue | Management commitment |
|----|-------------------|---|
| | waste | capacity. Separate waste containers must be provided for hazardous waste, potentially hazardous waste, general waste and construction waste. Hazardous / harmful waste must be clearly distinguishable as such. |
| 3 | | Containers shall be provided with lid or netting to prevent the waste from being removed by scavengers or wind. Waste containers should not be over-filled. |
| 4 | | Ensure that the campsites, the work site and the surroundings are kept in a neat condition at all times and that windblown litter is cleared on a daily basis. |
| 5 | Disposal of waste | All waste will be removed from site and disposed of at a licensed landfill site. Disposal certificates will be kept. |
| 6 | Burning of waste | No burning of waste is permitted. |

7.10.2.2 Hazardous solid waste (non-mineralised)

Objectives

The objective of the management measures is to ensure proper storage, removal, transportation and disposal of hazardous solid waste

Actions

TABLE 7-13: ACTIONS RELATING TO HAZARDOUS SOLID WASTE (NON-MINERALISED)

| No | Issue | Management commitment |
|--|---------------------|--|
| These commitments apply <u>construction, operation and decommissioning</u> phases | | |
| 1 | General | The waste management procedure will cover the storage, handling, and transportation of waste. Ensure that the contractor's responsible are made aware of these procedures. |
| 2 | Collection of waste | Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity. |
| 3 | Waste storage | Hazardous waste will not be stored in skips but in designated suitable containers. |
| 4 | | Collect and accumulate all hazardous waste until such time that the amounts can be removed from site. |
| 5 | | Place oil and greasy cloths and rags into a steel drum and when full transported off site to the hazardous waste site. |
| 6 | | Ensure that waste storage areas and/or containers meet the risk needs for that specific waste (e.g. impervious floor, bunded areas with drainage/containment systems, lids to prevent light material from blowing away or sealed containers for hazardous material). |
| 7 | Disposal | Disposal of waste at appropriate permitted waste disposal facilities as follows: |

| No | Issue | Management commitment |
|----|------------------|--|
| | | ○ Hazardous waste shall be removed from site and may be recycled or disposed of at the nearest hazardous site. |
| 8 | Disposal records | Written evidence of safe disposal of waste will be kept. |

8 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

This section describes the roles and responsibilities for implementing the various management plans.

8.1 NRE PROJECT MANAGER

The NRE Project Manager has overall responsibility for environmental management associated with their activities and for ensuring this EMP is implemented. To assist the Project Manager, NRE has an Environmental Department that is be dedicated to managing and monitoring the environmental issues associated with their activities. The Project Manager must make sure that environmental requirements are included in the tender documents sent to the contractor. The Project Manager must ensure that an environmental clause is included in the contract document and communicated to the contractor before the inception of the project. The Project Manager must ensure that the contractor remains in compliance with the requirements of the EMP, through regular communication and monitoring.

8.2 ENVIRONMENTAL DEPARTMENT

The NRE Environmental Department, will be responsible for assisting the Project Manager and various other managers in all environmental and community issues, and specifically to ensure that the commitments as set out in this EMP are implemented during the design, operations, decommissioning and closure phases.

The Environmental Department will assist the Project Manager in ensuring the contractor remains in compliance with this EMP through:

- Provides environmental inductions for the contractors and their employees
- Conduct regular inspections
- Organize and implement monitoring and audit functions, in consultation with the Project Manager
- Report back to the Project manager on contractor compliance to the EMP before the project close-off and final payment is made to the contractor

8.3 CONTRACTORS

- Is responsible for the implementation of the EMP
- Ensuring all tasks undertaken under the scope of work, are in accordance both with NRE's environmental policy as well as to the requirements of this EMP.
- Putting in writing a system of communication, in which all incidents and accidents are reported to the NRE Environmental section.
- Ensuring that all employees receive environmental induction before the start of the project.
- Ensuring that the work being done does not create a nuisance to the residents or animals on the property. If the contractor deems to continue work after the usual working hours, in the evenings and

at night or over weekends, he must obtain the landowner's permission before proceeding with such work.

9 MONITORING AND AUDITING

9.1 MONITORING

Monitoring requirements have been included in the Management and mitigation plans provided in Section 7.

- Monitor movement of construction staff to remain within the boundaries of the designated corridor.
- Monitor on a regular basis (during construction) that erosion controls are adequately managed.
- Monitor use of overpasses by mammals by counting spoor once a month (once confirmed the monitoring frequency can be reduced).
- Monitor use of firewood by staff and other people.

9.2 AUDITING COMPLIANCE OF THE EMP

The commitments contained in this EMP will, once an environmental clearance has been obtained, be NRE's contractual agreement with the Namibian authorities for sound environmental management. All employees, contractors and sub-contractors and any visitors to site will be expected to comply with the commitments contained herein.

9.2.1 AUDITS AND INSPECTIONS

The Environmental Department will conduct internal management audits against the commitments in the EMP. During the construction phase, these audits will be conducted every month. In the operational phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

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compilation)



global environmental solutions

NamPower
Environmental Management Plan for the Construction and
Operation of Lofdal Rare Earths Mine Powerline
SLR Project No.: 734.14013.00005

Report No.: 007

June 2016

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Environmental Management Plan for the Construction and
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June 2016

DOCUMENT INFORMATION

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ENVIRONMENTAL MANAGEMENT PLAN FOR THE CONSTRUCTION AND OPERATION OF LOFDAL RARE EARTHS MINE POWERLINE

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ACRONYMS AND ABBREVIATIONS

Below a list of acronyms and abbreviations used for the Lofdal Project (however, not all of these appear in this document).

| Acronyms / Abbreviations | Definition |
|--------------------------|---|
| AC | Alternating current |
| ART | anti-retroviral treatment |
| amsl | Above mean sea level |
| ASTM | American Society for Testing and Materials |
| BID | Background Information Document |
| bgl | Below ground level |
| Bq/kg | Becquerel per kilogram |
| CaCl ₂ | Calcium Chloride |
| CDT | Constant Discharge Test |
| CZ | Central Zone |
| CSR | Closest sensitive receptor |
| dBA | Decibels |
| DC | Direct current |
| DEA | Directorate of Environmental Affairs |
| DPM | Diesel Particulate Matter |
| EAP | Environmental Assessment Practitioner |
| EAPAN | Environmental Assessment Professionals Association of Namibia |
| ECC | Environmental Clearance Certificate |
| EIA | Environmental Impact Assessment |
| EMP | Environmental Management Plan |
| EPL | Exclusive Prospecting License |
| FOE | frequency of exceedance |
| GAL | Gangue acid Leach |
| GLC | Ground level concentrations |
| GROWAS | (national groundwater databse) |
| GWh | Gigawatt hour |
| GWD | Groundwater devide |
| ha | hectares |
| IBA | Important Bird Area |
| HREE | Heavy Rare Earth Enrichment |

| Acronyms / Abbreviations | Definition |
|---------------------------------|--|
| HDPE | High-density polyethylene |
| HCL | Hydrochloric acid |
| HSE | Health and Safety |
| IAMA | Institute of Environmental Management and Assessment, UK |
| IAEA | International Atomic Energy Agency |
| IAPs | Interested and Affected Party |
| ICP-MS | Inductively Coupled Plasma Mass Spectrometry |
| ICRP | International Commission on Radiological Protection |
| IFC | International Finance Corporation |
| IUCN | International Union for Conservation of Nature |
| km | kilometre |
| Km ² | Kilometre squared |
| KOPs | Key observation points |
| kWh | Kilowatt hour |
| kWp | Kilowatt peak |
| kV | kilovolt |
| LOM | Life of Mine |
| MAP | Mean Annual Precipitation |
| mSv/a | Millisieverts per year |
| m ³ /h | Cubic Metres per Hour |
| MAP | mean annual precipitation |
| MAWF | Ministry of Agriculture, Water and Forestry |
| MET | Ministry of Environment and Tourism |
| MHSS | Ministry of Health and Social Services |
| ML | Mining License |
| mm | Millimetre |
| MME | Ministry of Mines and Energy |
| MM5 | Fifth-Generation Penn State/NCAR Mesoscale Model |
| msl | Mean sea level |
| MVA | Megavolt amperes |
| MWp | Megawatt Peak |
| MW | Megawatt |
| NACOMA | Namibian Coast Conservation and Management project |
| NAMCOL | Namibian College of Open Learning |
| NBC | Namibian Broadcasting Commission |

| Acronyms / Abbreviations | Definition |
|--------------------------|---|
| NBR | Natural Background Radiation |
| NDCR | National Dust Control Regulation(s) |
| NGO | Non-Governmental Organisation |
| NGO | Non-Governmental Organizations |
| NHCN | National Heritage Council of Namibia |
| NMZ | Northern Margin Zone |
| NRE | Namibia Rare Earths |
| NSRs | Noise sensitive receptors |
| NWR | Namibia Wildlife Resort |
| NZ | Northern Zone |
| PAP | Project Affected People |
| PEA | Preliminary economic assessment |
| PM _{2.5} | Inhalable particulate matter with an aerodynamic diameter of less than 2.5µm |
| PM ₁₀ | Thoracic particulate matter with an aerodynamic diameter of less than 10µm |
| PPE | Personal Protective Equipment |
| PPP | Public Participation Process |
| PV | Photo Voltaic |
| RAP | Resettlement Action Plan |
| REE | Rare Earth Element |
| REO | rare earth oxides |
| RGM | Radon Gas Monitor |
| RMP | Radiation Management Plan |
| Rn | Radon (including the radioactive radon isotopes Rn ²²² and Rn ²²⁰) |
| ROM | Run-of-mine |
| RWL | Rest water level |
| SCZ | Mentioned in Geology section 4.2.2, but not written out. |
| SEA | Strategic Environmental Assessment |
| SLR | SLR Environmental Consulting (Namibia) (Pty) Ltd |
| SME | small and medium enterprises |
| SOP | Standard Operating Procedure |
| SRTM | Shuttle Radar Topography Misiion |
| TGM | Thoron Gas monitor |
| TREO | total rare earth oxide |
| TSF | Tailings Storage Facility |
| TSP | total suspended particulates |

| Acronyms / Abbreviations | Definition |
|---------------------------------|--|
| UNSCEAR | United Nations Scientific Committee on the Effects of Atomic Radiation |
| VOC | Volatile organic compound |
| WRD | Waste Rock Dump |
| WSS | Water supply scheme |
| XRF | x-ray fluorescence sorting technology |
| XRT | x-ray transmission sorting technology |
| %HREE | % heavy rare earth enrichment |

ENVIRONMENTAL MANAGEMENT PLAN FOR THE CONSTRUCTION AND OPERATION OF LOFDAL RARE EARTHS MINE POWERLINE

1 INTRODUCTION

Namibia Rare Earths (NRE) plans to develop an open-pit mine and processing plant that will produce a concentrate consisting mainly of 'rare earths'. The principal rare earth mineral of economic interest that will be produced at Lofdal is xenotime. The proposed mine, processing plant and associated infrastructure is hereinafter referred to as the "Lofdal Project".

This Environmental Management Plan (EMP) documents a series of individual management and mitigation plans (MMPs) which are designed to meet legal requirements and avoid or minimise the impacts associated with the implementation of Lofdal Mine Powerline.

The MMPs have been compiled based on a review of the findings and recommendations of the EIA Report for the Powerline for the proposed Lofdal Rare Earth Mining Project (SLR, 2016a) and associated specialist studies.

Two separate EMPs were developed for the proposed Lofdal Mine and associated water supply pipeline to the mine (SLR, 2016b and SLR, 2016c).

TABLE 1-1: SUMMARY OF ISSUES IDENTIFIED IN THE EIA AND CORRESPONDING MANAGEMENT PROGRAMMES

| Environmental component (reference to Section 7 of the EIA report for the powerline) | Issue (reference to Section 7 of the EIA) | Relevant MMP (reference to Section 0 of the EMP) |
|---|--|--|
| Biodiversity (7.3) | Direct physical destruction of biodiversity and their habitats, particularly sensitive and restricted habitats. Section 7.3.2 | MMP7.2 – Biodiversity |
| | General disturbance of biodiversity Section 7.3.3 | MMP7.2 – Biodiversity |
| Archaeology (7.4) | Damage to archaeological sites Section 7.4.1 | MMP7.9 - Archaeology |
| Visual (7.5) | Visual impact on tourism and residents Section 7.3.1 | MMP7.6 - Visual |

| Environmental component (reference to Section 7 of the EIA report for the powerline) | Issue (reference to Section 7 of the EIA) | Relevant MMP (reference to Section 0 of the EMP) |
|--|---|---|
| The following environmental components were not considered significant in terms of potential impacts and were therefore not assessed in detail. However, management and mitigation measures have been included in this EMP in order to ensure the avoidance/minimization of any potential impacts. The relevance of these potential impacts is discussed (screened) in Table 7-1 in Section 7 of the Powerline EIA Report. | | |
| Surface water and groundwater (7.1) | Pollution of surface water and groundwater Section 7.1 | MP7.3 – Surface water and groundwater MP |
| Air quality (7.1) | Air pollution Section 7.1 | MP7-4 – Air quality |
| Soil and Land Capability (7.1) | Loss of soil resources from pollution Section 7.1 | MP7.5 – Soil management and mitigation plan |
| | Loss of soil resources through physical disturbance Section 7.1 | |
| Visual (7.1) | Visual impact. Section 7.1 | MP7-6 – Visual |
| Noise (7.1) | Noise Pollution Section 7.1 | MP7-7 - Noise |
| Socio-economic (7.1) | Job creation and skills development. Section 7.1 | MP7-8 – Socio-economic |
| The following environmental components were not addressed in the EIA. However, management's measures have been included in this EMP in order to ensure the avoidance of any potential impacts. | | |
| Safety and security Capability | Impacts on safety and security of 3 rd parties, as well as fauna | MP7.1 – Safety and security |
| Waste | Address, control and mitigate waste-related impacts | MP7-10 – Waste |

NamPower has however prepared a 'General Environmental Management Plan' (GEMP) for the construction of all their power lines (NamPower, 2006). The GEMP provides standard requirements

regarding the environment to any contractor whom NamPower appoints for any construction activity. The GEMP however is not site specific and needs to be implemented by NamPower and their contractors with this (site specific) Lofdal Powerline EMP.

1.1 KEEPING EMPs UP TO DATE

It is the intention that this EMP should be seen as a “living document” which will be amended during the operation, as the activities might change or new ones be introduced.

Should a listed activity(s) as defined in the Environmental Impact Assessment Regulations: Environmental Management Act, 2007 (Government Gazette No. 4878) be triggered (as a result of future modifications/changes at the mine), this EMP will be updated as a result of another EIA process as stipulate in the regulations.

1.2 DETAILS OF THE PERSONS WHO PREPARED THIS EMP

SLR Namibia (Pty) Ltd (SLR), the independent firm of consultants who undertook the 2016 EIA has also compiled this EMP.

Werner Petrick, with the assistance of Simon Charter and Nadine Soutschka who are all Environmental Practitioners from SLR, prepared this EMP.

Werner Petrick, the EIA project manager has over seventeen years of relevant experience in conducting/managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems. Simon Charter has more than 10 years of experience of EIA preparation, compilation of EMPs, conducting audits and reviewing relevant reports. Nadine Soutschka has over 2 years of relevant experience.

2 SCOPE OF EMP

The components of the EMP are included in table 2-1 below.

TABLE 2-1: CONTENT OF THE EMP

| EIA Regulation requirement | Reference in the EMP |
|---|-----------------------------|
| Details of the persons who prepared the EMP and the expertise of those persons to prepare an environmental management plan. | Section 1.2 |
| Project overview | Section 4 |
| Overall objectives | Section 6 |
| Information on any proposed management or mitigation measures to address the environmental impacts that have been identified in a report contemplated by these regulations, including environmental impacts or objectives in respect of – <ul style="list-style-type: none"> i. Planning and design ii. Construction activities iii. Operation or undertaking of the activity iv. Rehabilitation of the environment v. Closure, where relevant | Section 7 |
| A detailed description of the aspects of the activity that are covered by the EMP. | Sections 4 & 5 |
| An identification of the persons to be responsible for the implementation of the mitigation measures. | Sections 5 & 8 |
| Where appropriate, time frames within which the measures contemplated in the EMP must be implemented. | Section 8 |
| Proposed mechanisms for monitoring compliance with the EMP and reporting on it. | Sections 7 & 9 |

3 ENVIRONMENTAL LEGISLATION

Section 2 of the EIA Report provides a detailed description of all Namibian legislation that is relevant to the Lofdal project.

3.1 PERMITS

table 3-1 provides a summary list of the relevant environmental permits required by NamPower.

TABLE 3-1: LIST OF RELEVANT ENVIRONMENTAL PERMITS/APPROVALS REQUIRED BY NAMPOWER

| Aspect | Permits/Certificates/Authorizations | Regulator |
|--------------------------------------|--|-----------|
| Construction of the powerline | Environmental Clearance for the proposed Lofdal Powerline | MET |
| Vegetation | Forest permit-Tree harvesting - Protected trees | MAWF - DF |
| Archaeological | Heritage permit/ to disturb and transport archaeological materials | NHC |

4 PROJECT OVERVIEW

4.1.1 POWER SUPPLY

The closest substation to the Lofdal Project site is the Welwitschia Substation near Khorixas. The power line between the Welwitschia Substation will be a 66 kV overhead line from the national power grid that will run to a new substation (11kV Motor Control Centre) located at the plant site.

The proposed powerline route as assessed in the EIA is depicted in Figure 4-1 (purple line). However, after the assessment, from a biodiversity perspective, (see EIA Report (SLR, 2016a)) a variation around a sensitive area (green line) is preferred.

4.1.2 POWER LINE STRUCTURES

The envisaged structure of the main 66 kV power line will be concrete monopoles, with three conductors and an earth wire on top. The height of a concrete monopole is around 24 m. The monopole is self-supporting, although stay wires are used at bend points.

At the processing plant site the 66 kV power will be stepped down from the NamPower overhead line to 11 kV. A switchboard (within a building) will be provided at the process plant (referred to as the 11 kV Motor Control Centre). There will be a requirement for Return Water at the Tailing Dam, and a short 11 kV overhead line (about 3 km) may be required, using a wooden Horizontal Line Post Compact Delta (HLPCD) monopole structure. The HLPCD structure is self-supporting, although stay wires are used at bend points. These structures have no earth wire.

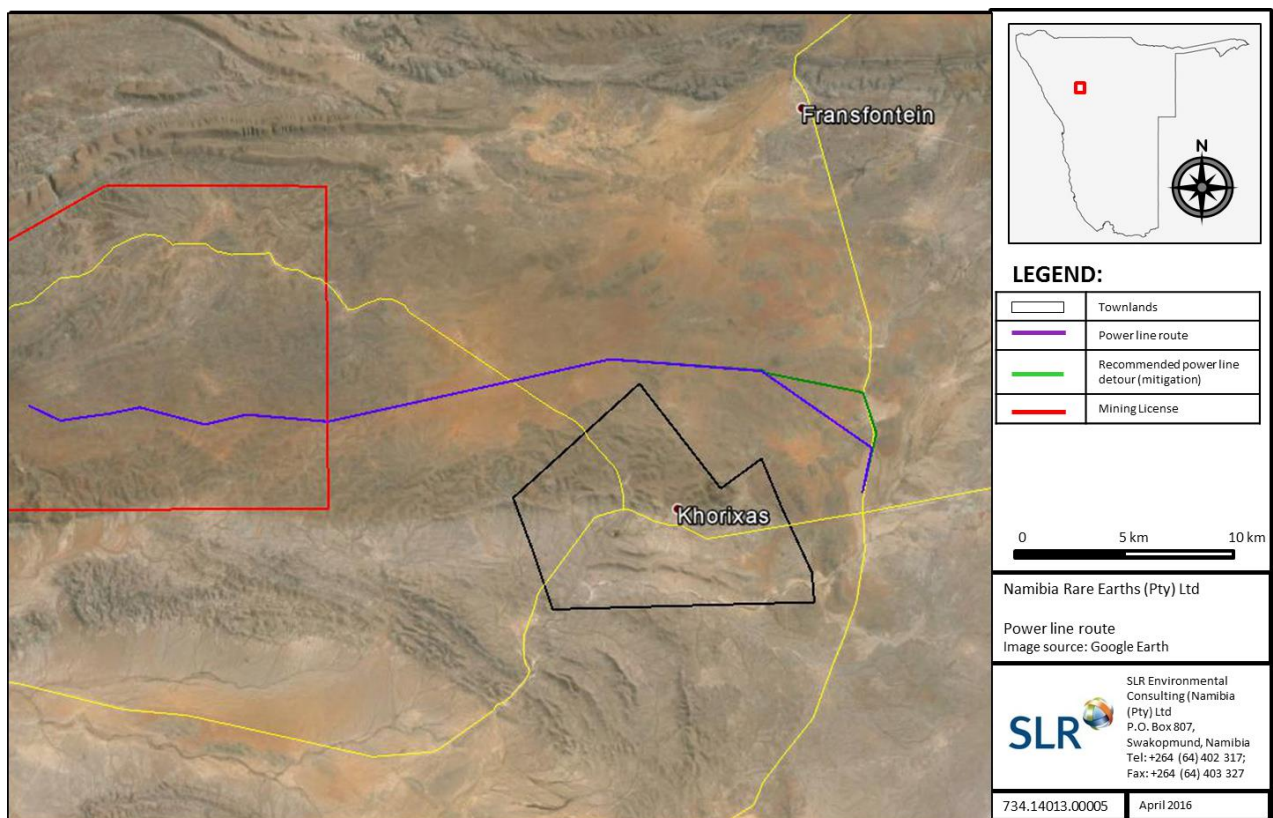


FIGURE 4-1: FINAL NAMPOWER POWER LINE OPTION

4.1.3 CONSTRUCTION

A number of construction laydown areas will be established on site during the power line infrastructure construction phase. These work areas will either move within the power line footprint as construction progresses, or they will be located at a specific stationary site within the power line footprints for the duration of the construction phase.

In general, the following facilities will be required at each contractor laydown area.

- mobile field workshop and maintenance areas;
- mobile stores for storing and handling fuel, lubricants, solvents, paints and construction materials;
- temporary lay-down areas;
- mobile site offices;
- mobile waste collection and storage areas;
- temporary parking area for cars and equipment;
- mobile change rooms; and
- toilets facilities (preferably chemical toilets) that will be serviced regularly.

4.1.4 CONSTRUCTION ACTIVITIES

Construction activities will take place during the establishment and preparation of the power line infrastructure. The following activities may be associated with the construction of the power line components:

- Surveying and setting out of the final power line route
- The cleared servitude (from large trees, shrubs, bushes, etc.) must be 25 m on each side (50 m in total) with the central 12 m cleared for a maintenance access road.
- Pegging of the power line (a 150 m corridor will be established prior to the pegging of the powerline in which the servitude can deviate if required – taking the EMP commitments into consideration).
- Hole excavation by means of a compressor drill rig
- Drilling and blasting (planting of poles using a 4x4 truck)
- Cleaning, grubbing and bulldozing
- Soil excavation
- Disposal or treatment of contaminated soil
- Foundation excavation
- Storage and handling of material (sand, rock, cement, chemical additives)
- Water utilization
- Operation and movement of construction vehicles
- Refuelling of equipment
- Handling, storage and transportation of non-hazardous and hazardous waste
- Stringing of conductors (Stringing the lines using a 4x4 truck)
- Use of generators
- Install transformers (cable / transformer point construction)
- Painting, grinding and welding (pole dressing though manual labour)
- Provision of washing and toilet facilities
- Slope stabilization and erosion control
- Appointment of contractors and laborers

4.1.5 EMPLOYMENT AND HOUSING

The construction will be done by a combination of NamPower employees and contractors. Contractors for the construction phase will be engaged on a short term, temporary basis. Construction personnel would reside in Khorixas, Fransfontein and the various farms as agreed with landowners located close to the project site.

4.1.6 WATER SUPPLY FOR CONSTRUCTION ACTIVITIES

No significant quantities are required and mobile water bowsers will be used. Water will be sourced from Khorixas/Fransfontein.

4.1.7 POWER SUPPLY FOR CONSTRUCTION ACTIVITIES

Small, mobile generators will supply power for the construction phase.

4.1.8 SANITATION FOR CONSTRUCTION

Chemical toilets with associated septic tanks (preferred) or toilets connect to French Drain systems will be used. The septic tanks will be emptied on a regular basis and the effluent disposed of at a licenced facility off-site.

4.1.9 WASTE MANAGEMENT FOR CONSTRUCTION

Relatively small quantities of waste will be generated during the construction phase. Waste will be separated at source, stored in a manner that there can be no discharge of contamination to the environment and either recycled or reused where possible. The remainder will be transported off site to appropriate recycling or disposal facilities.

Standard waste management requirements are stipulated in the NamPower GEMP.

4.1.10 TIME TABLE

Construction commencement is subject to regulatory approval, i.e. approval of the EIA and issuing of an Environmental Clearance Certificate (ECC) by MET as well as issuing of the ML for the Lofdal Mining Project by MME. Furthermore, economic considerations will dictate the start of construction.

At this point in time (depending the abovementioned conditions), NamPower plan to start with construction towards the middle of 2017.

4.2 DECOMMISSIONING AND CLOSURE

NRE must ensure that adequate rehabilitation and closure of the Lofdal Mine takes place following the conclusion of the proposed mine. Similarly, NamPower in collaboration with NRE would be responsibly for adequate rehabilitation of the powerline to the mine. However, during the development of the Mine Closure Plan that will be developed in consultation with relevant stakeholders (which will include the associated linear infrastructure), it might be decided to maintain the power line in its position to be used for future network development and power distribution

At a conceptual level, decommissioning can be considered a reverse of the construction phase with the demolition and removal of the majority of infrastructure and activities very similar to those described with respect to the construction phase.

5 ENVIRONMENTAL MANAGEMENT ASPECTS AND IMPACTS

Understanding the biophysical and human environment in which the powerline will be constructed and operated is the first step to understanding environmental impacts. The next and possibly more important step is to identify the environmental aspects that give rise to the impacts. All of these aspects have the potential to cause impacts on the environment in a different way. Successful management will be gauged by how well the applicant avoids, minimises or mitigates all the impacts associated with each environmental aspect.

As part of the EIA process for the Lofdal Mine and associated infrastructure (pipeline and powerline), environmental aspects and potential environmental impacts associated with the activities and facilities were identified. The full suite of activities, associated with the construction, operation, decommissioning, and closure phases are described in the 2016 EIA Reports (SLR, 2016a) and summarized in section 4 of this EMP. Table 5-1 provides a description of the significant environmental aspects that are associated with powerline and how they impact the biophysical and human environments, respectively.

TABLE 5-1: DESCRIPTION OF SIGNIFICANT ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS ASSOCIATED WITH LOFDAL RARE EARTHS MINE POWERLINE

| Environmental aspects | Potential impact | Management Plan |
|-----------------------|---|----------------------|
| Biodiversity | Direct physical destruction of biodiversity and their habitats, particularly sensitive and restricted habitats. | MP7.2 – Biodiversity |
| | General disturbance of biodiversity | MP7.2 – Biodiversity |
| Archaeology | Damage to archaeological sites | MP7.9 - Archaeology |
| Visual | Visual impact on tourism and residents | MP7.6 - Visual |

6 OVERALL ENVIRONMENTAL OBJECTIVES FOR THE EMP

The following overall environmental objectives have been set for the Lofdal Mine Project and associated infrastructure, relevant to the powerline:

- To comply with national legislation and standards for the protection of the environment.
- To limit potential impacts on biodiversity through the minimisation of the footprint (as far as practically possible).
- To keep surrounding communities informed of mining (and associated) activities through the implementation of forums for communication and constructive dialogue.
- To limit contaminated effluent discharge into the environment through the containment, recycling or removal of contaminated water.
- To protect soils and groundwater resources through the implementation of measures for spill prevention and clean-up.
- To ensure legal compliance and appropriate management and disposal of general and hazardous waste, through the implementation of a strategy for the minimisation, recycling, management, temporary storage and removal of waste.
- To minimise the potential for dust emissions through the implementation of dust control measures.
- To minimise the potential for noise disturbance in surrounding areas.
- To protect cultural heritage by thorough documentation and the obtaining of necessary legal approvals thereof prior to destruction, where relevant.
- To incorporate final closure objectives as part of the Lofdal Mine Closure planning.
- To develop, implement and manage management systems to ensure good environmental performance.
- To ensure the health and safety of surrounding communities.
- To support and encourage environmental awareness and responsibility amongst all employees and service providers.
- To provide appropriate environmental education and training for all employees and service providers.
- Prevent and minimise pollution.
- To incorporate the relevant requirements stipulated in this EMP into the design and planning.
- To ensure that all the contractors adhere to the construction related management commitments.
- Ensure compliance to the EMP.

7 MANAGEMENT PROGRAMMES

The management and mitigation plans (MMPs), listed in the table below, are applicable to all the relevant activities and facilities of the Lofdal Mine Powerline. (The MMPs follow in the subsequent sections).

TABLE 7-1: VARIOUS MMPS AND NUMBERS

| Number | Management and Mitigation Plan (MMP) |
|--------|--------------------------------------|
| 7.1 | Safety and Security MMP |
| 7.2 | Biodiversity MMP |
| 7.3 | Surface water and groundwater MMP |
| 7.4 | Air Quality MMP |
| 7.5 | Soil MMP |
| 7.6 | Visual MMP |
| 7.7 | Noise MMP |
| 7.8 | Socio-Economic MMP |
| 7.9 | Archaeology MMP |
| 7.10 | Waste MMP |

7.1
Safety and Security MMP

7.1 SAFETY AND SECURITY MANAGEMENT PROGRAMME

It is essential that safety and security measures are defined and implemented to ensure that the construction site cannot be accessed by unauthorized people.

7.1.1 COMPONENTS

This plan is made up of the following components:

- a. General (third party) safety and security.

7.1.2 MANAGEMENT

7.1.2.1 General (third party) safety and security

The objective of the measures is to limit the impacts of any excavations and surface infrastructure.

Actions (commitments)

TABLE 7-1: ACTIONS (COMMITMENTS) RELATING TO GENERAL (THIRD PARTY) SAFETY AND SECURITY

| No | Issue | Management commitment |
|--|---|--|
| These commitments apply to <u>construction/decommissioning phase</u> | | |
| 1 | Animals and 3rd parties falling into open trenches. | All trenches/excavations are marked whilst open and closed as soon as possible. |
| 2 | Emergency | If people are injured as a result of the proposed power line construction, the NamPower emergency response procedure will be followed. A system of communication must be devised by the contractor and made available to NamPower, in order to inform NamPower about all incidents and accidents (including those affecting the environment) and injuries sustained. |
| These commitments apply to <u>construction & operational phases</u> | | |
| 3 | Access of unauthorised people to the substation | The substation remains fenced with appropriate warning signs. |
| 4 | Communication with landowners | Before work commences, inform all affected landowners and relevant authorities about the project, at least 14 days before the start of the project. |
| 5 | | Whenever reasonably possible, the contractor shall meet with the landowner / representative of the conservancies, introduce himself and the company he represents and explain the scope of the work. The landowner / representative of the conservancies must have knowledge of the planned route and duration of work on the property prior to the commencement of the work. This shall be done in due courtesy to the owner / representative of the conservancies. |

| | | |
|-----------|---|--|
| 6 | General 3 rd party safety | The rights of the landowner shall be respected at all times and all staff shall be sensitised to the fact that they are working on private property. |
| 7 | | Personnel should limit their contact with permanent residents of the area. |
| 8 | | Personnel should be properly educated about the impact of HIV / AIDS. |
| 9 | | Any person making himself guilty of violence, harassment or any other activity deemed inappropriate by the landowner, must immediately be removed from the site. |
| 10 | | The distribution or supply of intoxicating liquor or drugs of any kind by the employees of the contractor or any contractor is strictly prohibited. |

7.2 Biodiversity MMP

7.2 BIODIVERSITY MANAGEMENT PROGRAMME

To understand biodiversity one must appreciate all of its components. It is not just about the species of plants and animals and the different habitats in which they live (biodiversity patterns) but the way that factors, such as wind, water, steepness of slope and presence of pollinators, affect the habitats and the species living in them (ecosystem processes).

The commitments derived from the EIA Report (SLR 2016A) with regards to Biodiversity forms the basis of this MMP.

7.2.1 COMPONENTS

This plan is made up of the following components:

- Managing the physical destruction of biodiversity.
- Managing general disturbance.

7.2.2 MANAGEMENT

7.2.2.1 Physical destruction of biodiversity

Objectives

The objective of the management measures is to prevent or limit the unacceptable loss of biodiversity and related functionality through physical disturbance.

Actions

TABLE 7-2: ACTIONS RELATING TO THE PHYSICAL DESTRUCTION OF BIODIVERSITY

| No | Issue | Management commitment |
|---|--------------------------------------|--|
| These commitments apply to the construction/decommissioning phases | | |
| 1 | Physical disturbance of biodiversity | To limit powerline infrastructure, activities and related disturbance to those specifically identified and described in the EIA report for the Lofdal Powerline. A strip, only wide enough to allow for vehicular movement, shall be cleared for access roads. trim out or clear the minimum number of trees and bush necessary for the safe electrical operation of the power line. |
| 2 | | The contractor to adhere to construction site speed limits at all times – i.e. 20 km/h on construction sites. |
| 3 | | Use existing access road, as far as possible, for vehicle movements. The possibility of using the same access roads (or section thereof) for the mine, water pipeline- and powerline maintenance roads must be investigated. NRE to liaise with both NamPower and NamWater in this regard. |
| 4 | | Dispose of waste materials at a license waste disposal site in an appropriate manner. |
| 5 | | Monitor rehabilitation in accordance with the restoration plan to ensure long term |

| No | Issue | Management commitment |
|----|-------|---|
| | | success. The restoration plan need to be drawn up us part of the Lofdal Mine Closure Plan development. |
| 6 | | Avoid all sensitive and very sensitive habitats by selecting a route that will cause the least destruction to avian habitats. Therefore the preferred route (green line) in Figure 4-1 needs to be implemented. |
| 7 | | Koppies with quartz should be designated no-go areas during construction of the powerline. |
| 8 | | Use areas that are already disturbed or will definitely be disturbed in the near future for any temporary construction camps or lay-down areas. |
| 9 | | Identify nests and roosts of birds and ensure that these are avoided during construction operations |
| 10 | | Trim out or clear the minimum number of trees and bush necessary for the safe electrical operation of the power line. |

7.2.2.2 Managing general disturbance

Objectives

The objective of the management measures is to prevent disturbance to biodiversity.

Actions

TABLE 7-3: ACTIONS RELATING TO THE GENERAL DISTURBANCE TO BIODIVERSITY

| No | Issue | Management commitment |
|--|--|--|
| These commitments apply to <u>design and construction phase</u> | | |
| 1 | Avoid/Minimize impacts on biodiversity | To limit powerline infrastructure, activities and related disturbance to those specifically identified and described in the EIA report for the Lofdal Powerline |
| 2 | | Line span lengths should be decreased where possible to increase the visibility of the line. |
| 3 | | Design footprints of all infrastructure (including roads) to be as small as is legally, safely and practically possible. In this regard, NamWater, NamPower and NRE need to collaborate regarding possible joint access road, etc. relating to the linear infrastructure corridor (i.e. pipeline, powerline and access road) to minimise the disturbance footprint as far as possible. |
| 4 | | The powerline route should avoid crossing or running close to a Tailings Storage Facility (TSF), which has the potential to attract birds. |
| 5 | | Where possible the powerline should follow should be in the same corridor as the existing Welwitschia – Fransfontein powerline on the eastern side of the C35 road, until it branches off to the west. |

| No | Issue | Management commitment |
|---|---|--|
| 6 | | <p>The need for marking in specific parts still needs to be determined. It is recommended that this aspect is confirmed during a walk-through with a bird specialist once the route has been pegged and construction begins. The ideal time to do this would be during the rainy season, when birdlife is at its most abundant. If possible a second walk-through should be conducted post-construction.</p> <p>Should a need be confirmed for marking any section(s) of the line, a spiral type bird flight diverter (BFD; e.g. Double Loop Bird Flight Diverter) should be used on the earth wire at 10 m intervals, alternating black and white. Any other suitable proven device on the market at that stage could also be considered.</p> |
| 7 | | <p>Ensure that planning of powerlines and large buildings are aware of these issues and that bird deterrent devices are incorporated into designs and that the position of such structures is selected to minimise the chances of strikes</p> |
| 8 | | <p>Install appropriate bird deterrent devices on all tall structures, and especially on power cables in the High Risk Zones (Refer to the Powerline EIA Report) (consult an ornithologist with experience of such things)</p> |
| <p>These commitments apply to <u>operational phase</u></p> | | |
| 9 | <p>Avoid/Minimize impacts on biodiversity</p> | <p>Ensure that the entire line is monitored for any signs of bird mortalities resulting from the construction and operation of the line; ideally, regular dedicated monitoring patrols should be carried out once a month for at least the first year after construction, and thereafter at least once per quarter.</p> |
| 10 | | <p>A bird specialist can be consulted to advise on methodology and to provide training and other support to the designated person(s) if need be.</p> |
| 11 | | <p>Record all bird mortalities related to the power line on a standardised form, with the GPS coordinates and power line structure and other details, and photographs of the carcass (especially the head of the bird), power line structure and general habitat; forward a copy of each report to the NamPower for further investigation.</p> |
| 12 | | <p>Monitor the effectiveness of mitigation measures; apply additional mitigation if further problem areas are identified, and replace any mitigation devices as and when necessary.</p> |
| 13 | | <p>Monitor the distribution of Pied Crows. Should they move into the area and should their numbers increase, the efficiency of refuse management needs to be investigated.</p> |

| No | Issue | Management commitment | |
|--|--|--|---|
| 14 | | Collection of plants, or parts of plants (including fuelwood) should be forbidden unless done by members of the local communities. Contractors should be expressly forbidden to collect any plant material, dead or alive for any purpose whatsoever and should be provided with fuel (preferably gas) for both heating and cooking. | |
| 15 | | Raise awareness of biodiversity, sensitive habitats and commitments contained in this EMP through awareness campaigns and training of key staff. | |
| These commitments apply to <u>construction//operation/decommissioning phase</u> | | | |
| 16 | Avoid/Minimize impacts on biodiversity | To limit powerline infrastructure, activities and related disturbance to those specifically identified and described in this EIA report | |
| 17 | | Use existing access road as far (as possible) for vehicle movements | |
| 18 | | Enforce site speed limits – i.e. 20 km/h on construction sites. | |
| 19 | | Ensure all relevant rules are regularly communicated to workers and visitors | |
| 20 | | Enforce no hunting and no collecting policies and inspect construction sites | |
| 21 | | Construction teams that live on-site should be limited to a contained and fenced area and their access to the area should be controlled. | |
| 22 | | Regularly inspect areas adjacent to operations for signs of litter, wood collection and hunting | |
| 23 | | Only allow construction personnel and registered visitors on site | |
| 24 | | Construction and maintenance staff should be educated and informed of their environmental obligations. Meaningful penalties for damages should be stipulated, and the main contractor should be held responsible for all transgressions. | |
| 25 | | Where relevant, commence rehabilitation immediately after impact has ceased. | |
| 26 | | Off-road driving and the creation of tracks, other than those approved by this EIA are prohibited and will be regarded as unwanted tracks and unwarranted disturbed areas. All unwanted tracks and unwarranted disturbed areas must be rehabilitated. | |
| 27 | | Risk of field fires | Fires are to be limited to the campsite only. All fires must be extinguished when there is not someone supervising it and all ash must be cleaned up. |
| 28 | | | Fire fighting equipment must be kept in close proximity to the where work is taking place, at all times during construction. |
| 29 | Emergency situations | Certain instances of injury to animals may be considered emergency situations. These will be managed by the appointed Contractor. | |

7.3
Surface Water and Groundwater
MMP

7.3 SURFACE WATER AND GROUNDWATER MANAGEMENT PROGRAMME

There are a number of sources in the construction/decommissioning phases that have the potential to pollute surface- and groundwater particularly in the unmanaged scenario. These potential pollution sources are temporary in nature, usually existing for a few weeks to a few months. Although these sources may be temporary, the potential pollution may be long term.

7.3.1 COMPONENTS

This plan is made up of the following components:

- a. Pollution of surface water and groundwater

7.3.2 MANAGEMENT

7.3.2.1 Impacts on surface water and groundwater quality - general

Objectives

The objective of the management measures is to prevent pollution of surface water run-off and groundwater.

Actions

TABLE 7-4: ACTIONS RELATING TO THE MANAGEMENT OF SURFACE WATER AND GROUNDWATER

| No | Issue | Management commitment |
|---|---------------------------------------|---|
| These commitments apply to <u>construction/decommissioning phase</u> | | |
| 1 | Pollution of surface- and groundwater | Refer to the Lofdal Rare Earths Mine EMP |
| 2 | | Implement containment and clean-up measures relating to hazardous substance spillages (including hydrocarbons) |
| 3 | | Implement containment and clean-up measures relating to all spillages. |
| 4 | | Fuel containment facilities to be used during construction phase should be placed in a bunded area. |
| 5 | | The use of all materials, fuels and chemicals which could potentially leach into groundwater must be controlled. |
| 6 | | All other hazardous materials such as chemicals must be stored in a specific and secured area to prevent pollution from spillages and leakages. The use of chemicals should be controlled. Used oils, fuel, paints, grease and solvents should be stored in drums or other suitable containers, which must be labelled, sealed and removed from the site to an appropriate disposal site or recycling facility. |
| 7 | | All vehicles and machines must be maintained properly to ensure that oil spillages are kept at a minimum. Vehicle maintenance and refuelling activities must be conducted within a bunded area. |

| No | Issue | Management commitment |
|----|----------------------|--|
| 8 | | Spill trays must be provided if refuelling or maintenance of construction vehicles are done on site. Areas shall be monitored for spills and any spills shall be contained, cleaned and rehabilitated immediately. |
| 9 | | Chemical sanitary facilities (preferred) must be provided for construction workers. Construction workers should only be allowed to use temporary chemical / permanent toilets on the site. Chemical toilets shall not be within close proximity of any drainage system. Frequent maintenance should include removal without spillages. |
| 10 | | A register shall be kept on all hazardous substances and be available for inspection at all times. |
| 11 | Emergency situations | All spillage incidents will be handled in accordance with the NamPower Emergency Response Procedure/GEMP. |

7.4

Air Quality MMP

7.4 AIR QUALITY MANAGEMENT PROGRAMME

The construction/decommissioning related activities have the potential to impact on the existing air quality environment with short term temporary dust impacts of low significance.

7.4.1 COMPONENTS

This plan is made up of the following components:

- Fall-out dust

7.4.2 MANAGEMENT

Objectives

The objective of the management measures is to prevent unacceptable air quality related pollution impacts.

Actions

TABLE 7-5: ACTIONS RELATING TO FALL-OUT DUST

| No | Issue | Management commitment |
|---|-----------------|---|
| These commitments apply to <u>construction and decommissioning</u> | | |
| 1 | Dust generation | Dust suppression techniques should be in place when required, specifically where construction activities will take place in close proximity to residents. |

7.5 Soil MMP

7.5 SOIL MANAGEMENT PROGRAMME

The physical loss of soils and/or the loss of soil functionality are important issues because as an ecological driver, soil is the medium in which most vegetation grows and a significant range of vertebrates and invertebrates exist.

7.5.1 COMPONENTS

This plan is made up of the following components:

- Loss of soil resources – pollution.
- Loss of soil resources – physical disturbance.

7.5.2 MANAGEMENT

7.5.2.1 Loss of soil resources - pollution

Objectives

The objective of the management measures is to prevent pollution of soils.

Actions

TABLE 7-6: ACTIONS (COMMITMENT) RELATING TO LOSS OF SOIL RESOURCES DUE TO POLLUTION

| No | Issue | Management commitment |
|---|--|--|
| These commitments apply to <u>construction/decommissioning</u> phase | | |
| 1 | Soil pollution | Refer to the the Surface water and Groundwater MMP |
| 2 | | Pollution prevention through proper education and training of workers (permanent and temporary) |
| 3 | | Prompt response to contain and remediate pollution incidents. In this regard the remediation options include treatment or disposal of contaminated soils as hazardous waste. The former is generally considered to be the preferred option because with successful remediation the soil resource will be retained in the correct place. The treatment includes removal of soils for washing at a designated area after which the soils are replaced. Refer to NamPower Emergency Response Procedure. |
| 4 | Storage and handling of hazardous substances | Refer to Table 7-4. |
| 5 | Emergency situations | All spillage incidents will be handled in accordance with the NamPower Emergency Response Procedure/GEMP. |

7.5.2.2 Loss of soil resources – physical disturbance

Objectives

The objective of the management measures is to prevent the loss of soils and related functionality through physical disturbance, erosion and compaction.

Actions

TABLE 7-7: ACTIONS (COMMITMENT) RELATING TO LOSS OF SOIL RESOURCES DUE TO PHYSICAL DISTURBANCE

| No | Issue | Management commitment |
|--|--|---|
| These commitments apply to <u>construction and decommissioning</u> phases | | |
| 1 | Soil disturbance/ management and erosion protection | Limit the disturbance of soils during site clearing and any other construction activities. |
| 2 | | To minimise soil erosion, vegetation should be trimmed as apposed to the complete removal of vegetation. |
| 3 | | Manual bush clearing, as apposed to clearing using a bulldozer, is preferable, in order to minimise vegetation loss and hence reduce the risk of soil erosion. |
| 4 | | Where there are no real obstacles, where vehicles can simply drive over an area, or where obstacles can simply be removed by hand, blading shall not be used. When manual bush clearing is impractical, blading shall be used, but the blade shall be kept approximately ten centimetres from the soil surface to minimise the impacts to the soil surface and top layer, small plants and the root systems of larger plants. |
| 5 | | In mountainous / rough terrain (towards the western side of the route), the contractor shall be responsible for any reasonable for prevention of soil erosion where relevant. |
| 6 | | Erosion and drainage problems must be minimised by avoiding tracks crossing contours at right angles. |
| 7 | | Measures must be put in place to avoid erosion at river and stream channel crossings, and at places where existing erosion scars and dongas are encountered to avoid any further erosion at these points. |
| 8 | | Vehicle tracks, particularly in areas of low rainfall, must be restricted to the width of the servitude or recognised access routes. All unnecessary tracks should be rehabilitated at the contractor's expense. |

7.6

Visual MMP

7.6 VISUAL MANAGEMENT PROGRAMME

The proposed new power supply line will change the visual landscape.

7.6.1 COMPONENTS

This plan is made up of the following components:

- Visual disturbance.

7.6.2 MANAGEMENT

7.6.2.1 Visual disturbance

Objectives

The objective of the management measures is to limit visual impacts.

Actions

TABLE 7-8: ACTIONS RELATING TO VISUAL DISTURBANCE

| No | Issue | Management commitment |
|---|------------------------------|---|
| These commitments apply <u>design phase</u> only | | |
| 1 | Aesthetics or visual impacts | The construction and maintenance access road should preferably be as small as possible, routing around significant vegetation or rocky outcrops and be designed in such a way that prominent hill features are excluded to minimise the visibility from far away. The possibility of using the same access roads (or section thereof) for the mine, water pipeline- and powerline maintenance roads must be investigated. NRE to liaise with both NamPower and NamWater in this regard. |
| 2 | | Crossing of the D2625 should not take place in a prominent location and should as much as possible cross the road at a perpendicular angle and 'dog-leg' crossing should be at least 100 m from the side of the road. |
| These commitments apply to the <u>construction/decommissioning phase</u> | | |
| 3 | Minimising visual impacts | The cleared vegetation along the route should not be heaped up or burned on site but should be scattered as far as possible. |
| 4 | | Erosion prevention measures need to be implemented to ensure that erosion is not caused by the tracks. |

7.6

Noise MMP

7.7 NOISE MANAGEMENT PROGRAMME

The project will introduce new noise sources to the existing noise environment during the construction/decommissioning phases of the project. These impacts will be short term and temporary.

7.7.1 COMPONENTS

This plan is made up of the following components:

- Noise pollution

7.7.2 MANAGEMENT

7.7.2.1 Noise Pollution

Objectives

The objective of the management measures is to limit excessive noise pollution

Actions

TABLE 7-9: ACTIONS RELATING TO NOISE POLLUTION

| No | Issue | Management Commitment |
|--|-------------------------------------|--|
| These commitments apply to <u>construction, operation and decommissioning</u> | | |
| 1 | Impact of noise on the environment/ | Document and investigate all registered complaints and address the area of concern where possible. |
| 2 | sensitive receptors | Communication channels are established to ensure prior notice to the sensitive receptor if work is to take place close to them. Information that should be provided to the potential sensitive receptor(s) include: <ul style="list-style-type: none"> • Proposed working times; • how long the activity is anticipated to take place; • what is being done; • contact details of a responsible person where any complaints can be lodged should there be an issue of concern. |
| 3 | | Ensure that plant and equipment is well-maintained and fitted with the correct and appropriate noise abatement measures. |

7.8
Socio-economic MMP

7.8 SOCIAL AND ECONOMIC MANAGEMENT PROGRAMME

The proposed new powerline will introduce activities and infrastructure in the construction, operational and decommissioning phases.

This section focuses on the tourism and economic development impacts associated with the proposed project.

7.8.1 COMPONENTS

This plan is made up of the following components:

- a. Tourism and recreation impacts
- b. Economic development and job creation

7.8.2 MANAGEMENT

7.8.2.1 Tourism and recreation impacts

Objectives

The objective of the management measures is to minimise the impacts on tourism (tourists travelling along the C28).

Actions (commitments)

Refer to the noise- air quality- visual MMPs.

7.8.2.2 Economic Impact

Objectives

The objective of the management measures is to enhance the positive impacts associated with job creation and investment.

Actions

TABLE 7-10: ACTIONS RELATING TO ECONOMIC IMPACT

| No | Issue | Management commitment |
|---|---------------------------|--|
| These commitments apply to <u>construction, operation and decommissioning</u> phases | | |
| 1 | Employment opportunities. | <ul style="list-style-type: none"> • Weighting tender selection is weighted in favor of suppliers of goods and services which use local suppliers down the supply chain (assuming that the vendor is qualified and that they can deliver the requested product of the required standard in the requested time with their requested quality); • Procurement policies that promote the use of small and medium enterprises; • A human resources policy which prioritises the selection of women for training and recruitment and which supports women to perform well in the workplace; <p>Skills development strategies and programmes are in place prior to construction to maximise use of the local labour force.</p> |
| These commitments apply to <u>operation</u> phase | | |

| No | Issue | Management commitment |
|----|-------|--|
| 2 | | <ul style="list-style-type: none">• Support employees and community members to continue learning and developing skills so they too benefit from being able to offer labour flexibility and productivity;• Promote continuous learning programmes to diversify and upgrade skills; Ensure skills upgrading during employment at mine is documented and accredited where possible so skills are recognised with future employers. |

7.9

Archaeology MMP

7.9 ARCHAEOLOGY MANAGEMENT PROGRAMME

The proposed new powerline has the potential to damage the land surface and associated archaeological resources through physical disturbance of the land. The main activities that could cause this disturbance are the placement of surface infrastructure and vehicle movement.

7.9.1 COMPONENTS

This plan is made up of the following components:

- a. Damage to archaeological sites and landscapes from proposed powerline

7.9.2 MANAGEMENT

7.9.2.1 Chance archaeological finds

Objectives

To ensure that the correct actions are taken to preserve or document chance archaeological finds.

Actions

TABLE 7-11: ACTIONS RELATING CHANCE ARCHAEOLOGICAL FINDS

| No | Issue | Management commitment |
|--|-------------------------------------|---|
| These commitments apply <u>all phases</u> | | |
| 1 | Disturbance of archaeological sites | The project footprint should be kept as small as possible and confined to that described in the EIA Report for the Lofdal Powerline. It is recommended that contractors working on the site are made aware that under the National Heritage Act any items protected under the definition of heritage found in the course of development should be reported to the National Heritage Council. |
| 2 | Chance Finds | In the event of a chance find, the Contractor should inform NamPower, who will notify the National Heritage Council. |

7.10

Waste Management MMP

7.10 WASTE MANAGEMENT PROGRAMME

Waste is generated primarily during construction and decommissioning (if required). This MP deals with solid waste management.

7.10.1 COMPONENTS

This plan is made up of the following components:

- Non-hazardous solid waste (non-mineralised).
- Hazardous solid waste (non-mineralised).

Waste Inventory list:

| Waste type | Waste specifics (example of waste types) | Source |
|---|---|---|
| Non-hazardous solid waste (non-mineralised) | Metal Cut offs, rubber, wood, product packaging, organic materials, glass, plastics, food scraps, cardboard/paper, used PPE, etc. | Across site |
| Hazardous solid waste (non-mineralised). | Batteries, hydrocarbons (oils, grease), fluorescent bulbs, etc. | Laydown areas, temporary workshops, equipment |

7.10.2 MANAGEMENT

7.10.2.1 Non-hazardous solid waste (non-mineralised)

Objectives

The objective of the management measures is to ensure proper storage, recycling, re-using, removal, transportation and disposal of non-hazardous solid waste.

Actions

TABLE 7-12: ACTIONS RELATING TO NON-HAZARDOUS SOLID WASTE (NON-MINERALISED)

| No | Issue | Management commitment |
|--|--------------|--|
| These commitments apply <u>construction, operation and decommissioning</u> phases | | |
| 1 | General | The waste management procedure must cover the recycling, re-use, storage, handling, transportation and disposal of waste. Ensure that the contractor's responsible are made aware of these procedures. |
| 2 | Collection / | Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate |

| No | Issue | Management commitment |
|----|-------------------|--|
| | storage of waste | capacity. In this regard, separate waste containers must be provided for hazardous waste, potentially hazardous waste, general waste and construction waste. Hazardous / harmful waste must be clearly distinguishable as such. |
| 3 | | Containers shall be provided with lid or netting to prevent the waste from being removed by scavengers or wind. Waste containers should not be over-filled. |
| 4 | | Ensure that the campsites, the work site and the surroundings are kept in a neat condition at all times and that windblown litter is cleared on a daily basis. |
| 5 | Disposal of waste | All waste will be removed from site and disposed of at a licensed landfill site. Illegal dumping and littering shall not be tolerated. |
| 6 | Burning of waste | No burning of waste will be permitted. |

7.10.2.2 Hazardous solid waste

Objectives

The objective of the management measures is to ensure proper storage, removal, transportation and disposal of hazardous solid waste

Actions

TABLE 7-13: ACTIONS RELATING TO HAZARDOUS SOLID WASTE (NON-MINERALISED)

| No | Issue | Management commitment |
|--|---------------------|--|
| These commitments apply <u>construction, operation and decommissioning</u> phases | | |
| 1 | General | The waste management procedure will cover the storage, handling, and transportation of waste. Ensure that the contractor's responsible are made aware of these procedures. |
| 2 | Collection of waste | Designated waste collection points will be established on site. Care will be taken to ensure that there will be sufficient collection points with adequate capacity. |
| 3 | Waste storage | Hazardous waste will not be stored in skips but in designated suitable containers. |
| 4 | | Collect and accumulate other hazardous waste until such time that the amounts can be removed from site. |
| 5 | | Place oil and greasy cloths and rags into a steel drum and when full transported off site to the hazardous waste site. |
| 6 | | Ensure that waste storage areas and/or containers meet the risk needs for that specific waste (e.g. impervious floor, bunded areas with drainage/containment systems, lids to prevent light material from blowing away or sealed containers for hazardous material). |

| No | Issue | Management commitment |
|----|------------------|---|
| 7 | Disposal | Disposal of waste at appropriate permitted waste disposal facilities as follows: <ul style="list-style-type: none"><li data-bbox="507 349 1461 427">○ Hazardous waste shall be removed from site and may be recycled or disposed of at the nearest hazardous site |
| 8 | Disposal records | Safe disposal for hazardous waste to be obtained from the waste disposal site. |

8 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

The roles and responsibilities for implementing the various management plans are specified in the NamPower GEMP. These (and other roles and responsibilities are provided below.

8.1 NAMPOWER PROJECT MANAGER

- Is responsible for the enforcement of the EMP.
- Must make sure that environmental requirements are included in the tender documents sent to the contractor
- Must ensure that a environmental clause is included in the contract document and communicated to the contractor before the inception of the project.
- Must ensure that the contractor remains in compliance with the requirements of the EMP, through regular communication and monitoring.

8.2 NAMPOWER ENVIRONMENTAL SECTION

- Assist the Project Manager in ensuring the contractor remains in compliance with this EMP through:
 - Provides environmental inductions for the contractors and their employees
 - Organize and implement monitoring and audit functions, in consultation with the Project Manager
 - Report back to the Project manager on contractor compliance to the EMP before the project close-off and final payment is made to the contractor.

8.3 SURVEYOR

- Ensures route alignment for the proposed power line is as per preferred route (see Figure 4-1)
- Ensure compliance to the recommendations in this EMP regarding the route alignment. Also ensure other general requirement in the NamPower GEMP are implemented (where relevant).

8.4 CONTRACTOR

- Is responsible for the implementation of the EMP
- Ensuring all tasks undertaken under the scope of work, are in accordance both with NamPower's environmental policy as well as to the requirements of this EMP.
- Putting in writing a system of communication, in which all incidents and accidents are reported to the NamPower Environmental section.
- Ensuring that all employees receive environmental induction before the start of the project.
- Ensuring that the work being done does not create a nuisance to the residents or animals on the property. If the contractor deems to continue work after the usual working hours, in the evenings and at night or over weekends, he must obtain the landowner's permission before proceeding with such work.

NRE will assist with the implementation of this EMP through ongoing consultation with NamPower and assisting the NamPower Environmental Section with monitoring and inspections. The specific requirements still needs to be agreed between the two parties. However, the following as advised:

8.5 NRE GENERAL MANAGER

Liaise with the NamPower Project Manger prior to (and during) construction of the powerline to agree on relevant tasks to be conducted by the NRE Environmental Department to assist with the implementation of the EMP.

8.6 NRE ENVIRONMENTAL DEPARTMENT

- Assist the NamPower Environmental Section with:
 - Monitoring requirements – as stipulated in the EMP
 - Inspections
 - Inductions
 - Report back to the NamPower Team on above mentioned.

9 MONITORING AND AUDITING

9.1 MONITORING

Monitoring requirements have been included in the Management and mitigation plans provided in Section 7. Regular inspections will be carried out to ensure compliance with this EMP.

9.2 AUDITING COMPLIANCE OF THE EMP

The commitments contained in this EMP will, once an environmental clearance has been obtained, be NamPower's contractual agreement with the Namibian authorities for sound environmental management. All employees, contractors and sub-contractors and any visitors to site will be expected to comply with the commitments contained herein.

9.2.1 AUDITS AND INSPECTIONS

The Environmental Department will conduct internal management audits against the commitments in the EMP. During the construction phase, these audits will be conducted every month. In the operational phase, these audits will be conducted on a quarterly basis. The audit findings will be documented for both record keeping purposes and for informing continual improvement.

10 REFERENCES

SLR, 2016a. EIA Report for the construction and operation of the Powerline for the proposed Lofdal Rare Earth Mining Project.

SLR, 2016b. Lofdal Rare Earths Mine EMP.

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