



# **LODESTONE NAMIBIA (PTY) LTD**

**PROPOSED NEW WATER PIPELINE FROM THE OANOB DAM  
TO THE DORDABIS IRON ORE MINE**

## **ENVIRONMENTAL MANAGEMENT PLAN**

**Prepared for: Lodestone Namibia (Pty) Ltd**

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## ENVIRONMENTAL MANAGEMENT PLAN FOR LODESTONE'S PROPOSED BULK WATER PIPELINE FROM OANOB DAM TO THE DORDABIS IRON ORE MINE

### CONTENTS

<b>1</b>	<b>INTRODUCTION</b> .....	<b>1</b>
1.1	BACKGROUND AND OVERVIEW .....	1
1.2	AIM OF THIS DOCUMENT .....	4
1.3	KEEPING THE EMP UP TO DATE.....	4
1.4	DETAILS OF THE PERSONS WHO PREPARED THIS EMP .....	5
<b>2</b>	<b>SCOPE OF THE EMP</b> .....	<b>6</b>
<b>3</b>	<b>LEGAL REQUIREMENTS</b> .....	<b>7</b>
3.1	ENVIRONMENTAL CLEARANCE CERTIFICATE.....	7
3.2	OTHER PERMITS.....	7
<b>4</b>	<b>ENVIRONMENTAL ASPECT AND IMPACT IDENTIFICATION</b> .....	<b>9</b>
4.1	ENVIRONMENTAL ASPECTS AND IMPACTS .....	9
4.2	COMPLIANCE AND ALIGNMENT REQUIREMENTS .....	11
<b>5</b>	<b>OVERALL ENVIRONMENTAL OBJECTIVES</b> .....	<b>12</b>
<b>6</b>	<b>GENERAL MANAGEMENT REQUIREMENTS</b> .....	<b>13</b>
6.1	PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP .....	13
6.1.1	CHIEF OPERATING OFFICER.....	13
6.1.2	CONSTRUCTION / SITE SUPERVISOR.....	13
6.1.3	ENVIRONMENTAL MANAGER / OFFICER .....	14
6.1.4	CONTRACTORS.....	14
6.2	DEALING WITH ENVIRONMENTAL EMERGENCIES AND INCIDENTS .....	14
6.3	AUDITING COMPLIANCE WITH THE EMP .....	14
6.4	REPORTING AND SUBMISSION OF INFORMATION .....	14
<b>7</b>	<b>ACTION PLANS</b> .....	<b>15</b>
7.1	BIODIVERSITY ACTION PLAN.....	16
7.1.1	DESCRIPTION .....	16
7.1.2	MITIGATION, MANAGEMENT AND MONITORING .....	16
7.2	SOIL ACTION PLAN .....	22
7.2.1	DESCRIPTION .....	22
7.2.2	MITIGATION, MANAGEMENT AND MONITORING .....	22
7.3	ARCHAEOLOGY ACTION PLAN .....	23
7.3.1	DESCRIPTION .....	23
7.3.2	MITIGATION, MANAGEMENT AND MONITORING .....	23
7.4	COMPENSATION ACTION PLAN AND LANDOWNER INTERACTIONS.....	24
7.4.1	DESCRIPTION .....	24
7.4.2	MITIGATION, MANAGEMENT AND MONITORING .....	24
7.5	VISUAL ACTION PLAN.....	27
7.5.1	DESCRIPTION .....	27
7.5.2	MITIGATION, MANAGEMENT AND MONITORING .....	28
7.6	MONITORING.....	28
<b>8</b>	<b>REFERENCES</b> .....	<b>29</b>

#### List of Figures

FIGURE 1: REGIONAL LOCALITY OF ML 182 (PROJECTED ON GOOGLE EARTH).....	1
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FIGURE 2: PROPOSED PIPELINE (AND ASSOCIATED POWERLINE) ROUTES PROJECTED ON GOOGLE EARTH..... 3

**List of Tables**

TABLE 1: CONTENT OF THE EMP..... 6  
TABLE 2: ACTIVITIES REQUIRING PERMITS UNDER NATIONAL LEGISLATION ..... 7  
TABLE 3: DESCRIPTION OF ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS..... 9

## ACRONYMS AND ABBREVIATIONS

Below is a list of acronyms and abbreviations used in this report.

<b>Acronyms / Abbreviations</b>	<b>Definition</b>
DEA	Department of Environmental Affairs
EAP	Environmental Assessment Practitioner
EAPAN	Environmental Assessment Professionals Association of Namibia
ECC	Environmental Clearance Certificate
EPL	Exclusive Prospecting License
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Management System
km	kilometre
kV	kilovolt
m	metre
m <sup>3</sup>	Cubic metre
m/s	metre per second
MET	Ministry of Environment and Tourism
MEFT	Ministry of Environment, Forestry and Tourism
ML	Mining Licence
Mm <sup>3</sup> /a	Million cubic meters per annum
Pty Ltd	Proprietary Limited
PVC	Polyvinyl chloride

# ENVIRONMENTAL MANAGEMENT PLAN FOR LODESTONE'S PROPOSED NEW BULK WATER PIPELINE FROM OANOB DAM TO THE DORDABIS IRON ORE MINE

## 1 INTRODUCTION

### 1.1 BACKGROUND AND OVERVIEW

Lodestone Namibia (Pty) Ltd (Lodestone) is a privately funded mining company, which holds Mining Licence (ML) 182 within their Exclusive Prospecting License (EPL) 7352 area, situated in the Khomas Region, approximately 20 km northwest of Dordabis and 75 km southeast of Windhoek on the C23 tar road (see Figure 1). Lodestone is in the process of developing an open pit mine and processing plant at the Dordabis Iron Ore Mining Project on ML 182 – to produce 68 % high-grade iron ore concentrate for export.



**FIGURE 1: REGIONAL LOCALITY OF ML 182 (PROJECTED ON GOOGLE EARTH)**

Between 2011 and 2013 Lodestone undertook an Environmental Impact Assessment (EIA) process for a proposed iron ore mine and processing plant with associated infrastructure and activities on their EPL area. Based on the approved EIA Report and accompanying

Environmental Management Plan (EMP) the Office of the Environmental Commissioner at the Directorate of Environmental Affairs (DEA), of the former Ministry of Environment and Tourism (MET), now the Ministry of Environment, Forestry and Tourism (MEFT), issued an Environmental Clearance Certificate (ECC) to Lodestone in July 2014.

In December 2019 Lodestone submitted a renewal application of the ECC to the MEFT. The application for the renewal, however, was for a much-reduced scale in activities on ML 182 (i.e. small-scale magnetite mining). MEFT issued the renewed ECC to Lodestone in June 2020.

Lodestone has finalized the Feasibility Study for the originally planned “Dordabis Iron Ore Mining Project and Associated Infrastructure” on ML 182 in 2020, and thereby proposed several changes to the previously assessed / approved (2013 EIA) project (i.e. the original bigger scale project). Subsequently, Lodestone appointed Namisun Environmental Projects and Development (Namisun) to administer the EIA (Amendment) process and to prepare an Amended EMP for the project activities / facilities relating to the Dordabis Iron Ore Mine and associated activities; as well as a proposed new 132 kV powerline (Namisun, 2020).

One of Lodestone’s proposed changes relate to its water requirements. The Dordabis Iron Ore Mining Project will require  $\pm$  600,000 to 700,000 cubic meters per annum ( $m^3/a$ ) water for mining, processing, and associated activities during its first phase, the “demonstration phase”. The two existing boreholes onsite are utilised to supply limited potable water to the plant site, admin buildings, logistics buildings and mining yard as well as supplement some of the process water requirements. Enough water from these boreholes to meet the demands of the project is not feasible.

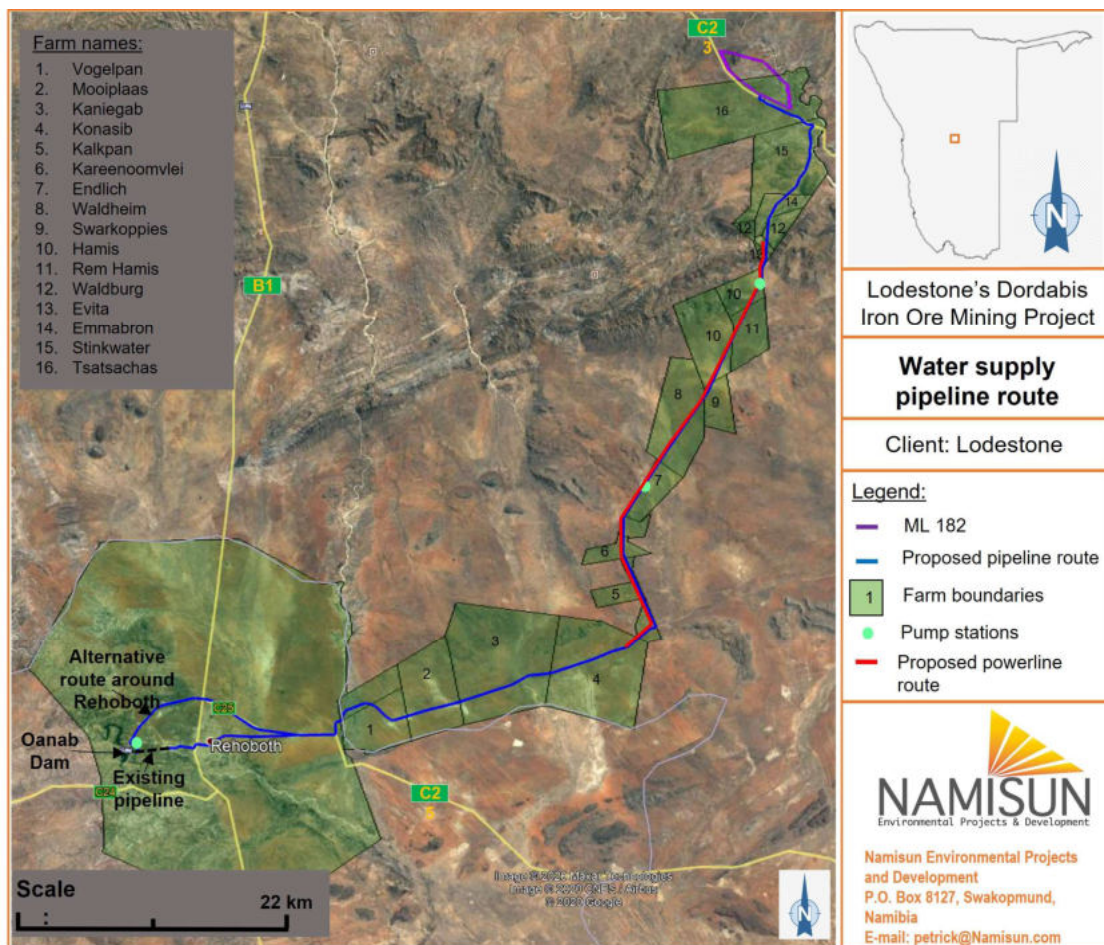
The water demand of the Dordabis Iron Ore Mining Project was identified and described in the original EIA of 2013 (Colin Christian & Associates CC, 2013), and Lodestone approached NamWater in 2014 to discuss the possibility of water supply to the mine from the Oanob Dam. Recent water supply requirements were determined at 2.0 million cubic meters per annum ( $Mm^3/a$ ) and this increase in demand was assessed as part of the 2020 EIA Amendment process and report (Namisun, 2020) and approved by MEFT (in 2021). It must be stated that Lodestone had consultations with NamWater in 2019, 2020 and 2021 and independent verification of the abstraction rates were presented during these sessions. Based hereupon, it is proposed that bulk raw water will be supplied by NamWater with a ~102 km long bulk water pipeline from the Oanob Dam to the mine site.

The offtake point for the proposed bulk water pipeline will be from NamWater’s raw water pipeline between the inlet tower and the water treatment plant below the Oanob Dam wall. The



offtake will provide water to a 2,000 m<sup>3</sup> ground level reservoir at the base pump station, to ensure a consistent flow from the base station into the pipeline. Two more booster pump stations are planned along the pipeline, each with a 500 m<sup>3</sup> ground level reservoir for control purposes. A 33 kV powerline along a section of the pipeline is proposed to provide the two pump stations with electricity.

From the base station at the Oanob Dam, the route of the pipeline will follow one of the two Oanob Dam access roads, across the B1, eastwards along the north side of the C25 to Rehoboth Station and follow the D1228 eastward to the D1249. Here the pipeline turns sharply northwards and run along the western side of D1249 to the C23, where it will turn westwards along the south side of the C23 for approximately 5 km to the mine site. The proposed pipeline route is presented in Figure 2.



**FIGURE 2: PROPOSED PIPELINE (AND ASSOCIATED POWERLINE) ROUTES PROJECTED ON GOOGLE EARTH**



Namisun has been appointed by Lodestone as the independent Environmental Assessment Practitioner (EAP) to undertake the EIA process for Lodestone's proposed bulk water pipeline between the Oanob Dam and the Dordabis Iron Ore Mining Project on ML 182 and its associated 33 kV powerline along a section of the pipeline, including two booster pump stations.

## 1.2 AIM OF THIS DOCUMENT

Specific management and mitigation (and monitoring) requirements relevant to the proposed bulk water pipeline and associated infrastructure are presented in this "Specific EMP" (this document), which accompanies the specific Scoping (including impact assessment) Report. The aim of this "Specific EMP" is to detail the specific actions to minimise negative impacts and enhance positive impacts as assessed in the Scoping (including impact assessment) Report.

Section 12.4 in the overall Dordabis Iron Ore Mining Project EMP (i.e., "*Management Plans Relevant to All*") provides the generic management plans (management and mitigation measures) that are relevant to all project components, including amongst others, the mining, processing and associated activities and infrastructure and the construction and operations of the proposed 132 kV powerline to the mine. In addition to this, a Specific EMP was developed for the proposed 132 kV powerline with management and mitigation (and monitoring) requirements (Enviro Dynamics, 2020), specific to the implementation of the 132 kV powerline (and approved).

The "Management Plans Relevant to All" in the overall Dordabis Iron Ore Mining Project EMP are largely relevant to the construction and operations of the proposed bulk water pipeline and associated infrastructure, and this "Specific EMP" must be read against this background – to ensure effective implementation of all management and mitigation measures relevant to this specific project by Lodestone and its contractors.

## 1.3 KEEPING THE EMP UP TO DATE

It is the intention that this EMP should be seen as a "living document" which will be amended during the operation (where relevant) as new information (e.g.: environmental data), policies, authority guidelines, technologies and as the activities might change, or new ones be introduced.

Lodestone will conduct periodic reviews of the EMP, should circumstances change.

Should further listed activity(s) as defined in the EIA-regulations associated with the Environmental Management Act, No. 7 of 2007 be triggered because of future modifications / changes, this EMP will be required to be updated through another EIA process as stipulated in the Act and its regulations.

#### 1.4 DETAILS OF THE PERSONS WHO PREPARED THIS EMP

Namisun (a Namibia-based, independent environmental consultancy firm) was appointed by Lodestone to undertake and manage the EIA process and environmental clearance applications. Namisun also compiled this EMP.

Dr Pierré Smit, the project manager, holds a PhD in Landscape Ecology and has more than twenty-eight years of experience in environmental management, managing environmental assessment, the implementation of EMPs and Environmental Management Systems (EMSs) in Namibia.

Werner Petrick, the project reviewer, has more than twenty-four years of relevant experience in conducting / managing EIAs, compiling EMPs and implementing EMPs and Environmental Management Systems (EMSs). Werner has a B. Eng (Civil) degree and a master's degree in environmental management and is certified as lead EAP and reviewer under the Environmental Assessment Professionals Association of Namibia (EAPAN).

## 2 SCOPE OF THE EMP

The components of the EMP, in accordance with the requirements stipulated in the EIA-regulations, are presented in Table 1.

**TABLE 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 1.4
Project overview	Section 1.1
Overall environmental objectives	Chapter 5
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 – i. Planning and design. ii. Construction activities. iii. Operation or undertaking of the activity. iv. Rehabilitation of the environment. v. Closure, where relevant.	Chapters 6 and 7
A description of the aspects of the activity that are covered by the EMP.	Section 4.1
An identification of the persons to be responsible for the implementation of the mitigation measures.	Section 6.1
Where appropriate, time frames within which the measures contemplated in the EMP must be implemented.	Chapter 7
Proposed mechanisms for monitoring compliance with the EMP and reporting on it.	Section 6.2 – 6.4

### 3 LEGAL REQUIREMENTS

A summary of the applicable legislation can be found in Chapter 3 of the main Scoping (including impact assessment) Report for Lodestone's proposed bulk water pipeline and associated infrastructure.

A summary of the relevant certificates and permits required by Lodestone is provided in this chapter.

#### 3.1 ENVIRONMENTAL CLEARANCE CERTIFICATE

As stipulated in the EIA-regulations associated with the Environmental Management Act, No.7 of 2007, an ECC needs to be obtained from the DEA within the MEFT prior to commencement of construction. An EIA Scoping (including an impact assessment) Report and EMP are required as part of the application for clearance, and to support the decision-making process.

If approved, an ECC will be issued for the proposed pipeline and associated infrastructure and the proponent will be held responsible for the implementation and management of the EMP. An ECC is valid for three years and may be renewed. Application for renewal must be lodged prior to the expiry date of the ECC.

#### 3.2 OTHER PERMITS

Table 2 summarizes the activities associated with the construction and operation of the proposed bulk water pipeline and associated infrastructure that will require permits under national legislation.

**TABLE 2: ACTIVITIES REQUIRING PERMITS UNDER NATIONAL LEGISLATION**

LEGISLATION	ACTIVITY REQUIRING PERMIT
Revised Compensation Policy and Guidelines	A compensation plan needs to be devised and implemented for the proposed pipeline and associated infrastructure (see Section 7.4).
Labour Act 11 of 2007	Regulations relating to the health and safety of employees at work are contained in GN 156/1997 (GG 1617), which Lodestone must be compliant with.
Forestry Act No 12 of 2001 Forest Amendment Act, No. 13 of 2005	For an area greater than 15 ha to be cleared from vegetation a permit under the Forest Act, No. 12 of 2001 as amended by the Forest Amendment Act, No. 13 of 2005 and its regulations of 2015 is required. Section 22 of the Act requires a permit for the cutting, destruction or removal of vegetation that are classified under rare and or protected species. The Act also stipulates that trees, shrubs and

	bushes within 100 m from a watercourse may not be cut, destroyed or removed without a permit.
National Heritage Act No 27 of 2004	No archaeological/heritage site or cultural remains may be removed, damaged, altered or excavated. No grave or other historical and archaeological sites have been identified, but any person who discovers a grave or any other archaeological / historical / heritage site must notify the National Heritage Council. A Chance Find Procedure must be developed and implemented, thus.

With reference to the proposed water supply from the Oanob Dam, Lodestone must ensure that an agreement between Lodestone and NamWater is formulated, and that the associated permits / authorisations for the supply of water from the dam are in place.

## 4 ENVIRONMENTAL ASPECT AND IMPACT IDENTIFICATION

Understanding the biophysical and human environment in which the proposed pipeline and associated infrastructure is located, is the first step to understanding the relevant impacts. The next and possibly more important step is to identify the environmental aspects that give rise to the implied impacts. Successful management will be gauged by how well Lodestone avoids, minimises, or mitigates all the impacts associated with each environmental aspect.

### 4.1 ENVIRONMENTAL ASPECTS AND IMPACTS

As part of the EIA processes for the proposed bulk water pipeline and its associated infrastructure, the environmental aspects and potential environmental impacts associated with the activities and facilities were identified – see Table 8 in Chapter 7 of the Scoping (including impact assessment) Report.

Table 3 provides a summary of the environmental aspects related to the proposed pipeline and associated infrastructure specifically, and how they impact the biophysical and human environments, respectively. The table refers to the relevant Action Plans, which must be read in conjunction with the Management and Mitigation Plans (MMPs) contained in the overall EMP for the Dordabis Iron Ore Mining Project. The roll out of these measures will ensure that the environmental objectives are achieved, and commitments are implemented.

**TABLE 3: DESCRIPTION OF ENVIRONMENTAL ASPECTS AND POTENTIAL IMPACTS**

ASPECT	POTENTIAL IMPACT	RELEVANT MEASURES
Biodiversity	<ul style="list-style-type: none"> <li>• Loss of habitat (including isolated / “island” habitats)</li> <li>• Loss of individual organisms (including specialists)</li> <li>• Loss of landscape connectedness</li> <li>• Interference, disturbance and displacement of invertebrates (individuals, populations and concentrations or groups)</li> <li>• Interruptions or restrictions of migration patterns</li> <li>• Disturbance of surface water flow patterns and impacts (downstream)</li> <li>• Drowning of organisms in open water bodies</li> <li>• Introduction of invasive alien plants</li> <li>• Illegal harvesting of wood from protected species, and illegal</li> </ul>	Biodiversity Action Plan (see Section 7.1) as well as Chapter 3 of the overall EMP for the Dordabis Iron Ore Mining Project.

ASPECT	POTENTIAL IMPACT	RELEVANT MEASURES
	<ul style="list-style-type: none"> <li>collecting of protected species such as aloes.</li> <li>• Illegal killing (poaching) and collecting of animals</li> <li>• Accidental killing and harming of organisms (e.g., road kills)</li> <li>• Noise, dust, light and chemical pollution</li> <li>• Interference, disturbance and displacement of birds</li> <li>• Interference or loss of bird habitats, flightpaths, corridors or flyways</li> <li>• Harming and killing of birds as a result of collisions and or electrocution</li> </ul>	
Soil	<ul style="list-style-type: none"> <li>• Loss of / disturbance of valuable topsoil (e.g., erosion – wind and water)</li> <li>• Compaction and trampling of soil</li> <li>• Pollution and contamination of soil</li> <li>• Invasion by alien species</li> </ul>	Soil Action Plan (see Section 7.2) as well as Section 3.3 of the overall EMP for the Dordabis Iron Ore Mining Project.
Archaeology	<ul style="list-style-type: none"> <li>• Potential destruction or damage to archaeological / heritage sites</li> </ul>	Archaeology Action Plan (see Section 7.3) as well as Section 3.14 of the overall EMP for the Dordabis Iron Ore Mining Project.
Surface and groundwater	<ul style="list-style-type: none"> <li>• The quality and quantity of surface and groundwater water can be compromised through potential contamination and effluent discharges and changes to flow patterns</li> <li>• The erosion potential can increase</li> <li>• The flow patterns of surface water can be altered and lead to impacts downstream</li> </ul>	See Sections 3.8 and 3.9 of the overall EMP for the Dordabis Iron Ore Mining Project
Land use	<ul style="list-style-type: none"> <li>• Creating and use of servitude</li> <li>• Access</li> <li>• Interruptions of farming activities</li> </ul>	Compensation Action Plan and Land ownership interactions (see Section 7.4)
Waste	<ul style="list-style-type: none"> <li>• Effluent discharge from waste and sewerage into soil and water</li> <li>• Emissions to land and air</li> <li>• Impacts on biodiversity</li> <li>• General degradation and nuisance impacts</li> </ul>	See Section 2.5 of the overall EMP for the Dordabis Iron Ore Mining Project.
Noise	<ul style="list-style-type: none"> <li>• Noise disturbance to third parties (sensitive receptors).</li> </ul>	See Section 3.12 of the overall EMP for the Dordabis Iron Ore Mining Project.



ASPECT	POTENTIAL IMPACT	RELEVANT MEASURES
Air quality (dust)	<ul style="list-style-type: none"> <li>Dust from construction activities causing impacts to third parties</li> </ul>	See Section 3.10 of the overall EMP for the Dordabis Iron Ore Mining Project.
Visual	<ul style="list-style-type: none"> <li>Powerline and pump houses can have intrusive impacts on views and sense of place</li> </ul>	Visual Action Plan (see Section 7.5) as well as Section 3.13 of the overall EMP for the Dordabis Iron Ore Mining Project.
Employment and income	<ul style="list-style-type: none"> <li>Job creation and skills development</li> <li>In-migration</li> <li>Impacts to the local, regional and national economy</li> <li>Third party health, safety and security</li> <li>Interrupted and compromised land use activities on affected commercial farms.</li> </ul>	See Sections 2.7 and 3.15 of the overall EMP for the Dordabis Iron Ore Mining Project.

#### 4.2 COMPLIANCE AND ALIGNMENT REQUIREMENTS

For the proposed bulk water pipeline and its associated infrastructure Lodestone and its contractors will comply with this “Specific EMP”, as well as the overall Dordabis Iron Ore Mining Project EMP. Accordingly, this EMP is aligned to the existing overall EMP. In this way a robust mechanism is provided for the implementation of this “Specific EMP” and, most importantly, it will ensure that the environmental management function is always reviewed in a spirit of continual improvement.

This EMP will form the basis of the ‘general’ environmental management for the duration of the project and all the associated procedures, work instructions, etc. will be developed taking cognizance of the relevant commitments in this “Specific EMP” as well as the overall Dordabis Iron Ore Mining Project EMP.

As part of environmental management, Lodestone will roll out the Action Plans in this EMP – in conjunction with the MMPs contained in the Dordabis Iron Ore Mining Project EMP – and develop work instructions / procedures to ensure that the objectives provided in both are achieved and commitments are implemented. Further responsibilities and target dates for implementing relevant commitments will therefore be included in the work instructions / procedures and other relevant documents.

## 5 OVERALL ENVIRONMENTAL OBJECTIVES

In addition to the environmental objectives contained in the overall Dordabis Iron Ore Mining Project EMP, some objectives have been set specifically for the proposed pipeline and its associated infrastructure, to be implemented by Lodestone:

- Ensure compliance to this “Specific EMP”, the existing overall Dordabis Iron Ore Mining Project EMP and other relevant conditions or approvals (ECC and other relevant permits) and all national legislation and standards for the protection of the environment.
- Keep key stakeholders informed about the activities implied by Lodestone’s proposed pipeline and associated infrastructure, where relevant.
- Promote ongoing environmental awareness.
- Apply the precautionary principle throughout by enforcing responsibility – by supporting and training of all employees and service providers to ensure that all the employees and contractors adhere to the relevant management commitments.
- Incorporate the relevant requirements stipulated in this EMP into the designs and contracts as well as work instructions, procedures and other relevant documents.
- No unauthorized access is allowed during construction:
  - Any person entering the construction site(s) will only be allowed after formal induction.
  - Warning signs will be erected to warn third parties of dangers.
- Without infringing on the rights of workers, manage their movements and set rules for behaviour, with special emphasis placed on preventing transgression and punishment of transgressors.
- Pollution will be prevented through basic infrastructure design and through maintenance of equipment.
- Clean up in case of incidents, through appropriate measures.
- Ensure the legal and appropriate management and disposal of general and hazardous waste, through the implementation of a strategy for the minimisation, recycling (where possible), management, temporary storage and removal of waste.
- Develop, implement and manage monitoring systems as required to ensure good environmental performance and reporting.
- In the case of incidents, the Chief Operating Officer (COO) should be informed, and the necessary action taken (including the reporting of incidents to Lodestone and the implied authorities).

## 6 GENERAL MANAGEMENT REQUIREMENTS

The following sections list the general management requirements that are relevant to the activities of Lodestone's proposed activities associated with the bulk water pipeline and its associated infrastructure.

### 6.1 PARTIES RESPONSIBLE FOR THE IMPLEMENTATION OF THE EMP

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

#### 6.1.1 CHIEF OPERATING OFFICER

The responsibilities of the COO of Lodestone are described in the overall Dordabis Iron Ore Mining Project EMP (see Section 2.1.1).

#### 6.1.2 CONSTRUCTION / SITE SUPERVISOR

In addition to the responsibilities described in the overall Dordabis Iron Ore Mining Project EMP, the Supervisor has overall responsibility for environmental management during the construction phase for ensuring this EMP is implemented.

The Construction Supervisor must ensure that contractors adhere to the conditions of the EMP, the ECC and other relevant permits.

Contract documents should consider the inclusion of penalties for non-conformance to the EMP, or to link the sign-off of the contract to a retainer clause.

The Supervisor shall be responsible for responding to any actual environmental emergencies / incidences that occur, as specified in procedures and protocols.

The Supervisor shall also ensure that sufficient financial and human resources are available to implement emergency procedures, and to take corrective action pro-actively when environmental risks are evident in advance.

The Supervisor will be responsible for the following aspects related to compliance of this EMP:

- Regular inspections and auditing compliance to this EMP and any other relevant legal requirements e.g., permits and authorisations.
- Ensure that environmental awareness training is conducted during induction training and on an ad hoc basis thereafter.
- Ensure compliance to this EMP and permits and authorisations issued to Lodestone by relevant authorities.

- Submit required information to relevant authorities such as reporting on compliance with the EMP, permit and relevant authorisations.
- Liaise with the COO on environmental management (where required).

### **6.1.3 ENVIRONMENTAL MANAGER / OFFICER**

The responsibilities of the Environmental Manager / Officer of Lodestone are described in the overall Dordabis Iron Ore Mining Project EMP (see Section 2.1.3).

### **6.1.4 CONTRACTORS**

All contractors, sub-contractors and their employees will be contractually required to comply with the relevant commitments in this EMP.

## **6.2 DEALING WITH ENVIRONMENTAL EMERGENCIES AND INCIDENTS**

Details about environmental emergencies and incidents are described in the overall Dordabis Iron Ore Mining Project EMP (see Section 2.2).

## **6.3 AUDITING COMPLIANCE WITH THE EMP**

Details about auditing are described in the overall Dordabis Iron Ore Mining Project EMP (see Section 2.3).

In addition, an inspection program shall be established to check that standards and procedures as described in the EMP are implemented and complied with.

Incidents and non-conformances shall be recorded and addressed with appropriate corrective action.

## **6.4 REPORTING AND SUBMISSION OF INFORMATION**

All required reports will be submitted to the relevant authorities on an ongoing basis, as stipulated in the overall Dordabis Iron Ore Mining Project EMP (see Section 2.4).

In addition, a reporting system shall be maintained to ensure that all applicable statutory requirements are met.

Reporting of incidents and non-conformances shall include details such as the reason for incidents and non-conformance, responsible persons, consequences, the corrective action taken and the necessary follow-up activities. Incidents and non-conformances shall be reported to the COO. The cause of incidents and non-conformances shall be investigated, and recommendations formulated to prevent recurrence.

## 7 ACTION PLANS

The Action Plans described in this chapter are specifically applicable to the relevant activities and facilities of Lodestone's proposed bulk water pipeline and its associated infrastructure. These Action Plans must be considered in conjunction with the MMPs, i.e. the "Management Plans Relevant to All" in the overall Dordabis Iron Ore Mining Project EMP, which are also relevant to the construction and operations of the proposed pipeline and its associated infrastructure.

Activities during the site preparation and the construction phase include, but are not restricted to the following:

- Surveying and setting out of the final pipeline / powerline route.
- Clearing the servitude (from large trees, shrubs, bushes, etc.).
- Pegging of the pipeline and powerline.
- Trenching and excavations for the pipeline.
- Drilling of holes by means of a compressor drill rig for the poles of the powerline.
- Drilling and blasting, where required.
- Cleaning, grubbing and bulldozing.
- General earthworks, including levelling and piling of soil.
- Excavations for foundations.
- Planting of poles for the powerline, using a 4x4 truck.
- Storage and handling of material (sand, rock, cement, chemical additives) in work areas.
- Water utilization.
- Operation and movement of construction vehicles.
- Refuelling of equipment.
- Handling, storage, and transportation of non-hazardous and hazardous waste.
- Disposal or treatment of contaminated soil.

All the components for the pipeline and associated infrastructure construction (PVC pipe, steel pylons, conductors, and insulators, etc.) will be transported to site by road on low-bed trailers. Concrete will be mixed and poured onsite; subsequently all concrete constituents (crushed stone, cement, water, and sand) will have to be transported to site. No significant impacts associated with traffic interruption are expected on these roads due to the construction activities.

The MMPs Relevant to All in the overall Dordabis Iron Ore Mining Project EMP that need to be emphasised here are the Solid and Liquid Waste (including Sewage) Management (see Section 2.5), the Stakeholder Consultation / Communication Management Plan (see Section 2.6) and the Safety and Security Management Plan (see Section 2.7).

The MMPs specifically for the pipeline and associated infrastructure are contained in Section 7.1 – 7.6 (below). These MMPs must be read in conjunction with the MMPs contained in the overall Dordabis Iron Ore Mining Project EMP (as outlined in Table 3 and Section 4.1. of this document.

## 7.1 BIODIVERSITY ACTION PLAN

### 7.1.1 DESCRIPTION

The pipeline and associated infrastructure will be constructed in areas where there are protected tree species and crossing sensitive habitats. Habitats of higher elevations (mountain and koppies) are regarded as sensitive and the habitat of rivers and washes are deemed as highly sensitive due to its importance as landforms that contain water (at least temporarily), its productivity and uniqueness. This mitigation is to avoid unnecessary destruction of these species and habitats and to minimize impacts on biodiversity in general.

Bird species may be sensitive, in varying degrees, to powerline impacts such as collision, electrocution and or disturbance and habitat destruction. Some potential flight paths across the proposed new powerline include paths across / between mountain ranges, or along narrower kloofs; and across or along the ephemeral riverbeds.

### 7.1.2 MITIGATION, MANAGEMENT AND MONITORING

#### **Pipeline and 33 kV Powerline**

MITIGATION / MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Physical destruction of vegetation and associated habitats, particularly sensitive habitats and protected plant species</b>		
<ul style="list-style-type: none"> <li>Minimise impacts by taking the shortest feasible route to reduce the number of trees that need to be removed.</li> <li>Follow the proposed shorter route through the undulating gravel plains, which will reduce the number of trees that need to be removed, and avoid some hills, the Stinkwater community and a potential Lithops habitat.</li> <li>Move the location of the second pump station further south, to avoid its proximity to two minor streams.</li> <li>Limit access routes to the construction areas to a minimum number of points.</li> </ul>	Contractor / Lodestone  In liaison with NamWater (for the pipeline) NamPower (for the powerline)	Construction / operations (i.e., maintenance)

<ul style="list-style-type: none"> <li>• Ensure that large vehicles are confined to the servitude and not allowed to turn around randomly in the bush.</li> <li>• Access points should be through existing farm gates, where possible.</li> <li>• Materials removed from the trenches for the pipeline must also be placed in the servitude, where possible, until they can be deposited in their final disposal sites.</li> <li>• Rocky material be arranged in piles to create new habitats for small animals. These would later also be colonised by plants, although care must be taken that the first colonisers are not alien plants. Alternatively, this material can be used to fill borrow pits, or placed along slopes to reduce erosion and to trap grass seeds.</li> <li>• If turning areas or temporary dumping sites are needed, these should be in areas where very few or, preferably, no protected tree species occur.</li> <li>• A buffer zone of at least two to three metres (at least the width of the canopy) should be maintained all around protected trees.</li> <li>• Quarrying for fill material (borrow pits) should only be done in areas where there are no protected trees and where excavated material from the trenches is not available or suitable. These sites should be kept to a minimum in size and number.</li> <li>• Should it be necessary to quarry in an area where there are protected trees, a buffer zone of at least two to three metres should be maintained all around protected trees. Any excess material from the excavations of the trenches should be put into these borrow pits.</li> <li>• The size and number of borrow pit areas need to be minimized.</li> <li>• The area needed for construction of the booster pumps and reservoirs should be kept to a minimum, avoiding protected trees.</li> <li>• Where individual trees occur on the edge of the servitude, these should be left in place. If absolutely necessary, branches leaning into the servitude can be pruned. Branches leaning over the pipeline can be left as these will not affect the pipeline. It would be advisable for all trees that need to be removed to be clearly marked prior to construction. Those that can be left and pruned should be marked in a different colour.</li> <li>• Before construction starts, the proposed powerline route should be inspected for any signs of bird nesting activity. Disturbance of nesting birds, in particular large raptors / vultures, or Kori Bustards should be avoided.</li> <li>• Ongoing awareness should be promoted about the value of biodiversity and the negative impacts of disturbance, especially to breeding birds.</li> </ul>		
<ul style="list-style-type: none"> <li>• Protected plant species are declared as such by Section 22 (1), 23 (1) of the Forest Act, No. 12 of 2001 and the Forest Regulations of 2015. Accordingly, a permit is needed from the Directorate of Forestry if these are to be removed. Aloes are protected as well, but can be transplanted to a safe alternative location, also with a permit from the Directorate of Forestry. For any tree</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)



<p>cutting in an area greater than 15 ha, a permit is required from the Directorate of Forestry, as stated under Section 22 (1), 23 (1) of the Forest Act, No. 12 of 2001. A permit is also required for the transport of any wood or wood products, for the sale and or export of any wood or wood products.</p> <ul style="list-style-type: none"> <li>The total habitat that will be destroyed by the construction of the proposed pipeline is a minimum of 200 ha. Since this area exceeds the allowable 15 ha, a permit from the Directorate of Forestry is required, as stated under Section 22 (1), 23 (1) of the Forest Act, No. 12 of 2001.</li> </ul>		
<b>Illegal harvesting of camelthorn wood or aloes</b>		
<ul style="list-style-type: none"> <li>Provide construction workers with wood from invasive species.</li> <li>Provide adequate competency training and awareness.</li> <li>Apply strict supervision and control.</li> <li>Strict rules and penalties need to be imposed on construction workers regarding illegal harvesting of wood from protected trees.</li> <li>Should anyone wish to use the wood from the protected trees that are felled, permission should be obtained from the landowner, and the necessary permits obtained from the Directorate of Forestry.</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)
<b>Physical destruction of habitats and animals</b>		
<ul style="list-style-type: none"> <li>By re-routing of the pipeline (to a shorter route) and the relocation of the northern pump station, some impacts can be minimized.</li> <li>Sensitive areas and areas of particular concern should be avoided where possible and require specific mitigation measures otherwise.</li> <li>Sensitive areas such as washes and rivers should be avoided as they sustain riverine vegetation, provides connectedness in the landscape and functions as a source of (albeit seasonal) water.</li> <li>Habitats where organisms occur in concentrated communities (e.g., rupicolous, burrowing, slow-moving and small species or roosting and nesting birds, dense stands of protected plant species, e.g., aloes) should be avoided and alternative routes preferred.</li> <li>Isolated habitats, habitats occupied by specialized organisms, and habitats sustaining landscape connectedness should be avoided and alternative routes preferred.</li> <li>Cutting into rocky outcrops should be avoided and alternative routes preferred.</li> <li>Where rocky outcrops are destroyed or large rocks unearthed during pump station construction or trenching, pile the waste rocks in suitable areas to mimic rocky outcrops. This will re-create habitat and off-set rocky habitat loss.</li> <li>Limit the distances of service and access roads.</li> <li>Demarcating the footprint can limit access outside these areas (and to protect undisturbed areas).</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)

<ul style="list-style-type: none"> <li>• Speed limits must be enforced.</li> <li>• A sound restoration plan for disturbed areas must be implemented.</li> <li>• Strict control and supervision during construction is required to protect undisturbed areas outside the construction zone.</li> </ul>		
<b>Poaching, killing of animals and the illegal collecting of animals</b>		
<ul style="list-style-type: none"> <li>• Reinforce acceptable behaviour through adequate information sharing.</li> <li>• Strictly enforce all environmental rules, with special emphasis placed on preventing transgression and punishment of transgressors.</li> <li>• Put in place appropriate competency and compliance training and enforcement of behaviour rules.</li> <li>• Without infringing on the rights of workers, manage movements and set rules accordingly.</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)
<b>Noise, dust, light and chemical pollution</b>		
<ul style="list-style-type: none"> <li>• Machinery must be equipped with the necessary measures to minimize noise.</li> <li>• Vehicles need to be regularly maintained. Maintenance programs will be established and implemented.</li> <li>• Chemical and oil spills to be immediately contained and removed. Protocols and equipment for this are in place with regular checks.</li> <li>• Enforce speed limits (higher speeds generated higher noise and dust levels).</li> <li>• Screen lights or use insect-friendly bulbs.</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)
<b>Rehabilitation and decommissioning</b>		
<ul style="list-style-type: none"> <li>• Take care to prevent soil erosion, encourage herbaceous vegetation growth and prevent bush encroachment after the water pipe is installed underground. Aftercare is necessary as invader bushes will coppice and new seedlings will germinate. Erosion may occur and alien invasive species may also establish. Periodic inspections and clearing are thus needed.</li> <li>• Rehabilitate borrow pits through landscaping and by encouraging vegetation growth on the impacted surfaces (e.g., sowing of indigenous grass species, erosion control).</li> <li>• Dispose of recyclable material (such as steel, power cables and pipelines) in the appropriate manner and recycle wherever possible.</li> <li>• Keep disturbance during decommissioning to a minimum.</li> <li>• Restore areas where soil was disturbed, paying attention to natural drainage networks and prevention of soil erosion.</li> </ul>	Contractor / Lodestone  In liaison with NamWater (for the pipeline) NamPower (for the powerline)	Construction / operations (i.e. maintenance)

**Powerline**

MITIGATION / MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Collision of birds with overhead powerline</b>		
<ul style="list-style-type: none"> <li>The selected route will likely cause a visual barrier, and this barrier will likely act as mitigation to reduce bird mortalities.</li> <li>In addition, bird diverters can be attached to the conductors – especially where the powerline crosses identified habitats and flightpaths such as drainage lines. The marking of more sensitive sections of the powerline to increase visibility is therefore recommended in the sensitive narrow habitat in the northern section (see the Avifauna Specialist report for coordinates). This ~7.2 km section should be regarded as the minimum, and the details should be confirmed once the final route is selected.</li> <li>The top OPGW (earth/ground) wire should be marked, for the full length of each span.</li> <li>Recommended devices to use include the following, all made by Preformed Line Products: <ul style="list-style-type: none"> <li>The large SWAN-FLIGHT Diverter (SFD); alternating with</li> <li>The Viper Live Bird Flapper ("Viper")</li> </ul> </li> <li>The marking distance between devices should be 5 – 10 m on the 33 kV line, with offset designs/colours (e.g. black and white).</li> <li>At this stage, no nocturnally visible marking is recommended, but it should become mandatory should monitoring results indicate the necessity (e.g., repeat collisions of any nocturnal or crepuscular fliers). The need for fitting mitigation for collisions on stay wires should also be based on monitoring results.</li> </ul>	<p>Contractor / Lodestone</p> <p>In liaison with NamPower</p>	<p>Construction / operations (i.e. maintenance)</p>
<p>The following monitoring initiatives should be conducted: (Note that, should numbers and or nesting activity of any of the target species in the area increase at any stage, or recorded numbers of incidents become a cause for concern, the need for monitoring for powerline incidents would increase proportionately).</p> <ul style="list-style-type: none"> <li>Ensure that the entire 33 kV powerline routes are monitored in an acceptable way 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. The NamPower / NNF Strategic Partnership can be contacted for assistance with monitoring procedures (<a href="http://www.nnf.org.na/project/nampowernnf-partnership/13/5/5.html">http://www.nnf.org.na/project/nampowernnf-partnership/13/5/5.html</a>).</li> <li>Identified sensitive areas such as those closest to ephemeral river systems should receive particular attention, and preferably surveyed on foot.</li> <li>Set up a reporting channel and clarify monitoring and reporting procedures to all partners. Record all bird mortalities on a standardised form, with the GPS</li> </ul>		

<p>coordinates and powerline structure and other details, and photographs of the carcass (especially the head of the bird), powerline structure and general habitat.</p> <ul style="list-style-type: none"> <li>• Monitor the effectiveness of mitigation measures; should repeated collision incidents involving vultures, eagles, or any other group of birds, occur, consider the retrofitting of further mitigation; replace mitigation devices as and when necessary.</li> <li>• Monitor bird nesting and perching activities on powerline structures and follow up if any electrocution incidents occur.</li> <li>• Monitor numbers and nesting activity by Sociable Weavers.</li> <li>• Monitor numbers and nesting activity by species such as Pied Crows; also monitor the management of food/vegetable wastes during construction to avoid an increase in crow numbers.</li> </ul>		
<b>Electrocution of birds on overhead powerline</b>		
<p>The mitigation measures below are already standard procedure for most poles of this nature but are mentioned for the sake of completeness.</p> <ul style="list-style-type: none"> <li>• The earth wire on each powerline poles should stop at least 300 mm below the lowest phase to provide an "air space safety gap", to reduce electrocution risk; this procedure is known as "gapping". The gap should be wide enough to avoid being permanently active, but close enough to allow lightning strikes to bridge it. This mitigation should be fitted to all wooden and (especially) any steel A-frame poles.</li> <li>• Transformer / switchgear structures should be designed in such a way that they are not attractive as bird perches / nesting sites; selected live components should be insulated (e.g., using PVC piping or low-density polyethylene pipe [LDPE]).</li> <li>• The stay wires should also be "gapped" using an insulator.</li> <li>• On strain structures where "jumper" wires are used in a horizontal configuration, the two outer jumpers should be suspended below the cross arm and the third / centre jumper should be insulated or offset; or all jumpers insulated.</li> <li>• Should bird electrocutions take place after the above mitigation, safe alternative perching areas / perching platforms may be added to selected structures, as per the example of the perch for the 132 kV line (above). Ideally, the perch should be higher than the pole and at least 90 cm higher than the nearest conductor; and in this case 120 cm higher, as vultures occur in the area. If possible, the size should allow for two vultures to perch side by side. Additional (high) perches could be fitted above transformer structures.</li> <li>• The need for reporting powerline incidents should be stressed, and reporting procedures developed (see monitoring requirements above).</li> </ul>		

**Bird nesting on overhead powerline**

- No specific mitigation measures are recommended, but it can be applied subsequently – when problem sites area identified.

Refer to the Biodiversity Specialist Reports for further details on management and mitigation measures (where required).

**7.2 SOIL ACTION PLAN****7.2.1 DESCRIPTION**

Soil will be impacted within the narrow strip where the pipeline will be located, the construction sites where the pump houses and reservoirs will be built, a few borrow pits, and the servitude.

**7.2.2 MITIGATION, MANAGEMENT AND MONITORING****Pipeline and 33 kV Powerline**

MITIGATION/MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Disturbance to soil with resulting erosion</b>		
<ul style="list-style-type: none"> <li>• The impacts of the pipeline are best reduced by taking the shortest route for the pipeline.</li> <li>• Quarrying for bedding and filling material should only be done in areas where there are no protected trees.</li> <li>• The size and number of borrow pit areas need to be minimized.</li> <li>• Buffer zones of at least three meters should be maintained all around remaining protected trees.</li> <li>• Limit access routes to a minimum number and distance.</li> <li>• Large vehicles need to be confined to the servitude and may not turn around randomly in the bush.</li> <li>• Materials removed from the trenches for the pipeline must be placed in the servitude, where possible, until they can be deposited in their final disposal sites.</li> <li>• Rehabilitation of areas affected by construction should start as soon as construction is complete, particularly borrow pits.</li> <li>• A sound restoration plan for areas with disturbed soil (including areas affected by contamination) should be implemented.</li> <li>• Planting of new saplings and ground cover (active revegetation) is advisable and the colonisation by indigenous herbaceous plants should be encouraged to reduce wind and water erosion. Care must be taken not to allow the establishment of alien vegetation.</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)

<ul style="list-style-type: none"> <li>Since riverbeds and riverbanks are sensitive to disturbance and subjected to erosion, these sites need to be stabilized after disturbance.</li> </ul>		
<b>Establishing of alien invasive species on areas of disturbance</b>		
<ul style="list-style-type: none"> <li>Regular inspections and clearing of alien species are needed.</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)

### 7.3 ARCHAEOLOGY ACTION PLAN

#### 7.3.1 DESCRIPTION

The pipeline route traverses an area with a relatively sparse distribution of previously known archaeological / heritage sites, and a significant proportion of the pipeline route traverses rocky hillslopes that are generally devoid of archaeological remains. Although there is a generally low likelihood that unknown heritage sites are uncovered, it is possible that buried archaeological remains, including graves, may be found in the course of earthworks. On the sandy plains east of Rehoboth a number of archaeological sites occur and most of these are associated with the ephemeral pans present in this area. The sites are generally well preserved, but no archaeological sites were found within the road corridor or in the areas adjacent to the road corridor through this part.

#### 7.3.2 MITIGATION, MANAGEMENT AND MONITORING

##### Pipeline and 33 kV Powerline

MITIGATION/MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Disturbance and damage to heritage sites</b>		
<ul style="list-style-type: none"> <li>It is recommended that a Chance Finds Procedure is adopted (see below).</li> <li>The precautionary principle must be applied throughout – team members should be given training to know what heritage resources they may encounter and what to do in case a discovery is made. In addition, the landowners need to be consulted about the possibility of present graves on their properties.</li> </ul>	Contractor / Lodestone	Construction / operations (i.e., maintenance)
<b>Archaeological Chance Find Procedure</b>		
<ul style="list-style-type: none"> <li>If operating machinery or equipment stop work.</li> <li>Identify the site with flag tape.</li> <li>Determine GPS position if possible.</li> <li>Report findings to foreman / team leader.</li> </ul>	Person identifying archaeological or heritage material	Construction
<ul style="list-style-type: none"> <li>Report findings, site location and actions taken to the Construction Supervisor.</li> <li>Cease any works in immediate vicinity.</li> </ul>	Foreman / Team leader	Construction

<ul style="list-style-type: none"> <li>Visit site and determine whether work can proceed without damage to findings.</li> <li>Determine and mark exclusion boundary.</li> <li>Site location and details to be added to project GIS for field confirmation by archaeologist.</li> </ul>	Construction Supervisor / Environmental Officer	Construction
<ul style="list-style-type: none"> <li>Inspect site and confirm addition to project GIS.</li> <li>Advise the National Heritage Council and request written permission to remove findings from work area.</li> <li>Recovery, packaging and labelling of findings for transfer to National Museum.</li> </ul>	Archaeologist	Construction
<ul style="list-style-type: none"> <li>Should human remains be found, the following actions will be required: <ul style="list-style-type: none"> <li>Apply the chance find procedure as described above.</li> <li>Schedule a field inspection with an archaeologist to confirm that remains are human.</li> <li>Advise and liaise with the NHC and Police.</li> <li>Remains will be recovered and removed either to the National Museum or the National Forensic Laboratory.</li> </ul> </li> </ul>	Archaeologist National Heritage Council Police	Construction

## 7.4 COMPENSATION ACTION PLAN AND LANDOWNER INTERACTIONS

### 7.4.1 DESCRIPTION

The route affects the Rehoboth Townlands as well as several farms. Even though it has been routed to avoid homesteads, dams, boreholes, and other existing structures, a strip of land is affected where the pipeline will be situated.

### 7.4.2 MITIGATION, MANAGEMENT AND MONITORING

#### Pipeline and 33 kV Powerline

MITIGATION/MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Compensation</b>		
Devise a compensation action plan, including the following: <ul style="list-style-type: none"> <li>Surveyed diagram of each portion of land affected within the servitude and the surveyed size.</li> <li>Appoint a valuer to determine the applicable compensation amount for each portion of land.</li> <li>Compile agreements with each affected landowner, which should include a Code of Conduct of how construction, operation and maintenance will occur.</li> <li>Engage the Rehoboth Town Council for the routing of the pipeline through the townlands.</li> <li>Visit each landowner, explain, and conclude an agreement with each landowner.</li> </ul>	Lodestone  In liaison with NamWater (for the pipeline) and NamPower (for the powerline)	During design phase



<b>Grievances</b>		
Implement a grievance procedure for the affected farm owners to submit their concerns / complaints during construction and operation.	Lodestone  In liaison with NamWater (for the pipeline) NamPower (for the powerline)	Immediately after compensation and relocation has been completed.
<b>Local labour and equipment</b>		
Encourage the contractor to use labour and equipment from these farms as far as possible.	Lodestone  In liaison with NamWater (for the pipeline) NamPower (for the powerline)	Before construction.
<b>Interaction with landowners</b>		
<ul style="list-style-type: none"> <li>All structures, infrastructure affected will be identified and where possible, the route will be moved to avoid these.</li> <li>Where this is not possible, Lodestone will negotiate fair compensation as set out above.</li> <li>The construction schedule should be discussed with the landowners to enable them to plan the rotation of livestock accordingly, where relevant. Their limitations should be accommodated, where possible.</li> <li>The schedule and approach to construction must be presented to the directly affected receptors for input prior to finalisation.</li> <li>Before work commences, Lodestone should inform all affected landowners and authorities about the project, at least 14 days before the start of the project.</li> <li>Lodestone should secure all rights of way to cross over private properties. The contractors may not stray from the servitude. The contractor shall inform the owner or his legal representative before entering onto any private property, of his intention to do so and shall make such arrangements with such owner or his legal representative as may be necessary to ensure free and unhampered entry to, and movement on or over the property concerned, for the duration of the project. This should be done at least one month in advance and written proof of such communication should be always available.</li> <li>Whenever reasonably possible, the contractor shall meet with the landowner / representative of the property, introduce himself and the company he represents and explain the scope of the work. The landowner / representative 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.</li> <li>The contractor must ensure that the landowner or his legal representative fill in forms containing the following information, before and after the contractor has worked on the property.</li> </ul>	Contractor / Lodestone	Before and during construction

<ul style="list-style-type: none"> <li>• Before entry, to be completed and signed by the landowner: <ul style="list-style-type: none"> <li>○ The state of their properties and assets prior to construction; the inclusion of photographs should be encouraged. Activities to be conducted on the farm (e.g., camping, construction etc.).</li> <li>○ Specific conditions to be met on the farm.</li> <li>○ Dates when entry is needed.</li> <li>○ Farmer's signature (if the farmer or his legal representative does not agree to sign the form, this must be noted on the form along with a list of names of all the people present at the meeting).</li> <li>○ Contractor's signature of commitment to adhere to the requirements.</li> </ul> </li> <li>• Upon leaving the farm, to be completed and signed by the farm owner: <ul style="list-style-type: none"> <li>○ Post-construction, the site should be reassessed to ensure that the farm is left in an acceptable state.</li> <li>○ Post-construction, the affected landowners or users should be invited to join Lodestone and the appointed contractor for a 'walk down' the pipeline and powerline route to identify any outstanding issues.</li> <li>○ Remarks on compliance and misconduct</li> <li>○ Issues still to be resolved.</li> </ul> </li> <li>• The success of the project depends on good relations with the landowners. Thus, the landowners must have knowledge of any changes to the construction and maintenance programme that might occur, but only if they are affected by it.</li> <li>• A system of communication must be devised by the contractor and made available to Lodestone, to inform Lodestone about all incidents and accidents (including those affecting the environment) and injuries sustained.</li> <li>• Appropriate contact numbers shall be made available to the landowner, to ensure open channels of communication and prompt responses to any queries and claims.</li> <li>• The rights of the landowner shall be always respected and all staff shall be sensitised to the fact that they are working on private property.</li> <li>• Where lines cross an inhabited area, all the necessary precautions shall be taken by the contractor to safeguard the lives and property of the inhabitants.</li> <li>• The contractor shall not interfere, under any circumstances, with built infrastructure belonging to the landowners.</li> <li>• A register shall be kept of all complaints from landowners. All claims shall be handled immediately to ensure timely rectification.</li> </ul>		
<b>Access to private property</b>		
<ul style="list-style-type: none"> <li>• The movements of the contractor, subcontractor, or their employees, are restricted to the areas of the servitude and any further encroaching on private property at any time are subject to the owner's permission.</li> </ul>	Contractor / Lodestone	Before and during construction

<ul style="list-style-type: none"> <li>• Movement of construction vehicles across the farms during the pipeline construction and erection of the towers and the stringing of the lines needs to be limited as far as possible. Existing tracks should be used to at least reach the tower sites rather than to drive through the fields. A detailed plan with routes should be produced and availed to the contractor.</li> <li>• Roads marked with no entry signs, shall not be used.</li> <li>• Fences or gates of landowners shall not be damaged when gaining access to the servitude.</li> <li>• Gates and locks shall be regularly monitored to ensure that they are secure.</li> <li>• If no gates are available at crossing points, landowners shall be informed prior to the loosening and crossing of fences. Fences loosened and crossed shall be immediately restored to its original state and to the complete satisfaction of the landowner.</li> <li>• All gates shall be fitted with locks and kept always locked during construction. Lodestone must be supplied with three copies of these keys. Once the contractor has left the site, all gates shall be fitted with locks.</li> </ul>		
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### **Pipeline**

MITIGATION/MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Water off-take</b>		
<ul style="list-style-type: none"> <li>• Lodestone, in liaison with NamWater to determine additional (possible) off-take points for future connections to users along the route.</li> <li>• Lodestone to discuss this option with relevant users during the design stage to determine most suitable positions for off-take points and to explain to the users that water tariffs through separate agreement(s) between NamWater and the users will apply and that Lodestone will not sponsor the water to users.</li> </ul>	Lodestone  In liaison with NamWater (for the pipeline)	During design phase

## **7.5 VISUAL ACTION PLAN**

### **7.5.1 DESCRIPTION**

Seeing that the proposed water pipeline will be buried, no visual impacts are expected, except during the construction phase. However, new reservoirs and pump stations will be constructed along the route, which could also have a visual impact. It will not be possible to 'hide' the 33 kV powerline, reservoirs and booster pump but mitigation is possible to a degree from sensitive receptor areas (i.e. the gravel road).

## 7.5.2 MITIGATION, MANAGEMENT AND MONITORING

### Pipeline and 33 kV Powerline

MITIGATION/MONITORING ACTION	RESPONSIBILITY	SCHEDULE
<b>Reduced visual resources for sensitive receptors relating to the 33 kV overhead powerline, reservoirs and pump stations</b>		
<ul style="list-style-type: none"> <li>• Continuous rehabilitation of disturbed areas after construction activities have been completed.</li> <li>• Reservoirs and pump station structures (colours) should blend in with the natural environment.</li> <li>• Restrict the extent of work areas.</li> <li>• Consult farm owners as to the best laydown areas that will be out of sight.</li> <li>• Keep work areas tidy and implement the waste management plan daily.</li> <li>• Where possible, leave a visual screen (i.e. trees) in front of the reservoirs and booster pump stations</li> </ul>	Contractor / Lodestone	Construction / operations (i.e. maintenance)

## 7.6 MONITORING

Details about monitoring requirements are described in the overall Dordabis Iron Ore Mining Project EMP (see Section 3.17).

## 8 REFERENCES

- African Conservation Services, 2020.** EIA Amendment for Lodestone's Dordabis Iron Ore Mining Project and Associated Infrastructure. Construction of new 132 kV and 33 kV overhead powerlines. Avifauna baseline / scoping and assessment. Unpublished report for Namisun.
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