



**Prepared for:**

Limpopo Economic Development  
Agency on behalf of Musina-  
Makhado SEZ (SOC)



ROOTED IN THE FUTURE

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## MUSINA\_MAKHADO SEZ SOUTHERN SITE

### ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

DRAFT REPORT  
REVISION 00

**AUGUST 2020**

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## GLOSSARY

ACRONYM	EXPLANATION
<b>AC</b>	Alternative Current
<b>ADE</b>	Aquifer Dependent Ecosystem
<b>AGA</b>	Astronomy Geographic Advantage Act
<b>AIDS</b>	Acquired immune deficiency syndrome
<b>AQ</b>	Air quality
<b>AQMP</b>	Air Quality Management Plan
<b>ARC</b>	Agricultural Research Council
<b>BID</b>	Background Information Document
<b>BME</b>	Baobab Mining and Exploration (Pty) Ltd
<b>CBA</b>	Critical Biodiversity Area
<b>Cr</b>	Chrome
<b>CITES</b>	Convention on International Trade and Endangered Species
<b>CO<sub>2</sub></b>	Carbon Dioxide
<b>COMESA</b>	Common Market of Eastern and Southern Africa
<b>DM</b>	District Municipality
<b>DMR</b>	Department of Mineral Resources
<b>DRC</b>	Democratic Republic of Congo
<b>DTi</b>	Department of Trade and Industry
<b>DWS</b>	Department of Water and Sanitation
<b>EAC</b>	East African Community
<b>EAP</b>	Environmental Assessment Practitioner
<b>EIA</b>	Environmental Impact Assessment
<b>EIP</b>	Environmental Implementation Plan
<b>ESA</b>	Ecological Support Area
<b>FeCr</b>	Ferrochrome
<b>GDP</b>	Gross Domestic Product
<b>GEP</b>	Good Engineering Practice
<b>GN</b>	Government Notice
<b>GNR</b>	Government Notice Regulation
<b>ha</b>	Hectare
<b>hz</b>	Hertz
<b>HAZOP</b>	Hazard and Operability

ACRONYM	EXPLANATION
HIA	Heritage Impact Assessment
HNO <sub>3</sub>	Nitric acid
HRSRG	Heat Recovery Steam Generators
IBA	Important Bird Area
ICT	Information and Communications Technology
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IFR	In-stream Flow Requirements
IPAP	Industrial Policy Action Plan
ISRDS	Integrated Sustainable Rural Development Strategy
km	kilometer
kpa	Key Performance Area
LADC	Limpopo Agricultural Development Corporation
LDO	Land Development Objective
LDP	Limpopo Development Plan
LEDA	Limpopo Economic Development Agency
LEDET	Limpopo Department of Economic Development, Environment and Tourism
LEGDP	Limpopo Employment, Growth and Development Plan
LIBSA	Limpopo Business Support Agency
LimDev	Limpopo Economic Development Enterprise
LPDMF	Limpopo Provincial Disaster Management Framework
LUMS	Land Use Management Scheme
MCA	Maximum Credible Accident
MgFeSi	Magnesium Ferro Silicon
mm	Millimetre
m/s	Meters per second
Mtpa	Metric Tonnes per annum
MVA	Mega Volt Amps
N1	National Road 1
NDP	National Development Plan
NEFPA	National Freshwater Ecological Policy Areas
NEMA	National Environmental Management Act
NEM:AQA	National Environmental Management: Air Quality Act



ACRONYM	EXPLANATION
<b>NEM:PA</b>	National Environmental Management: Protection Act
<b>NEM:WA</b>	National Environmental Management: Waste Act
<b>NGP</b>	New Growth Path
<b>NH<sub>3</sub></b>	Ammonia
<b>NIPF</b>	National Industrial Policy Framework
<b>NO<sub>x</sub></b>	Nitrogen Oxides
<b>NPAES</b>	National Protected Areas Expansion Strategy
<b>O<sub>3</sub></b>	Ozone
<b>OHSA</b>	Occupational Health and Safety Act
<b>PAN</b>	Protected Area Network
<b>PDPF</b>	Provincial Development Planning Forum
<b>PGDS</b>	Provincial Growth and Development Strategy
<b>PMU</b>	Project Management Unit
<b>PM<sub>10</sub></b>	Thoracic particulates (particulates with diameter of less than 10 µm)
<b>PP</b>	Public Participation
<b>PPP</b>	Public Participation Process
<b>QLFS</b>	Quarterly Labour Force Survey
<b>SA</b>	South Africa
<b>SADC</b>	South African Development Community
<b>SAEO</b>	South African Environment Outlook
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SDF</b>	Spatial Development Framework
<b>SDI</b>	Spatial Development Initiative
<b>SEA</b>	Strategic Environmental Assessment
<b>SEZ</b>	Special Economic Zone
<b>SIMRAC</b>	Safety in Mines Research Advisory Committee
<b>SIP</b>	Strategic Integrated Project
<b>SMME</b>	Small, Medium and Micro-sized Enterprises
<b>SO<sub>2</sub></b>	Sulphur Dioxide
<b>SPLUMA</b>	Spatial Planning and Land Use Management, 2013 (Act No. 16 of 2013)
<b>StatSA</b>	Statistics South Africa
<b>TiL</b>	Trade and Investment Limpopo
<b>UNESCO</b>	United Nations Education, Scientific and Cultural Organisation

ACRONYM	EXPLANATION
WULA	Water Use Licence Application
WWTW	Waste Water Treatment Works

## TERMS

TERM	EXPLANATION
<b>Alternatives</b>	<p>Defined in the Regulations as different means of meeting the general purpose and requirements of the activity, which may include alternatives to:</p> <ul style="list-style-type: none"> <li>• The property on which or location where it is proposed to undertake the activity</li> <li>• The type of activity to be undertaken</li> <li>• The design or layout of the activity</li> <li>• The technology to be used in the activity or process alternatives</li> <li>• The operational aspects of the activity</li> <li>• The option of not implementing the activity.</li> </ul>
<b>Aquifer</b>	An aquifer is an underground layer of water-bearing permeable rock or unconsolidated materials (gravel, sand, silt, or clay) from which groundwater can be abstracted.
<b>Biodiversity</b>	The variability among living organisms from all sources, including terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species, and of ecosystems.
<b>Biosphere Reserve</b>	Areas identified either on terrestrial or marine ecosystems (or both) that are internationally recognized under the framework of UNESCO's Man and Biosphere (MAB) programme.
<b>Catchment</b>	The land area drained by a river and its tributaries.
<b>Contractor (C)</b>	A person or company appointed by LEDA to carry out stipulated activities.
<b>Domestic Waste</b>	Waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreational purposes.
<b>Emergency</b>	An undesired event that does result in significant environmental impacts and requires the notification of relevant statutory body such as a local or provincial authority.
<b>Environmental authorisation</b>	The authorisation by a competent authority of a listed or specified activity in terms of NEMA, and includes a similar authorisation contemplated in a specific environmental management Act.

<b>Environmental Management Programme (EMPr)</b>	A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of the project.
<b>Environment</b>	<p>The surroundings within which humans exist and that are made up of:</p> <ul style="list-style-type: none"> <li>• The land, water and atmosphere of the earth</li> <li>• Micro-organism, plant and animal life</li> <li>• Any part or combination of (i) and (ii) and the interrelationships among and between them, and</li> </ul> <p>The physical, chemical, aesthetic, and cultural properties and conditions of the foregoing that influence human health and well-being.</p>
<b>Environmental Control Officer (ECO)</b>	A person appointed by the LEDA to monitor environmental compliance of the contractor and produce monthly environmental compliance reports.
<b>Environmental Impact</b>	A change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.
<b>Hazardous Waste</b>	Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste have a detrimental impact on health and the environment.
<b>Indigenous vegetation</b>	Vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.
<b>Industrial complex</b>	An area used or zoned for industrial purposes, including bulk storage, manufacturing, processing or packaging purposes.
<b>Integrated water use licence</b>	A water use licence that combines both non-waste-discharge (section 21 (a), (b), (c), (i) and (k) water uses) and waste-discharge related water uses in a single licence.
<b>Intermodal</b>	Involving two or more different modes of transport in conveying goods.
<b>Mitigation</b>	The implementation of practical measures to reduce the adverse effects or enhance the beneficial effects of an action

<b>National Protected Area Expansion Strategy (NPAES)</b>	South Africa's national strategy for expansion of the protected area network, led by the Department of Environmental Affairs and developed in collaboration with national and provincial conservation authorities. The NPAES sets targets for protected area expansion, provides maps of the most important areas for protected area expansion, and makes recommendations on mechanisms for protected area expansion. Focus areas for protected area expansion are identified in the NPAES. They are large, intact, unfragmented areas of high importance for land-based protected area expansion, suitable for the creation or expansion of large protected areas.
<b>New order mining right</b>	Mining right granted under the Mineral and Petroleum Resources Development Act, 2002 (Act 208 of 2002).
<b>Non-renewable energy</b>	Non-renewable energy comes from sources that will run out or will not be replenished in our lifetimes – or even in many, many lifetimes. Most non-renewable energy sources are fossil fuels: coal, petroleum, and natural gas.
<b>Protected Area</b>	Protected areas contemplated in section 9 of the NEMPAA and the core area of a biosphere reserve and shall include their buffers.
<b>Rehabilitation</b>	Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (where possible) which it was before disruption. Rehabilitation for the purposes of this specification is aimed at post-reinstatement re-vegetation of a disturbed area and the insurance of a stable land surface. Re-vegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way.
<b>Renewable energy</b>	Energy that is generated from natural processes that are continuously replenished. This includes sunlight, geothermal heat, wind, tides, water, and various forms of biomass. This energy cannot be exhausted and is constantly renewed.
<b>Run-off</b>	The total water yield from a catchment, including surface and subsurface flow.
<b>Servitude</b>	A registered right that a person has over the immovable property of another.
<b>Settlement</b>	The totality of a human community – whether city, town, or village – with all the social, material, organizational, spiritual and cultural elements that sustain it.

<b>Stormwater</b>	Water resulting from natural precipitation and/or the damming up or accumulation thereof and includes groundwater and spring water ordinarily conveyed by the stormwater system, but excludes water in a drinking water or waste water reticulation system.
<b>Special Economic Zone</b>	Special Economic Zones (SEZs), are geographically designated areas of a country set aside for specifically targeted economic activities, supported through special arrangements (that may include laws) and systems that are often different from those that apply in the rest of the country.
<b>Surface Water</b>	Permanently or seasonally flooded areas characterized by the absence (or low abundance) of emergent plants.
<b>Topsoil</b>	The upper soil profile irrespective of the fertility, appearance, structure, agriculture potential and composition of the soil, usually containing organic material and which is colour specific.
<b>Watercourse</b>	A geomorphological feature characterized by the presence of a stream flow channel, a floodplain and a transitional upland fringe seasonally or permanently conveying surface water.
<b>Wetland</b>	Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

# 1 INTRODUCTION

## 1.1 BACKGROUND

The Limpopo Provincial Government was requested by the Department of Trade and Industry (DTI) to submit areas for evaluation considered as strategic for the development of the Limpopo economy through industrialisation. Preliminary studies were conducted and the Limpopo province submitted four areas that align with potential growth points in the province.

The Department of Trade and Industry evaluated the submission and approved two of the areas for further feasibility investigation including Musina and Tubatse. The Limpopo province subsequently motivated that the proposed Musina SEZ will include two components situated at two different locations. A Skills Plan for the Musina Special Economic Zones (SEZ) is critical to ensure the long-term sustainability of the SEZ and lasting impact on the local and provincial economy. The Musina Special Economic Zone (SEZ) in Limpopo province involves a metallurgical and logistics cluster, with the potential of adding a petrochemical cluster in future. It consists of 2 sites, namely one at Antonvilla (Site 1) in Musina where logistics and manufacturing will form the main component and the other approximately 50km to the south of Musina referred to as the Makhado / Bokmakierie portion (Site 2), focussed on the metallurgical cluster. The SEZ land includes 375 ha that has been secured for phase 1 and a further 3150 ha in phase 2 (The phase 1 portion belongs to the Musina municipality and phase 2 portion is in process of being transferred from the Department of Public Works (DPW) to the municipality)) and Site 2 (belongs to the Community Property Owner's Association (CPA)) which consists of 8021 ha in total, of which 2000 ha has been agreed in principle already for phase 1.

The establishment of a Metallurgical Cluster in close proximity to the source of raw materials, the Logistics Hub in the SEZ, and access into the African market presents a unique opportunity for mineral beneficiation, which is a national key government priority. An investigation has been done into the establishment of a petrochemicals cluster in future within the SEZ; this has been found to be a viable proposal and will be pursued further upon securing suitable potential investors. The feasibility study indicated that a Logistics Cluster in the SEZ is viable and a value adding business opportunity because it provides an essential service to other Industries, playing a significant role in the movement of goods between South Africa and SADC. There is clearly a number of up-stream value adding opportunities in the supply chain as long as the SEZ is located close to a main corridor, in this case the North-South Corridor.

As the economies of SADC continue to grow, the need for capital equipment will increase especially if the SADC countries follow a policy of industrialisation. This will pave the way for South Africa to become a key supplier of capital goods to these markets as well as a supplier of input materials. Packaging, storage and

distribution will form part of the SEZ Logistics Cluster. The Metallurgic cluster will be placed at Site 2 and all their secondary services will be located at Site 1.

This report deals specifically with the Makhado / Bokmakierie portion (Site 2) of the Musina-Makhado Special Economic Zone (SEZ), the 'southern site'. The locality of the two sites are indicated below:

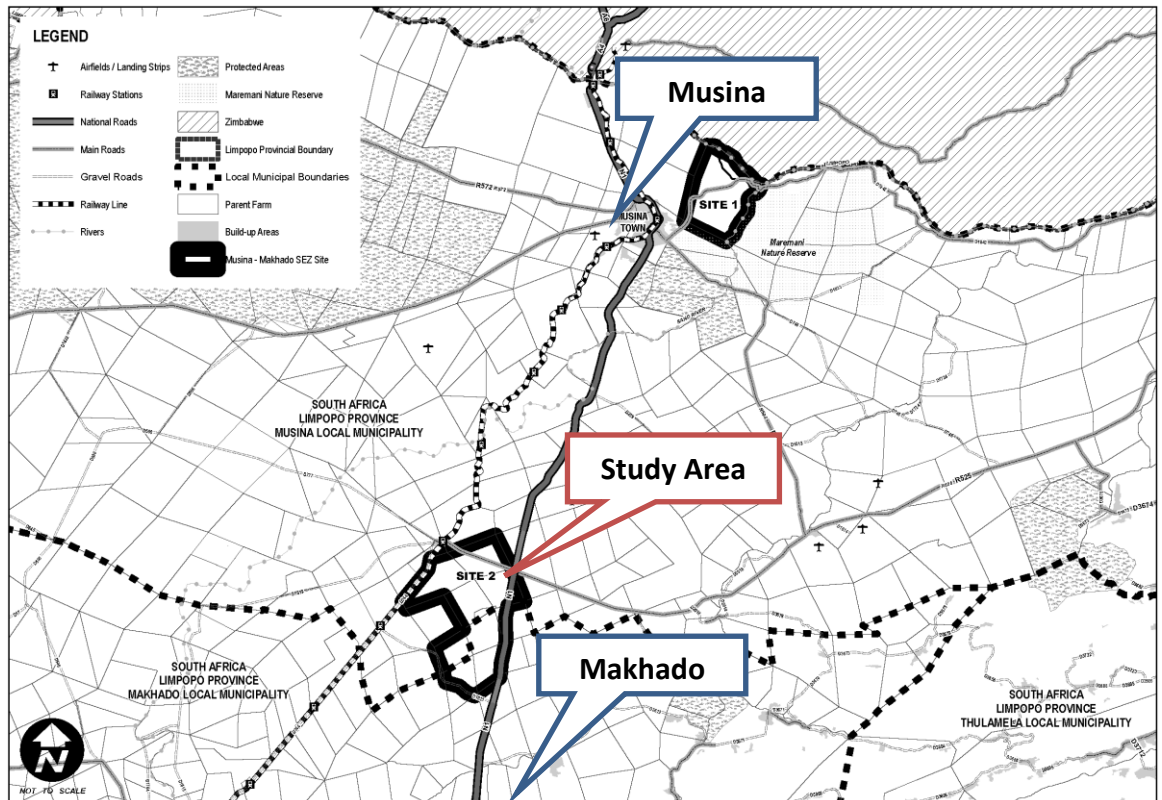


Figure 1-1: Musina-Makhado SEZ Locality

### 1.1.1 SPECIAL ECONOMIC ZONES

The South African Government seeks to transform the local economy into a globally competitive industrial economy, built on the full potential of all citizens and regions. The Special Economic Zone (SEZ) Programme has been established as one of the mechanisms to achieve this objective. The SEZ Programme focuses on much more than just building world-class industrial infrastructure but includes building robust industrial eco-systems in the host regions (DTi, 2016).

A SEZ is a geographic portion of a country set aside in terms of the **Special Economic Zone Act, 2014 (Act 16 of 2014) as amended** for the development of specific industrial or economic activities, and supported through a range of special measures that do not generally apply outside of the zone.

The SEZs are expected to contribute towards strengthening South Africa's terms of trade through the export of value-added commodities, the creation of stronger value chains and provision of much-needed jobs in previously disadvantaged regions.



The SEZ objectives include:

- To promote the acquisition and development of targeted industrial capabilities within the framework of the Industry Policy Action Plan (IPAP), New Growth Path and the National Development Plan
- To promote beneficiation and value-addition to the country's minerals and other natural resources
- To develop world-class infrastructure required to support the development of the targeted industrial activities
- To attract relevant foreign and domestic direct investment
- To develop certain regions
- To promote employment creation
- To support urban regeneration and rural development (Limpopo Development Plan, 2015).

As industrial and economic development tools, SEZs only work over the long-term and are not considered suitable as short-term interventions (DTi, 2012).

The typical implications of the development of an SEZ include:

- The re-organisation of the space economy of the region because of the nature, size and potential impact of emerging projects
- Potential increase in population due to influx of people seeking employment with social and cultural impacts
- An increase in the demand for municipal infrastructure services
- A potential increase in revenues for the municipality
- An increase in the demand for social, economic and other services
- Opportunity for inclusive development
- Opportunity for the exploitation of other economic opportunities
- Potential Environmental Impacts (Musina, 2015).

### **1.1.2 MUSINA-MAKHADO SPECIAL ECONOMIC ZONE**

The proposed Musina-Makhado SEZ is the largest single planned SEZ development in the country. Cabinet has approved the designation of the Musina-Makhado SEZ in July 2017 (LEDA, 2017) and the DTi designated the Musina-Makhado SEZ on 01 December 2017.

The Musina-Makhado SEZ is based on two initiatives (Musina, 2015):

- The location at Musina (northern location) makes it the ideal hub to serve as the logistics port to Africa, integral to the North / South Corridor development, import, export and beneficiation. The SEZ will also be linked to the SIP 17 infrastructure project on regional integration for African cooperation and development (Limpopo Development Plan, 2015).
- Development of the South African Energy and Metallurgical Zone (heavy industrial cluster) - Metals beneficiation is to be anchored around the Musina-Makhado Corridor SEZ (southern location) overlapping the border

between the Makhado and Musina municipalities (Limpopo Development Plan, 2015).

The essence of the Musina-Makhado SEZ is:

- The creation of a new industrial hub at the Musina-Makhado SEZ, which is part of the Trans-Limpopo Spatial Development Initiative, situated at two locations each with its own unique industrial focus, as described in more detail later on.
- Attracting appropriate foreign and domestic direct investment to promote the following industrial activities:
  - Mineral beneficiation: Metallurgical Cluster (Lime, steel, silica etc) and Petro-chemical Cluster (processing)
  - Agro-processing: Food industries
  - Logistics: Inter-modal hub - rail, road and air transport links
  - Other non-core industries: opportunities endless (Musina, 2015)

## **1.2 PURPOSE OF REPORT**

This EMPr provides a description of the methods and procedures for mitigating and monitoring impacts. The EMPr also contains environmental objectives and targets which the project proponent or developer needs to achieve in order to reduce or eliminate negative environmental impacts. Monitoring methods and performance indicators are also included.

## **1.3 APPLICABLE DOCUMENTS**

The following documents should be read in conjunction with this EMPr, the same is applicable to the project:

- The draft Environmental Impact Assessment Report; and
- Specialist reports that informed the Environmental Impact Assessment (EIA).
- The Environmental Authorisation pertaining to the project, issued by the Limpopo Economic Development, Environment and Tourism (DEA) (*pending*).

## **1.4 EMPr ADMINISTRATION**

Copies of this EMPr must be kept at the site office at all times. Copies thereof must be distributed to all senior contract personnel. All senior personnel involved in the construction and operation of the new development and must familiarise themselves with the content of the EMPr.

A detailed induction protocol, incorporating the conditions of the EMPr and associated Environmental Authorisation (EA), must be developed and all contractors and future permanent staff must be subjected to stringent training on

these environmental (bio-physical and socio-economic) requirements and responsibilities.

It should also be noted that the EMPr will be updated if / when the Environmental Authorisation is released and should it contain additional mitigating measures.

## 1.5 OVERVIEW OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Mr. Nico-Ronaldo Retief is a professional water, ecological biodiversity and visual specialist with emphasis on biodiversity and zoology. He has undertaken numerous mining related, environmental and ecological assessments, wetland studies and water quality specialist studies as well as visual impact assessments. He is registered with the South African Council for Natural Scientific Professions (SACNASP) and Environmental Assessment Practitioners Association of South Africa. For more information, please refer to Table 1-1.

**Table 1-1: Details of the Specialist**

<b>Specialist</b>	Nico-Ronaldo Retief
<b>Qualifications:</b>	M.Sc. Zoology (University of Johannesburg)
<b>Experience:</b>	Flora and Fauna Habitat Surveys Water Quality Assessments (Biomonitoring) Wetland Assessments Visual Impact Studies Aquatic Assessments and Biomonitoring Mining and water specialist 14 years' Experience
<b>Affiliation/ Registration</b>	SACNASP Professional Natural Scientist 400134/10 EAPASA – Professional Environmental Assessment Practitioner (2019/181)
<b>Address:</b>	PO Box 11375, Maroelana, 0161
<b>Tel:</b>	012 368 1850
<b>Email:</b>	Ronaldo.retief@deltabec.com
<b>Signature</b>	
<b>Date</b>	29 July 2019

## 1.6 STRUCTURE OF THIS EMPR

In terms of legal requirements, a crucial objective of the EMPr is to satisfy the requirements of Appendix 4 of the amended NEMA EIA Regulations published in Government Notice No. R 326 of 7 April 2017, and Section 24N of NEMA. These regulations regulate and prescribe the content of the EMPr and specify the type of supporting information that must accompany the submission of the report to the authorities. An overview of where the requirements are addressed in this EMPr is presented in Tables 3 and 4.

**Table 1-2: EMPr table of contents based on Annexure 4 of EIA Regulations, 2014 (as amended)**

EMPR REQUIREMENTS	SECTION OF REPORT
(1) (a) details of –  <ul style="list-style-type: none"> <li>(i) the EAP who prepared the EMPr; and</li> <li>(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;</li> </ul>	Section 1.5
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.1 Section 2
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	Appendix G
(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including –  <ul style="list-style-type: none"> <li>(i) planning and design;</li> <li>(ii) pre-construction activities;</li> <li>(iii) construction activities;</li> <li>(iv) rehabilitation of the environment after construction and where applicable post closure; and</li> <li>(v) where relevant, operation</li> </ul>	Section 9 Section 10 Section 11 Section 12 Section 13 Section 14

activities.	
<p>(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable. Include actions to –</p> <p>(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</p> <p>(ii) comply with any prescribed environmental management standards or practices;</p> <p>(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and</p> <p>(iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;</p>	<p>Section 9</p> <p>Section 10</p> <p>Section 11</p> <p>Section 12</p> <p>Section 13</p>
<p>(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	<p>Section 9</p> <p>Section 10</p> <p>Section 11</p> <p>Section 12</p> <p>Section 13</p>
<p>(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	<p>Section 9</p> <p>Section 10</p> <p>Section 11</p> <p>Section 12</p> <p>Section 13</p>
<p>(i) An indication of the persons who will be responsible for the implementation of the impact management actions;</p>	<p>Section 9</p> <p>Section 10</p> <p>Section 11</p>

	Section 12 Section 13
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 9 Section 10 Section 11 Section 12 Section 13
(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 9 Section 10 Section 11 Section 12 Section 13
(l) a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 4 Section 5 Section 7 Appendix E Appendix F
(m) an environmental awareness plan describing the manner in which-  (i) the applicant to inform his or her employees of any environmental risk which may result from their work; and  (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 6 Appendix H
(n) any specific information that may be required by the competent authority.	N/A

Table 3: Compliance with Section 24N of NEMA

Requirements of Section 24N of NEMA	Where it is included in this EMPr?
<p>(2) The environmental management programme must contain—</p> <p>(a) information on any proposed management, mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified in a report contemplated in subsection 24(1A), including environmental impacts or objectives in respect of—</p> <p>(i) planning and design;</p> <p>(ii) pre-construction and construction activities;</p> <p>(iii) the operation or undertaking of the activity in question;</p> <p>(iv) the rehabilitation of the environment; and</p> <p>(v) closure, if applicable;</p>	Section 9 to 13
<p>(b) details of—</p> <p>(i) the person who prepared the environmental management programme; and</p> <p>(ii) the expertise of that person to prepare an environmental management programme;</p>	Section 1
<p>(c) a detailed description of the aspects of the activity that are covered by the environmental management programme;</p>	Section 9 to 13
<p>(d) information identifying the persons who will be responsible for the implementation of the measures contemplated in paragraph (a);</p>	Section 3 & 4
<p>(e) information in respect of the mechanisms proposed for monitoring compliance with the environmental management programme and for reporting on the compliance;</p>	Section 4, 9 to 13

Requirements of Section 24N of NEMA	Where it is included in this EMPr?
(f) as far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and	Section 9 to 13
(g) a description of the manner in which it intends to— (i) modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) remedy the cause of pollution or degradation and migration of pollutants; and (iii) comply with any prescribed environmental management standards or practices.	Section 3, 4, 6, 7, 9 to 13
(3) The environmental management programme must, where appropriate— (a) set out time periods within which the measures contemplated in the environmental management programme must be implemented; (b) contain measures regulating responsibilities for any environmental damage, pollution, pumping and treatment of polluted or extraneous water or ecological degradation which may occur inside and outside the boundaries of the operations in question; (Section 24N(3)(b) substituted by section 5(c) of Act 25 of 2014) (c) develop an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment.	Section 9 to 13



Requirements of Section 24N of NEMA	Where it is included in this EMPr?
5) The Minister, the Minister responsible for mineral resources or an MEC may call for additional information and may direct that the environmental management programme in question must be adjusted in such a way as the Minister, the Minister responsible for mineral resources or the MEC may require.	N/A
6) The Minister, the Minister responsible for mineral resources or an MEC may at any time after he or she has approved an application for an environmental authorisation approve an amended environmental management programme.	N/A

Requirements of Section 24N of NEMA	Where it is included in this EMPr?
<p>7) The holder and any person issued with an environmental authorisation-</p> <p>a) must at all times give effect to the general objectives of integrated environmental management laid down in section 23;</p> <p>b) must consider, investigate, assess and communicate the impact of his or her prospecting or mining on the environment;</p> <p>c) must manage all environmental impacts</p> <p>(i) in accordance with his or her approved environmental management programme, where appropriate; and</p> <p>(ii) as an integral part of the prospecting or mining, exploration or production operation, unless the Minister responsible for mineral resources directs otherwise;</p> <p>d) must monitor and audit compliance with the requirements of the environmental management programme;</p> <p>e) must, as far as is reasonably practicable, rehabilitate the environment affected by the prospecting or mining operations to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development; and</p> <p>f) is responsible for any environmental damage, pollution, pumping and treatment of polluted or extraneous water or ecological degradation as a result of his or her operations to which such right, permit or environmental authorisation relates.</p>	

Requirements of Section 24N of NEMA	Where it is included in this EMPr?
8) Notwithstanding the Companies Act, 2008 (Act No. 71 of 2008), or the Close Corporations Act, 1984 (Act No. 69 of 1984), the directors of a company or members of a close corporation are jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused by the company or close corporation which they represent, including damage, degradation or pollution.	

## 2 DESCRIPTION OF THE RECEIVING ENVIRONMENT

### 2.1 CLIMATE

#### 2.1.1.1 Regional Climate

The SEZ site is situated in a semi-arid zone to the north of the Soutpansberg. The regional climate is strongly influenced by the east-west orientated mountain range which represents an effective barrier between the south-easterly maritime climate influences from the Indian Ocean and the continental climate influences (predominantly the Inter-Tropical Convergence Zone and the Congo Air Mass) coming from the north.

The rainfall in this area usually varies between 300 and 400 mm in summer, while experiencing very dry winters. The area is characterized by cool, dry winters (May to August) and warm, wet summers (October to March), with April and September being transition months. Temperature range from 0.9 °C to 39.9 °C and the area is generally frost free (Mucina and Rutherford, 2006).

The mountains give rise to wind patterns that play an important role in determining local climates. These wind effects include wind erosion, aridification and air warming.

#### 2.1.1.2 Temperature

Average monthly minimum and maximum temperatures for the Tshipise weather station (No. 0766277 1) some 32 km south-east of the SEZ area is shown in the table below. Average daily maximum and minimum summer temperatures (November to February) at the weather station range between ~33°C and ~20°C, while winter temperatures (May to August) range between ~28°C and ~7°C respectively. The high average temperatures are reflected by the fact that the minimum average daily summer temperature is a high 20°C and the minimum average daily winter temperature does not dip below 7°C.

**Table 2-1: Temperature data for Tshipise for the period from 1994 to 2006**

Month	Temperature (° C)			
	Highest Recorded	Average Daily Maximum	Average Daily Minimum	Lowest Recorded
January	42.2	32.8	21.5	12.6
February	41.4	32.3	21.5	14.9
March	42.9	31.5	20.1	13.0
April	40.9	30.1	16.3	5.7
May	42.3	27.9	11.2	1.7
June	34.3	25.6	8.2	-0.4

Month	Temperature (° C)			
July	34.1	25.0	7.3	-1.2
August	37.4	27.8	10.3	1.7
September	41.2	27.7	12.9	3.6
October	41.4	29.1	16.5	8.0
November	42.5	32.2	20.1	11.1
December	43.4	33.1	21.0	13.8
Year	43.4	29.6	15.6	-1.2

Source: Weather SA (Station No 0766277 1)

### 2.1.1.3 Winds

A period wind rose for the Mopane Project<sup>1</sup> area (proposed in the vicinity of the SEZ site) is presented in the figure below. Wind roses comprise of 16 spokes which represents the direction from which winds blew during the period. The colours reflect the different categories of wind speeds. The dotted circles provide information regarding the frequency of occurrence of wind speed and direction categories.

Based on an evaluation of the meteorological data obtained from the South African Weather Services, the following deductions regarding the prevailing wind direction and wind frequency can be assessed. Looking at the figure below, the predominant wind direction within the project area is mainly from the south-eastern region. Secondary winds are noted from the eastern region. The highest frequency of wind speeds lies between 0.5 and 2.1 m/s which occurred for 42% of the time. The second highest wind class 2.1 to 3.6 m/s occurs 34% of the time.

<sup>1</sup> Greater Soutpansberg Mopane Project Environmental Impact Assessment and Environmental Management Programme, November 2013

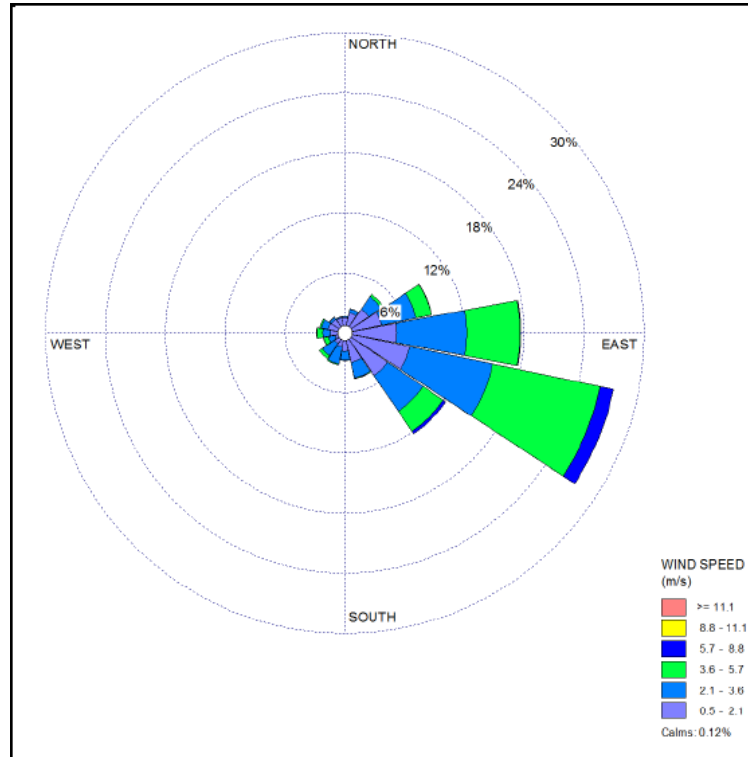


Figure 2-1: Period wind rose for the Mopane (from railway station eastwards) project area for the period Jan 2008 – Dec 2012

### 2.1.2 GEOLOGY

The geology of the area consists of Calc-silicate rocks and marble, together with leucogneisses and subordinate pink hornblende granitoid gneiss, metaquartzite and amphibolite and Sandstone, shale and coal from the Karoo Supergroup and the Beit Bridge Complex group<sup>2</sup>.

<sup>2</sup>Council of Geoscience:  
[http://www.geoscience.org.za/images/Maps/DataFile/rsa\\_1m\\_shape\\_layer\\_font\\_tar.zip](http://www.geoscience.org.za/images/Maps/DataFile/rsa_1m_shape_layer_font_tar.zip)

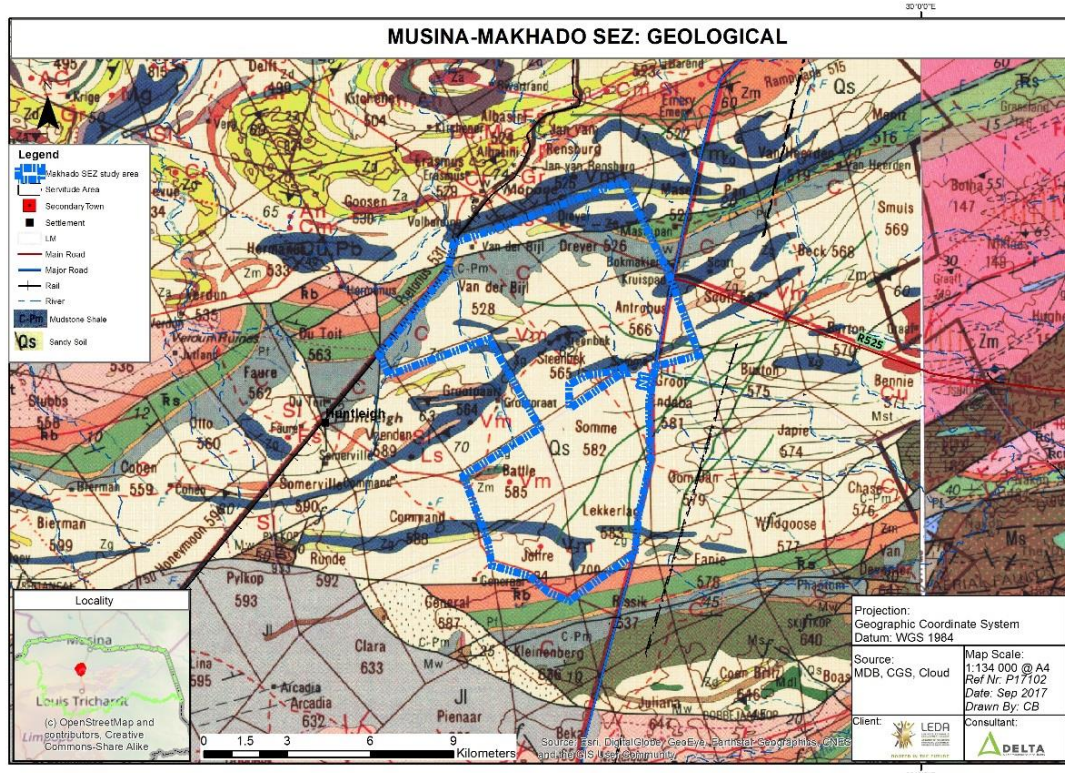


Figure 2-2: Geology

### 2.1.3 VEGETATION

The SEZ site falls within the Musina Mopane Bushveld. The Musina Mopane Bushveld is categorised as least threatened with a target of 19% to be conserved however, only 2% is statutorily conserved, mainly in the Mapungubwe National Park and the Nwanedi and Honnet Nature Reserves. It is the most diverse mopaneveld type in South Africa.<sup>3</sup> Refer to the figure below showing the vegetation type of the study area.

<sup>3</sup> Mucina, L., & Rutherford, M.C. (2012). The Vegetation of South Africa, Lesotho and Swaziland, Strelitzia 19, South Africa, [https://www.researchgate.net/publication/236982063\\_Savanna\\_Biome](https://www.researchgate.net/publication/236982063_Savanna_Biome) Accessed: 28 September 2017

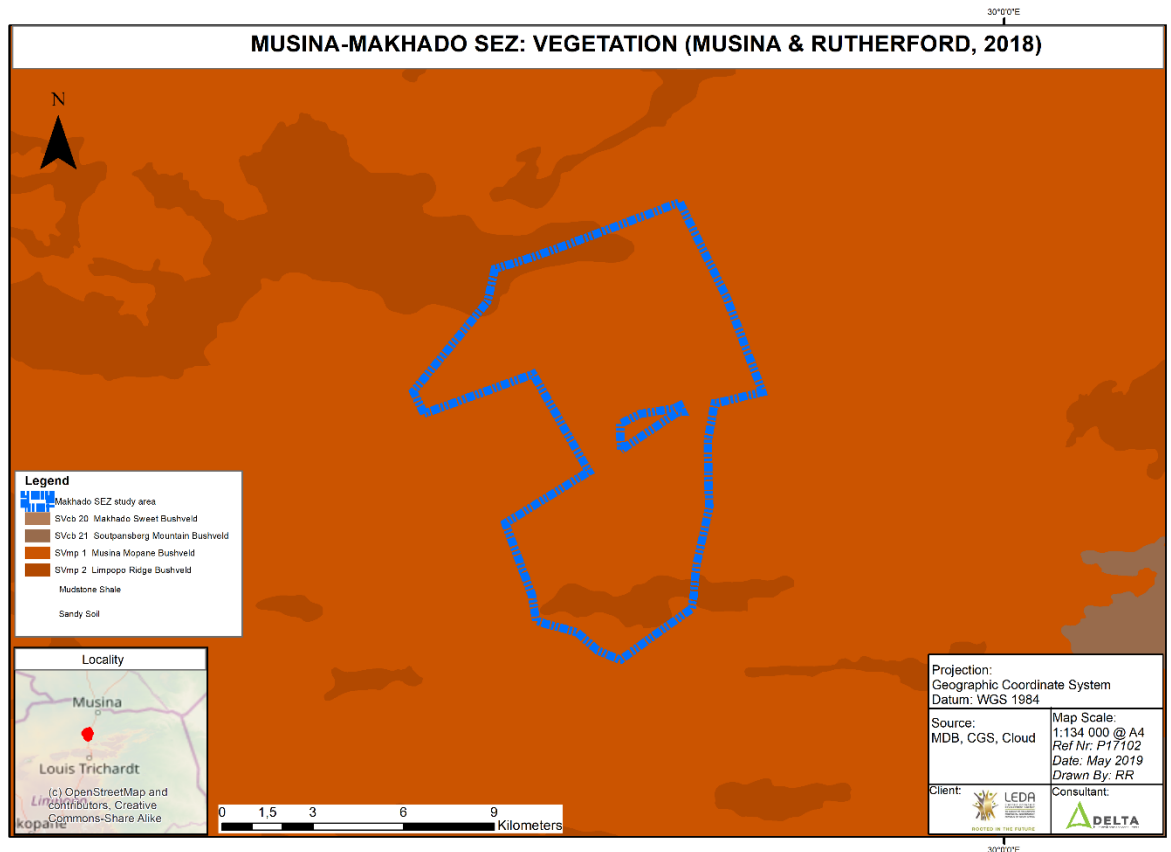


Figure 2-3: National vegetation map

## 2.1.4 LAND COVER

There are cultivated low scale commercial fields on farms Antrobus 566 MS (975,02662ha) and Somme 611 MS (989,295716ha) located on the eastern extent of the proposed SEZ. The land cover is depicted in Figure 2-4 below.



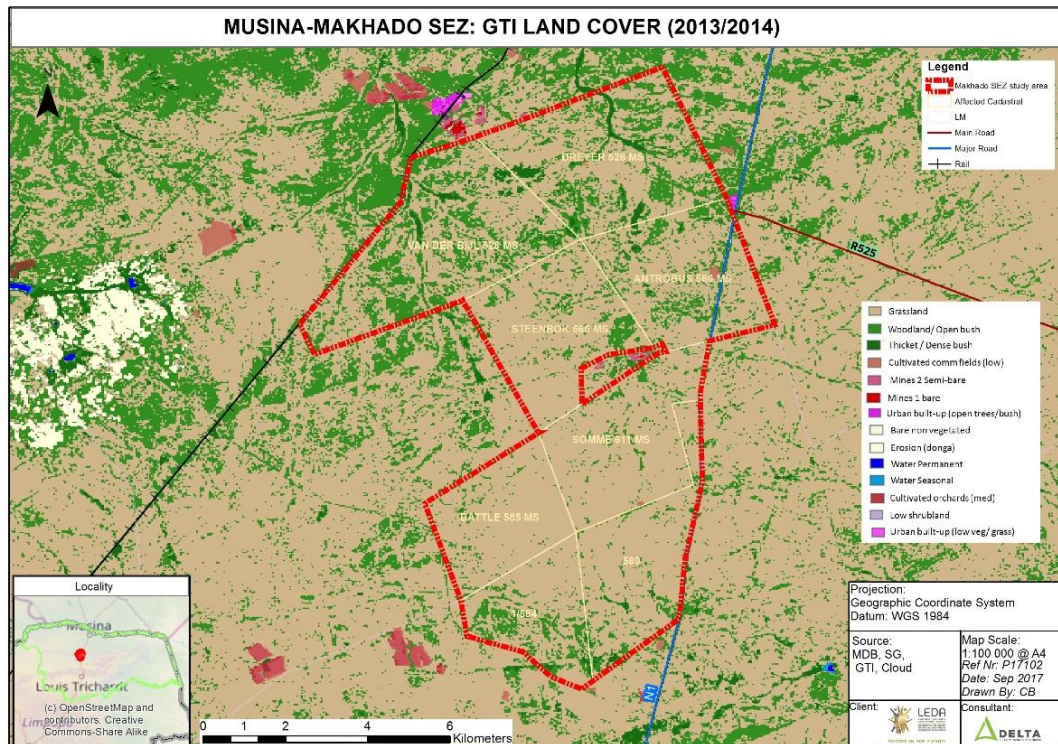
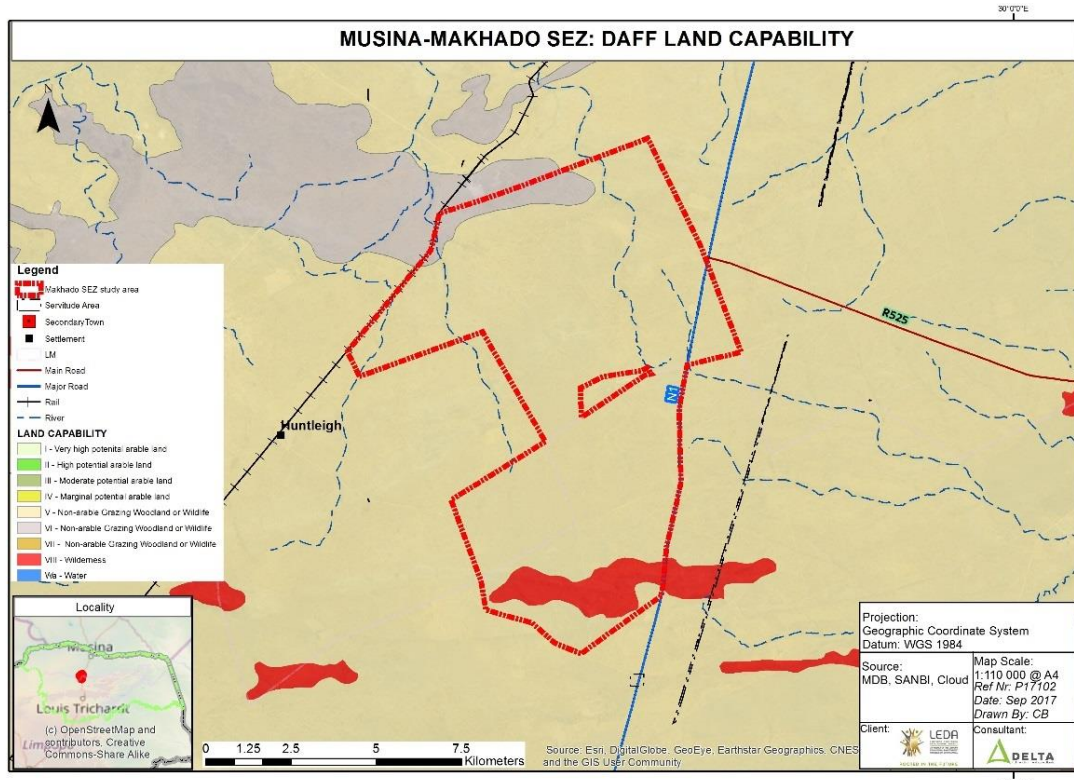


Figure 2-4: GTI Land cover (2013/2014)

### 2.1.5 SOIL AND LAND CAPABILITY

The general soil pattern for the SEZ site is classified as non-arable grazing woodland / wildlife land and wilderness capability. The grazing capacity ranges from non-arable in the north to wilderness area in the south, with low grazing potential.



**Figure 2-5: Department of Agriculture, Forestry and Fisheries (DAFF): Land capability**

The general soil class can be described as red and yellow, sandy well drained soils with high base status and minimal development, with or without intermittent diverse soils.

Soil restrictions in this class (VII and VIII) may have one or more continuing limitations that cannot be corrected, such as (1) very steep slopes, (2) erosion, (3) shallow soil, (4) stones, (5) wet soil, (6) salts or sodium, (7) unfavourable climate, or (8) other limitations that make them unsuited to common cultivated crops. They can be used safely for grazing or woodland or wildlife food and cover or for some combination of these under proper management.

## 2.1.6 WATER RESOURCE

It is envisaged, based on the Business Plan for South Africa Energy and Metallurgy Special Economic Zone, Shenzhen Hoimor Resources Holding Company Limited, April 2019, that the energy and metallurgical complex shall comprise the manufacturing plants outlined in the table below.

**Table 2-2: Proposed Musina-Makhado SEZ southern site Operations**

Projects	AREA (ha)	WATER (10km <sup>3</sup> for 9-year construction period)
Coal Washery	100	80,62
Coking Plant	400	11.64
Heat Recovery power generation	0	273.24
Thermal Plant	620	1 105.95

Projects	AREA (ha)	WATER (10km <sup>3</sup> for 9-year construction period)
Ferrochrome Plant	500	1 055.15
Ferromanganese	100	87.6
Silicomanganese Plant	100	933
Vanadium – titanium magnetite project	1 000	6 350
High Manganese steel	280	300
High Vanadium Steel	100	300
Stainless Steel Plant	300	2 076
Lime Plant	60	40
Cement Plant	30	80
Refractories Plant	18	17,3
Sewage Treatment Plant	20	
Industrial domestic water plant	10	
Light Industrial processing zone	600	1 200
Machining zone	300	
Commercial residential area	300	
Living area	500	
SEZ administrative centre	200	
Bonded area	400	
Logistics centre	100	
Total	6 038	13 910,5

Source: *Business Plan for South Africa Energy and Metallurgy Special Economic Zone, Shenzhen Hoimor Resources Holding Company Limited, April 2019*

The bulk water demand for the fully developed Musina-Makhado SEZ southern site is currently estimated at 13 910,5 km<sup>3</sup> for the 9-year construction period.

As part of the Department of Water and Sanitation's preliminary studies, they identified water sources in Zimbabwe not currently in use, making Zimbabwe a potential water supply source. A cross border water transfer from Zimbabwe will require an international water user agreement.

An additional alternative water source is Zhovhe dam on Mzingwane River – Zimbabwe which has at least 30 million m<sup>3</sup> per annum raw water which can be purchased from the Zimbabwe National Water Authority when agreements are in place. The Zhovhe dam is situated on the Mzingwane River – a tributary of the Limpopo River. Water can be abstracted from the Limpopo River on the Zimbabwe River banks as the water is released from the Zhove dam.<sup>4</sup>

<sup>4</sup> Aphane Consulting, (2014). Development of a feasibility study for the Mutasshi/Musina corridor bulk water supply, Prepared for the Department of Water Affairs, Aphane Consulting, Polokwane

**NOTE:**

***In terms of Notice 538 of 2016, published in Government Gazette No. 26187 on 2 September 2016:***

- ***Permissible surface water abstraction volumes for all eight properties (8 x 2000 m<sup>3</sup>) equals 16 000 cubic metres per year at 1 litre per second.***
- ***Permissible groundwater abstraction volumes for all eight (8) properties (8 x 45 m<sup>3</sup>) equals to 360 585 m<sup>3</sup> per year at 1 litre per second.***

***Total permissible surface and groundwater abstraction volumes available for the SEZ site is estimated at 0.377 million m<sup>3</sup>.***

***The Musina-Makhado SEZ southern site requires a total of 123 million m<sup>3</sup> of water for its operation.***

A critical risk factor for the success of the Musina-Makhado SEZ southern site is the long-term availability of water as the region is severely water strained<sup>5</sup>. Various other sources of water are still being investigated for the Musina-Makhado SEZ southern site.

#### **2.1.6.1 Surface Water**

The two main sources of water in the area are the **Limpopo River** (and the alluvial aquifer under the riverbed) and the **Nzhelele Dam**, see figure below.

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<sup>5</sup> Limpopo Department of Economic Development, Environment & Tourism, (2017). Intervention on the provision of water for the Musina Makhado SEZ, LEDET, Polokwane



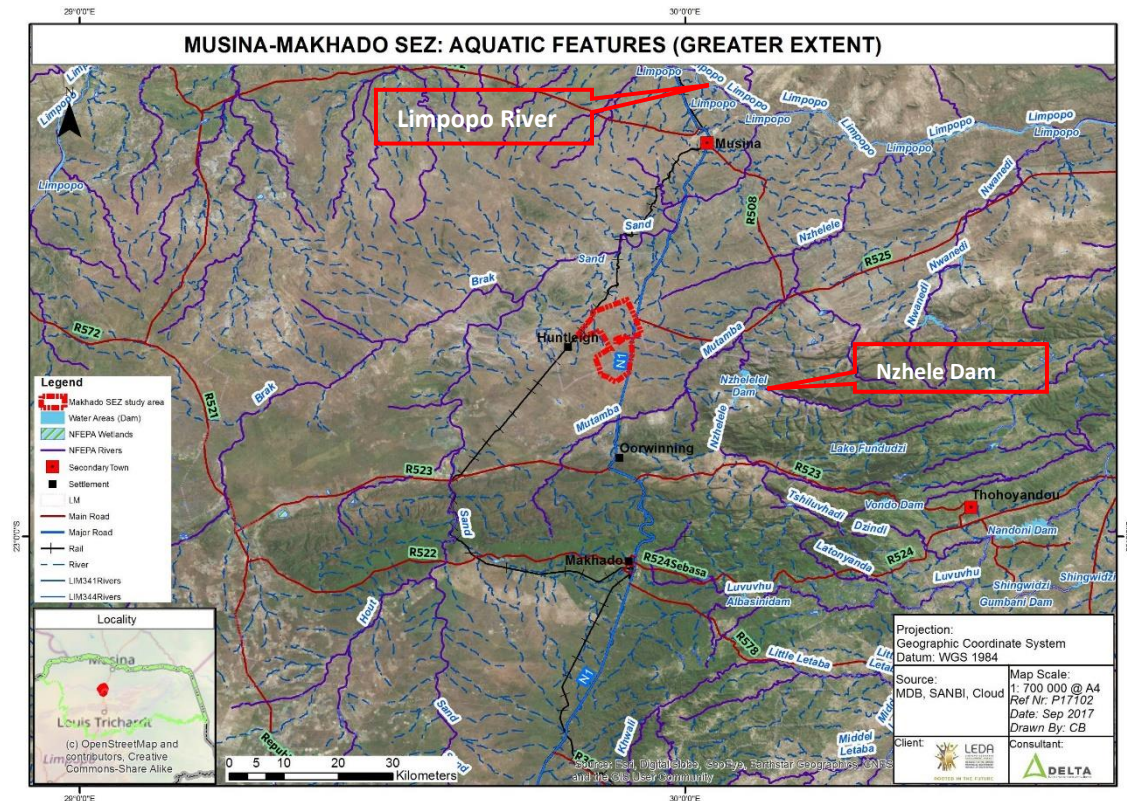


Figure 2-6: Surface water within the study area

### 2.1.6.2 Limpopo River

The river is the second largest perennial river in South Africa and it is about 1 600 km long. The Limpopo River flows through Botswana, Zimbabwe, South Africa and Mozambique where it empties into the Indian Ocean. It also acts as a border which separates South Africa from Zimbabwe on the north for 240 km and South Africa from Botswana on the north-east for 400 km. The Limpopo Department of Water Affairs will provide 30 million cubic metres of water for the first phase of the Musina-Makhado SEZ southern site projects <sup>6</sup>

### 2.1.6.3 Nzhelele Dam

The Nzhelele Dam is situated on the Nzhelele River, approximately 50 km north-east of Makhado (10 km south-east of the farm Antrobus 566), in the Limpopo province (See figure below). The capacity of the Dam is 55.3 million m<sup>3</sup> <sup>7</sup>. On 1 February 2019 the Department of Water and Sanitation gazetted the Limiting of water in terms of item 6 of schedule 3 of the National Water Act of 1998 for irrigation, urban, industrial and mining purposes from the Polokwane Water Supply System, Mutshedzi, Nshelele, Nwanedi and Luphephe, Albasini, Middle Letaba, Nsami, Modjadji, Tzaneen, Doorndraai and Glen Alpine sub-system / dams. Herein the Nzhelele Dam received a 10% restriction (2.9 Mm<sup>3</sup> / annum) for

<sup>6</sup> South African Energy Metallurgical Special Economic Zone Development Plan, April 2019

<sup>7</sup> <http://www.fao.org/3/y5744e/y5744e07.htm>

irrigation usage of 29.01 million m<sup>3</sup>/annum, therefore supply 26.109 million m<sup>3</sup>/annum<sup>8</sup>

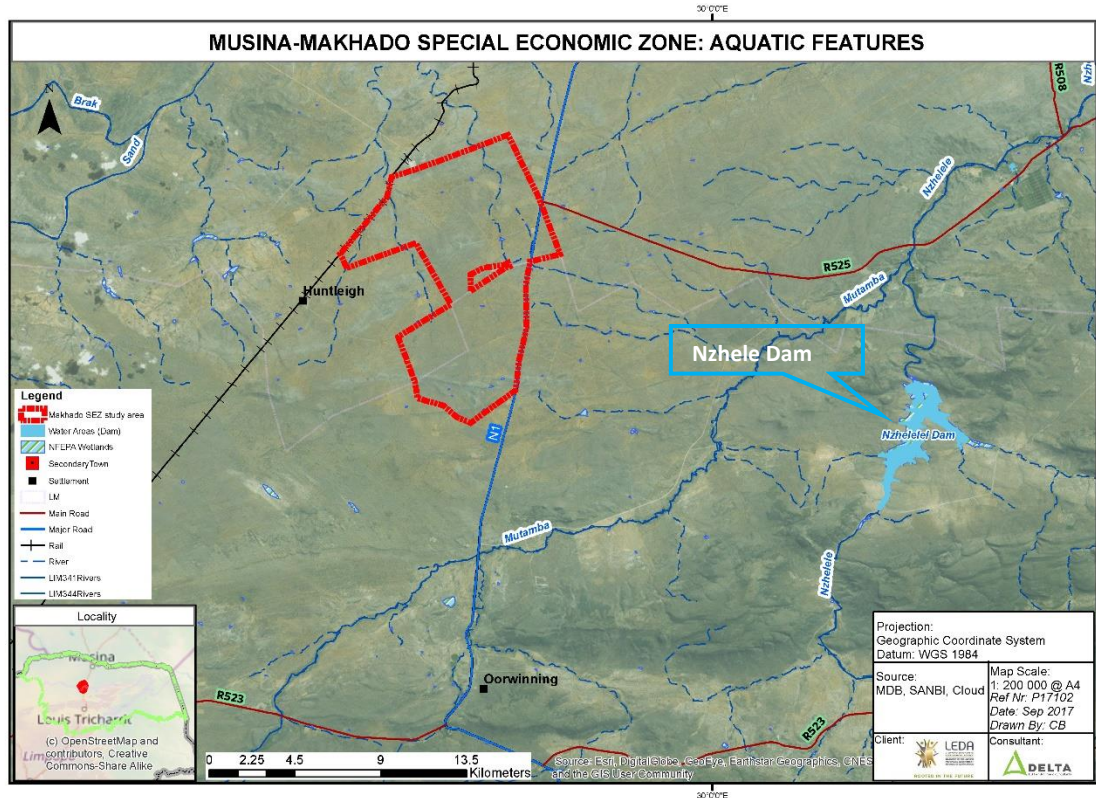


Figure 2-7: Aquatic features

According to information provided by Jeffares & Green consultants, the dam has a total storage volume of 55.3 million m<sup>3</sup>, with a capacity of 790 m<sup>3</sup>/s. The main purpose of the dam is to serve irrigation.

#### 2.1.6.4 Sand River

The Sand River a perennial stream that is often dry in the winter and flows to the west, 10 km north of the SEZ site.

#### 2.1.6.5 Mutamba/Nzhelele Rivers

The Mutamba/Nzhelele Rivers with perennial flow in a south-east direction, 20 km east of the SEZ site.

#### 2.1.6.6 Permissible Surface Water Abstraction Volumes

The SEZ site falls within **primary drainage region A**, the Limpopo Water Management Area and Quaternary **drainage regions A71K and A80F**.

In terms of Notice 538 of 2016, published in Government Gazette No. 26187 on 02 September 2016, the maximum volume of surface water that may be

<sup>8</sup> Limpopo Provincial Operations: Limiting the use of water in terms of item 6 of schedule 3 of the National Water Act of 1998... 01 February 2019 No. 96.

abstracted and stored on each property ((SEZ site comprise eight (8) properties)) from the surrounding rivers (Limpopo River, Sand River and the Nzhelele River) is 2 000 cubic metres per year.

#### **2.1.6.7 Surface Water Quality**

In an assessment undertaken by Scientific Aquatic Services in November 2013, the Sand River displayed limited impacts on the in-stream ecology although impact due to water abstraction from the system leading to reduce in-stream flow and loss of refuge pools was considered highly likely to be occurring.<sup>9</sup>

The Nzhelele River displayed no significant impacts on the in-stream ecology although the discolouration of the water was a potential indication of eutrophication.<sup>10</sup>

#### **2.1.6.8 Wetlands**

Multiple wetlands are located across the eight farms forming part of the Musina-Makhado SEZ southern site including: seeps, flats, valley-bottom wetlands and channelled valley-bottom wetlands.

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<sup>9</sup> Van Staden, S, Van der Haar, N & Crafford, C., (2013). Wetland and aquatic ecological assessment as part of the environmental assessment and authorisation process for the Greater Soutpansberg Chapudi Project, Limpopo Province, <http://www.sahra.org.za/sahris/sites/default/files/additionaldocs/007%20Annex-5%20Chapudi%20Aquatic%20Specialist%20Report.pdf> Accessed: 22 September 2017

<sup>10</sup> Van Staden, S, Van der Haar, N & Crafford, C., (2013). Wetland and aquatic ecological assessment as part of the environmental assessment and authorisation process for the Greater Soutpansberg Chapudi Project, Limpopo Province, <http://www.sahra.org.za/sahris/sites/default/files/additionaldocs/007%20ANNEX-5%20Generaal%20Wetland%20and%20Aquatic%20Assessment.pdf> Accessed: 22 September 2017



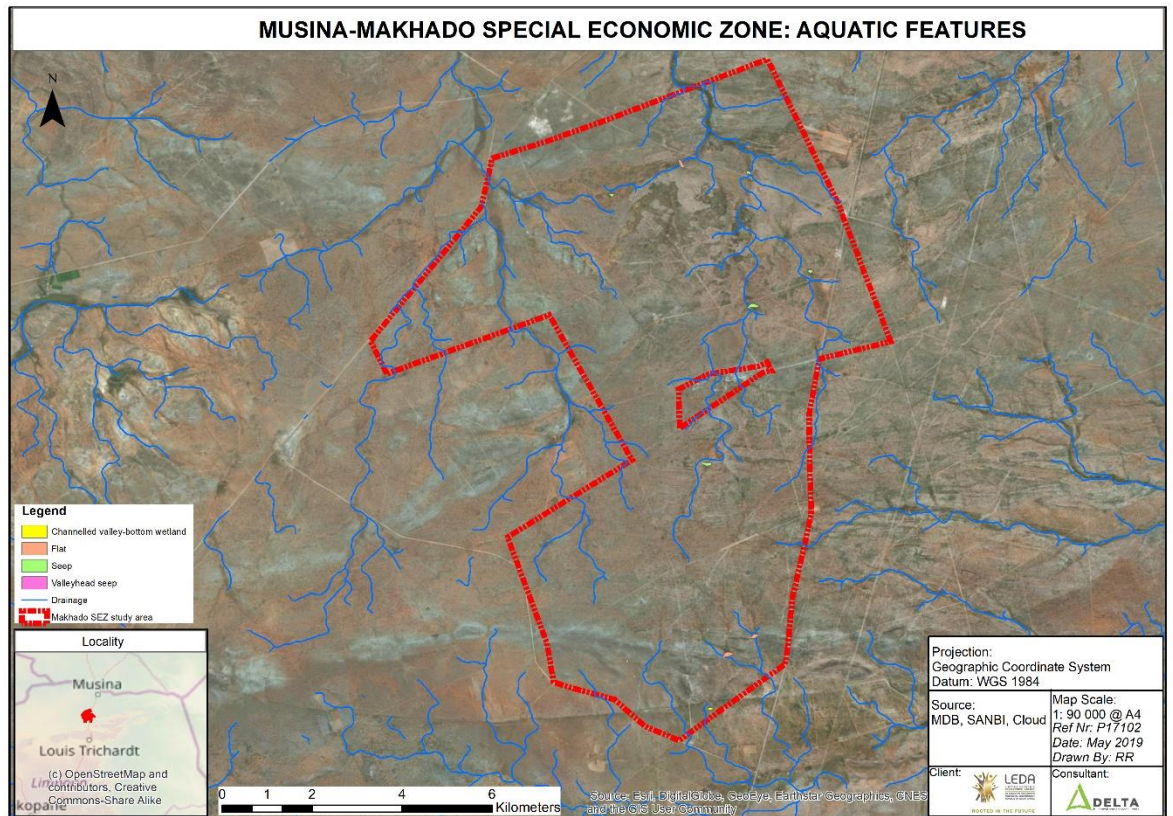


Figure 2-8: Aquatic features associated with the Musina-Makhado SEZ southern site

### 2.1.7 GROUNDWATER

The proposed SEZ falls within the Limpopo Water Management Area and the Sand Sub-Water Management Area. The area falls within a river National Freshwater Ecosystems Priority Areas (NFEPA).



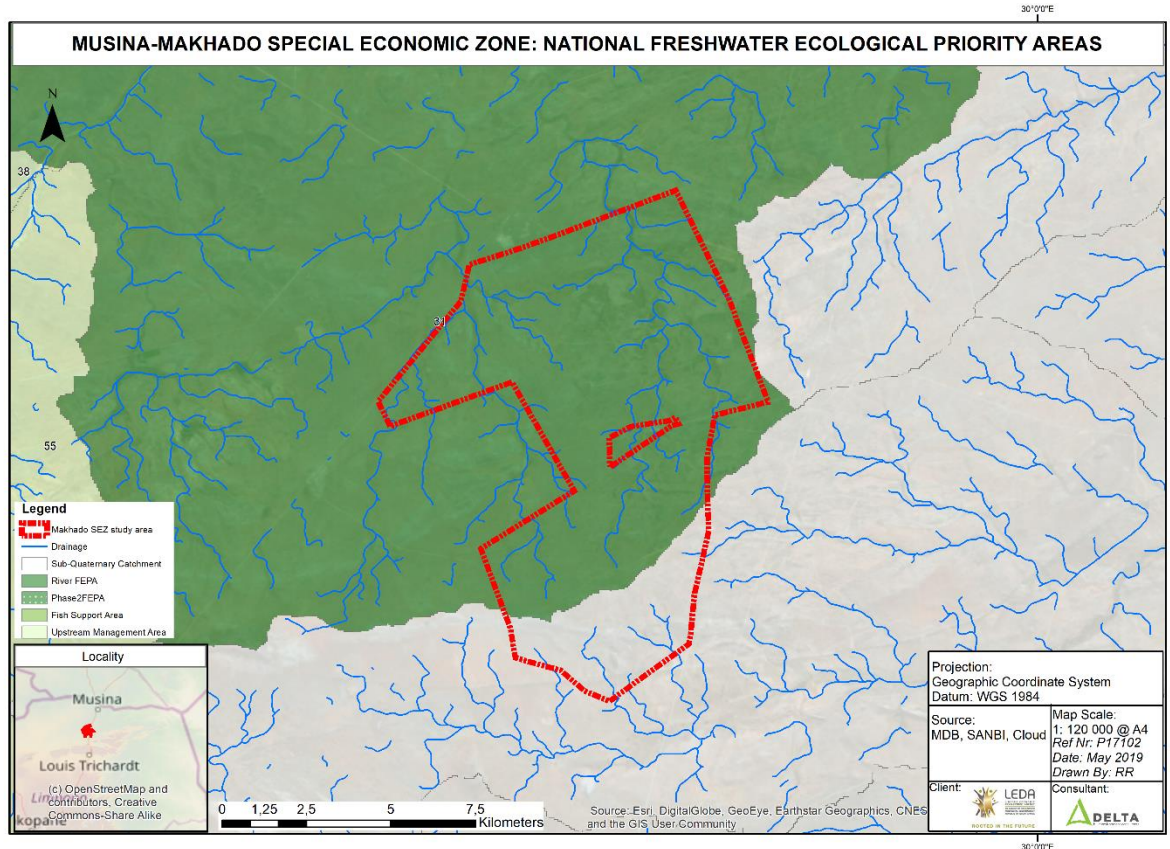


Figure 2-9: National freshwater ecosystem priority areas (NFEPA)

The alluvial aquifer under the Limpopo river riverbed is governed by the SADC Protocol on shared watercourses. At least 70 million cubic metres per annum are currently being extracted from a section of the Limpopo alluvial aquifer for irrigation, mining and for the Musina Town'.<sup>11</sup>

#### 2.1.7.1 Permissible Groundwater Abstraction Volumes

In terms of Notice 538 of 2016, published in Government Gazette No. 26187 on 2 September 2016, maximum volume of water that may be taken from groundwater resources (within quaternary drainage region A71K and A80F) on each property ((SEZ site comprise eight (8) properties)) is 45 cubic metres per year.

Therefore, the **permissible groundwater abstraction volumes** for all eight (8) properties ( $8 \times 45 \text{ m}^3$ ) **equals to 360 585 m<sup>3</sup> per year at 1 litre per second.**

#### 2.1.8 AIR QUALITY

In terms of the Limpopo Provincial Air Quality Management Plan (AQMP), 2013 it is noted that there is a shortage of up-to-date information on the South African

<sup>11</sup> Aphane Consulting, (n.d). Development of a feasibility study for the Mutasshi/Musina corridor bulk water supply, Prepared for the Department of Water Affairs, Aphane Consulting, Polokwane

Air Quality Information System ([www.saaqis.org.za](http://www.saaqis.org.za)) with respect to Limpopo Province.

Historical data for Louis Trichardt (1995 to 2005) as conducted by the North West University indicated very low ambient concentrations of SO<sub>2</sub>, NO<sub>x</sub>, O<sub>3</sub>, NH<sub>3</sub> and HNO<sub>3</sub>, but no PM<sub>10</sub> concentrations have been measured.

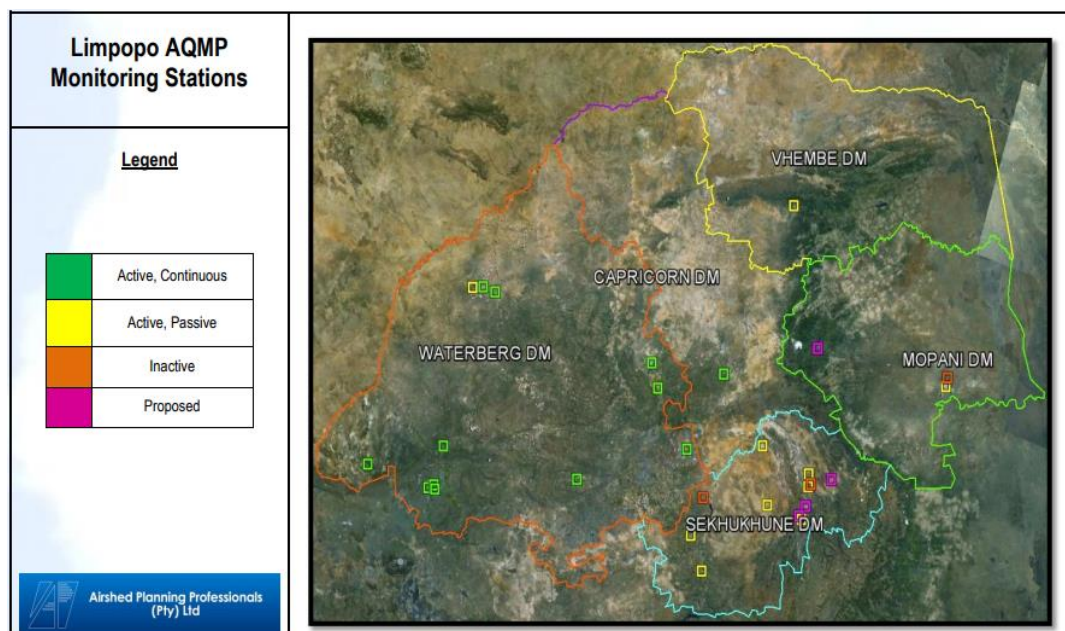


Figure 2-10: Monitoring stations across Limpopo Province

The main contributor within the Province to fine particulate matter (PM<sub>2.5</sub>) and CO is biomass burning. Vehicle tailpipe emissions are the main source of hydrocarbons specifically within the District of Vhembe. Wood processing, mainly based on the number of activities, was ranked first in Mopani and in Vhembe. There are, however, far more wood processing activities in Mopani than in Vhembe.

Vhembe District Municipalities is in the process of developing District Air Quality Management Plans (AQMPs).

### 2.1.9 RENEWABLE ENERGY

The use of renewable energy sources such as solar energy could be explored as the region experiences 2100 kWh solar radiation per square metre with an optimal solar inclination of 24–25°.



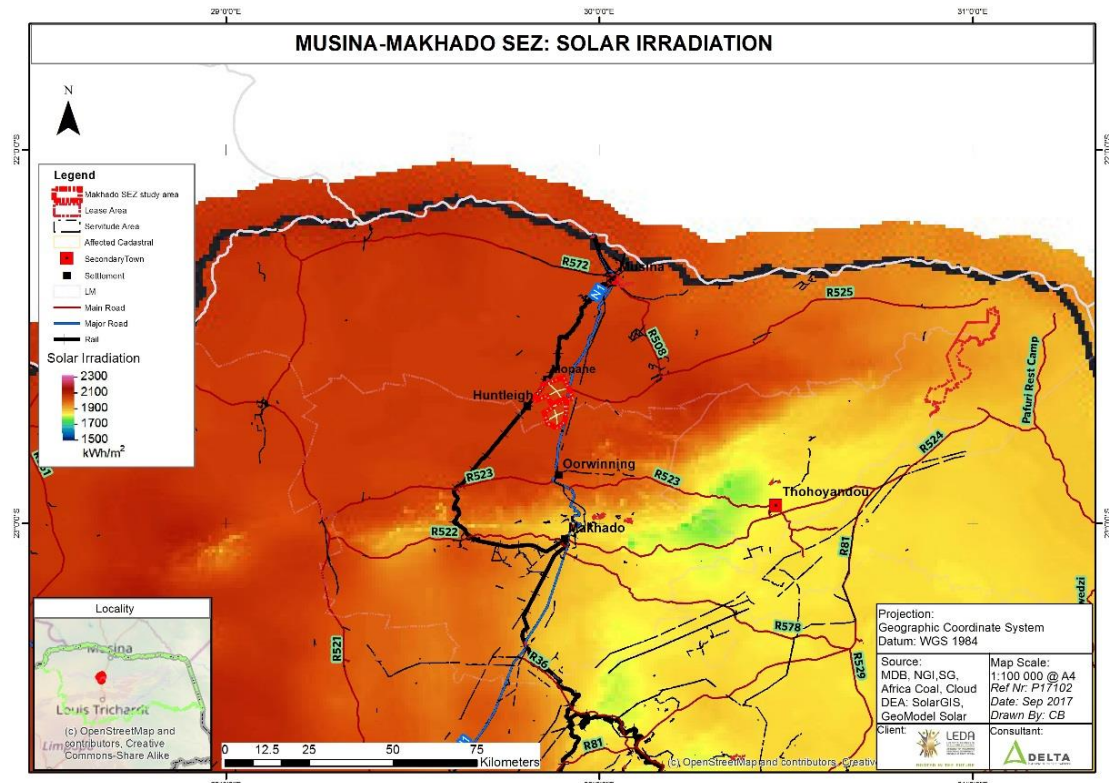


Figure 2-11: Solar Radiation

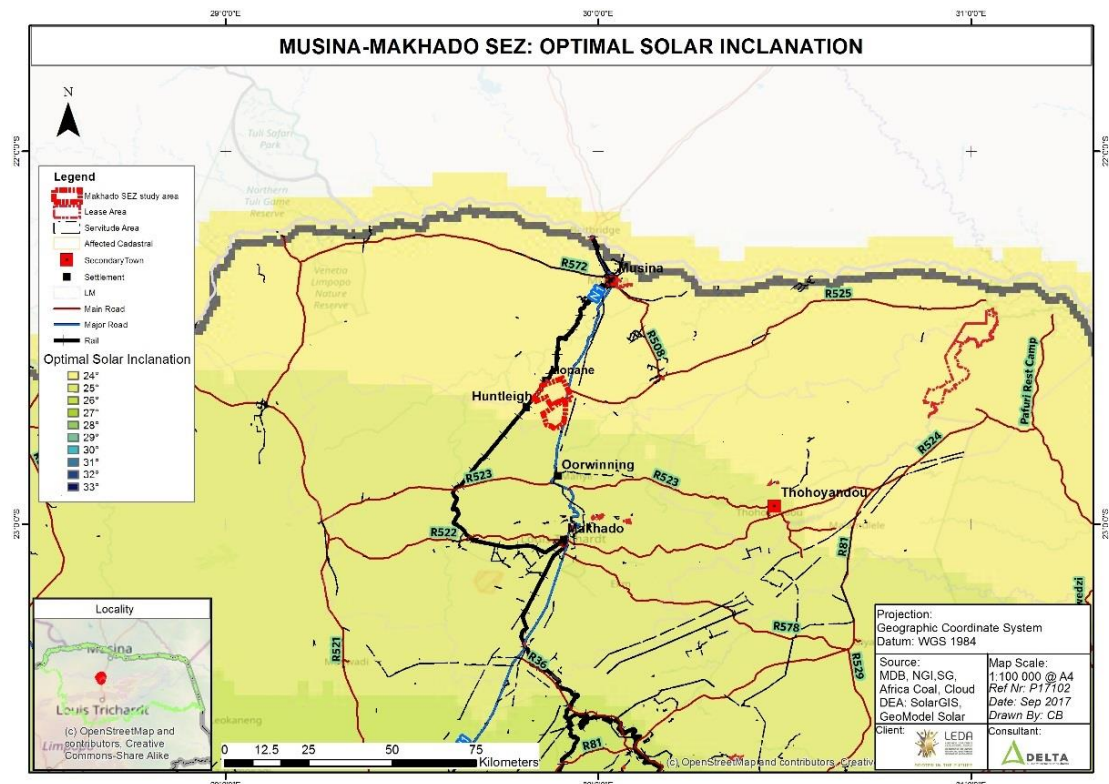


Figure 2-12: Solar Inclination

Other renewable sources for instance wind and bio-recycling may also be considered as possible sources within the Musina-Makhado SEZ southern site.

## 2.2 BIOLOGICAL

### 2.2.1 PROTECTED AREAS

Protected Areas (PAs) are assets that contribute to the environmental integrity, economic development and to social well-being of the population. Limpopo has an existing protected area network (PAN) comprising both formal PAs and informal (i.e. private nature reserves not legally declared in terms of NEM:BA) PAs.

The following formal and informal protected areas are discussed under this chapter and shown in the figure below:

- Vhembe Biosphere Reserve
- National Parks (NBA 2011)
- Formal Protected Areas
- Informal Protected Areas
- National Protected Areas Expansion Strategy (NPAES) Focus Areas
- Private Nature Reserves.

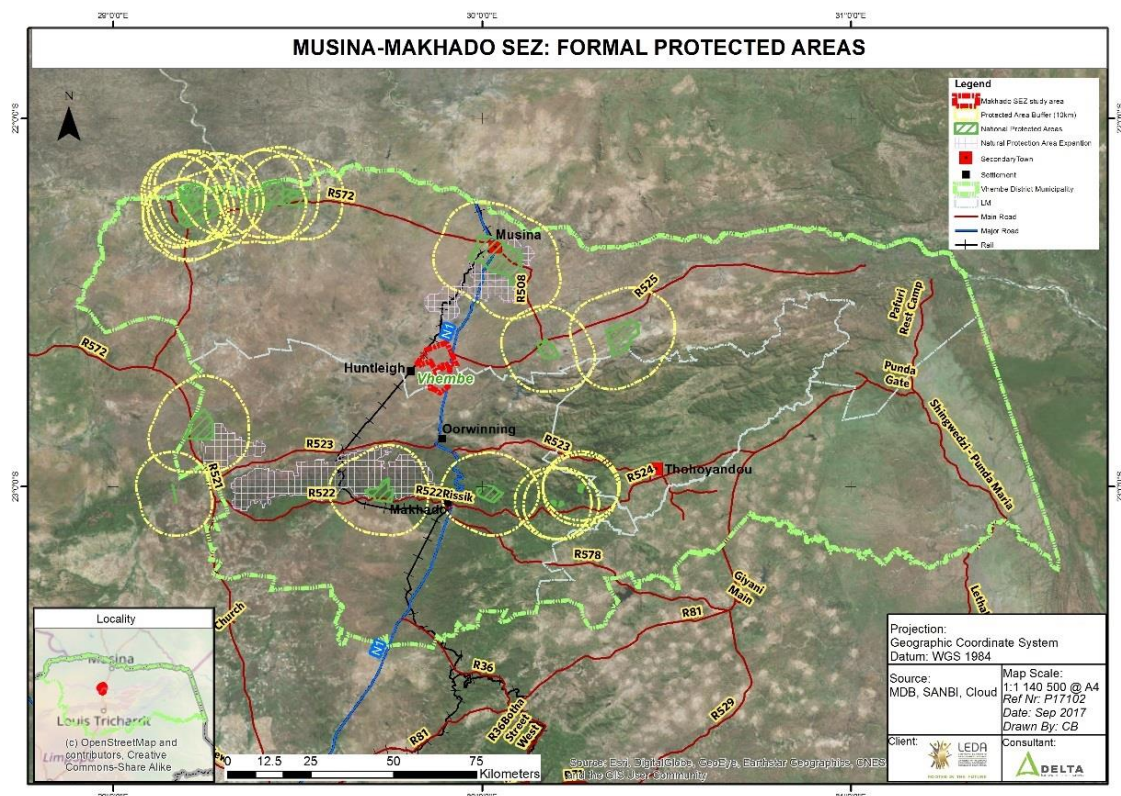


Figure 2-13: Formal protected areas

#### 2.2.1.1 Biosphere Reserves

South Africa initiated its participation in the United Nations Education, Scientific and Cultural Organization (UNESCO) Biosphere Reserve Programme in 1995 during the Second World Congress of Biosphere Reserves in Spain, and entered into a Memorandum of Understanding with UNESCO in April 1998. The same year

South Africa received UNESCO's approval for the designation of its first Biosphere Reserve (Kogelberg Biosphere Reserve). There are three biosphere reserves within the Province, namely Vhembe, Waterberg and Kruger 2 Canyon which aid to the conservation of biodiversity. The SEZ site is located within the Vhembe biosphere reserve.

Biosphere reserves are areas identified either on terrestrial or marine ecosystems (or both) that are internationally recognized under the framework of UNESCO's Man and Biosphere (MAB) programme. MAB is an intergovernmental scientific programme aiming to ensure harmonious coexistence of people with nature; it is housed in and supported by UNESCO. The Vhembe Biosphere Reserve has three biomes, namely savannah, grassland and forest. It has four bioregions and twenty-three different vegetation types, eight of which are endemic to South Africa.<sup>12</sup>

The spatial zonation of the Vhembe Biosphere Reserve (VBR) (shown in the figure below) comprises the following zones:

- **Core zone/s** – areas that must have a legal/long term protection status in terms of national laws.
- **Buffer zone/s** – areas usually surrounding or adjoining core areas.
- **Transitional zone** – areas which support/contains a diversity of sustainable activities.<sup>13</sup>

The SEZ site falls within the Transitional zone (areas which support/contains a diversity of sustainable activities) as shown in the figure below.

The VBR covers five local municipal areas of the Limpopo Province. They are Blouberg, Musina, Makhado, Thulamela and Mutale. A portion of the Kruger National Park, north of the Shingwedzi River, is also included. "The eastern border is formed by the Mogalakwena River and the southern border extends roughly from just south of the Blouberg – Makgabeng and Soutpansberg Mountain Ranges, across the Luvuvhu River catchment, to the east. The northern and eastern boundaries are formed by the international boundaries with Botswana, Zimbabwe and Mozambique. The size of the VBR is approximately 30 701 km<sup>2</sup>.

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<sup>12</sup> Department of Environmental Affairs, (2017). Vhembe Biosphere Reserve, Department of Environmental Affairs, [https://www.environment.gov.za/?q=content/projects\\_programmes/manand\\_thebiosphere\\_reserves/list/vhembe](https://www.environment.gov.za/?q=content/projects_programmes/manand_thebiosphere_reserves/list/vhembe) Accessed: 22 September 2017

<sup>13</sup> Munyai, T, (2014). Status of biosphere reserves in South Africa, 2014 Biodiversity Planning Forum, South Africa, South African National Biodiversity Institute <http://biodiversityadvisor.sanbi.org/wp-content/uploads/2014/08/42-Munyai-BiosphereReservesStatus.pdf> Accessed: 28 September 2017



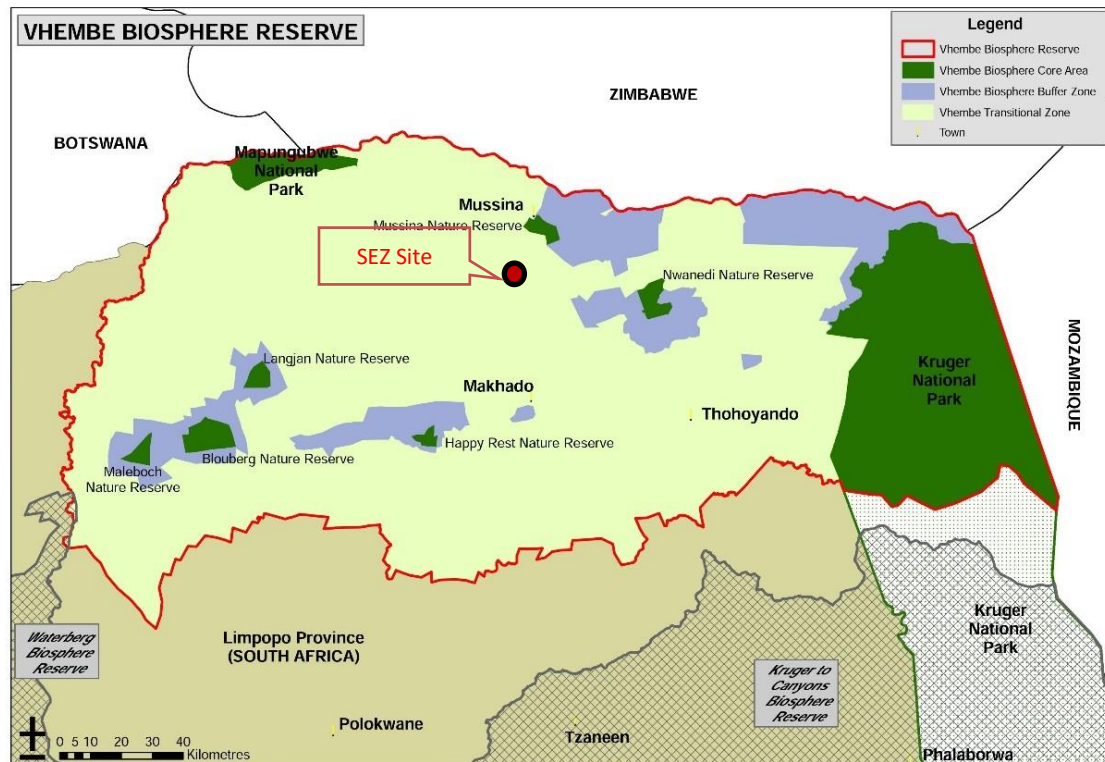


Figure 2-14: Vhembe Biosphere Reserve

According to the VBR there are a large number of private game farms and agricultural farms creating an ideal opportunity for the unleashing the economic potential of the established VBR. The biosphere reserve will promote an integrated approach to sustainable development, ensuring that essential ecosystem services are maintained, education is improved, human development and wealth creation are stimulated through better communication and training while conserving the unique ecosystems, species and cultural resources of the region.<sup>14</sup>

### 2.2.1.2 National Parks

The **Kruger National Park** is located approximately **140 km from the SEZ site by road** and is the major contributor at 72%, to the formal protected area net (PAN) of the province.

The **Mapungubwe National Park** is located approximately **65 km from the SEZ site** and is situated on South Africa's northern border neighbouring Botswana and Zimbabwe. Mapungubwe National Park (also a world heritage site) is where South Africa's first kingdom was established around 1300 AD, remains of this trade with eastern cultures such as China and India are observed through numerous

<sup>14</sup> UNESCO, (2010). UNESCO – MAB Biosphere Reserves Directory, United Nations Educational, Scientific and Cultural Organization, <http://www.unesco.org/mabdb/br/brdir/directory/biores.asp?mode=all&code=SAF+06> Accessed: 22 September 2017

artefacts and artwork. The World Heritage site is also home to multiple fauna, flora and vegetation.

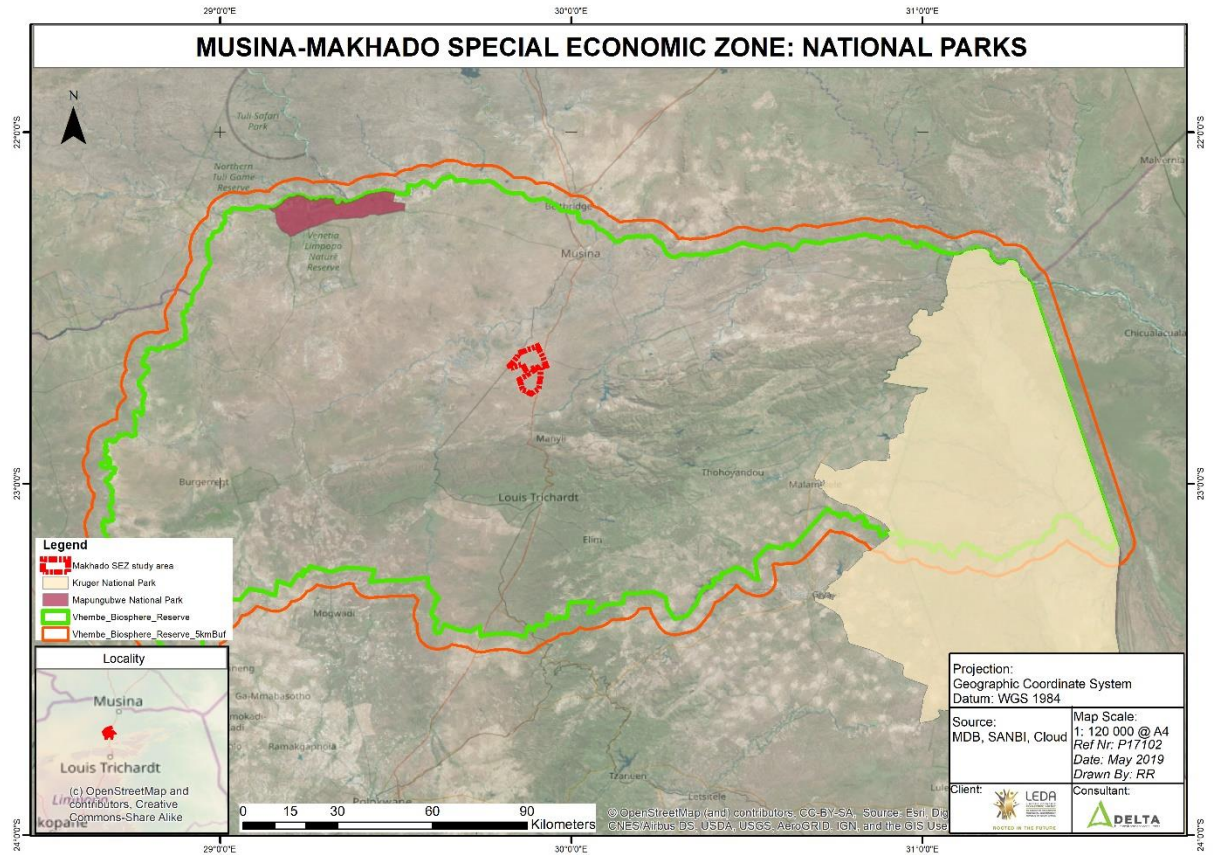


Figure 2-15: National Parks

### 2.2.1.3 Formal Protected Areas

Within the Limpopo Province, the primary responsibility of managing and monitoring biodiversity vests with the Limpopo Department of Economic Development, Environment & Tourism (LEDET).

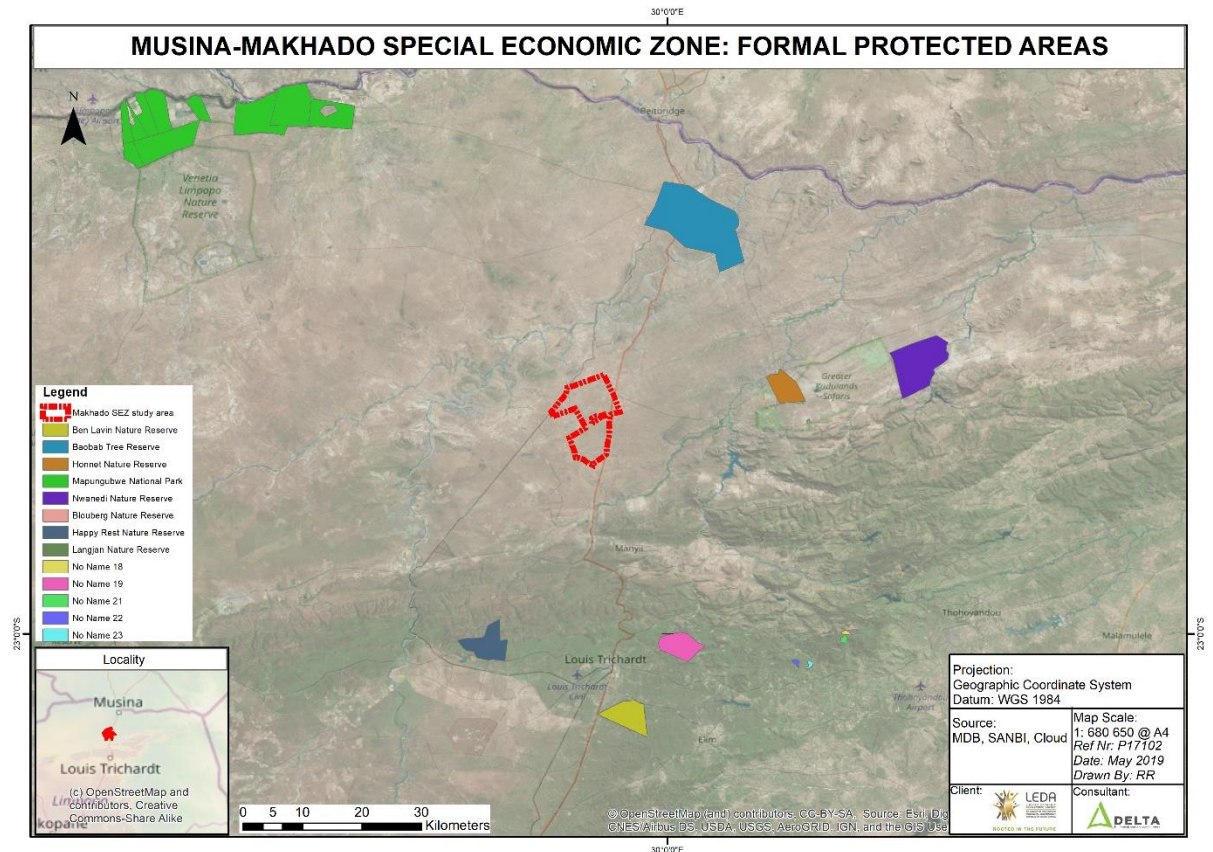


Figure 2-16: Formal Protected Areas

The **Musina Nature Reserve**, formally known as the **Baobab Tree Reserve**, is located approximately **25 km from the SEZ site** to the north-north-east, and is recognised for its high concentration of baobab trees.

The **Honnet Nature Reserve** is located approximately **23 km from the SEZ site** to the east. The reserve is located in the Bushveld north of Makhado and extends over 2 200 hectares of Mopane and other indigenous trees native to the region. It is home to game and multiple species of birdlife.

The **Nwanedi Nature Reserve** is located approximately **43 km from the SEZ site** to the East. The reserve is located at the foothills of the Venda Mountains, and is home to a number of white rhinos, antelope, giraffes and leopards.

The **Nzhelele Nature Reserve** is located approximately **30 km from the SEZ site** to the south-south-east. The reserve is Located 60 km north-east of Makhado on the R525 and covers an area of 2 122.078 Hectares.

The **Happy Rest Nature Reserve** is located approximately **29 km from the SEZ site** to the south-south-west, and is situated off the R522 west of Makhado, on the foothills of the Soutpansberg. The reserve is home to over 250 bird species, forest birds include: Black Sparrowhawk, Narina Trogon, African Crowned Eagle, Grey Cuckooshrike, Purple-Crested Turaco, Knysna Turaco and Bat Hawk.



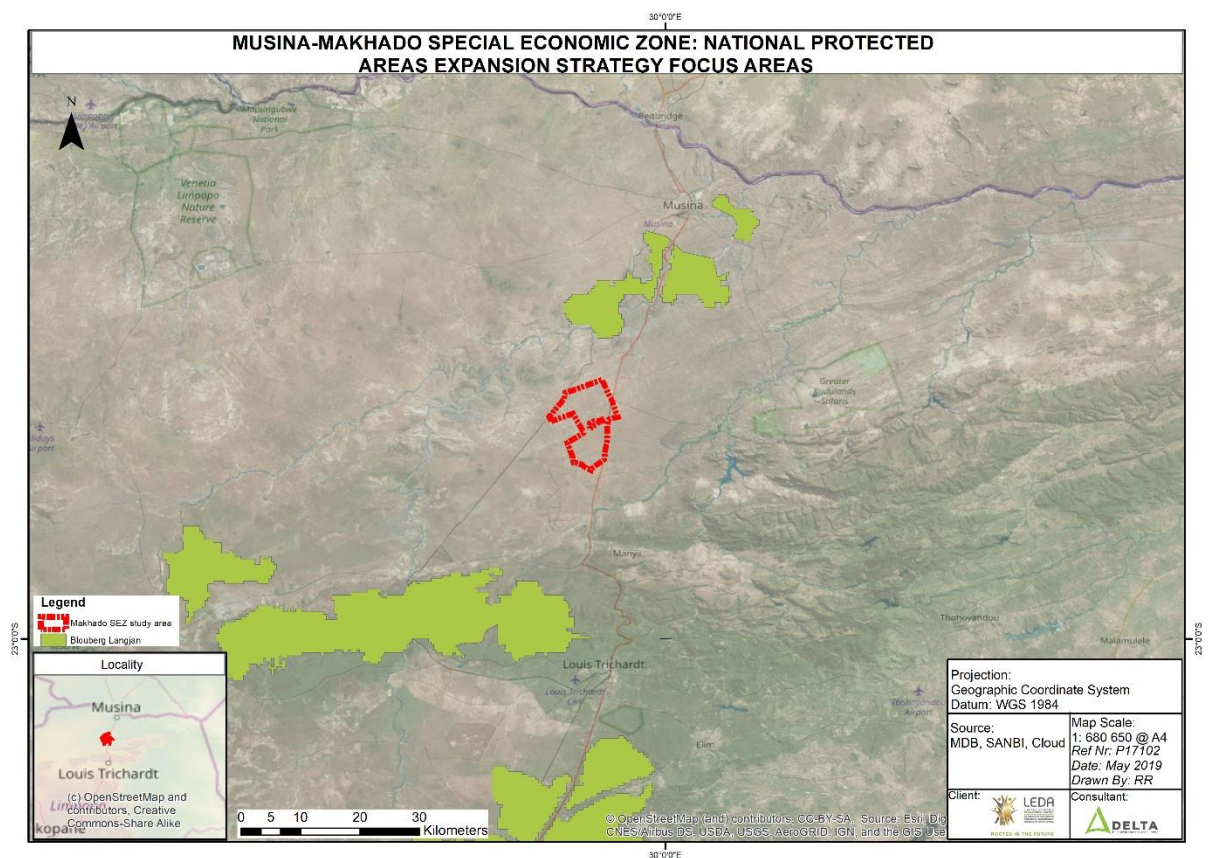
The **Langjan Nature Reserve** is located approximately **61 km from the SEZ site** to the west. The reserve conserves the only remaining naturally occurring herd of the gemsbok (*Oryx Gazelle*) in the Limpopo Province.

#### 2.2.1.4 Informal Protected Areas

No informal protected areas are identified, in terms of the South African Biodiversity Institute, within a distance of 70 km from the SEZ site.

#### 2.2.1.5 National Protected Areas Expansion Strategy Focus Areas (NPAES)

The SEZ site is bounded by the Blouberg Langjan National Protected Areas Expansion Strategy focus area to the north (approximately 6 km from the SEZ site) and to the south-east (approximately 20 km from the SEZ site).



**Figure 2-17: Blouberg Langjan NPAES Focus Area**

Focus areas present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES, and were designed with strong emphasis on climate change resilience and requirements for freshwater ecosystems.

#### 2.2.1.6 Private Nature Reserves

The **Avarel Private Nature Reserve** borders the SEZ site along the N1 north and extends over three farms comprising an area of 37.83 km<sup>2</sup>. The **Nzhelele Private Nature Reserve** is located 19 km north-east from the SEZ site. The reserve began as a small 25-ha reserve on a peninsula in the Nzhelele Dam. Presently the reserve

covers 1 400 ha and is a popular spot for angling. The National Environment Management: Protected Areas Act [NEM:PA], 2003 (Act No. 57 of 2003) stipulates that there is not prescribed minimum size for a private nature reserve, however the size of the area should be in accordance with the purpose and objectives of the private nature reserve.<sup>15</sup>

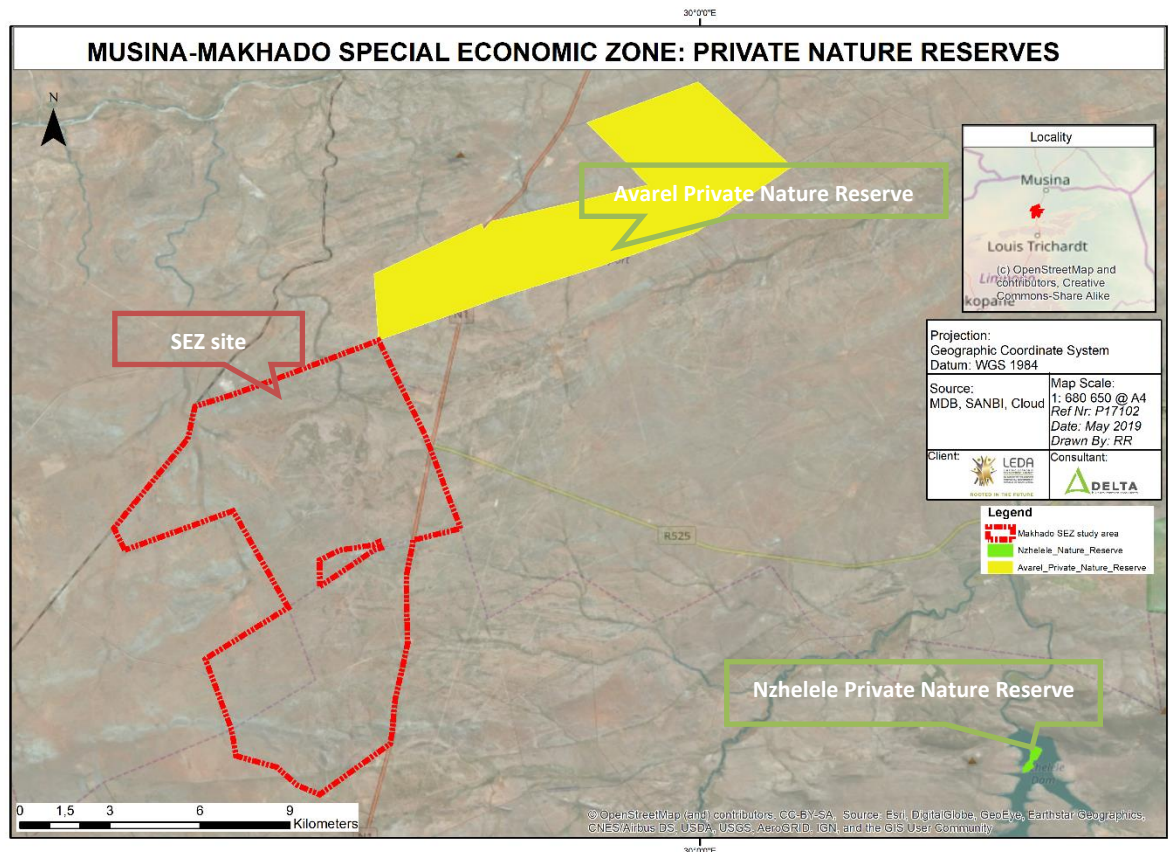


Figure 2-18: Private Nature Reserves

## 2.2.2 CRITICAL BIODIVERSITY AREAS

Critically biodiversity areas are areas identified to assist in meeting the region's biodiversity targets in terms of aquatic and terrestrial systems.<sup>16</sup> Biodiversity targets also provide sound foundation for determining the size of a biodiversity offset required.

Based on the Limpopo Conservation Plan (see figure below) the majority of the SEZ site falls within the category Ecological Support Area 1 (ESA 1). ESA 1 being in a largely natural state that retain significant importance from a process perspective (e.g. maintaining landscape connectivity).

<sup>15</sup> National Environment Management: Protected Areas Act [NEM:PA], 2003 (Act No. 57 of 2003)

<sup>16</sup> Desmet, P. G., Holness, S., Skowno, A. & Egan, V.T. (2013). Limpopo Conservation Plan v.2: Technical Report. Contract Number EDET/2216/2012. Report for Limpopo Department of Economic Development, Environment & Tourism (LEDET) by ECOSOL GIS



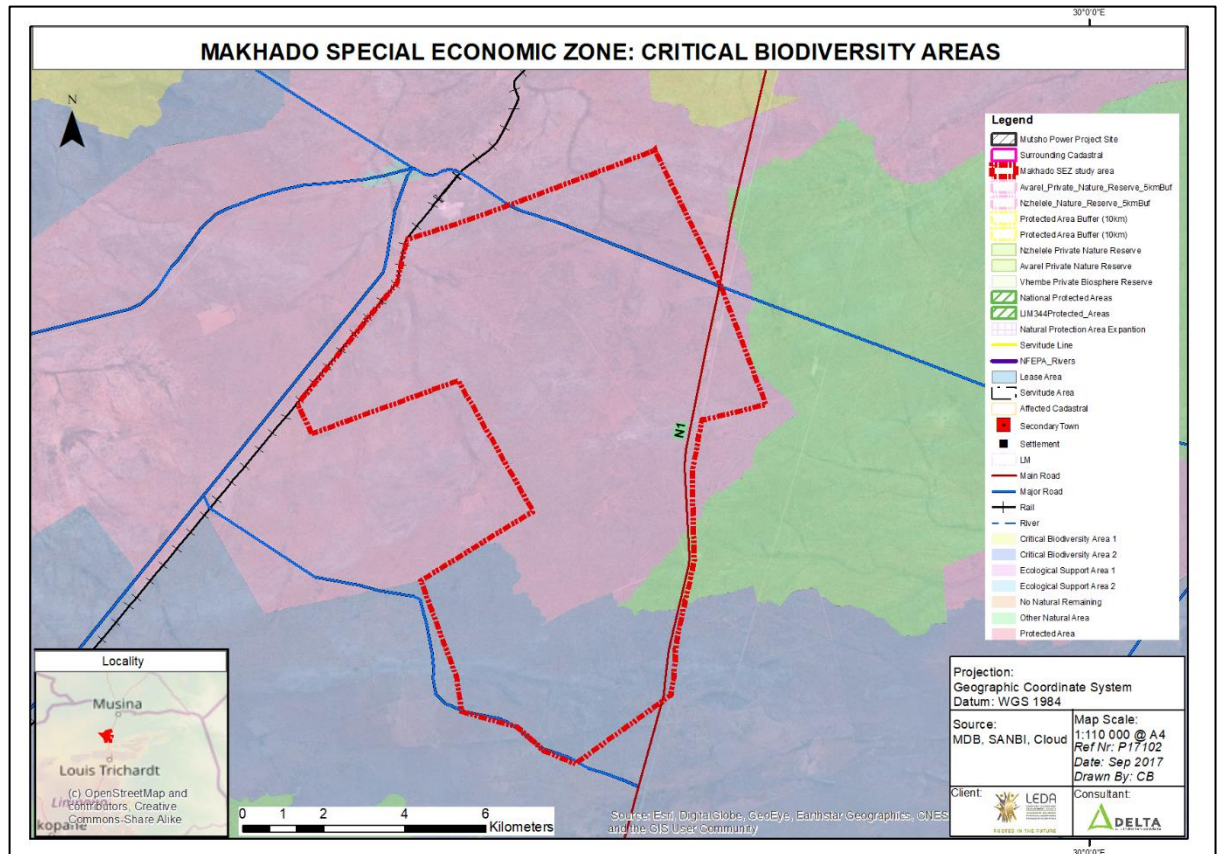


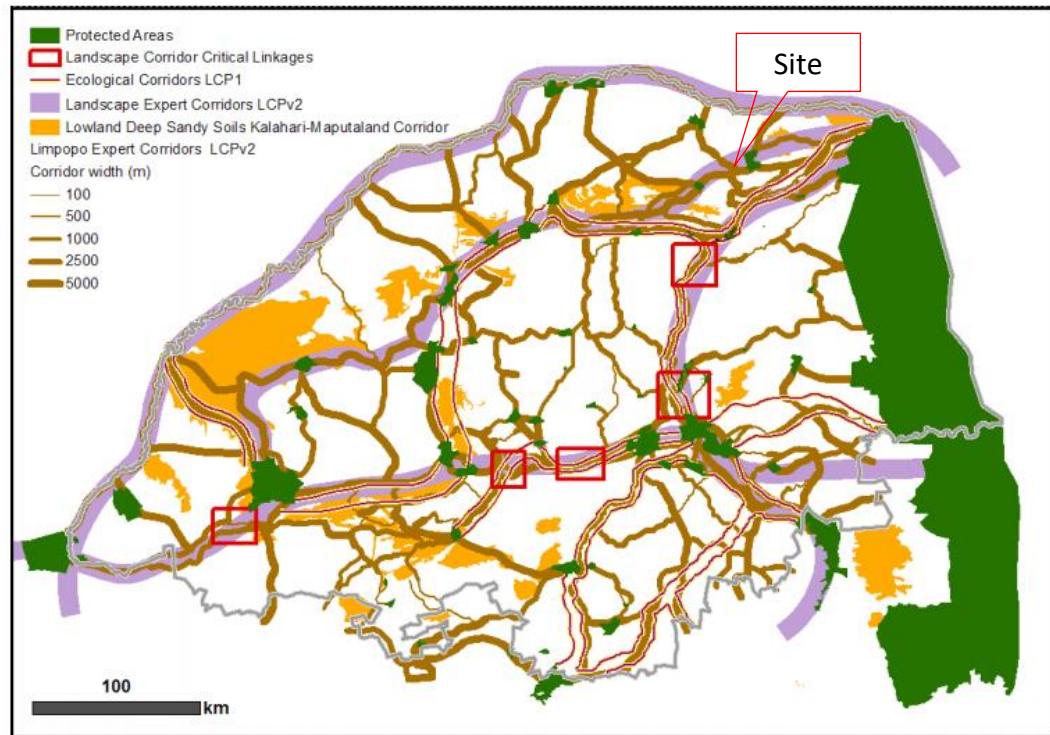
Figure 2-19: Critical Biodiversity Areas

The most critical area of biodiversity conservation is located within the southern portion of the SEZ site and is categorised as Critical Biodiversity Area 2 (CBA 2). CBA 2's represents areas where there are spatial options for achieving targets and the selected sites are the ones that best achieve targets within the landscape design objectives of the plan.

The remainder of the proposed Musina-Makhado SEZ southern site is on Ecological Support Area 2 (ESA 2) which are areas no longer intact, but potentially retain significant importance from a process perspective (e.g. maintaining landscape connectivity).

### 2.2.3 ECOLOGICAL CORRIDOR NETWORK

The Ecological Corridor Network (see figure below) identifies comprehensive terrestrial and riverine corridors to ensure linkages are retained between key biodiversity features; areas supporting climate change resilience (e.g. refuge habitats and areas with diverse bioclimatic variables) were identified and included as features in the plan; and other features such as ridges which include important environmental gradients and linkages.



Limpopo Conservation Plan v.2 Technical Report 2013

Figure 2-20: Ecological Corridor Network map<sup>17</sup>

#### 2.2.4 IMPORTANT BIRD AREAS

An Important Bird Area (IBA) is an area designated as globally important habitat for the conservation of bird populations. The programme was developed by Bird Life International and the stewardship of IBAs in the province is designated by Birdlife South Africa. Their existence is important to the conservation of biodiversity within the Limpopo Province.

The SEZ site does not fall within any IBA, however, the Mapungubwe, Soutpansberg and Blouberg Important Bird and Biodiversity Areas (BirdLife South Africa, 2015) surrounds the site, refer to the figure below.

<sup>17</sup> Limpopo Conservation Plan v.2 Technical Report 2013

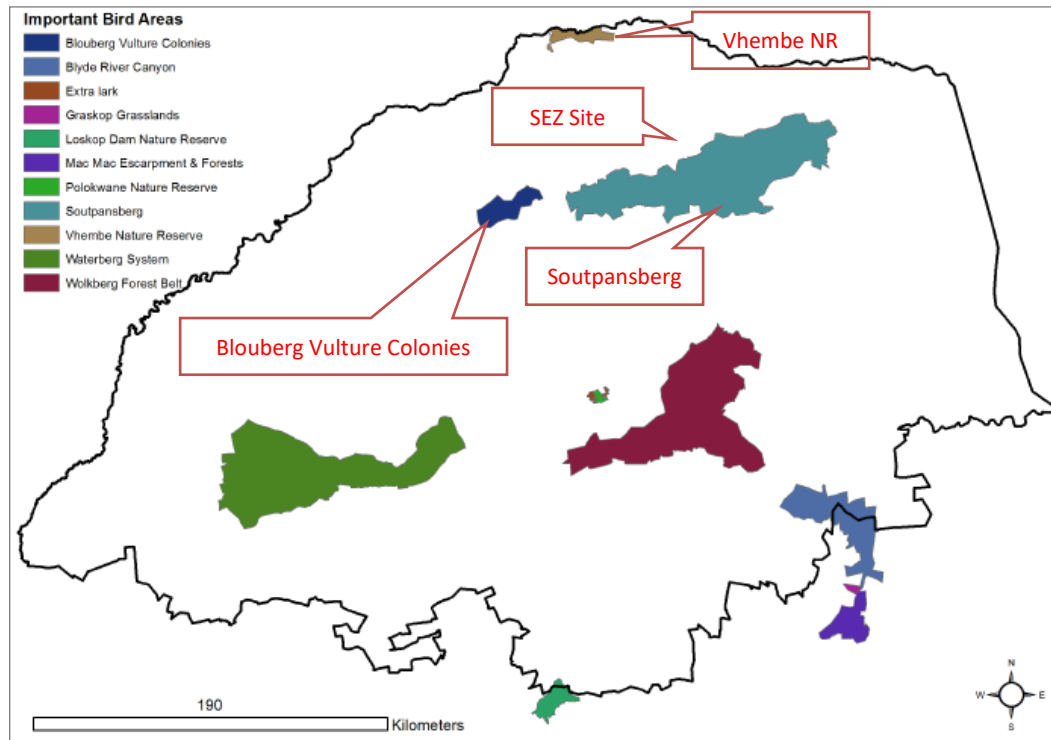


Figure 2-21: Important Bird Areas (Source: LCPv2\_technicalReport\_2013)

Important Bird Areas within Limpopo Province house the two largest breeding colonies of *Gyps coprethes* (Cape Vulture) in the world at Blouberg IBA.

#### 2.2.4.1 Threatened terrestrial ecosystems

The proposed SEZ falls within an area that is Least Threatened according to the list of threatened terrestrial ecosystems, as shown in the map below. This means that in terms of terrestrial ecosystems the selected site falls outside of any threatened terrestrial ecosystems where the proposed Musina-Makhado SEZ southern site is to be located.

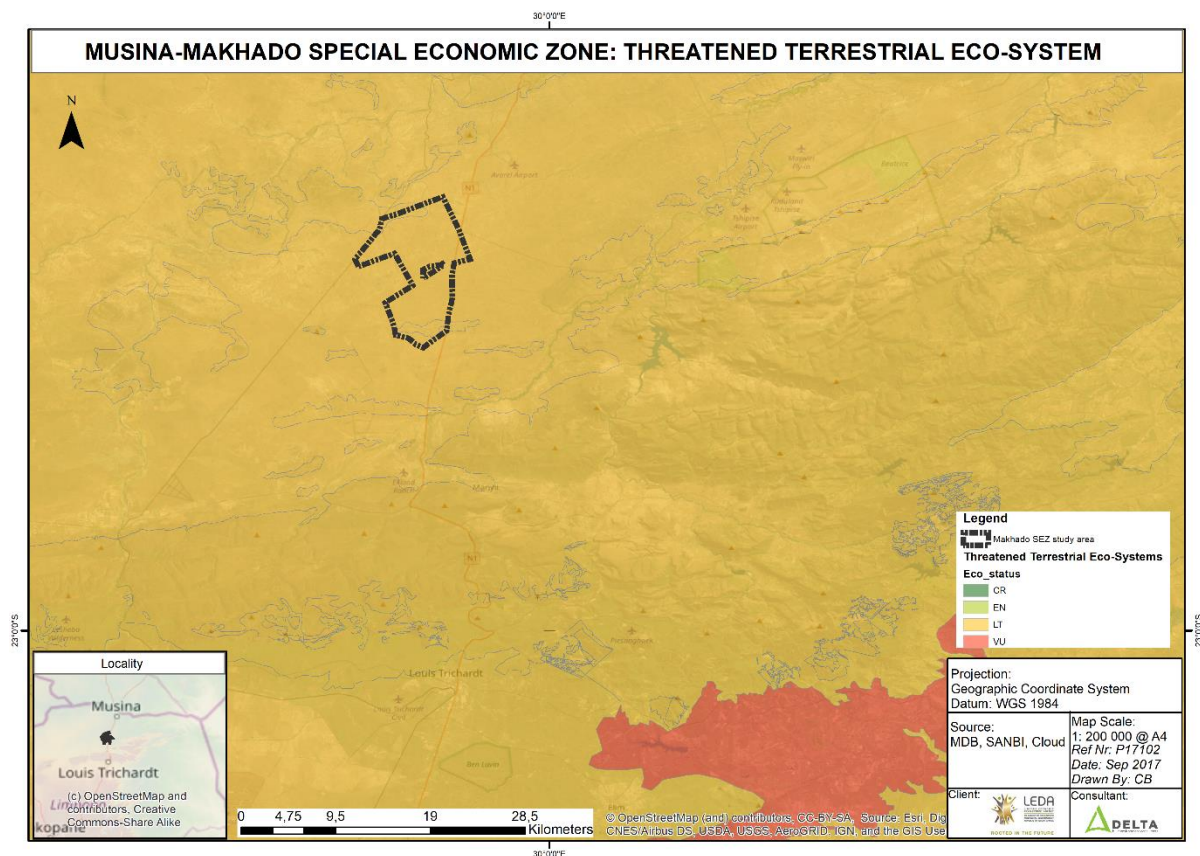


Figure 2-22: Threatened terrestrial ecosystems

### 3 ORGANISATIONAL REQUIREMENTS

During construction, all instructions and official communications regarding environmental matters shall follow the organisational structure shown in Figure 3-1. The organisational structure identifies and defines the authority's structure, and the communication structure for the various parties involved in the construction of the proposed development.

The LEDA will appoint a consultant for the proposed development. The consultant will appoint a RE on site to coordinate and monitor the contractor throughout construction.

LEDA shall appoint an independent ECO to oversee the implementation of the EMP on site. It will be the responsibility of the ECO to consult with the RE regarding instructions pertaining to contravention, corrective actions, and penalties or working methods.

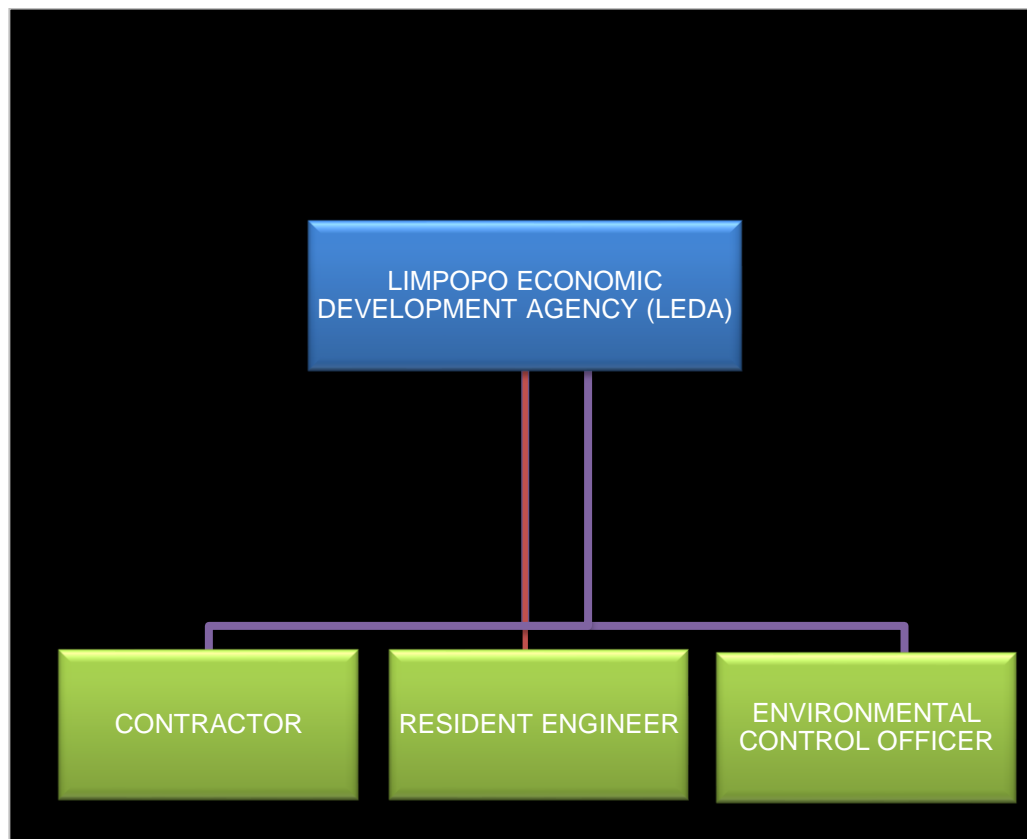


Figure 3-1: Organisational Hierarchy



## 4 ROLES AND RESPONSIBILITIES

INDIVIDUAL	RESPONSIBILITY
<b>LEDA</b>	<p>The LEDA will be responsible for the overall implementation, administration and enforcement of the EMPr. The department shall:</p> <ul style="list-style-type: none"> <li>• Ensure that the EMPr specifications are included in all tender documents issued for the development works and activities on site, and shall ensure that the prospective Tenders / Contractors abide by the provisions thereof,</li> <li>• Appoint an ECO to monitor implementation of and compliance with the EMPr for the duration of the works. The RE may be required to fulfil this function when the ECO is not available,</li> <li>• Be liable / accountable, to the relevant authority, for any contravention / non-compliance by any Contractor under their supervision, and</li> <li>• Through the RE issue fines or stop works orders for contravention of the EMPr and give instruction regarding corrective action.</li> </ul>
<b>Environmental Control Officer</b>	<p>The ECO will be responsible for monitoring, reviewing and verifying compliance with the EMPr by the Contractor.</p> <p>In particular, the ECO shall:</p> <ul style="list-style-type: none"> <li>• Be appointed by LEDA to monitor all activities on site,</li> <li>• Visit / inspect the site regularly, to ascertain the level of compliance of works,</li> <li>• Assist the RE in ensuring that necessary environmental authorisations and permits have been obtained,</li> <li>• Review and approve construction Method Statements together with the RE,</li> <li>• Assist the Contractor in finding environmentally responsible solutions to problems,</li> <li>• Provide material/manuals and assistance for the environmental awareness courses,</li> <li>• Maintain a photographic record of the site before, during and after construction,</li> <li>• Ensure that activities on site comply with legislation of relevance to the environment.</li> </ul>



INDIVIDUAL	RESPONSIBILITY
<b>Resident Engineer</b>	<p>The RE will be responsible for monitoring, reviewing and verifying compliance with the EMPr by the Contractor when the ECO is not available. The RE's duties, over and above his contractual obligations, will include the following:</p> <ul style="list-style-type: none"> <li>• Comply with the contents of this document as well as with the EMPr specifications in the Contract Document to ensure that the requirements of the EMPr are met,</li> <li>• Monitor and verify that the EMPr is adhered to at all times and take action if the specifications are not followed,</li> <li>• Monitor and verify that environmental impacts are kept to a minimum,</li> <li>• Review construction Method Statements in conjunction with the ECO,</li> <li>• Assist the Contractor in finding environmentally responsible solutions to problems with input from the ECO,</li> <li>• Inspect the site and surrounding areas regularly with regard to compliance with the EMPr.</li> </ul>

INDIVIDUAL	RESPONSIBILITY
<b>Contractor</b>	<p>The contractor shall:</p> <ul style="list-style-type: none"> <li>• Ensure that the environmental specifications contained in the EMPr are effectively implemented. This includes the on-site implementation of steps to mitigate environmental impacts,</li> <li>• Ensure that all employees and co-contractors employed comply with the requirements and provisions of the EMPr,</li> <li>• Monitor environmental performance and conformance with the specifications contained in this document during daily site inspections,</li> <li>• Discuss implementation of and compliance with the EMPr with staff at routine site meetings,</li> <li>• Report progress towards implementation and all non-compliances with the EMPr at site meetings,</li> <li>• Notify the ECO of the detailed anticipated programme of works to take place,</li> <li>• Ensure all required records are kept and all documentation is available to the ECO,</li> <li>• Notify the ECO of all incidents, accidents and transgressions on site with respect to the environmental management as well as the requirements of the EMPr,</li> <li>• Inform the ECO of problems arising when implementing the EMPr and recommended ways of improving it, and</li> <li>• Inform the ECO of any complaints received.</li> </ul>

## 4.1 PENALTIES

- Tolerance with respect to environmental matters applies during construction as well as day-to-day operations required in completing the work.
- The Contractor will comply with the environmental requirements on an ongoing basis, and any failure on their part to do so will entitle the Project Manager, in consultation with the Environmental Manager and ECO, to certify the imposition of a fine subject to the details set out in the EMPr.
- The Project Manager, Environmental Manager and any other specific personnel as designated by the Project Manager may alter the Schedule of Fines for this specific project.
- Fines may be issued per incident at the discretion of the Site Manager. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the requirements of the EMPr and

documents supporting thereof. Fines may be omitted from construction guarantees as supplied by the contractor.

- The Site Manager and ECO will be the judge as to what constitutes a transgression in terms of the above clause. Further, note that in the event that transgressions continue to an unacceptable level the applicant may cancel the contract.
- Where the Contractor inflicts non-repairable damage upon the environment or fails to comply with any of the environmental requirements, he will be liable to pay a penalty fine over and above any other contractual consequence. This may also lead into a Rectification Application in terms of Section 24G of the NEMA, which could lead to certain fines and / or prosecution.
- The Contractor is deemed NOT to have complied with this specification if: -
  - Within the boundaries of the site, site extensions and access roads there is evidence of contravention of the requirements of the EMPr.
  - Environmental damage ensues due to negligence.
  - The Contractor fails to respond adequately to complaints from the public.
  - Legal action is instituted against the developer in terms of Environmental laws due to any action / activities undertaken by the Contractor.
- Payment of any fines in terms of the contract will not absolve the offender from being liable from prosecution in terms of any law.
- A record of penalties will be maintained within the procurement department, and may influence later commissions awarded to the contractor.
- The following, inter alia, represents a list of offences that could result in penalties:
  - Silt fences not installed as per EMPr where silt enters the environment unchecked and / or soil erosion is uncontrolled.
  - Insufficient sedimentation ponds which allows silt to enter the environment unchecked.
  - Inadequate and poor dust control.
  - Illegal activities.
  - On-going, repeated non-conformances.
  - Damage to no-go areas, specifically and most importantly, topsoil and the riparian buffer-zones.
  - Failure to provide adequate waste disposal certificates.

## 4.2 REPORTING

#### **4.2.1 LINES OF COMMUNICATION (REPORTING)**

Open and clear lines of communication shall be established and maintained between the contractor, LEDA and any further parties to be appointed by the applicant (e.g. Independent ECO, etc.).

#### **4.2.2 COMPLIANCE MONITORING**

The contractor is to ensure that employees and all sub-contractors onsite are familiar with the requirements of the EMPr and conditions stipulated in the relevant environmental authorisations (i.e. NEMA EA) issued for the project. Therefore, the contractor should implement a management system reviewing compliance to these.

The applicant must appoint an internal, permanent ECO on site who will be monitoring the site and submitting monthly monitoring reports to the applicant.

Monitoring reports are to be sent to the relevant authorities by the LEDA or the appointed independent ECO, as per the specific requirements set in the project's environmental authorisations.

#### **4.2.3 COMMUNICATION WITH AUTHORITIES**

Only the LEDA and the appointed independent ECO are to liaise with Authorities, except if the contractor has to report Occupational Health and Safety incidents / accidents to the Department of Labour.

#### **4.2.4 INCIDENTS REPORTING**

The contractor is to conduct incident investigations immediately after occurrence. If an incident is identified as being a major incident, the contractor is to inform the applicant without delay.

The contractor is to ensure all employees are made aware on the relevant incident reporting procedures. The contractor must ensure that all relevant appointments are in place. An Incident Register must be kept on site and up to date at all times.

#### **4.2.5 LEGAL NON-COMPLIANCE**

Any legal non-compliance which may have a significant detrimental impact on the environment must be reported by the LEDA to the relevant Authority within 24 hours, unless otherwise stipulated.

#### **4.2.6 NON-COMPLIANCE WITH CONDITIONS**

Any legal non-compliance that may have a significant detrimental impact on the environment with conditions stipulated in any Authorisation / License / Permit, to

be reported by the applicant to the relevant Authority within 24 hours, unless otherwise stipulated.

#### 4.2.7 COMPLIANCE MONITORING

Compliance monitoring will be done against, inter alia:

- Conditions of the EA;
- The EMPr;
- Specialist Reports;
  - Wetland Assessment
  - Ecological Assessment
  - Heritage Assessment
  - Visual Assessment
  - Soil and Land Capability Assessment
  - Palaeontological Assessment
  - Socio-economic Assessment
  - Climate Change Assessment
  - Health Impact Assessment
  - Biodiversity Offset Assessment
  - Air Quality Assessment
  - Noise Impact Assessment
- Applicable Environmental Legislation:
  - National Environmental Management Act, 1998 (Act No. 107 of 1998);
  - National Heritage Resources Development Act, 1999 (Act No. 25 of 1999);
  - National Water Act, 1998 (Act No. 36 of 1998);
  - Occupational Health and Safety Act, 1993 (Act No. 85 of 1993); and
  - National Road Traffic Act, 1996 (Act No. 93 of 1996)
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
  - Regulation 1031; and
- Procedures and policies prescribed and amended from time to time by the applicant.

The responsibilities in terms of Environmental Compliance Monitoring are as follows:

- The Proponent will be responsible for the appointment of a suitably qualified Environmental Assessment Practitioner (EAP) as an independent Environmental Control Officer (ECO) for the construction phase of the project.
- A management team must be appointed to ensure compliance with the Environmental Management Program (EMPr) during the operational phase.
- The PM will be responsible to ensure all contractors receive a copy of this document and understand its contents.

- The ECO will ensure that all contractors / subcontractors / employees are fully aware of their environmental responsibilities.
- Contractors must ensure that all the environmental and safety precautions contained in the Environmental Authorisation, mitigating measures included in the Specialist Studies as well as this EMPr are adhered to, at all times.
- Compliance monitoring will take place by means of regular site visits and reporting by the ECO, for onwards transmission to the applicant and the relevant Government Departments (DEA, LEDET, SAHRA and DWS) for their information and record keeping.

## 5 CONCLUSION

The contractor shall submit written method statements to the ECO and Resident Engineer for approval prior to construction work commencing.

The method statements should provide a step by step description in order for the ECO and the Engineer to understand the contractor's proposed actions.

Method statements should indicate the following:

- **What:** A description of the work to be undertaken
- **How:** A description of the process of work, methods and materials to be used
- **When:** An estimate of the commencement and end dates
- **Who:** The people that will be undertaking the activity?

The method statement should also detail the control measures that will be put in place to ensure correct environmental management.

The Method statement should be approved by the ECO and Resident Engineer prior to works being carried out.

The following Method Statements should be provided by the contractor and submitted to the ECO and Resident Engineer at least seven days prior to site establishment.

### 5.1 SITE ESTABLISHMENT

The method of site establishment (including all buildings, offices, fuel storage areas, batching areas and related infrastructure).

### 5.2 SITE CLEARANCE

The method to be undertaken during vegetation clearance for site establishment.

### 5.3 TOPSOIL

Method of clearing topsoil and location of topsoil stockpiles and the methods that will be implemented to avoid erosion.

### 5.4 FUEL STORAGE

The location and specifications of the fuel storage area where re-fuelling will be undertaken.

### 5.5 WASTE DISPOSAL

Expected solid waste types, quantities, disposal procedures.

## **5.6 HAZARDOUS MATERIALS STORAGE**

Specifications of the hazardous materials to be used and the storage, handling and disposal of such materials. The location of cement and concrete mixing areas and the methods that will be used to undertake this.

## **5.7 EMERGENCY PROCEDURES**

The emergency procedures that will be followed in the event of fire, accidental leaks and the spillage of hazardous substances (firefighting equipment, spill kits, etc.)



## 6 ENVIRONMENTAL AWARENESS TRAINING

The Contractor will be responsible for implementing an environmental awareness training programme to ensure that all the employees are acquainted with the requirements of this EMPr.

*“Environmental awareness involves communication campaigns for reaching various audiences, developing messages and selecting and/or producing the appropriate resources and media to reach these audiences. The aim of environmental awareness is to make people from all walks of life aware of specific issues related to their surroundings, including living and non-living elements, e.g. land, soil, plants, animals, air, water and other humans, as well as awareness of their built, social and economic surroundings, and the impacts of our actions on these. Awareness is a necessary but not a sufficient element of social change.*

The aims of awareness raising activities are more limited in scope than environmental education and the processes should not be confused. While they cannot, on their own, achieve the required educational outcomes outlined above, awareness-raising can be a component of broader and more in-depth education processes” Environmental Awareness, education and training strategy for the Limpopo Economic Development Agency (LEDA).

As a minimum the contractor will conduct awareness training for all new employees and subcontractors prior to commencement with construction work. All employees must be made aware of what the potential impact can be due to their work activities on the project.

Regular and frequent training which may include daily toolbox talks and safety meetings will be used to provide any additional training as and when required. The Contractor will make use of the LEDA standardized Environmental induction. Toolbox talk topics should include, but are not limited to:

- Waste management (Hazardous waste and general waste management);
- Chemicals handling and storage;
- Site clearance after maintenance;
- General Environmental management/awareness; and
- Ad hoc talks based on the outcomes of Risk Assessments.

Anybody who obtains access to the site for the first time will have to undergo awareness training. This will include any sub -consultants or sub-contractors. A register of all training provided must be kept on site. Please refer to Appendix I.

## 7 LEGISLATION

**Table 7-1: List of potential listed activities likely to be triggered by the proposed SEZ development**

NOTICE:	ACTIVITY NO.:	LISTED ACTIVITY	DESCRIPTION:
GN R.983, 2014	9	The development of infrastructure exceeding 1000 metres in length for the bulk transportation of water or storm water – i. With an internal diameter of 0.36 metres or more; or With peak throughput of 120 litres per second or more.	The proposed SEZ will require infrastructure for the bulk transportation of water or stormwater.
GN R.983, 2014	10	The development and related operation of infrastructure exceeding 1000 metres in length for the bulk transportation of sewage, effluent, process water, wastewater, return water, industrial discharge or slimes – i. With an internal diameter of 0.36 metres or more; or With a peak throughput of 120 litres per second or more.	The proposed SEZ will require infrastructure for the bulk transportation of sewage, wastewater, return water and industrial discharge.
GN R.983, 2014	11	The development of facilities or infrastructure for the transmission and distribution of electricity – i. Outside urban areas or industrial complexes with a capacity or more than 33 but less than 275 kilovolts.	The proposed SEZ will require facilities and infrastructure for the transmission and distribution of electricity.
GN R.983, 2014	13	The development of facilities or infrastructure for the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more.	The proposed SEZ will require the off-stream storage of water, including dams and reservoirs, with a combined capacity of 50 000 cubic metres or more for the power station, other infrastructure and water supply demands.
GN R.983,	14	The development and related	Host industries may

NOTICE:	ACTIVITY NO.:	LISTED ACTIVITY	DESCRIPTION:
2014		operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a contained capacity of 80 cubic metres or more but not exceeding 500 cubic metres.	require the storage, or the storage and handling of dangerous goods, in containers or equipment.
GN R.983, 2014	24	The development of a road – With a reserve wider than 13.5 meters, or where no reserve exists where the road is wider than 8 metres.	The proposed SEZ will require internal roads wider than 8 metres with reserves wider than 13.5 metres.
GN R.983, 2014	25	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2000 cubic metres but less than 15000 cubic metres.	The proposed SEZ will include the construction of effluent, wastewater and sewage treatment infrastructure.
GN R.983, 2014	28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:  Will occur outside an urban area, where the total land to be developed is bigger than a hectare.	Proposed development would be bigger than 1 hectare.  Applications for environmental authorisation and change of land use are required in order to establish the Musina-Makhado SEZ southern site with all its land uses.
GN R.984, 2014	2	The development and related operation of facilities or infrastructure for the generation of electricity from a non-renewable resource where the electricity output is 20 megawatts or more.	The SEZ will comprise of a coal-fired power station which will supply the internal industries with electricity and electricity infrastructure.
GN R.984, 2014	6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or	Industries in the SEZ will release emissions that will require an Air Emissions Licence.

NOTICE:	ACTIVITY NO.:	LISTED ACTIVITY	DESCRIPTION:
		provincial legislation governing the generation or release of emissions, pollution or effluent.	
GN R.984, 2014	9	The development of facilities or infrastructure for the transmission and distribution of electricity with a capacity of 275 kilovolts or more, outside an urban area or industrial complex.	The proposed SEZ will require infrastructure for the transmission and distribution of electricity.
GN R.984, 2014	11	The development of facilities or infrastructure for the transfer of 50 000 cubic metres or more water per day, from and to or between any combination of the following – i. Water catchments ii. Water treatment works Impoundments.	The proposed SEZ will require infrastructure for the transfer of water from water treatment works.
GN R.984, 2014	15	The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed SEZ will occur within an area of approximately 7262 Ha of undeveloped land (greenfield project) as designated by the Department of Trade and Industry (DTI).
GN R.984, 2014	25	The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of 15 000 cubic metres or more.	The proposed SEZ may have wastewater and sewage treatment infrastructure which will have a daily throughput capacity of 15000 cubic metres or more.
GN R.984, 2014	27	The development of a road – With a reserve, wider than 30 metres.	The proposed SEZ will require the development of roads wider than 30 metres from the N1 and interchanges.
GN R.985, 2014	2	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres.  Limpopo	Reservoirs will be developed within sensitive and CBA areas of the Limpopo Province of the

NOTICE:	ACTIVITY NO.:	LISTED ACTIVITY	DESCRIPTION:
		<ul style="list-style-type: none"> <li>ii. Outside urban areas</li> <li>b. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.</li> <li>d. Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</li> </ul>	proposed SEZ.
GN R.985, 2014	4	<p>The development of a road wider than 4 metres with a reserve less than 13.5 metres.</p> <p>Limpopo</p> <ul style="list-style-type: none"> <li>i. Outside urban areas</li> <li>c. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority.</li> </ul> <p>Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority.</p>	Roads wider than 4 metres with reserves less than 13.5 metres will be developed within sensitive and CBA areas of the proposed SEZ.
GN R.985, 2014	10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good.	Host industries will require infrastructure for the storage, or the storage and handling of dangerous goods.
GN R.985, 2014	12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required	Over 300 square metres of indigenous vegetation will be cleared for the SEZ

NOTICE:	ACTIVITY NO.:	LISTED ACTIVITY	DESCRIPTION:
		<p>for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>Limpopo</p> <p>ii. Within critical biodiversity areas identified in bioregional plans.</p> <p>On land, where, at the time of coming into effect of this notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p>	development.
GN R.985, 2014	14	<p>The development of (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—(a) within a watercourse; within 32 metres of a watercourse, measured from the edge of a watercourse</p> <p>Limpopo</p> <p>i. Within critical biodiversity areas identified in bioregional plans.</p>	Reservoir/s will be developed as part of the Musina-Makhado SEZ southern site.

Notes regarding the identification of potential listed activities:

- It should be noted that a precautionary approach was followed when identifying listed activities (for inclusion in the Application for EA and to be assessed as part of the Scoping and EIA Process), i.e. if the activity potentially forms part of the project, it is listed. However, the final project description will be shaped by the findings of the EIA Process and certain activities may be added or removed from the project proposal. The DEA and I&APs will be informed in writing of such amendments accordingly.
- Based on the preliminary sensitivity screening undertaken for the site, the proposed project area does fall within a threatened ecosystem. A national list of threatened ecosystems is provided for in The National Environmental Management: Biodiversity Act (NEMBA) (No. 10 of 2004) (South Africa, 2004). There are three classes of threatened ecosystems namely: i) Critically endangered (CR) vegetation types which have less than 25 % of its original cover remaining, have undergone severe degradation of ecological structure, function or composition due to human activities, and are subject to an extremely high risk of irreversible transformation; ii) Endangered (EN) vegetation types have lost more than 60% of its original

extent and have undergone degradation of ecological structure, function, or composition due to human activities, although they are not critically endangered ecosystems; and iii) Vulnerable (VU) vegetation types that have lost approximately 50 % of its original extent and are at a high risk of undergoing significant degradation of ecological structure, function or composition due to human activities, although they are not critically endangered ecosystems or endangered ecosystems.

## 7.1 LEGISLATION AND GUIDELINES PERTINENT TO THIS EIA

The conventions applicable in the Limpopo Province are outlined in the table below.

**Table 7-2: Conventions applicable in the Limpopo Province**

CONVENTION TYPE	PURPOSE
<b>Convention of Biological Diversity<sup>18</sup></b>	To effect international co-operation in the convention of biological diversity and to promote sustainable use of the living resources.
<b>Convention on Wetlands of International Importance especially as Water Flow Habitat (RAMSAR Convention)</b>	To stem the loss, and to promote the wise use of all wetlands.
<b>Convention of International Trade in Endangered Species of Wild Fauna flora (CITES)</b>	To ensure protection of endangered species and the economic use of species, monitoring the status of the species and control the illegal trade.
<b>World Heritage Convention</b>	To ensure protection of world cultural and natural heritage.
<b>Convention on Migratory Species of Wild Animal (Bonn Convention)</b>	To ensure conservation of animal (terrestrial animal, reptiles, marine species and birds) that migrate across the border. Special attention is paid the endangered species.
<b>Man, and Biosphere Programmes (Biosphere Reserves)</b>	The biosphere reserves concept form part of UNESCO's programmes that aims to provide scientific basis of regional land use and land management.
<b>Convention on Desertification</b>	To combat desertification in those countries experiencing serious drought and/or particularly in Africa.
<b>Protocol for the Protection of Ozone Layer (Montréal Protocol)</b>	Aimed at ensuring measures to protect the ozone layers and was designed to reduce the production and consumption of ozone depleting substances.

<sup>18</sup> <https://www.cbd.int/>



CONVENTION TYPE	PURPOSE
<b>Convention of the Control of Transboundary Movement of Hazardous Waste and their Disposal (Basel convention)</b>	Aimed at a reduction in the production of hazardous waste and their restriction of trans boundary movements and disposal of such waste.
<b>Framework Convention of Climatic Change (Kyoto Protocol)</b>	Addresses the threat of global climate change by urging government to reduce sources of greenhouse gasses.
<b>Lusaka Agreement</b>	Aims at the co-operative enforcement operation directed at illegal trade in wild fauna and flora.
<b>SADEC Convention on Conservation</b>	Nagoya Protocol – Biodiversity Convention – Protocol on Wildlife Conservation and Law Enforcement.

### 7.1.1 NATIONAL

The foundation for a system of cooperative governance in South Africa across the three spheres of government is set out in the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), stating that they should cooperate in mutual trust and good faith, including sharing information, consulting on areas of common interest, coordinating action and legislation and avoiding legal proceedings against each other. **Section 156** sets out the powers and functions of local government, **Schedule 4** sets out functional areas of concurrent national and provincial legislative competence in which industrial promotion is highlighted, and Schedule 5 sets out areas of exclusive provincial jurisdiction.

In terms of the Bill of Rights, Paragraph 24 *Environment* of the Constitution of the Republic of South Africa, 1996, everyone has the right:

- (a) *to an environment that is not harmful to their health or wellbeing; and*
- (b) *to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that*
  - (i) *prevent pollution and ecological degradation;*
  - (ii) *promote conservation; and*
  - (iii) *secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.*

The **National Development Plan (NDP)** offers a long-term development perspective. It defines a desired destination and identifies the roles that different sectors of society need to play in reaching that goal. The NDP aims to eliminate poverty and reduce inequality by 2030. According to the plan, South Africa can realise these goals by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capacity of the state, and promoting leadership and partnerships throughout society.

Developing and upgrading capabilities to enable sustainable and inclusive development requires a new approach and involves:

- Creating jobs and livelihoods
- Expanding infrastructure
- Transitioning to a low-carbon economy
- Transforming urban and rural spaces
- Improving education and training
- Providing quality healthcare
- Building a capable state
- Fighting corruption and enhancing accountability
- Transforming society and uniting the nation.

The NDP states that long-term shifts in global trade and investment are reshaping the world economy and international policy, requiring greater policy focus, effective implementation of industrial policies and improved skills development.<sup>19</sup>

It is also stated in the NDP that South Africa must tackle the diversification of the economy from a range of angles. It needs to build on state capacity to identify sectors that will improve export opportunities. In addition, development finance can play a crucial role in promoting industrial policy. The government, in partnership with the private sector, must identify areas to nurture and support; develop sensible instruments to support those areas; and implement them competently.

Support and protection should be focused on industries, not firms – hence a reason to promote the proposed SEZ. At the same time the government must encourage vigorous competition and impose it through competition laws. Critically, industrial policy should allow for learnings and for timely exit strategies.

**It is further elaborated that industrial zone developments and trade promotion will rely on competitive logistics, services, skills, product capabilities and market access through local procurement rules.**

According to the *National Strategy for Sustainable Development and Action Plan 2011–2014 (2011)* South Africa aspires to be a sustainable, economically prosperous and self-reliant nation state that safeguards its democracy by meeting the fundamental human needs of its people, by managing its limited ecological resources responsibly for current and future generations, and by advancing efficient and effective integrated planning and governance through national, regional and global collaboration.

According to the *New Growth Path*, there is growing consensus that creating decent work, reducing inequality and defeating poverty can only happen through a new growth path founded on a restructuring of the South African economy to improve its performance in terms of labour absorption as well as the composition and rate of growth. To achieve that step, change in growth and transformation of

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<sup>19</sup> NDP – 2030 (pg. 31, 155 and 128)

economic conditions requires hard choices and a shared determination as South Africans to see it through.

The New Growth Path must provide bold, imaginative and effective strategies to create the millions of new jobs South Africa needs. It must also lay out a dynamic vision for how we can collectively achieve a more developed, democratic, cohesive and equitable economy and society over the medium term, in the context of sustained growth. The strategy sets out critical markers for employment creation and growth, and identifies where viable changes in the structure and character of production can generate a more inclusive and Greener economy over the medium to long term. To that end, it combines macro-economic and micro-economic interventions.

**Employment creation is the top priority of Government.** The New Growth Path starts by identifying where employment creation is possible, both within economic sectors, as conventionally defined, and in cross-cutting activities. It then analyses the policies and institutional developments required to take advantage of these opportunities. In essence, the aim is to target our limited capital and capacity at activities that maximise the creation of decent work opportunities. To that end, 'we must use both macro and micro-economic policies to create a favourable overall environment and to support more labour-absorbing activities.

*Implications for provinces and localities: The Spatial Dimensions of the Growth Path:* Within metros, too, there are vast disparities and spatial challenges, with townships located far from most employment opportunities. **A core task for the New Growth Path is to break with this legacy through a coherent approach to spatial development backed by strong investment in infrastructure and the identification of viable and sustainable opportunities for historically disadvantaged regions.**

National government also adopted a **National Infrastructure Plan** in 2012. The plan aims to transform the South African economic landscape while also driving the expansion of jobs and strengthening the delivery of basic services. Investment is targeted at improving access to healthcare facilities, schools, water, sanitation, housing and electrification as well as the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams.<sup>20</sup>

The plan has identified 18 Strategic Integrated Projects some of which is highlighted here (SIPs):

#### **SIP 1: Unlocking the northern mineral belt with Waterberg as the catalyst**

The outcomes of the SIP 1 are as follows:

- Unlock mineral resources
- Rail, water pipelines, energy generation and transmission infrastructure
- Thousands of direct jobs across the areas unlocked

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<sup>20</sup> South African Government: Official Website: <https://www.gov.za/issues/national-infrastructure-plan> (based on the summary report of South African National Infrastructure Plan)

- Urban development in Waterberg – first major post-apartheid new urban centre will be a ‘green’ development project
- Rail capacity to Mpumalanga and Richards Bay from the north
- Shift from road to rail in Mpumalanga from the north
- Logistics corridor to connect Limpopo, Mpumalanga and Gauteng.

## **SIP 2: Durban-Free State-Gauteng logistics and industrial corridor**

The objective of the SIP 2 is to strengthen the logistics and transport corridor between South Africa's main industrial hubs and to improve access to Durban's export and import facilities. It is estimated that 135 000 jobs will be created in the construction of projects in the corridor. Once the projects are completed a further 85 000 jobs are expected to be created by those businesses that use the new facilities.<sup>21</sup> The specific outcomes of SIP 2 are:

- Strengthen the logistics and transport corridor between South Africa's main industrial hubs
- Improve access to Durban's export and import facilities
- Integrate Free State Industrial Strategy activities into the corridor
- New port in Durban
- Aerotropolis around OR Tambo International Airport.

## **SIP 17: Regional integration for African cooperation and development**

The outcomes of SIP 17 are as follows:

- Participate in mutually beneficial infrastructure projects to unlock long-term socio-economic benefits by partnering with fast-growing African economies with projected growth ranging between 3% and 10%.
- The projects involving transport, water and energy also provide competitively-priced, diversified, short- and medium- to long-term options for the South African economy.
- All these projects complement the Free Trade Area (FTA) discussions to create a market of 600 million people in South, Central and East Africa.<sup>22</sup>

South Africa's long-term vision of an equitable society is defined by the **National Development Plan (NDP)**. The **Industrial Policy Action Plan (IPAP), 2014/15 – 2016/17** is informed by this vision and is both framed by and constitutes a key pillar of the programmatic perspectives set out in the **New Growth Path (NGP)**. Its core objectives remain as set out in the **National Industrial Policy Framework (NIPF)**:

- To facilitate **diversification** beyond our current reliance on traditional commodities and non-tradable services. This requires the promotion of increased value-addition per capita characterised particularly by

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<sup>21</sup> South African Government: Official Website: <https://www.gov.za/issues/national-infrastructure-plan> (based on the summary report of South African National Infrastructure Plan)

<sup>22</sup> South African Government: Official Website: <https://www.gov.za/issues/national-infrastructure-plan> (based on the summary report of South African National Infrastructure Plan)

movement into non-traditional tradable goods and services that are competitive in both export markets and the domestic economy.

- The long-term **intensification of South Africa's industrialisation process**, and movement towards a twenty-first century knowledge economy.
- The **promotion of a more labour-absorbing industrialisation** path with a particular emphasis on tradable labour-intensive goods and services and economic linkages that catalyse employment creation.
- The promotion of a **broadier-based industrialisation** path characterised by greater levels of participation by historically disadvantaged economic citizens and marginalised regions in the mainstream of the industrial economy.
- Contributing to **industrial development in Africa**, with a strong emphasis on building regional productive capabilities.

**The National Freight Logistics Strategy** is a response to the freight systems inability to fulfil the demand for the movement of cargo at prices, levels of service, quality of service, and at acceptable levels of reliability in a manner that supports the national development strategies. The strategy confirms that improvements can only be achieved where these specifically provide an integrated systems-level approach. This strategy signals a shift toward demand-driven delivery of freight logistics services, from a supply approach. The intention has been to develop a freight transport master plan that integrates the planning of government into all spheres, public agencies and the private sector, from both an infrastructure and operations perspective. The implementation involves emphasis on rural freight transport systems from a freight system perspective, and an approach to corridor development along certain critical freight routes.

#### 7.1.1.1 Environmental Legislation

Environmental legislation in South Africa exists at all spheres of government – national, provincial and local government. Some of the National Environmental Legislation containing important implications for Environmental Management are detailed in the table below.

**Table 7-3: Environmental Legislative Framework applicable to the Musina-Makhado SEZ southern site**

LEGISLATION	PURPOSE
PRIMARY LEGISLATIVE PROVISIONS	
<b>Carbon Tax Act (Act No 15 of 2019)</b>	To provide for the imposition of a tax on the carbon dioxide (CO <sub>2</sub> ) equivalent of greenhouse gas emissions; and to provide for matters connected therewith
<b>Section 24 of the Constitution of the Republic of South Africa, 1996</b>	Everyone has the right to an environment that is not harmful to their health or well-being; and to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure

LEGISLATION	PURPOSE
	ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.
<b>Limpopo Environmental Management Act (Act 7 of 2003)</b>	To consolidate and amend the environmental management legislation of or assigned to the Province; and to provide for matters incidental thereto.
<b>National Environmental Management Air Quality Management Act (Act 39 of 2004).</b>	<p>The aim of this act is to reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures.</p> <p>Under this act a list of activities which result in atmospheric emissions which have or may have a significant detrimental effect on the environment including health, social conditions, economic conditions, ecological conditions or cultural heritage published on 22 November 2013 (as amended 2 November 2018; 22 May 2019) is applicable for investor site-specific developments within the Musina-Makhado SEZ southern site.</p>
<b>National Environmental Management Act (Act No 107 of 1998)</b>	To provide for co-operative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith. The Environmental Impact Assessment Regulations published in 2014 and amended on 7 April 2017 provide listed activity notices based on the magnitude of the developments with thresholds. Listing Notice 1 requires a basic assessment process to be followed, while Listing Notice 2 requires a full Scoping / Environmental Impact Assessment. Listing Notice 3 requires a basic assessment process and utilises the biodiversity and ranges.
<b>National Environmental Management Biodiversity Act (Act 10 of 2004)</b>	The National Environmental Management: Biodiversity Act (Act 10 of 2004) (NEMBA) provides for “the management and conservation of South Africa’s biodiversity within the framework of the NEMA, the protection of species and ecosystems that warrant national protection, and the use of indigenous biological

LEGISLATION	PURPOSE
	<p>resources in a sustainable manner, amongst other provisions". The Act states that the state is the custodian of South Africa's biological diversity and is committed to respect, protect, promote and fulfil the constitutional rights of its citizens.</p> <p>Furthermore, NEMBA states that the loss of biodiversity through habitat loss, degradation or fragmentation must be avoided, minimised or remedied. The loss of biodiversity includes inter alia the loss of threatened or protected species. Biodiversity offsets are a means of compensating for the loss of biodiversity after all measures to avoid, reduce or remedy biodiversity loss have been taken, but residual impacts still remain and these are predicted to be medium to high. Chapter 5 of NEMBA (Sections 73 to 75) regulates activities involving invasive species, and lists duty of care as follows:</p> <ul style="list-style-type: none"> <li>• the land owner/land user must take steps to control and eradicate the invasive species and prevent their spread, which includes targeting offspring, propagating material and regrowth, in order to prevent the production of offspring, formation of seed, regeneration or re-establishment;</li> <li>• take all required steps to prevent or minimise harm to biodiversity; and</li> <li>• ensure that actions taken to control/eradicate invasive species must be executed with caution and in a manner that may cause the least possible harm to biodiversity and damage to the environment.</li> </ul> <p>An amendment to the NEMBA has been promulgated, which lists 225 threatened ecosystems based on vegetation types present within these ecosystems. Should a project fall within a vegetation type or ecosystem that is listed, actions in terms of NEMBA are triggered. Based on the preliminary sensitivity screening undertaken for the proposed site, none of the threatened ecosystems occur within the study area. This will be confirmed as part of the Ecological Impact Assessment study undertaken during the EIA Phase.</p>
<p><b>National Environmental Management Protected Areas Act (Act 57 of 2003)</b></p>	<p>To provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes; for the establishment of a National register of all National, Provincial, and Local protected areas for the management of those areas in accordance with national norms and standards; for intergovernmental co-operation and public consultation in matters concerning</p>



LEGISLATION	PURPOSE
	protected areas; and for matters in connection therewith.
<b>Policy on the Development of Special Economic Zones in South Africa (2012)</b>	<p>The Special Economic Zones policy aims to position special economic zones as an effective tool for industrial development, and is flexible and rigorous enough to be responsive to the development needs of all regions, as well as the needs of investors and other key role-players.</p> <p>The purpose is to provide a clear policy framework with respect to the development, operations and management of SEZs addressing the following challenges of the current programme through:</p> <ul style="list-style-type: none"> <li>• Expanding the strategic focus to cover diverse regional development needs and contexts, and improve the design deficiencies of the IDZs programme;</li> <li>• Providing a clear, predictable and systematic planning framework for the development of a wide array of SEZs to support implementation of the Industrial Policy Action Plan, regional industrial development strategies, National Development Plan (NDP) and the New Growth Path (NGP);</li> <li>• Clarifying and strengthening governance arrangements for the management of SEZs;</li> <li>• Expanding the range and quality of support measures beyond the provision of infrastructure, including both in zone and out-of-zone support measures;</li> <li>• Developing and implementing a predictable financing framework to enable long-term planning;</li> <li>• Developing and implementing a comprehensive programme to support the development of SEZs, including their marketing; and</li> <li>• Addressing all the weaknesses of the Industrial Development Zones Programme, and introducing best practices in the planning, development and management of special economic zones.</li> </ul> <p><u>Objectives:</u></p> <ul style="list-style-type: none"> <li>• To facilitate the creation of an industrial complex having a strategic economic advantage for targeted investments and industries in the</li> <li>• manufacturing and tradable services sectors; within the framework of the IPAP, New Growth Path and the New Development Plan,</li> <li>• To promote beneficiation and value addition to the country's minerals and other natural resources,</li> <li>• To develop infrastructure required to support the development of the targeted industrial activities,</li> </ul>

LEGISLATION	PURPOSE
	<ul style="list-style-type: none"> <li>To attract relevant foreign and domestic direct investment and taking advantage of existing industrial and technological capacity, promoting integration with local industry and increasing value added production,</li> <li>To accelerate exports and economic growth and the creation of much needed jobs,</li> <li>To contribute to balanced industrial development.</li> </ul>
<b>South African Weather Service Act (Act No 8 of 2001)</b>	To establish a juristic person to be known as the South African Weather Service; to determine its objects, functions and method of work; to prescribe the manner in which it is to be managed and governed; to regulate its staff matters and financial affairs; and to provide for matters connected therewith. The impact of climate change especially on weather patterns may be applicable here.
<b>Regulations in terms of the Special Economic Zones Act, 2014 (Act 16 of 2014)</b>	Provides an interpretation of the SEZ and sources of funding, provides the administration and management for SEZs and gives a distribution of money from the special economic zones fund. Furthermore, the regulations deal with feasibility studies, the start-up costs, site preparation, infrastructure development, business development and performance improvement as well as skills development. The regulations also provide the business incubators, funding options and agreements, requirements for the application of money from the SEZ fund, supportive measures, and deals with the application for designation of the SEZ. The type of service and business that may be located in the SEZ is also indicated, and overall governance and management. Furthermore, the regulations specify the SEZ operator permit, advisory board and provides transitional arrangements.
<b>Special Economic Zones Act, 2014 (Act no 16 of 2014)</b>	<p>To provide for the designation, promotion, development, operation and management of Special Economic Zones; to provide for the establishment, appointment of members and functioning of the Special Economic Zones Advisory Board; to provide for the establishment of the Special Economic Zones Fund; to regulate the application, issuing, suspension, withdrawal and transfer of Special Economic Zones operator permits; to provide for functions of the Special Economic Zones operator; to provide for transitional arrangements; and to provide for matters connected therewith.</p> <p>The objects of this Act are to provide for—</p> <p>(a) the determination of Special Economic Zones policy and strategy;</p>

LEGISLATION	PURPOSE
	<p>(b) the establishment of the Advisory Board;</p> <p>(c) the establishment of the Special Economic Zones Fund to support the development of Special Economic Zones;</p> <p>(d) the designation, promotion, development, operation and management of Special Economic Zones;</p> <p>(e) regulatory measures and incentives for Special Economic Zones in order to attract domestic and foreign direct investment; and</p> <p>(f) the establishment of a single point of contact or one stop shop that delivers the required government services to businesses operating in Special Economic Zones in order to lodge applications to various government authorities and agencies and to receive information on regulatory requirements from such authorities and agencies</p>
<b>World Heritage Convention Act (Act 49 of 1999)</b>	<p>To provide for the incorporation of the World Heritage Convention into South African Law; the enforcement and implementation of the World Heritage Convention in South Africa; the recognition and establishment of World Heritage Sites; the establishment of Authorities and the granting of additional powers to existing organs of State; the powers and duties of such Authorities, especially those serving the integrity of World Heritage Sites; where appropriate the establishment of Boards and Executive staff Components of the Authorities; integrated management plans over World Heritage Sites; land matters in relation to World Heritage Sites; financial, auditing and reporting controls over the Authorities; and to provide for incidental matters.</p>
SECONDARY ENVIRONMENTAL LEGISLATIVE PROVISIONS	
<b>Conservation of Agricultural Resources Act (Act 43 of 1983)</b>	<p>The objectives of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) are to provide for the conservation of the natural agricultural resources of South Africa by the:</p> <ul style="list-style-type: none"> <li>• maintenance of the production potential of land;</li> <li>• combating and prevention of erosion and weakening or destruction of the water sources; and</li> <li>• protection of the vegetation and the combating of weeds and invader plants.</li> </ul> <p>The CARA states that no land user shall utilise the vegetation of wetlands (a watercourse or pans) in a manner that will cause its deterioration or damage. This includes cultivation, overgrazing, diverting water run-off and other developments that damage the water resource. The CARA includes regulations on alien invasive</p>

LEGISLATION	PURPOSE
	<p>plants. According to the amended regulations (GN R280 of March 2001), declared weeds and invader plants are divided into three categories:</p> <ul style="list-style-type: none"> <li>• Category 1 may not be grown and must be eradicated and controlled,</li> <li>• Category 2 may only be grown in an area demarcated for commercial cultivation purposes and for which a permit has been issued, and must be controlled, and</li> <li>• Category 3 plants may no longer be planted and existing plants may remain as long as their spread is prevented, except within the flood line of watercourses and wetlands. It is the legal duty of the land user or land owner to control invasive alien plants occurring on the land under their control.</li> </ul> <p>Should alien plant species occur within the study area; this will be managed in line with the EMPr. Rehabilitation after disturbance to agricultural land is also managed by CARA. The DAFF reviews and approves applications in terms of these Acts according to their Guidelines for the evaluation and review of applications pertaining to renewable energy on agricultural land, dated September 2011.</p>
<b>Disaster Management Act (Act 57 of 2002)</b>	To provide for an integrated and co-ordinated disaster management policy that focuses on preventing or reducing the risk of disasters, mitigating the severity of the damage caused by disasters.
<b>Draft Climate Change Bill, 2018</b>	<ul style="list-style-type: none"> <li>• provide for the coordinated and integrated response to climate change and its impacts by all spheres of government in accordance with the principles of cooperative governance;</li> <li>• provide for the effective management of inevitable climate change impacts through enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change, with a view to building social, economic, and environmental resilience and an adequate national adaptation response in the context of the global climate change response;</li> <li>• make a fair contribution to the global effort to stabilise greenhouse gas concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system within a timeframe and in a manner that enables economic, employment, social and environmental development to proceed in a</li> </ul>

LEGISLATION	PURPOSE
	sustainable manner.
<b>Firearms Control Management Act (Act 43 of 2003)</b>	To establish a comprehensive and an effective system of firearms control; and to provide for matters connected therewith.
<b>Hazardous Substances Act (Act 15 of 1973)</b>	This Act provides for the control of substances which may cause injury or ill health to, or death, of human beings by reason of their toxic, corrosive, irritant, strongly sensitising or flammable nature. To provide for the prohibition and control of the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances and products.
<b>Intergovernmental Relation Framework Act (Act 13 of 2005)</b>	To establish a framework for the National government, Provincial governments and Local governments to promote and facilitate inter-governmental relation; to provide for mechanism and procedures to facilitate the settlement of inter-governmental disputes; and to provide matters connected therewith.
<b>Mineral and Petroleum Resources Development Act (Act 28 of 2002)</b>	To make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources; and to provide for matters connected therewith.
<b>Mountain Catchment Areas Act (Act 63 of 1970)</b>	To regulate the conservation, use, management and control of mountain catchment areas.
<b>Municipal Systems Act (Act 32 of 2000)</b>	To regulate the delivery of services in the local government sphere an all matters related thereto.
<b>National Forest Act (Act 84 of 1998)</b>	To provide for reformation of the law on forest.
<b>National Health Act (Act No 61 of 2003)</b>	To provide a framework for a structured uniform health system within the Republic, taking into account the obligations imposed by the Constitution and other laws on the national, provincial and local governments with regard to health services; and to provide for matters connected therewith.
<b>National Heritage Resources Act (Act 25 of 1999)</b>	<p>The National Heritage Resources Act (Act 25 of 1999) (NHRA) introduces an integrated and interactive system for the managements of national heritage resources (which include landscapes and natural features of cultural significance).</p> <p>Parts of sections 35(4), 36(3) (a) and 38(1) (8) of the NHRA apply to the proposed project:</p> <p><u>Archaeology, palaeontology and meteorites:</u></p> <p>Section 35 (4) No person may, without a permit issued by the responsible heritage resources authority:</p> <p>a. destroy, damage, excavate, alter, deface</p>

LEGISLATION	PURPOSE
	<p>or otherwise disturb any archaeological or palaeontological site or any meteorite;</p> <ul style="list-style-type: none"> <li>b. destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite;</li> <li>c. bring onto or use at an archaeological or palaeontological site any excavation equipment or any equipment which assist in the detection or recovery of metals or archaeological and palaeontological material or objects, or use such equipment for the recovery of meteorites.</li> </ul> <p><u>Burial grounds and graves:</u></p> <p>Section 36 (3) (a) No person may, without a permit issued by South African Heritage Resources Agency (SAHRA) or a provincial heritage resources authority:</p> <ul style="list-style-type: none"> <li>a. destroy, damage, alter, exhume or remove from its original position or otherwise disturb the grave of a victim of conflict, or any burial ground or part thereof which contains such graves;</li> <li>b. destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority; or</li> <li>c. bring onto or use at a burial ground or grave referred to in paragraph (a) or (b) any excavation equipment, or any equipment which assists in the detection or recovery of metals.</li> </ul> <p><u>Heritage resources management:</u></p> <p>38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as:</p> <ul style="list-style-type: none"> <li>a. the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;</li> <li>b. the construction of a bridge or similar structure exceeding 50 m in length;</li> <li>c. any development or other activity which will change the character of the site –</li> </ul>



LEGISLATION	PURPOSE
	<ul style="list-style-type: none"> <li>i. exceeding 5000 m<sup>2</sup> in extent, or</li> <li>ii. involving three or more erven or subdivisions thereof; or</li> <li>iii. involving three or more erven or divisions thereof which have been consolidated within the past five years; or</li> <li>iv. the costs of which will exceed a sum set in terms of regulations by SAHRA, or a provincial resources authority;</li> <li>d. the re-zoning of a site exceeding 10 000 m<sup>2</sup> in extent; or</li> <li>e. any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.</li> </ul> <p>While landscapes with cultural significance do not have a dedicated Section in the NHRA, they are protected under the definition of the National Estate (Section 3). Section 3(2)(c) and (d) list “historical settlements and townscapes” and “landscapes and natural features of cultural significance” as part of the National Estate. Furthermore, Section 3(3) describes the reasons a place or object may have cultural heritage value. Section 38 (2a) of the NHRA states that if there is reason to believe that heritage resources will be affected then an impact assessment report must be submitted.</p>
<b>National Veld and Forest Fire Act (Act 101 of 1998)</b>	To reform the law on veld and forest fires; to repeal certain provisions of the Forest Act, 1984, and to provide for related matters.
<b>National Water Act (Act 36 of 1998)</b>	One of the important objectives of the National Water Act (Act 36 of 1998) (NWA) is to ensure the protection of the aquatic ecosystems of South Africa’s water resources. Section 21 of this Act identifies certain land uses, infrastructural developments, water supply/demand and waste disposal as ‘water uses’ that require authorisation (licensing) by the Department of Water and Sanitation (DWS). Chapter 4 (Part 1) of the NWA sets out general principles for the regulation of water use. Water use is defined broadly in the NWA, and includes taking and storing water, activities which reduce stream flow, waste

LEGISLATION	PURPOSE
	<p>discharges and disposals, controlled activities (activities which impact detrimentally on a water resource), altering the bed, banks, course or characteristics of a watercourse, removing water found underground for certain purposes, and recreation. In general, a water use must be licensed unless it is listed in Schedule I, is an existing lawful use, is permissible under a general authorisation, or if a responsible authority waives the need for a licence. The Minister may limit the amount of water which a responsible authority may allocate. In making regulations the Minister may differentiate between different water resources, classes of water resources and geographical areas.</p> <p>All water users who are using water for agriculture: aquaculture, agriculture: irrigation, agriculture: watering livestock, industrial, mining, power generation, recreation, urban and water supply service must register their water use. This covers the use of surface and ground water.</p> <p>Section 21 of the Act lists the following water uses that need to be licensed:</p> <ul style="list-style-type: none"> <li>a) taking water from a water resource;</li> <li>b) storing water;</li> <li>c) impeding or diverting the flow of water in a watercourse;</li> <li>d) engaging in a stream flow reduction activity contemplated in section 36;</li> <li>e) engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1);</li> <li>f) discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall or other conduit;</li> <li>g) disposing of waste in a manner which may detrimentally impact on a water resource;</li> <li>h) disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;</li> <li>i) altering the bed, banks, course or characteristics of a watercourse;</li> <li>j) removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people; and</li> <li>k) using water for recreational purposes.</li> </ul> <p>Any activities that take place within a water course or within 500 m of a wetland boundary require a Water Use</p>

LEGISLATION	PURPOSE
	Licence (WUL) under the Section 21 (c) and Section 21 (i) of the NWA. The need for a Water Use Licence will be determined in the EIA Phase.
<b>Promotion of Access to Information Act (Act 2 of 2000)</b>	To give effect to the constitutional right of access to any information held by the State and any information that is held by another person.
<b>Promotion of Administrative Justice Act (Act 3 of 2000)</b>	To give effect to the right to administrative action that is lawful, reasonable and to written reasons for administrative action as contemplated in section 33 of the Constitution.
<b>Skills Development Act (Act No 97 of 1998)</b>	To provide an institutional framework to devise and implement national, sector and workplace strategies to develop and improve the skills of the South African workforce; to integrate those strategies within the National Qualifications Framework contemplated in the South African Qualifications Authority Act, 1995; to provide for learnerships that lead to recognised occupational qualifications; to provide for the financing of skills development by means of a levy-grant scheme and a National Skills Fund; to provide for and regulate employment services; and to provide for matters connected therewith
<b>Spatial Planning and Land Use Management Act (Act No 16 of 2013)</b>	To provide a framework for spatial planning and land use management in the Republic; to specify the relationship between the spatial planning and the land use management system and other kinds of planning; to provide for the inclusive, developmental, equitable and efficient spatial planning at the different spheres of government; to provide a framework for the monitoring, coordination and review of the spatial planning and land use management system; to provide a framework for policies, principles, norms and standards for spatial development planning and land use management; to address past spatial and regulatory imbalances; to promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land use decisions and development applications; to provide for the establishment, functions and operations of Municipal Planning Tribunals; to provide for the facilitation and enforcement of land use and development measures; and to provide for matters connected therewith.
<b>Subdivision of Agricultural Land Act (Act 70 of 1970) as amended</b>	To control the subdivision, and in connection therewith, the use of Agricultural land.

### 7.1.1.2 Other Applicable Legislation

Other applicable national legislation that may apply to the proposed project include:

- Electricity Act (Act 41 of 1987)
- Electricity Regulations Amendments (August 2009)
- Energy Efficiency Strategy of the Republic of South Africa (Department of Integrated Resource Plan for Electricity (IRP) (GN R400, 06 May 2011)
- Fencing Act (Act 31 of 1963)
- Minerals and Energy (DME) now operating as Department of Mineral Resources (DMR), March, 2005)
- National Road Traffic Act (Act 93 of 1996).
- Occupational Health and Safety Act (Act 85 of 1993), as amended by Occupational Health and Safety Amendment (Act 181 of 1993)
- Promotion of Administrative Justice Act (Act 2 of 2000)

### 7.1.2 PROVINCIAL

The ***Limpopo Development Plan (LDP) 2015–2019*** builds on the foundations of the ***Limpopo Economic Growth and Development Plan (LEGDP) 2009-2014*** and the ***Limpopo Provincial Growth and Development Strategy (PGDS) 2004-2008*** and built on the **National Development Plan (NDP)**. These strategies were reviewed, in order to maintain positive momentum for development and to overcome shortcomings that were revealed during their implementation cycles.<sup>23</sup>

According to the LDP, mining is the dominant sector in the Limpopo provincial economy, contributing almost 29% to the value of total production. Mining has become considerably more significant during the past 12 years, mainly due to new platinum mining developments. It is anticipated that the mining sector could become even more dominant in the production structure of the Limpopo provincial economy in the foreseeable future. By contrast, the relative contributions of manufacturing, as well as trade and tourism have declined.

It is also stated that the implication for the Limpopo Development Plan is that, in addition to the two envisaged Special Economic Zones (SEZs), specific manufacturing clusters for appropriate industrial value-chains should be identified to enable the manufacturing sector in Limpopo to be more competitive nationally.

Although the mining development potential presents valuable growth, cluster promotion and employment opportunities within the province, it is just as important to promote diversification and multi-skilling of the workforce, in order to mitigate the risks of shocks associated with commodity price dips and mine closures.

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<sup>23</sup> Limpopo Provincial Government (2015) Limpopo Development Plan (LDP) Summary

### 7.1.2.1 Local Planning

A municipal ***Integrated Development Plan (IDP)*** is the principal strategic planning instrument which guides and informs all planning, budgeting, management and decision-making processes of a municipality. The IDP is a legislative requirement and has legal status as outlined in Section 26(e) of the Municipal Systems Act, and is the municipality's primary strategic plan guiding development and municipal expenditure. This framework is rolled out into planning statements covering the five-year objectives, key performance indicators and targets for implementation which directly inform the ***Service Delivery and Budget Implementation Plan***. The whole process was structured around supporting and working toward contributing to the achievement of the programmes set in the GDS 2055.

The ***Spatial Development Framework (SDF)*** is an integral component of a municipality's IDP. The SDF is required in order to give spatial direction to the strategic and development objectives of the IDP and by shaping where and how investment takes place in space. Consequently, it forms the primary strategic tool within the municipality's ***Land Use Management Scheme (LUMS)***.

***Section 26(e) of the Municipal Systems Act*** requires all municipalities to compile a Spatial Development Framework (SDF) as a core component of Integrated Development Plans (IDP).

The SEZ will fall across the jurisdiction of both Musina Local Municipality and Makhado Local Municipality.

Spatial Planning and Land Use Management are governed by the Municipal Systems Act, 2000 (Act 32 of 2000) (MSA), and the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) (SPLUMA). Accordingly, municipalities (as the principal authority responsible for land-use management and spatial planning at the local level/area) must ensure that land development within the area of jurisdiction adheres to the principles outlined in the Act.

Development Principles (in terms of Section 7 of SPLUMA) apply to spatial planning, land development and land-use management:

- The principle of spatial justice
- The principle of spatial sustainability
- The principle of efficiency
- The principle of spatial resilience, whereby flexibility in spatial plans, policies and land-use management systems are accommodated to ensure sustainable livelihoods in communities most likely to suffer the impacts of economic and environmental shock; and
- The principle of good administration.

### 7.1.2.2 The Principle of Spatial Justice

**'Past spatial and other development imbalances must be addressed through improved access to and use of land.'**

The principle of spatial justice is appropriate to the township establishment for a part of the Musina-Makhado SEZ southern site, in the following ways:

- Past spatial and other development imbalances are redressed through access to and use of land – creating job opportunities and attracting investment to provide a better quality of life for the people.
- Development and investment should be managed to ensure an integrated development that is able to contribute to spatial transformation. The development of an SEZ will be a significant investment for the area, and will stimulate future growth opportunities related to industrial development.
- The proposed development of the Musina-Makhado SEZ southern site will enable land to be used in an improved way and will contribute directly by creating opportunities for all.

#### **7.1.2.3 The Principle of Sustainability**

**‘The principle of sustainability requires the sustainable management and use of the resources making up the natural and built environment.’**

The forthcoming SEZ in Musina will be focusing on hard infrastructure by planning and implementing both below and above ground infrastructure.

It is essential for the development to function in a sustainable manner so as to preserve and better manage resources and to minimise the harmful effects of industries on the surrounding environment.

The SEZ will make use of green technology and green infrastructure that will reduce emissions, conserve water, reduce waste and consume less energy, resulting in a reduced level of impact on the environment.

The clustering of the different industries and other relevant land uses on the subject property will help to meet sustainability goals such as sharing of resources and reducing waste, maintaining activity and leading to economic efficiency, which will in turn, ensure that the space is developed to its full potential at an optimal location.

The valuable resources which will be extracted from the mines in the area and the equipment that will be manufactured within the SEZ will supply the mines and industries in the surrounding area, allowing more efficient use and distribution of resources, rather than directly exporting these resources.

#### **7.1.2.4 The Principle of Efficiency**

**‘The principle of efficiency requires that the desired result of land use must be produced with the minimum expenditure of resources.’**

Although the Musina Spatial Development Framework, 2014/2015 does not make mention of the Musina-Makhado SEZ southern site, due to its outdatedness. However, the SDF does indicate that due to the location of the Municipality as a



gateway to other African states, Musina Local Municipality has been afforded the opportunity or status of a Special Economic Zones (SEZ) in order to enhance and accelerate economic growth within the region through industrial development and agro-processing as well as manufacturing.

As mentioned above the clustering of industries and other land uses on the subject property will lead to improved efficiency as minerals that are being mined can be beneficiated in close proximity to their sources.

#### **7.1.2.5 Spatial Resilience**

**‘Securing communities and livelihoods from spatial dimensions of socio-economic and environmental shock through mitigation and adaptability that is accommodated by flexibility in spatial plans, policy and land use management systems.’**

The Musina Local Municipality has an unemployment rate of 18.7% (StatsSA, 2011). The Musina-Makhado SEZ southern site as a potential job provider for the surrounding marginalised areas is recognised. The development of an SEZ will create temporary (during the construction phase) and permanent (operational phase) job opportunities. The improved level of service delivery that will be created by the SEZ can potentially attract investment promoting the investment confidence of the area.

More specifically, the proposed Musina-Makhado SEZ southern site will be developed to:

- Support local economic development,
- Create jobs and contribute to the National GDP,
- Facilitate the creation of an industrial complex,
- Develop infrastructure required to support the development of targeted industrial activities,
- Attract foreign and domestic direct investment,
- Provide the location for the establishment of targeted investments;
- Enable the beneficiation of mineral and natural resources;
- Take advantage of existing industrial and technological capacity,
- Promote integration with local industry and increasing value-added production,
- Promote regional development,
- Create decent work and other economic and social benefits in the region in which it is located, including the broadening of economic participation by promoting small, micro and medium enterprises and co-operatives, and
- Promote skills development and technology transfer.

#### **7.1.2.6 Good Administration**

**‘All spheres of government must ensure an integrated approach to land use and land development and all departments must provide their sector inputs and**

comply with prescribed requirements during the preparation or amendment of SDFs.'

A key part of this application is to ensure that the rights applied for are in place through good administrative practice. The application submitted addresses all salient aspects through:

- Initial consultation with relevant officials
- Advertisement allowing for a transparent process and public comment
- Addressing all relevant technical aspects to enable evaluation and approval of this application by sector departments and stakeholders. The Musina-Makhado SEZ is one of ten SEZs announced by the Minister of Trade and Industry (DTI). Its establishment is driven by the projected outlook for logistics and cross border transport as well as the potential downstream and upstream beneficiation of mineral resources such as diamonds and coking coal, endowed in Musina itself and its neighbouring areas. This is aligned with the IPAP 2016/17, which makes provision for SEZs as important instruments to support long-term industrial and economic development. This will have a direct impact on employment and economic growth, as well as attract foreign direct investment. As required by Chapter 7 of the National Development Plan, the Musina-Makhado SEZ will also expand trade and investment for the country.

#### **7.1.2.7 Musina Local Municipality**

According to the ***Musina Spatial Development Framework (SDF) 2014/15 review***, industrial development in South Africa is a crucial priority as it is understood to be the key to economic prosperity and success. It is required that the country creates and sustains economic opportunities in all its regions.

The SDF makes provision for the re-development of the Musina Central Business District which at present is challenged by congestion, informality and urban decay. It is proposed to formalise activities, upgrade the National Road (N1) and apply more law enforcement as well as maintenance of services, upgrading and renovation of the existing buildings in the Central Business District (CBD).

The SDF also makes provision for the Mutasshi Special Economic Zone, which consists of the following two SEZs:

- Beit-Bridge Gateway Economic Zone (situated at the border post) or Antonville Site
- Musina Special Economic Zone.

The Musina SDF is currently being revised to address the southern site of the Musina-Makhado SEZ southern site as part of the municipal spatial framework and strategy in terms of the ***Spatial Planning and Land Use Management (Act 16 of 2013) (SPLUMA)***. Accordingly, municipalities (as the principle authority responsible for land use management and spatial planning at the local area) must

ensure that land development within the area of jurisdiction adheres to the principles outlined in the Act.

#### 7.1.2.8 Makhado Local Municipality

According to the *Makhado Spatial Development Framework, 2011*, areas such as Makhado town are located along the Trans Limpopo Spatial Development Initiative (SDI), creating an opportunity for economic development, whilst very little attention is given to the vast rural areas. However, it is indeed acknowledged that the rural areas consist in many instances of dormitory towns with land in between which are used for farming purposes.

Areas with mining potential is highlighted in the SDF, however it is stated that due to the locality of the coal field between areas with agricultural activities and areas of biodiversity protection, **great care should be taken in ensuring sustainability of the latter uses/activities. Development of mining activities should not prejudice any of the other land uses earmarked for this area, nor should it encroach on agricultural land and environmental protection areas.**

It is also proposed that the bulk of industrial uses, especially noxious industrial uses contemplated in Schedule 1 of the Makhado Land-Use Scheme, 2009 as well as manufacturing etc., **mainly be located in the Provincial Growth Point and secondly in the District Growth Point. It is further proposed that it should be permitted in specific industrial townships or industrial clusters only.** No specific reference to the proposed Musina-Makhado SEZ southern site is made in the Makhado SDF. The SDF should therefore be revised to address the Musina-Makhado SEZ southern site as part of the municipal spatial framework and strategy in terms of the *Spatial Planning and Land Use Management (Act 16 of 2013) (SPLUMA)*. Accordingly, municipalities (as the principle authority responsible for land use management and spatial planning at the local area) must ensure that land development within the area of jurisdiction adheres to the principles outlined in the Act.

#### 7.1.3 POLICIES, PLANS AND PROGRAMMES

In terms of the Musina-Makhado SEZ southern site development, the Limpopo Economic Development Agency (LEDA) will have to demonstrate how it will ensure that the identified priority policies, plans and programmes comply with the environmental management principles for sustainable development outlined in Section 2 of NEMA, and with any national norms and standards set by departments with a mandate for environmental management.

There are two important and relevant principles set out in Chapter 1 of NEMA as follows:

- a) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

- b) Development must be socially, environmentally and economically sustainable.

The table below provides a description of policies, plans and programmes that may significantly affect the environment.

**Table 7-4: Policies, Plans and Programmes based on the Limpopo Environmental Implementation Plan<sup>24</sup>**

POLICY, PLAN OR PROGRAMME	RELEVANT NORMS AND STANDARDS, AND GUIDELINES	HOW THE LEDET ENSURE IMPLEMENTATION OF THE ENVIRONMENTAL IMPLEMENTATION PLAN (EIP)	CONSULTATIVE FORUM ESTABLISHED
<b>Limpopo Development Plan</b>			
<b>Limpopo Employment, Growth and Development Plan (LEGDP)</b>	Medium Term Strategic Framework	There is a commitment on Environmental Sustainability (according to NEMA) for all developments that should happen in the province	Provincial Development Planning Forum
<b>Provincial Integrated Waste Management Plan</b>	National Waste Management Strategy; National norms and standards <ul style="list-style-type: none"> <li>Assessment of waste for landfill disposal</li> <li>Disposal of waste to landfill</li> <li>Storage of waste</li> </ul>	The norms and standards are based on NEMA principles; therefore, alignment ensures compliance to NEMA principles.	
<b>Limpopo State of Environment Report 2006</b>	National Strategy for Sustainable Development (NSSD)	By virtue of being aligned to NSSD, the NEMA principles are already incorporated	
<b>Limpopo 2nd Edition EIP (Environmental Impact Policy) 2015–2020</b>	EIP/EMP guidelines	NEMA principles are core to the EIP / EMP development guidelines	Limpopo Environmental Management Forum
<b>Limpopo Conservation Plan 2013</b>	National norms and standards published under NEMBA: <ul style="list-style-type: none"> <li>Biodiversity</li> </ul>	The norms and standards for the development of the Limpopo Conservation	

<sup>24</sup> Limpopo Environmental Implementation Plan 2<sup>nd</sup> Edition 2015-2020.

POLICY, PLAN OR PROGRAMME	RELEVANT NORMS AND STANDARDS, AND GUIDELINES	HOW THE LEDET ENSURE IMPLEMENTATION OF THE ENVIRONMENTAL IMPLEMENTATION PLAN (EIP)	CONSULTATIVE FORUM ESTABLISHED
	management plans for ecosystems <ul style="list-style-type: none"> <li>Biodiversity management plans for species</li> </ul>	Plan are founded on NEMA principles; therefore, alignment ensures compliance to NEMA principles.	
<b>Climate Change Management / Response Strategy</b>	National Norms and Standards of Air Quality Monitoring in South Africa	The Norms and standards are founded on NEMA principles; therefore, alignment ensures compliance to NEMA principles.	
<b>Limpopo Air Quality Management Plan</b>	National Air Quality Management Framework in South Africa (2012) National Norms and Standards of Air Quality Monitoring in South Africa	The norms and standards are founded on NEMA principles; therefore, alignment ensures compliance to NEMA principles.	

#### 7.1.3.1 Limpopo Environmental Implementation Plan key objectives<sup>25</sup>

In relation to the policies, plans and programmes, one of the key focus areas relates to planning for Integrated Environmental Management (IEM) in terms of significant environmental issues and impacts in Limpopo.

The table below outlines one of the focus areas in terms of the NEMA principles and compliance thereof in respect of planning for Integrated Environmental Management by an applicant / developer.

**Table 7-5: NEMA Principles and Compliance thereof in respect of planning<sup>26</sup>**

NEMA PRINCIPLE	COMPLIANCE TO RELEVANT NEMA PRINCIPLES BY AN APPLICANT / DEVELOPER
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<sup>25</sup> Limpopo Environmental Implementation Plan 2<sup>nd</sup> Edition 2015-2020.

<sup>26</sup> Limpopo Environmental Implementation Plan 2<sup>nd</sup> Edition 2015-2020.

NEMA PRINCIPLE	COMPLIANCE TO RELEVANT NEMA PRINCIPLES BY AN APPLICANT / DEVELOPER
<b>Sustainable development</b>	<ul style="list-style-type: none"> <li>• EIA process requires developer to proof ecological, social and economic sustainability.</li> <li>• SPLUMA requires developer to address sustainability to some extent e.g. water and sewerage.</li> <li>• National Water Act (NWA) requires in stream Flow Requirements (IFR) to determine sustainable water supply in the long term.</li> <li>• Although IEM is implemented to some extent to determine the best land use option to ensure sustainable development in the long term, some projects are environmentally sustainable due to a result of short-term social and economic pressure.</li> </ul>
<b>Integration of environmental consideration into decision-making</b>	<ul style="list-style-type: none"> <li>• EIA Process requires this and this therefore implies for all listed activities in terms of the EIA Regulation, 2014 (as amended). SPLUMA also an Environmental impacts Study for all proposed developments. NWA requires In-stream Flow Requirements (IFRs).</li> <li>• Environmental consideration is still regarded a priority issue during decision-making for strategic planning and activities not regulated by laws, e.g. Municipal System act 32 of 2000 (environment not included in S26-IDP).</li> </ul>
<b>Participation, employment and transparency</b>	<ul style="list-style-type: none"> <li>• Communities at large are not adequately involved in the strategic planning.</li> <li>• EIA Process ensures public involvement in the undertaking of listed activities</li> <li>• SPLUMA process also requires public consultation for all proposed development and change in zoning. Water catchments agencies include public organisation.</li> </ul>
<b>Environmental justice</b>	<ul style="list-style-type: none"> <li>• Interested and affected parties must contribute towards the EIA process before and can appeal after decision-making. Development tribunal ensures that interested and affected parties can voice their concern to multidisciplinary team Strategic Environmental Assessment (SEAs), Sustainable Development Indicator (SDI) and Land Development Objective (LDO) are developed with input from the public.</li> <li>• Other planning instruments, especially strategically one should address this as well.</li> </ul>



NEMA PRINCIPLE	COMPLIANCE TO RELEVANT NEMA PRINCIPLES BY AN APPLICANT / DEVELOPER
<b>Ecological integrity</b>	<ul style="list-style-type: none"> <li>• Concept is well addressed during SEA and EIA process and application in terms of SPLUMA. National Water Act, 1998 (Act 36 of 1998) addresses it well in terms of ecological reserves and requires the proper management of stream flow reduction activities (e.g. plantation). Water quality also needs to be addressed for new and existing developments. Mineral and Petroleum Development Act addressed in terms of Environmental Management Programmes (EMPRs). Lacking in other planning instruments.</li> </ul>
<b>Cooperative governance</b>	<ul style="list-style-type: none"> <li>• EIA process and SPLUMA application involves all relevant government departments in the decision-making process. EMPRs for prospecting and mining requires comments from relative department. Water use licensing also requires inputs from relevant department before decision-making.</li> <li>• Provincial Development Planning Forum (PDPF) with proper mandate and clear guidance on decision-making powers will ensure that this principle is implemented at ground level for all programmes and projects.</li> </ul>

#### 7.1.4 INTERNATIONAL FINANCE CORPORATION PERFORMANCE STANDARDS

In order to promote responsible environmental stewardship and socially responsible development, the proposed Atlantis Gas-to-Power project will, as far as practicable, incorporate the environmental and social policies of the International Finance Corporation (IFC). These policies provide a frame of reference for lending institutions to review of environmental and social risks of projects, particularly those undertaken in developing countries.

Through the Equator Principles, the IFC's standards are now recognised as international best practice in project finance. The IFC screening process categorises projects into A, B or C in order to indicate relative degrees of environmental and social risk. The categories are:

- Category A - Projects expected to have significant adverse social and/or environmental impacts that are diverse, irreversible, or unprecedented.
- Category B - Projects expected to have limited adverse social and/or environmental impacts that can be readily addressed through mitigation measures.
- Category C - Projects expected to have minimal or no adverse impacts, including certain financial intermediary projects.

Accordingly, projects such as the proposed Atlantis Gas-to-Power project are categorised as Category B projects. The EA Process for Category B projects examines the project's potential negative and positive environmental impacts and compares them with those of feasible alternatives (including the 'without project'

scenario). As required for Category B projects a Scoping and EIA Process is being undertaken.

Other Acts, standards and/or guidelines which may also be applicable will be reviewed in more detail as part of the specialist studies to be conducted for the EIA.

## 8 PLANNING AND DESIGN PHASE

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
			MONITORING METHODS	PERFORMANCE INDICATORS
8.1 TIMING AND DOCUMENTATION				
Construction Activities	<ul style="list-style-type: none"><li>It is preferable that construction takes place during the dry season (if possible) to reduce the erosion potential of the exposed surfaces and during low flows of the channelled valley bottom wetland.</li></ul>	LEDA, Contractor	Internal audit, construction schedules and contractor appointments.	Construction is carried out during dry season.
Environmental management for construction.	<ul style="list-style-type: none"><li>Appoint a suitably experienced ECO before commencement of any land clearing or construction activities to ensure that the mitigation measures and recommendations are implemented and to ensure compliance with the EMPr.</li></ul>	LEDA	Internal audit	Appointment of ECO
EMPr to be updated with Environmental Authorisation conditions.	<ul style="list-style-type: none"><li>All additional mitigation measures specified by the DEA should be incorporated into the EMPr.</li></ul>	LEDA, ECO	EMPr Review	All environmental authorisation conditions are incorporated into EMPr

MANAGEMENT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>Include the EMPr in all Contractors' tender documents to ensure that sufficient resources are allocated to environmental management by the Contractors.</li> </ul>	LEDA	Internal audit	EMPr in tender documents

## 9 PRE-CONSTRUCTION ACTIVITIES

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
			MONITORING METHODS	PERFORMANCE INDICATORS

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
9.1 ENVIRONMENTAL AWARENESS TRAINING				
Employees knowledge of environmentally sensitive areas and required conduct	<ul style="list-style-type: none"><li>• All construction personnel and employees should undergo environmental awareness training prior to site clearance. Topics should include:</li><li>• What is the environment</li><li>• What are wetlands</li><li>• Why wetlands need to be protected</li><li>• The regulatory implications of detrimental actions to the environment</li><li>• How the proposed construction can impact on the environment</li><li>• Measures to mitigate against environmental impacts</li><li>• Awareness of emergency spill procedures</li><li>• Labourers have the right to refuse to do work which is detrimental to their health or the environment.</li></ul>	ECO, Contractor, Resident Engineer	Training Records	Construction personnel and employees are environmentally aware, no damage to environmentally sensitive areas.



MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
9.2 SITE CLEARANCE				
Vegetation clearance	<ul style="list-style-type: none"><li>• A method statement should be submitted to the Resident Engineer and the ECO for approval before site clearance takes place.</li><li>• Construction areas should be clearly demarcated on site to minimise clearance outside the construction footprint.</li><li>• ‘No-go’ areas should be clearly demarcated and staff made aware of these areas.</li><li>• A photographic record should be made of the site prior to site clearance.</li></ul>	Contractor, ECO, Resident Engineer	Visual Inspections, ECO Audits	<ul style="list-style-type: none"><li>• Method statements in place,</li><li>• Clear demarcation of construction footprint</li><li>• Clear demarcation of no-go areas</li><li>• Photographic records kept on file</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
9.3 SITE CAMP				
<ul style="list-style-type: none"><li>Site camp establishment</li></ul>	<ul style="list-style-type: none"><li>The site camp location must be approved by the ECO before set up. It should on areas of low ecological sensitivity.</li><li>Contractor will be responsible for the drainage of stormwater and the prevention of water ponding through the use of suitable measures approved by the ECO.</li><li>Shade cloth should be used to conceal site camp activities and reduce visual impacts experienced by surrounding residents.</li><li>Adequate sanitary facilities and ablutions must be provided for all personnel.</li><li>Chemical toilets should be serviced regularly.</li></ul>	<ul style="list-style-type: none"><li>ECO, Contractor, Resident Engineer</li></ul>	<ul style="list-style-type: none"><li>Visual Inspections, ECO Audit</li></ul>	<ul style="list-style-type: none"><li>Site camp location approved by ECO before site camp establishment.</li><li>Site camp storm water drainage systems in place.</li><li>Shade cloth placed around site camp.</li><li>Provision made for ablution facilities.</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
9.4 VEGETATION CLEARANCE				
Loss of terrestrial fauna	<ul style="list-style-type: none"><li>• The intentional killing of any animals including snakes, frogs, hedgehog or other animals should be prohibited.</li><li>• If sensitive species like hedgehogs are encountered during clearance activities, clearance should temporarily cease and an ecologist should be commissioned to perform an assessment and to potentially relocate the animals to elsewhere on the site.</li></ul>	Contractor, ECO	Visual Inspections, ECO Audits	<ul style="list-style-type: none"><li>• No killing of animals on site</li><li>• Successful rescue and relocation of terrestrial faunal species</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
Loss of flora species	<ul style="list-style-type: none"> <li>Avoidance of further impacts on the partially modified habitat unit situated in the northern portion of the project area.</li> <li>Compilation of and implementation of an alien vegetation management plan for the site.</li> <li>An independent ECO should be appointed to oversee site clearance.</li> <li>Vegetation should be cleared in a phased approach, minimising the extent of exposed areas. It is recommended that sparsely vegetated areas be cleared first, with the densely-vegetated areas being cleared last.</li> <li>No open fires should be permitted on site.</li> </ul>	LEDA, ECO, Resident Engineer	ECO Audits	<ul style="list-style-type: none"> <li>No ecological impacts on habitat unit to the north</li> <li>Alien vegetation management plan implemented</li> <li>ECO present during site clearance.</li> <li>No excessive clearance of vegetation.</li> <li>No open fires on site.</li> </ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
9.5 SOIL MANAGEMENT				
Soil management: Topsoil	<ul style="list-style-type: none"><li>In all areas where physical disturbance of soil will take place, topsoil should be removed and stored in an adequately protected manner.</li><li>The height of topsoil stockpiles must not exceed 2 m</li><li>Stockpiles should be located away from storm water drainage channels.</li></ul>	ECO, Contractor, Resident Engineer	ECO Audits, Visual Inspections	<ul style="list-style-type: none"><li>Topsoil stockpiles do not exceed 2 m</li><li>No erosion channels observed on stockpiles</li></ul>
Soil management: Subsoil	<ul style="list-style-type: none"><li>Subsoil should be removed and stored separately from topsoil, adequately protected for use for rehabilitation.</li></ul>	Contractor	ECO Audits, Visual Inspections	<ul style="list-style-type: none"><li>Subsoil stockpiles stored separately from topsoil stockpiles.</li><li>No erosion channels observed on stockpiles</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
9.6 SOIL EROSION				
The removal of vegetation will expose soils which will be susceptible to erosion.	<ul style="list-style-type: none"><li>Control and prevent the development of erosion.</li><li>Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area.</li><li>Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover. The grassland can be removed as sods and re-established after construction is completed. Protect all areas susceptible to erosion (especially the sloped rocky grassland) and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.</li></ul>	Contractor	ECO Audits, Visual Inspections	<ul style="list-style-type: none"><li>No unnecessary removal of vegetation</li><li>Minimal routes created through vegetated areas.</li><li>No disturbance observed to adjoining vegetation cover.</li><li>No erosion channels observed on exposed soil.</li></ul>
9.7 ALIEN INVASIVE VEGETATION				
Alien invasive species removal	Alien invasive species, should be removed from the development footprint and immediate surrounds, prior to construction or soil disturbances.	Contractor	Visual Inspections, ECO Audits	Alien invasive species removed prior construction and any soil disturbances.



## 10 CONSTRUCTION ACTIVITIES

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
			MONITORING METHODS	PERFORMANCE INDICATORS
10.1 SITE CAMP				
Concrete Batching	<ul style="list-style-type: none"><li>All concrete and cement batching should be done on a hardened impervious surface</li></ul>	Contractor	ECO Audits, Visual Inspections	Hardened surfaces provided for all concrete batching.

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
10.2 SOIL COMPACTION				
The movement of heavy machinery over vegetated areas will result in soil compaction that will modify habitats, destroy vegetation and inhibit re-vegetation. Soil compaction as a result of vehicles and traffic, could lead to a decrease of water infiltration and an increase of water runoff. Soil compaction leads to a compaction of the soil seed bank which has a negative impact on plant seed germination.	<ul style="list-style-type: none"><li>• Vehicles and machinery may not veer from dedicated roads</li><li>• Access to construction site by heavy vehicles should be controlled so as to avoid compaction and damage to the structure of topsoil</li><li>• All compacted soil should be continuously loosened.</li></ul>	Contractor	ECO Audits	No compacted soil observed Evidence of continuous soil de-compaction
Weeded soil	<ul style="list-style-type: none"><li>• Stockpiled soil is to be maintained in a weed-free condition throughout the duration of which it will be stockpiled. All weeds should be continuously removed.</li></ul>	Contractor	ECO Audits, Visual Inspection	<ul style="list-style-type: none"><li>• No weeds observed on stockpiled soil</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
10.3 WASTE				
Solid Waste	<ul style="list-style-type: none"><li>• Solid waste should be stored in an appointed area in covered, scavenger proof, tip-proof drums. Disposal of solid waste shall be done at a licensed landfill site.</li><li>• No waste may be burned or buried at or near the project area.</li></ul>	Contractor	ECO Audits, Visual Inspections	<ul style="list-style-type: none"><li>• Covered, scavenger-proof, tip-proof drums provided for waste disposal</li><li>• No solid waste dumped on site</li><li>• No evidence of burned waste on site</li></ul>
Litter	<ul style="list-style-type: none"><li>• At all places of work, the contractor must provide scavenger proof litter collection facilities for waste disposal</li></ul>	Contractor	Visual Inspections	<ul style="list-style-type: none"><li>• All litter disposed of in scavenger proof litter collection bins</li><li>• No litter observed on site</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
<b>Hazardous Waste</b>	<ul style="list-style-type: none"> <li>Hazardous waste must be stored on a bunded surface and disposed of at an approved landfill site</li> <li>Any spillages of hazardous materials must be immediately removed and the affected areas rehabilitated to the satisfaction of the ECO</li> <li>Contaminated soil should be excavated to storage containers. Spills on impermeable surfaces should be contained using absorbent materials.</li> <li>The contractors should have spill kits available to ensure that any fuel or oil spills are cleaned-up and discarded correctly.</li> <li>Provide suitable toilet facilities which are covered, closed, ventilated and offer hand-washing facilities. One toilet per 20 workers should be provided.</li> <li>Maintain toilets in a hygienic state and remove waste to a licensed disposal facility.</li> <li>Ensure that no spillages occur when the toilets are cleaned or emptied.</li> </ul>	Contractor	ECO Audits	<ul style="list-style-type: none"> <li>Hazardous waste securely stored on a bunded surface</li> <li>No evidence of spills observed on site</li> <li>Sufficient ablution facilities provided and appropriately located</li> </ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
10.4 TRANSPORT OF MATERIALS				
Spillage and Windblown waste	<ul style="list-style-type: none"><li>Secure all loads to prevent spillage and windblown waste during transport</li></ul>	Contractor	Visual inspection by ECO during audits	<ul style="list-style-type: none"><li>Number of spillages and windblown waste along access road</li></ul>
Dust containment	<ul style="list-style-type: none"><li>Ensure haul vehicles transporting fine materials have suitable covers e.g. tarpaulins if there is any chance of dust being created during transport</li></ul>	Contractor	Visual inspection by ECO during audits	<ul style="list-style-type: none"><li>Dust plumes observed in the air along access roads</li></ul>
10.5 STORAGE				
Hazardous Material	<ul style="list-style-type: none"><li>Storage areas should be secured to prevent theft and unauthorised access</li><li>Fire prevention and spill response equipment should be provided in all hazardous material storage areas</li><li>Stored material should be on an impermeable surface</li><li>Signage should be placed in all storage areas where hazardous material is kept</li><li>Hazardous material should have a bund wall that can contain 110% of the hazardous material stored.</li></ul>	Contractor	ECO Audits	<ul style="list-style-type: none"><li>No unauthorised entry into storage areas</li><li>Impermeable surface provided for hazardous material storage areas</li><li>Hazardous material signage in place</li><li>All hazardous material securely bundled</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
10.6 HERITAGE FEATURES				
Heritage and archaeological features	<ul style="list-style-type: none"><li>Should any heritage artefacts be exposed during excavation, work on the area where the artefacts are discovered should be stopped immediately and the ECO notified as soon as possible.</li><li>All discoveries must be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made.</li><li>Under no circumstances should artefacts be removed, destroyed or interfered with by anyone on the site, and</li><li>Contractors and workers should be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the National Heritage Resources Act, 1999 (Act No. 25 of 1999).</li></ul>	Contractor, ECO	ECO Audits	<ul style="list-style-type: none"><li>No unlawful damage/removal of cultural, historical, archaeological or palaeontological artefacts</li></ul>



MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
10.7 NOISE				
Increased traffic movement and noise from construction activities will be a nuisance to surrounding residents.	<ul style="list-style-type: none"><li>Erect noise barrier and also visually eliminate view of construction from surrounding land owners.</li><li>Noise levels should be kept within acceptable limits</li><li>In the event of excessive noise, the contractor should liaise with the community on the best ways to minimise noise levels</li><li>Activities should be limited to allocated working hours</li></ul>	Contractor	Visual inspections, ECO Audits, Complaints register	<ul style="list-style-type: none"><li>Noise barrier in place</li><li>Construction activities limited to agreed working hours</li><li>No noise complaints received</li></ul>
10.8 DUST AND AIR POLLUTION CONTROL				
Dust generation	<ul style="list-style-type: none"><li>All exposed surfaces should be watered down during dry periods as required.</li><li>Excavations and related work should be undertaken during set working times.</li><li>A speed limit of 30 km/h should be enforced on all dirt roads.</li><li>Construction vehicles and equipment should be maintained in good working order to reduce excessive emissions.</li></ul>	Contractor	Visual inspections, Complaints register	<ul style="list-style-type: none"><li>No dust and hydrocarbon plumes observed on site</li><li>No complaints received related to dust</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
10.9 ACCESS AND TRAFFIC				
Temporary access routes	<ul style="list-style-type: none"><li>Temporal internal access routes should be discussed and approved by the ECO</li><li>Temporal internal access routes should be rehabilitated immediately after use</li></ul>	Contractor, ECO	ECO Audits	<ul style="list-style-type: none"><li>Temporal access routes approved by ECO</li><li>Speed Limits strictly adhered to</li><li>All temporal access routes monitored and rehabilitated after use</li></ul>
10.10 SAFETY AND SECURITY				
Personal Protective Equipment	<ul style="list-style-type: none"><li>Enforce the use of appropriate personal protective equipment (PPE) at all times</li></ul>	Contractor	Internal Contractor audits,	<ul style="list-style-type: none"><li>All workers in required PPE</li></ul>

## 11 REHABILITATION ACTIVITIES

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
			MONITORING METHODS	PERFORMANCE INDICATORS
11.1 SOIL				
Soil Compaction	<ul style="list-style-type: none"><li>Once construction is complete, obsolete roads should be obliterated by breaking the surface crust to prevent erosion, while the natural species composition should be re-established.</li></ul>	Contractor, LEDA	Visual Inspections, ECO audits	Re-establishment of natural species
11.2 CONTAMINANTS				
Removal of contaminants	<ul style="list-style-type: none"><li>All building rubble and litter should be removed from the site and disposed of at a licensed waste disposal site.</li><li>Areas cleared of solid waste should be graded and if required, re-vegetated.</li></ul>	Contractor, LEDA, ECO	Visual inspections, ECO Audits	<ul style="list-style-type: none"><li>All building rubble removed from the site.</li><li>Cleared areas graded and re-vegetated.</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
11.3 EROSION				
Erosion Prevention	<ul style="list-style-type: none"><li>Stormwater should be managed to divert flows and reduce run-off velocities</li><li>Cleared areas must be stabilised to prevent erosion. Slopes should be stabilised using vegetation. Endemic plant species should be used.</li></ul>	Contractor, LEDA, ECO	Visual inspections, ECO Audits	Cleared areas stabilised with vegetation
11.4 TOPOGRAPHY				
Restoration of topography to a more natural state	<ul style="list-style-type: none"><li>All backfilled excavations should be reshaped mechanically, but avoid soil compaction at surface</li><li>Slopes must be re-shaped to a low gradient and these areas re-vegetated</li><li>Compacted soils should be ripped to a depth of 300 mm</li></ul>	Contractor	Visual inspections, ECO Audits	<ul style="list-style-type: none"><li>Slopes re-shaped and re-vegetated.</li><li>Compacted soils de-compacted</li></ul>

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
11.5 HABITAT AND BIODIVERSITY VALUE				
Increase habitat and biodiversity Value	Conduct an alien vegetation removal programme Implement removal techniques as required for the relevant plant species. It is preferable that mechanised methods be adopted in preference to chemical removal techniques. Plants selected for re-vegetation must include endemic species	Contractor, LEDA, ECO	Visual inspections, ECO Audits	<ul style="list-style-type: none"><li>• Alien vegetation removal programme in place</li><li>• Endemic species used in rehabilitation</li></ul>

## 12 OPERATIONAL ACTIVITIES

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
			MONITORING METHODS	PERFORMANCE INDICATORS
12.1 FROGS				
Frog killings	<ul style="list-style-type: none"><li>Once construction is complete, it is unlikely that frogs will enter the infrastructure development area, especially bullfrogs. However, in the event of stochastic migrations, a herpetologist should be employed to facilitate the relocation of individual frogs.</li></ul>	LEDA	Visual Inspections	Successful relocation of individual frogs

MANAGEMENT ASPECT	MITIGATION MEASURE/PROCEDURE	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
12.2 LIGHTING				
Visual nuisance	<ul style="list-style-type: none"><li>Lighting on site should be set out to provide maximum security and to enable easier patrol of the site, without creating a visual nuisance to neighbouring properties</li><li>Outdoor lighting should be directed downwards, floodlighting should be kept to a minimum and away from oncoming traffic and nearby houses</li></ul>	LEDA	Visual Inspections	Lighting does not create a visual nuisance to neighbouring properties
12.3 NOISE				
Noise generation	<ul style="list-style-type: none"><li>No amplified music should be allowed other than in emergency situations</li><li>Internal and external speed limits should be strictly enforced and adhered to</li><li>All ventilation outlets should be adequately attenuated</li><li>All air intakes should be fitted attenuators</li></ul>	LEDA	Complaints received	No noise complaints received from surrounding residents



## 13 SPECIALIST RECOMMENDATIONS AND MITIGATION MEASURES

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
			MONITORING METHODS	PERFORMANCE INDICATORS
13.1 HERITAGE				
Construction Phase	<ul style="list-style-type: none"><li>A suitably-qualified archaeologist must undertake a walk-down of the final Project layout, where such areas were not included in the EIA assessment;</li><li>Where possible, LEDA should amend the infrastructure design to avoid identified heritage resources of significance within the Project area and incorporate a no-go buffer zone of 50m between the heritage resources and Project activities;</li><li>Where identified heritage resources are avoided, LEDA must develop and implement a Conservation Management Plan (CMP) to manage conserved heritage resources. The CMP must include any applicable mitigation measures, management strategies and proposed monitoring schedules and outline the roles and responsibilities of those involved. This document must be submitted to the</li><li>Heritage Resources Authorities (HRAs) for approval prior to implementation;</li><li>LEDA amends the Project design to avoid</li></ul>	LEDA	1) Avoidance/Preserve: This is viewed to be the primary form of mitigation. The site should be retained in situ and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Depending on the type of site, the buffer zone can vary from <ul style="list-style-type: none"><li>10 metres for a single grave or a built structure, to</li><li>50 metres where the boundaries are less obvious, e.g. a Late Iron Age site.</li></ul> (2) Archaeological investigation: This option can be implemented with additional design and construction inputs.	<ul style="list-style-type: none"><li>Heritage resources preserved / avoided</li><li>No damage or impact to heritage resources</li><li>Positive internal and external compliance audit and inspection results / outcomes</li><li>No fines or</li></ul>
		MMSEZ		
		Contractor		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>negative impacts to the built heritage resources and, where possible, conserve the resources through adaptive reuse of the structures. This will require a permit issued in terms of Section 34 of the NHRA and Chapter III of the NHRA Regulations;</p> <ul style="list-style-type: none"> <li>Where this is not feasible or desirable, LEDA must complete a destruction permit application process in accordance with Section 34 of the NHRA and Chapter III of the NHRA Regulations;</li> <li>Where burial grounds and graves will be impacted upon by the proposed infrastructure, LEDA must undertake a GRP in accordance with Section 36 of the NHRA and Chapter IX and XI of the NHRA Regulations and obtain a permit from SAHRA;</li> <li>Where archaeological sites will be impacted upon by the proposed infrastructure, LEDA must record the sites in detail in accordance with Section 35 of the NHRA and Chapter IV of the NHRA Regulations;</li> <li>LEDA must identify rock art sites that may be affected by additional dust or other emissions generated by the Project and record these sites in sufficient detail to develop an accurate baseline that can be used to monitor changes to the integrity of the rock art. LEDA must develop and implement a monitoring programme to</li> </ul>		<p>Mitigation is to excavate the site by archaeological techniques, document the site (map and photograph) and analyse the recovered material to acceptable standards. This can only be done by a suitably qualified archaeologist.</p> <p>This option should be implemented when it is impossible to avoid impacting on an identified site or feature.</p> <p>Impacts can be beneficial e.g. mitigation contributes to knowledge.</p>	<p>legal transgressions</p>

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>identify and manage changes to the rock art;</p> <ul style="list-style-type: none"> <li>Where rock art sites are identified within the Project area, such sites must be included in the project-specific CMP;</li> <li>A project-specific Chance Find Procedure (CFP) must be developed and approved by the HRAs prior to the commencement of the construction of Project-related infrastructure;</li> <li>A project-specific Fossil Finds Procedures (FFP) must be approved prior to the commencement of the construction phase of the Project (refer to <b>Appendix A</b> of the Palaeontological (PIA) specialist report;</li> <li>Known sites should be clearly marked in order that they can be avoided during construction activities;</li> <li>The contractors and workers should be notified that archaeological sites might be exposed during the construction activities;</li> <li>Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible;</li> <li>All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>Environmental Control Officer will advise the necessary actions to be taken;</p> <ul style="list-style-type: none"> <li>• Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site;</li> <li>• Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51(1);</li> <li>• A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage;</li> <li>• Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above;</li> <li>• In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
13.2 VISUAL				
Construction phase	<ul style="list-style-type: none"> <li>Paint all structures with colours that reflect and complement the colours of the surrounding landscape. To further reduce the potential of glare, the external surfaces of structures should be articulated or textured to create interplay of light and shade. Avoid pure white and black colours;</li> <li>Lighting, security and construction lighting should, as far as possible, only be focused on temporary structures and construction works;</li> <li>Careful planning and consideration in terms of lighting apparatus at night and the use of shiny materials on the roofs of the proposed development to minimise during the daytime to prevent glare;</li> <li>As far as possible, install light fixtures that provide precisely directed illumination to reduce light “spillage” beyond the immediate surrounds of the development;</li> <li>Avoid high pole top security lighting along the periphery of the site and use only lights that are activated on illegal entry to the site;</li> <li>Minimise the number of light fixtures to the bare minimum, including security lighting;</li> <li>Minimum amounts of existing vegetation and topsoil should be removed;</li> </ul>	LEDA  MMSEZ  Contractor	<ul style="list-style-type: none"> <li>Visual Inspections and planning methods</li> <li>Consultation with landscape architect</li> </ul>	Lighting should not create a visual nuisance to neighbouring properties or area  <

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>• Ensure, wherever possible, natural indigenous vegetation is retained and incorporated into the site rehabilitation;</li> <li>• Ensure a 50m buffer of existing vegetation is maintained along the boundary of the project site;</li> <li>• All topsoil within the proposed activity footprints must be removed and stockpiled for later use when areas that have been disturbed must be rehabilitated;</li> <li>• Where required, use dust suppression techniques during all phases of the project, such as regular wetting and/or the use of non-polluting chemicals that will retain moisture in the road surface;</li> <li>• Any soil must be exposed for the minimum time possible once cleared of vegetation to avoid prolonged exposure to wind and water erosion and to minimise dust generation;</li> <li>• The placement of construction camps as well as a site plan of the construction camp indicating waste areas, storage areas and placement of ablution facilities should either be screened or positioned in areas where they would be less visible from farmsteads/game farms and main roads;</li> <li>• Construction activities should be limited to between 08:00 and 17:00 or in conjunction with</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>the ECO;</p> <ul style="list-style-type: none"> <li>• The presence of degraded areas and disused construction roads, which are not rehabilitated, will increase the overall visual impact. An ecological approach to rehabilitation, as opposed to a purely horticultural approach, should be an adopted preference;</li> <li>• Ensure effective rehabilitation of the construction camps (including temporary access roads, lay-down areas and worker camps) and all other areas affected by the construction works;</li> <li>• All cut and fill slopes and areas affected by construction work should be progressively top soiled and re-vegetated as soon as possible;</li> <li>• Cut and fill slopes should mimic the shapes and angles found in the adjacent area;</li> <li>• A complaints register should be available onsite whereby the general public or community in close connection of the proposed development can issue their concerns, if needs be;</li> <li>• Adopt responsible construction practices aimed at containing the construction activities to specifically demarcated areas;</li> <li>• Erosion control measures should be in place to avoid wind and water erosion from bare ground.</li> </ul>			



MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
<b>Closing (Rehab) Phase</b>	<ul style="list-style-type: none"> <li>Suitable indigenous tree species endemic to the area could be planted and utilised during rehabilitation, however the general veldt conditions should be left similar or minimal impacts to the area, as this will result in a better visual absorption and capacity of the area;</li> <li>Slopes should be vegetated using suitable indigenous grass species (or as specified) as this will allow blending in with the existing landscape colours;</li> </ul> <p>Rehabilitation and the general area should be vegetated using suitable indigenous grass species (or as specified in the rehabilitation plan) as this will allow the port and infrastructure to blend in with the existing landscape colours.</p>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>	Visually appealing and pleasing	<p>Rehabilitation undertaken</p> <p>Landscaped area</p> <p>Positive audit results</p> <p>Positive specialist review</p>
<b>Operational Phase</b>	<ul style="list-style-type: none"> <li>It is suggested that any new ancillary structures be built in the same style to ensure visual continuity and may also be very effectively screened with vegetation and tree lines of indigenous species;</li> <li>When vegetation is cleared for servitudes and roads, the edges of the cleared area should be irregular or curvilinear rather than straight and sharp. Irregular and curvilinear lines would blend in with the natural formation of the landscape and as a result minimise the visual impact;</li> </ul>	<p>SAPS</p> <p>Border Control</p> <p>LEDA</p> <p>MMSEZ</p>	<p>Visual inspections</p> <p>Rehabilitation and Landscaping</p>	<p>Site rehabilitated</p> <p>No litter, garbage</p> <p>Area clean and no waste in stormwater channels, onsite and dust bins covered and litter not scattered</p>

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>Waste should be managed as not to be aesthetically appealing or attract pests or rodents;</li> <li>Control of alien invasive plants with approved methods, whether physical or chemical;</li> <li>Rehabilitation and landscaping within the development should be encouraged and specified as a condition of the Environmental Authorisation;</li> <li>Clean-up and maintenance of all permanent, hardened drainage channels.</li> </ul>			
<b>13.3 FRESHWATER (AQUATIC AND WETLANDS)</b>				
<b>Monitoring Requirements (Construction Phase)</b>	<ul style="list-style-type: none"> <li>A Water Use Licence Application (WULA) to be submitted to the Department of Water and Sanitation (DWS) as the proposed activities will trigger sections of Section 21 of the National Water Act [NWA], 1998 (Act No. 36 of 1998);</li> <li>Together with the WULA, a rehabilitation and monitoring plan will have to be compiled as supporting documents to the application;</li> <li>These documents must be incorporated as part of the Environmental Management Programme (EMPr);</li> <li>No development should occur within the seasonal wet zone or buffers of any wetlands unless a water use authorisation is issued by the authority (DWS);</li> </ul>	LEDA  MMSEZ  Contractor	Wetland rehabilitated and preserved  Overall Class increased  Monitoring undertaken  Water Use License applied for  Water quality monitoring undertaken for stormwater runoff, before and after bridge structure	No adverse impacts on the wetland, wetland intact and functional  Freshwater/aquatic fauna and flora re-established  Culverts increased to allow for species movement

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>• A wetland monitoring programme should be developed based on the baseline assessment and audited against on a quarterly basis. Feedback from the monitoring should be used to measure and mitigate further negative impacts, if found;</li> <li>• Wetland monitoring occurring on a quarterly basis should be conducted by a skilled professional qualified in assessing and understanding the complex nature of wetlands and their associated drivers;</li> <li>• It should be attempted to preserve complete wetland function (current status) if at all possible;</li> <li>• Wetland drivers should be protected as far as possible. These include the hydrological, water quality and geomorphological aspects. This can be achieved by incorporation of sound civil engineering designs of any bridge structures and the stormwater attenuation system(s);</li> <li>• Wetland releases into downstream aquatic resources should be rehabilitated, enhanced and monitored through a monitoring and rehabilitation programme;</li> <li>• Water quality preservation is key. Weekly <i>in situ</i> monitoring should take place during the construction phase, following a monitoring plan;</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>Present exotic and invasive plant species should be eradicated where appropriate.</li> </ul>			
<b>Construction Phase</b>	<ul style="list-style-type: none"> <li>Mitigation for the proposed development activities should be implemented, managed and monitored according to. Freshwater ecosystem recommendations include:</li> <li>Construction should take place during the dry season to minimise runoff;</li> <li>Ensure construction activities are limited to the project footprint and that no vehicles are allowed to drive indiscriminately around the proposed Project area;</li> <li>Sequential removal of the vegetation should take place (not all vegetation immediately);</li> <li>Revegetate the construction footprint and vehicular pathways as soon as possible;</li> <li>Storm water should be diverted from construction activities and managed in such a manner to disperse runoff and prevent the concentration of storm water flow;</li> <li>Implement and maintain an alien vegetation management programme. This must be put in place so as to prevent further encroachment by invasive species as a result of disturbance to the surrounding terrestrial zones;</li> <li>Active rehabilitation, re-sloping, and re-vegetation of disturbed areas immediately after</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>construction;</p> <ul style="list-style-type: none"> <li>• Revegetate the construction footprint and vehicular pathways as soon as possible;</li> <li>• Ensure all stockpiles are within the construction footprint and ensure vehicles remain on demarcated roads;</li> <li>• Storm water should be diverted from construction activities and managed in such a manner to disperse runoff and prevent the concentration of storm water flow;</li> <li>• Construction should take place during the dry season to minimise runoff; and</li> <li>• Sequential removal of the vegetation should take place (not all vegetation immediately).</li> <li>• Runoff from the construction areas may result in contamination of wetland and downstream aquatic habitats;</li> <li>• Onsite storm water management must be implemented;</li> <li>• Last out, first in, approach for stockpiling and re-filling of soil;</li> <li>• The wetlands, if any sections are to be excavated, must be filled according to the soil profiles;</li> <li>• Prevent heavy construction vehicles moving within the wetland areas altering the soil structure sub-surface hydrology;</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>Ingress and egress must be managed to minimise impacts in respect of compaction of the wetland soils;</li> <li>Single entry and exit points must be established;</li> <li>These areas must be scarified as part of the rehabilitation plan;</li> <li>As a first option, stockpiling must be located outside the delineated wetland and buffer boundaries; As a second option, stockpiling must be located upstream of any trenches;</li> <li>The use of machinery, mixing of concrete and clearing of vegetation for construction must be controlled to minimise water pollution, sedimentation and siltation;</li> <li>The following aspects may result in reduction of ecosystem habitat integrity: <ul style="list-style-type: none"> <li>-Dust and sediment runoff from construction activities;</li> <li>-Diesel and oil spill from equipment and machinery; and</li> <li>-Higher and faster water flow from the site that could cause soil erosion.</li> </ul> </li> <li>The following aspects may result in sedimentation of the associated aquatic systems:</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>-Sedimentation due to increase runoff and dispensed soil particles and runoff from the affected areas; and</p> <p>-Increase in the velocity of the runoff from the exposed soil, due to construction.</p> <ul style="list-style-type: none"> <li>• The proposed activities must be initiated and constructed in such a way to prevent the reduction of natural water flow into the wetlands and downstream which, in essence, is the driving factor in terms of water provision;</li> <li>• An approved stormwater management plan must be implemented;</li> <li>• Subsurface drains must be installed to assist in the aquatic driver sustainability across the full width of the wetland;</li> <li>• Velocity dissipation structures (such as reno mattresses) must also be installed to prevent water flowing through culverts to gain velocity. An increase in velocity will lead to channelisation of wetlands and soil erosion;</li> <li>• Care must be taken that no pollutants such as any hydrocarbons (fuels, oil) are spilled in or near water resources and if spilled, are promptly managed using acceptable, best practice methodology;</li> <li>• Use existing ablutions or provide portable ablutions to a max of 10 people per unit. Portable ablutions should be placed &gt;32m from</li> </ul>			



MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>any water resource.</p> <ul style="list-style-type: none"> <li>• Induction awareness to be provided on freshwater resources and the need for their protection.</li> <li>• Onsite waste management and removal required, waste not to sit longer than 7 days. Bins to have lids and waste types to be separated.</li> <li>• The wetland systems sustain biodiversity and this should be considered and factored in in terms of the overall engineering design.</li> <li>• Wetland integrity should be improved during the rehabilitation phase. This may entail the following: <ul style="list-style-type: none"> <li>-Removal of alien and invasive plant species during the construction and operational phases.</li> <li>-Re-vegetation and landscaping the wetland and buffer areas with indigenous wetland plant species.</li> <li>-Stabilisation of gullies and drainage lines to prevent erosion.</li> <li>-Planting of indigenous herbaceous plants on shallow banks and indigenous woody vegetation on steep banks to increase stability of banks, thereby preventing erosion.</li> <li>-Implementation of topsoil management (stockpiling, topography shaping) and erosion control (berms, geo-textiling, silt fences, hay</li> </ul> </li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>bales and gabion structures);</p> <ul style="list-style-type: none"> <li>An appropriate dirty and clean water separation system should be in place before activities commence;</li> <li>Erosion berms should be installed on roadways and downstream of stockpiles to prevent gully formation and siltation of the freshwater resources. The following points should serve to guide the placement of erosion berms: <ul style="list-style-type: none"> <li>-Where the track has a slope of less than 2%, berms every 50m should be installed;</li> <li>-Where the track slopes between 2% and 10%, berms every 25m should be installed;</li> <li>-Where the track slopes between 10%-15%, berms every 20m should be installed;</li> <li>-Where the track has slope greater than 15%, berms every 10m should be installed.</li> </ul> </li> <li>Limit the footprint area of the construction activities to what is essential to minimise impacts as a result of vegetation clearing and compaction of soils (all areas but critically so in wetland areas);</li> <li>If it is unavoidable that any of the pans or ephemeral drainage lines present (not withstanding those already accounted for in the proposed activities) will be affected, disturbance must be minimised and suitably rehabilitated;</li> </ul>			

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	<ul style="list-style-type: none"> <li>• Ensure that no incision and canalisation of the pans and ephemeral drainage lines present takes place;</li> <li>• All erosion noted within the construction footprint should be remedied immediately and included as part of an ongoing rehabilitation plan;</li> <li>• Actively rehabilitate, re-slope, and re-vegetate disturbed areas immediately after construction;</li> <li>• All soils compacted because of construction activities should be ripped/scarified (&lt;300mm) and profiled;</li> <li>• Implement and maintain a suitable Alien Invasive Plant (AIP) control programme to prevent further encroachment because of disturbance to the surrounding terrestrial zones;</li> <li>• Permit only essential personnel within the assigned buffers for all freshwater features identified (refer to Table 5-3 for buffer widths);</li> <li>• No unnecessary crossing of the wetland features and their associated buffers should take place and the substrate conditions of the wetlands and downstream stream connectivity must be maintained;</li> <li>• No material may be dumped or stockpiled within any rivers, tributaries or drainage lines;</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>No vehicles or heavy machinery may be allowed to drive indiscriminately within any wetland or instream areas and their associated zones of regulation (notwithstanding those areas to be directly impacted upon as a result of the proposed activities). All vehicles must remain on demarcated roads and within the construction footprint;</li> <li>All vehicles must be regularly inspected for leaks;</li> <li>Re-fueling must take place at a diesel facility, on a sealed surface area away from wetlands to prevent ingress of hydrocarbons into topsoil;</li> <li>All hydrocarbon spills should be immediately cleaned up and treated accordingly;</li> <li>Wetlands should be monitored quarterly during construction;</li> <li>Appropriate sanitary facilities must be provided for the duration of the construction activities and all waste must be removed to an appropriate waste facility.</li> </ul>			
<b>Operational Phase</b>	<ul style="list-style-type: none"> <li>Appropriate storm water and waste water systems must be in place;</li> <li>Incidents of erosion should be remedied as soon as possible;</li> <li>Any pollutants should be removed to reduce contamination of the water quality. The contaminated material should then be</li> </ul>	<p>LEDA</p> <p>MMSEZ</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>discarded at the correct facility;</p> <ul style="list-style-type: none"> <li>Leak detection of the industrial plant pipelines must be done on a regular basis;</li> <li>Limit the footprint area of the operational activities to what is essential to minimise impacts as a result of any potential vegetation clearing and compaction of soils (all areas but critically so in freshwater areas);</li> <li>All areas of increased ecological sensitivity should be designated as “No-Go” areas and be off limits to all unauthorised vehicles and personnel;</li> <li>No vehicles or heavy machinery may be allowed to drive indiscriminately within any freshwater areas and their associated zones of regulation. All vehicles must remain on demarcated roads;</li> <li>All vehicles must be regularly inspected for hydrocarbon leaks;</li> <li>Re-fuelling must take place on a sealed surface area away from freshwater features to prevent ingress of hydrocarbons into topsoil;</li> <li>All hydrocarbon spills should be immediately cleaned up and treated accordingly;</li> <li>Appropriate sanitary facilities must be provided for the duration of the operational activities and all waste must be removed to an appropriate waste facility;</li> <li>Permit only essential personnel within the various zones of regulation/buffers for all</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>freshwater features identified.</p> <ul style="list-style-type: none"> <li>• Removal of IAPs, specifically with a focus on water-loving species such as. <i>Eucalyptus</i> species, which will aid in rehabilitation. These trees utilise large amounts of water and therefore impact on the hydrology of wetlands. A co-ordinated IAP removal programme should be run annually;</li> <li>• Incidents of erosion should be remedied as soon as possible to reduce deterioration of the wetland habitat;</li> <li>• Any contamination from liquid or solid pollutants should be removed to reduce contamination of the water quality. The contaminated material should then be discarded at the correct facility;</li> <li>• Limit the footprint area of the operational activities to what is essential to minimise impacts as a result of any potential vegetation clearing and compaction of soils (all areas but critically so in freshwater areas);</li> <li>• If it is unavoidable that any of the freshwater areas present will be affected, disturbance must be minimised and suitably rehabilitated;</li> <li>• Ensure that no incision and canalisation of the freshwater features present takes place because of the proposed operational activities;</li> <li>• All areas of increased ecological sensitivity should be designated as “No-Go” areas and be</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>off limits to all unauthorised vehicles and personnel;</p> <ul style="list-style-type: none"> <li>• No unnecessary crossing of the wetland features, instream areas and their associated buffers, as well as the constructed berms or canals should take place and the substrate conditions of the wetlands, instream areas and downstream stream connectivity must be maintained;</li> <li>• No vehicles or heavy machinery may be allowed to drive indiscriminately within any freshwater areas and their associated zones of regulation. All vehicles must remain on demarcated roads where possible;</li> <li>• All vehicles must be regularly inspected for leaks and drip trays should be used for vehicles that are standing for a long duration of time;</li> <li>• Re-fuelling of machinery must take place on a sealed surface area away from freshwater features to prevent ingress of hydrocarbons into topsoil;</li> <li>• All hydrocarbon spills should be immediately cleaned up and treated accordingly;</li> <li>• Appropriate sanitary facilities must be provided for the duration of the operational activities and all waste must be removed to an appropriate waste facility;</li> <li>• Monitor all systems for erosion and incision;</li> <li>• Ensure soil management programme is</li> </ul>			



MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>implemented and maintained to minimise erosion and sedimentation;</p> <ul style="list-style-type: none"> <li>All soils compacted because of construction activities should be ripped/scarified (+/- 300mm) and profiled;</li> <li>If significant rehabilitation measures are required, mitigation measures of the construction phase must be implemented;</li> <li>Permit only essential personnel within the assigned buffers for all freshwater features identified (refer to Table 5-3 in specialist report for buffer widths).</li> </ul>			
<b>13.4 TERRESTRIAL BIODIVERSITY (FLORA &amp; FAUNA)</b>				
<b>Construction Phase</b>	<ul style="list-style-type: none"> <li>During the design phase ensure that noise abatement measures are investigated and implemented to limit the noise generated by the SEZ which may have an effect on fauna;</li> <li>Conduct a protected flora and fauna species survey (search and rescue) prior to commencement and relocate species where possible or required;</li> <li>Adhere to the guidelines and permit requirements for the removal of protected species;</li> <li>Limit the vegetation disturbance to the designated areas only and the legal minimum requirement width for road and powerline servitudes is strictly adhered to. No trees /</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>	<p>-Alien plants eradicated</p> <p>-Habitats re-established after construction</p> <p>-Open space and connectivity intact</p> <p>-Corridors and pathways maintained to allow species movements</p>	<p>-Terrestrial ecosystems and habitats intact and functional</p> <p>-Fauna and flora maintained</p> <p>-Rehabilitate wilderness areas in line with the local setting (with expert knowledge)</p>

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>vegetation outside the construction area should be removed or damaged, therefore demarcate the construction footprints;</p> <ul style="list-style-type: none"> <li>• Alien invasive species should be eradicated as far as possible to minimise the spread of alien vegetation;</li> <li>• Plan the location of infrastructure in such a manner as to leave as many natural vegetation areas or individual species as possible;</li> <li>• Areas marked as sensitive should undergo limited habitat loss and fragmentation;</li> <li>• Limit the interaction of humans with the biophysical environment by ensuring that personnel remain within the demarcated areas;</li> <li>• No fires allowed on site;</li> <li>• No poaching or harvesting flora;</li> <li>• No removal of trees for firewood;</li> <li>• Exclude fauna from the site where possible using passive means such as electrification of fences;</li> <li>• No animals should be hunted, trapped, disturbed or killed. This includes nesting, breeding or other such sites possibly occurring onsite;</li> <li>• No animal shall be killed, unless an immediate threat to human health is perceived or in conjunction with the Environmental Control Officer (ECO) or specialist advice;</li> <li>• Should fauna be encountered during site</li> </ul>			-Biodiversity offset area established

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>clearance or during construction activities, earthworks shall cease immediately, until such fauna have been safely relocated. These include nesting sites or large raptors or Red Data listed species;</p> <ul style="list-style-type: none"> <li>• Feeding or leaving of food for stray or wild animals in the area is forbidden;</li> <li>• Developmental areas such as transmission lines, pipelines and roads must be either be located on previously disturbed areas or existing development corridors;</li> <li>• Ensure that dust control measures are implemented on the roads;</li> <li>• Ensure that the developmental footprint is not exceeded;</li> <li>• Ensure that noise control measures are implemented by reducing speed, ensure that exhaust systems are functioning according to manufacturer's specifications;</li> <li>• Ensure that speed limits are enforced;</li> <li>• Ensure that food waste is stored in animal proof containers;</li> <li>• Ensure that there are waste disposal and littering prevention procedures in place;</li> <li>• Ensure that environmental awareness training takes place a regular intervals;</li> <li>• A waste management plan must be generated and implemented. The system must be monitored to ensure that the environment is</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>not polluted and that fauna do not consume the waste;</p> <ul style="list-style-type: none"> <li>• Ensure that there are spillage procedures in place so that any exposure to biophysical environment is limited;</li> <li>• Ensure that the appropriate training is given to staff and management;</li> <li>• During rehabilitation ensure that planting of species that are naturally occurring in the area is adhered to;</li> <li>• Should alien invasive plants be noticed on site that an Alien Invasive Management Plan be formulated and implemented;</li> <li>• Integrate a measure of open space planning into the development to provide for some ecological processes to remain;</li> <li>• Planting of exotic grasses during rehabilitation should not occur, instead, non-invasive indigenous flora should be used where required during the rehabilitation phase;</li> <li>• Planting of exotic grasses during rehabilitation should not occur, instead, non-invasive indigenous flora should be used where required during the rehabilitation phase;</li> <li>• Building or waste material discarded should be undertaken at an authorised location, which should not be within any sensitive areas;</li> <li>• Ensure that an ecologist is commissioned to guide the rehabilitation of the natural elements</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>of the project site;</p> <ul style="list-style-type: none"> <li>Rehabilitate successfully to bushveld comprised of natural indigenous species with the carrying capacity of pre-disturbance standards.</li> </ul>			
<b>Operational Phase</b>	<ul style="list-style-type: none"> <li>Ensure that a Biodiversity Action Plan (BAP) addresses operational impacts;</li> <li>Ensure that the controls of noise, dust, waste generation, vehicle speed limits, food waste disposal, hazardous waste disposal, human interaction with the ecology are monitored regularly and controls to prevent adverse conditions arising from the activities which are likely to affect fauna are updated and implemented;</li> <li>Ensure continuous environmental awareness training takes place;</li> <li>Ensure the use of new technologies, such as electrostatic precipitators, adhere to national and international emissions standards;</li> <li>Ensure an operational waste management plan for water and production wastes is in place;</li> <li>Ensure an integrated IAP management plan is in place and adhered to;</li> <li>Specific control measures from an IAP Monitoring Plan must be incorporated into the working procedures;</li> <li>Regular on-site monitoring for invasive species must be carried out to allow early identification</li> </ul>	<p>LEDA</p> <p>MMSEZ</p>		<p>-Terrestrial ecosystems and habitats intact and functional</p> <p>-Native fauna and flora populations maintained</p> <p>-Rehabilitate wilderness areas in line with the local setting (with expert knowledge)</p> <p>-Biodiversity offsets successfully established (see section 13.5 below)</p>

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>of such species before they become established and spread cleared areas;</p> <ul style="list-style-type: none"> <li>Regular hygiene inspections of all equipment, vehicle and machinery should be carried to ensure no spread of alien invasive plants occurs;</li> <li>Ensure that the rehabilitation plan is updated during the project's term;</li> <li>Ensure that environmental liability assessments are done annually and that the cost for rehabilitation is updated annually and the funds are available;</li> <li>Ensure that the correct specialists are involved well in advance to deal with any aspects relating to decommissioning.</li> </ul>			
<b>13.5 BIODIVERSITY OFFSETS</b>				
	<ul style="list-style-type: none"> <li>Establish and commission a biodiversity offset management team or committee;</li> <li>Implement the biodiversity offset strategy and offset risk management plan(s);</li> <li>Submission of quarterly or annual biodiversity offset reports, as required;</li> <li>Continually review and update/amend the biodiversity offset strategy, as necessary.</li> </ul>	<p>LEDA</p> <p>MMSEZ</p>	-Extent to which the targets in the biodiversity offset strategy / plans have been implemented.	Successful offsets for critical, natural habitats and priority biodiversity areas (for protected and/or endangered flora and fauna and NFEPA wetland ecosystems).

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
13.6 WASTE				
Planning and Design Phase	<ul style="list-style-type: none"><li>• The potential for the reduction, re-use and recycling of waste exists and requires detailed feasibility studies to be undertaken to ensure that the potential benefits from such activities materialise. Waste reduction must, as per the Waste Management Hierarchy adopted in the National Waste Management Strategy, receive priority attention as part of the integrated waste management plans for the district and local municipalities and in particular for the SEZ;</li><li>• The Integrated Waste Management Plans of the district and local municipalities must be updated, taking cognisance of the planned development in the area, such as the Musina-Makhado SEZ, the Antonvilla SEZ and the ECO Industrial Estate;</li><li>• The need for the expansion of the existing municipal waste disposal facilities must be investigated further by means of a feasibility study;</li><li>• The best way in which to deal with hazardous waste generated in the SEZ and the need for the development of a hazardous waste disposal facility must be investigated further by means of a feasibility study. This feasibility study should include a proper investigation in terms of the siting of such a facility;</li><li>• The planning of waste facilities for the SEZ must</li></ul>	LEDA  MMSEZ		



MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>comply with the applicable policy and legislative framework that requires the licencing of all waste activities. This entails detailed feasibility studies regarding the site and the assessment of alternative sites. It also entails undertaking an environmental impact assessment process as environmental authorisation is required;</p> <ul style="list-style-type: none"> <li>The environmental impacts of the proposed waste disposal facilities must be mitigated by compliance to the Waste Classification and Management Regulations (R.634) and the associated norms and standards, National norms and standards for the assessment of waste for landfill disposal (R.635), and National norms and standards for disposal of waste to landfill (R.636). The facilities must also be operated in line with the Minimum Requirements for Waste Disposal by Landfill, 2nd edition (DWAF, 1998).</li> </ul>			
<b>Construction Phase</b>	<ul style="list-style-type: none"> <li>On-site waste management and removal will be required. Waste storage should comply with relevant regulations and by-laws;</li> <li>Bins to have lids and waste types to be separated;</li> <li>On-site chipping of vegetation for removal to composting yards;</li> <li>Recycling, and disposal of the remaining waste fraction in a Class B lined landfill;</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>Sorting of builders' rubble on site and transporting it to a builders' rubble crushing facility.</li> </ul>			
<b>Operational Phase</b>	<ul style="list-style-type: none"> <li>Recycling, and disposal of the remaining waste fraction in a Class B lined landfill;</li> <li>Disposal in Class A lined landfill;</li> <li>Operation in line with facilities' waste management licenses and all relevant legislation.</li> </ul>	<p>LEDA</p> <p>MMSEZ</p>		
<b>13.7 SOILS AND LAND CAPABILITY</b>				
<b>Construction &amp; Operational Phase</b>	<ul style="list-style-type: none"> <li>Minimise / prevent potential contamination of soils (<i>i.e.</i> land contamination) through proper management interventions (as detailed in this EMPr).</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		
<b>13.8 NOISE</b>				
<b>Construction &amp; Operational Phase</b>	<ul style="list-style-type: none"> <li>Depending on noise levels, it is preferable not to develop an industrial zone closer than 500m (45-50 dBA), 1000m (50-55 dBA) or 2000m (&gt;55 dBA) from existing Noise-sensitive Development (NSDs);</li> <li>Conduct an Environmental Noise Impact Assessment (ENIA) to consider the noise impact on the NSD if no alternatives exists;</li> <li>Depending on noise levels of the SEZ and</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>should any associated heavy industry (with cooling / exhaust / intake / induced draft fans or exhaust stacks higher than 20m) be developed within the 500m, 1000m and 2000m from a NSD, or an area that may in the future be used for residential purposes, an ENIA must be compiled to define the potential magnitude of the noise impact, the extent of the noise impact and the potential significance of the noise impact. See clause 5.4 (i)] and 5.4 (l) of SANS 10328:2008;</p> <ul style="list-style-type: none"> <li>• Should a NSD be proposed within 500m from the N1 highway or similar busy road or if any new roads are proposed within 200m from an NSD where noise levels will exceed 55 dBA, an ENIA should be conducted;</li> <li>• Relocation of NSDs <i>i.e.</i> purchase of the farms located within focus area;</li> <li>• Future land uses in the SEZ must be planned to ensure that noise-generating activities do not impact on potential noise-sensitive land uses with certain noise limits, as defined in Table 1 of SANS 10103:2008, e.g. - -Locate the industrial areas as far as possible from existing NSD (if not relocated) and areas that may be used in the future for potential noise-sensitive activities; -Place light industrial areas between commercial/retail areas and heavy industrial areas. The commercial/retail areas to be</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	planned as buffers between industrial areas and potential noise-sensitive areas (NSD) -Use available space to ensure a buffer of at least 500m between industrial activities and potential NSDs, though a buffer of at least 1000m is recommended.			
<b>13.9 AIR QUALITY</b>				
<b>Operational Phase</b>	<ul style="list-style-type: none"> <li>The relevant authority (DEA) should specify what measuring and annual reporting on stack emissions is required;</li> <li>The data provider (LEDA) will be expected to report annual emissions on the NAEIS system;</li> <li>SEZ operators should ensure the installation of the best available technologies (BAT) at the processing plants and the implementation of best engineering practices;</li> <li>All equipment should be maintained and replaced when necessary;</li> <li>Conduct a short sampling campaign after commencement of operations for H<sub>2</sub>S to determine if the operations are compliant with the international inhalation health criteria;</li> <li>Exhaust emissions testing be done on all mobile diesel combustion sources as part of equipment maintenance schedules;</li> <li>Continuous dust fallout sampling at multiple locations, as well as PM<sub>10</sub>, PM<sub>2.5</sub>, NO<sub>2</sub> and SO<sub>2</sub> monitoring at one location, be conducted as</li> </ul>	Authority (DEA)  LEDA  MMSEZ		Emissions and ambient air concentrations from SEZ operations should comply to the the relevant ambient air quality criteria off-site (See AQMP).

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>part of the integrated SEZ air quality management plan (AQMP). Recommended sampling locations and the reasons for selection are provided in the air quality specialist report (Figure 8-1 and Table 8-1);</p> <ul style="list-style-type: none"> <li>Any future facilities and expansions will be required to undergo an EIA and application for a new AEL and may be required;</li> <li>Implement ambient air quality monitoring and reporting procedures, as per the AQMP.</li> </ul>			
<b>13.10 CLIMATE CHANGE</b>				
<b>Operational Phase</b>	<p><i>*The majority of the SEZ emissions will occur during the operational phase.</i></p> <ul style="list-style-type: none"> <li>An environmental authorisation (EA) for the individual plants in the SEZ should only be granted if the emission intensities (as indicated on page 99 of the Climate Change Specialist Report) can be achieved;</li> <li>The EA should specify a re-assessment of the GHG emission intensities 10 years after the start of operation of the respective SEZ plants. Maximum emission intensities for the plants are what would be required by the science-based target trajectories for 2030;</li> <li>The construction of a coal fired thermal power plant should not be approved unless the plant is fitted with a carbon capture and storage unit that can sequester all emission from the</li> </ul>	<p>LEDA</p> <p>MMSEZ</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>combustion of coal from the starting date of operation;</p> <ul style="list-style-type: none"> <li>Specialist studies (groundwater, surface water, etc) for the EA for each plant in the overall SEZ should specifically address the impact of climate change on each area. For example, a groundwater study should address the impact of climate change on the recharge of groundwater, etc. This is also important for any studies related to the social impacts of the proposed development.</li> </ul>			
<b>13.11 HEALTH</b>				
<b>Construction &amp; Operational Phase</b>	<ul style="list-style-type: none"> <li>Develop a project specific Health Management Plan.</li> </ul> <p><b>Water and Sanitation</b></p> <ul style="list-style-type: none"> <li>Conduct baseline water and sanitation studies on communities based on accepted health indicators;</li> <li>Monitor for groundwater organics, bi-annually, including total coliforms, <i>E. coli</i> and heterotrophic plate counts;</li> <li>Ensure proper disposal of human waste that is generated from the development;</li> <li>Ensure proper waste management from project generated waste according to waste management principles;</li> <li>Support the local authority in supporting and</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>improving water and sanitation services, including the collection and disposal of waste in the communities;</p> <ul style="list-style-type: none"> <li>• Establish water and sanitation committees in the communities to manage their own water and sanitation services. This will improve sustainability of any outreach support;</li> <li>• Support information campaigns in the community on water use, hygiene and general sanitation;</li> <li>• Manage the on-site activities in compliance with an Integrated Waste Management Plan (WMP);</li> <li>• Ensure all necessary waste management-related permits and approvals required by the authorities have been obtained;</li> <li>• Hire and manage contractors, subcontractors and SEZ approved third-party service providers for offsite waste diversion, treatment and disposal services;</li> <li>• Provide all necessary resources for personnel orientation, including induction and training materials;</li> <li>• On-site storage of hazardous waste should be avoided and should only be in small quantities until collection. The hazardous waste storage sections on-site are to be provided with the following: <ul style="list-style-type: none"> <li>-Roof for shelter from direct sunlight and any</li> </ul> </li> </ul>			



MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>rain events;</p> <ul style="list-style-type: none"> <li>-Concrete base and dyke/bund walls to contain spillages and to avoid contamination of soil and groundwater by the hazardous substances in the case of a spill. The storage area should include a spill containment system to capture and collect any spills from the containers stored in the area.</li> <li>-Adequate drainage system to keep storm water away from hazardous areas;</li> <li>-Similar to non-hazardous waste, separate compartments for each different waste type;</li> <li>-Containers and storage tanks comprising of suitable / compatible material to contain the hazardous waste and properly labelled;</li> <li>-Signboards for each waste type and storage area along with personnel protective equipment (PPE) to be used in handling of each waste;</li> <li>-Any spillage or rinsate from transfer or washing operations shall be captured for appropriate management;</li> <li>-Access for mobile equipment to this area is to be provided to facilitate material movement.</li> </ul> <p><b>Occupational Health and Safety</b></p> <ul style="list-style-type: none"> <li>• Conduct education campaigns in the workforce on proper water use, hygiene and sanitation;</li> <li>• Provide accommodation camps and work areas with proper and sufficient potable water</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>facilities conduct surveillance to ensure that water is potable;</p> <ul style="list-style-type: none"> <li>The Project will need to sustain its own water, sanitation and waste management systems. These need to have sufficient capacity so as not to impact on the community water supplies;</li> <li>As part of the pre-employment examination, any prospective employee that has blood in the urine and/or faeces should be tested for schistosomiasis and have this excluded as an illness and treated.</li> </ul> <p><b>Food and nutrition</b></p> <ul style="list-style-type: none"> <li>Developer may assist in training selected individuals to bake bread on a semi-commercial scale and sell from their homes;</li> <li>Support local procurement of food items in combination with incentives to increase local production.</li> </ul> <p><b>Road Traffic Accidents</b></p> <ul style="list-style-type: none"> <li>Engage the Local Municipality and interested and affected parties to assist with programmes targeted at improving traffic management and road safety in the study area;</li> <li>Develop a clear policy for the management of emergencies or accidents in the community as a direct result of the projects activities;</li> <li>Support with local safety and security as</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>addressed in these specialist studies;</p> <p><b>Solid Waste</b></p> <ul style="list-style-type: none"> <li>• The SEZ must implement an integrated waste management hierarchy of prevention, reduction, reuse, recycling, recovery, treatment, and as a last option, landfill disposal;</li> <li>• Haulage roads are sprinkled with water at regular intervals for which water tankers with sprinkler arrangement are deployed;</li> <li>• Trucks carrying coal and other raw material are covered with tarpaulin to prevent spreading of dust during transportation;</li> <li>• Green belt and greenery development around storage yards, around plants, either side of roads and around the periphery of the industry/ SEZ;</li> <li>• Dust respirators are provided for the people working dust generating locations;</li> <li>• All internal roads in the premise are paved /tarred;</li> <li>• Develop a dust management plan;</li> <li>• Apply wetting agents, dust suppressant or binders on the exposed area;</li> <li>• Vegetate, with grass or a gravel monolayer, the exposed areas;</li> <li>• Reduce erosion loss by roughening slope surface - this dissipates energy of water or wind moving over the slope;</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>Assess the angle of the slope, as maximum erosion occurs on slopes with angles between 30° and 35°;</li> <li>Improve upon the surface strength of a slope, which will lower the rate of erosion;</li> <li>Implement particulate matter (PM) monitoring and continue with ongoing dust fallout monitoring;</li> <li>Collect data on a longitudinal basis from the local health centres on incidence of increased respiratory disease - especially respiratory tract infections that could be ascribed to dust. While these may not be specifically ascribed to the Project, the prevailing trends are useful to monitor so that any concerns could be addressed. This may require health systems strengthening to support recording;</li> <li>Establish a monthly and annual reporting structure to appraise performance, compliance and complaints;</li> <li>A comprehensive, continuous air quality monitoring programme must be undertaken to ensure that mitigation measures are applied at all times to keep ambient air concentrations of PM10 and PM2.5 within the NAAQS over residential areas;</li> <li>Machines and vehicles to be serviced to the designed requirements of the machinery/vehicles to ensure noise suppression</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>mechanisms are effective;</p> <ul style="list-style-type: none"> <li>Environmental noise monitoring;</li> <li>Develop and implement a Stormwater Management Plan.</li> </ul> <p><b>Emergency Preparedness and Response</b></p> <ul style="list-style-type: none"> <li>The developer must document its emergency preparedness and response activities, resources, and responsibilities, and will disclose appropriate information to PACs, relevant government agencies, or other relevant parties;</li> </ul> <p><b>Social health and well-being</b></p> <ul style="list-style-type: none"> <li>Implement social management plans and recommendations as per the SIA;</li> <li>Reduce substance-abuse and improve social cohesion by: <ul style="list-style-type: none"> <li>-Conduct substance-abuse prevention education programs in the schools within the communities;</li> <li>-Provide recreational facilities for workers without families;</li> <li>-Contribute to the establishment of appropriate community recreation facilities- considering needs and assets of the community;</li> <li>-Collaborate with the relevant authorities to establish a system to monitor violence and community cohesion related to project activities - provide technical skills;</li> <li>-Participate in violence-prevention education</li> </ul> </li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>programs, particularly focusing on gender violence and tribalism.</p> <ul style="list-style-type: none"> <li>• Support education programs with a gender equity focus;</li> <li>• Identify and support vulnerable groups;</li> <li>• Support graduate training programs for the youth in the community.</li> </ul> <p><b>Health Systems Issues</b></p> <ul style="list-style-type: none"> <li>• The developer must develop a plan to support health infrastructure in the project area. This strategic investment should consider the existing health needs of the community and be designed in such a way to evolve with the likely future health needs. Even minimal support with the local health infrastructure will result in significant positive impacts;</li> <li>• Support community volunteer programs through expansion of the community- based peer health educator group;</li> <li>• Support the health information management system at the local health facilities as a means to support the monitoring of specific health impacts. This will provide a longitudinal tool to track specific health conditions and through the partnership provide access to information. The Project may set up a basic monitoring tool with support of the local health facilities;</li> <li>• Develop a memorandum of understanding</li> </ul>			

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>(MoU) with the government for the mutual support of the health facilities in the Project area. The Project must not become the de-facto government as this will create an unsustainable situation. It is recommended that the Project support upgrading of facilities to a level that supports the needs of the community and farmers and support the planned mitigation and enhancement;</p> <p><b>Non-Communicable Diseases</b></p> <ul style="list-style-type: none"> <li>• Support health education programs as part of a community-based peer health educator program. These should focus on lifestyle risk factors such as diet, exercise, smoking and alcohol consumption;</li> <li>• Support the local healthcare personnel with training on disease-management programs and the recognition of NCD symptoms and associated management. This should include integrated management to include proper management strategies for hypertension and high cholesterol;</li> <li>• Provide support with diagnostic medical hardware, where feasible.</li> </ul>			
<b>13.12 SOCIO-ECONOMY</b>				
	<ul style="list-style-type: none"> <li>• From an enhancement perspective, the construction and operation of the SEZ could:</li> </ul>	LEDA MMSEZ		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<ul style="list-style-type: none"> <li>-result in procurement by the SEZ from local businesses stimulating economic growth of local firms;</li> <li>-promote business development in the local economy;</li> <li>-facilitate skills development and transfer in local communities.</li> </ul>			
<b>13.13 ECONOMIC RATIONALE</b>				
<b>Construction &amp; Operational Phase</b>	<ul style="list-style-type: none"> <li>• If authorised, the SEZ, from a perspective of enhancement as opposed to mitigation, will accelerate mineral beneficiation and industrialisation of the provincial and national economies and lead to technology and skills transfer in the country;</li> <li>• Infrastructure upgrades, including road, rail and water, are likely to have positive spill over effects on local communities thereby contributing to the creation of employment, eradication of poverty and inequality and poverty in the area;</li> <li>• It is estimated that the development of the SEZ will generate approximately 21 000 jobs in the first 5 years of operation, increasing to 51 000 jobs in the 10<sup>th</sup> year of operation, thereby giving rise to a positive economic impact in the Vhembe District Municipality;</li> <li>• Adequate training will be required to equip the local population with the relevant skills.</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		



MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>Importing the required skills is an alternative however this may pose a significant challenge and result in local unrest in the local communities;</p> <ul style="list-style-type: none"> <li>The developer should undertake a detailed study on the availability, cost and quality of critical raw materials (coking coal, ferrochrome, manganese and iron ore) to the metallurgical complex and the implications this will have on the overall business case for SEZ.</li> </ul>			
<b>13.14 TRAFFIC</b>				
	<p>The developer should explore a number of enhancement options and opportunities, as indicated below:</p> <p><b>Road Network</b></p> <ul style="list-style-type: none"> <li>The proposed SEZ can only be successfully accommodated if the proposed road upgrades, as per the specialist traffic impact assessment report, are implemented;</li> <li>It is proposed that the N1/R525 intersection be upgraded to a cloverleaf interchange to allow easy access to the site that will support the larger quantities of traffic movement to and from the site;</li> <li>A new single carriageway for Huntleigh Road, with one lane in each direction, should be constructed on the existing gravel road.</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p><b>Rail Network</b></p> <ul style="list-style-type: none"> <li>From an enhancement perspective, the SEZ will require a rail network that will be able to import raw material and export manufactured products from and to different locations in South Africa. The section on the North-Eastern System between Polokwane and Musina should be upgraded from a diesel line to an electrified line. The recommended upgrades should be done in order to allow the entire North-Eastern System to have two lines that are electrified in order to accommodate the SEZ demand.</li> </ul> <p><b>Air Transport</b></p> <ul style="list-style-type: none"> <li>Of all airports in the region, the Musina Airport was found to be potentially suitable for commercial operations to enhance the SEZ operations.</li> </ul>			
<b>13.15 STORM WATER</b>				
<b>Construction &amp; Operational Phase</b>	<ul style="list-style-type: none"> <li>Adhere to and implement the Stormwater Management Plan.</li> <li>Keep clean water clean and keep clean and dirty water systems separated by ensuring that clean water is diverted around the site into the natural environment;</li> <li>Contain any dirty water within the system and minimise the risk of spillages into any clean</li> </ul>	<p>LEDA</p> <p>MMSEZ</p> <p>Contractor</p>	Ensure flood and rainfall events do not result in adverse impacts from the SEZ impacting negatively on adjacent water resources and surrounding land.	<p>Internal and external compliance audit results.</p> <p>Monitoring inspections and photographic records.</p>

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	water system; <ul style="list-style-type: none"> <li>Minimise dirty water catchment and promote recycling or re-use of dirty within the system to minimise raw water intake.</li> </ul>			Public complaints.
<b>13.16 WATER SERVICES</b>				
<b>Construction &amp; Operational Phase</b>	<ul style="list-style-type: none"> <li>Any water requirements for the other SEZ developments, not included in the Limpopo Eco Industrial Park (LEIP), should also be supplied from the Limpopo River via the infiltration gallery and off-channel storage dam or any other suitable alternative identified;</li> <li>Pursue an agreement with the Vhembe DM and Musina LM to supply temporary additional water treatment to the required standards and to use the effluent for suitable industrial processes on the Northern Site;</li> <li>Undertake geo-hydrological assessments of abstraction potential for the sites;</li> <li>Boreholes should be suitably equipped and connected to a reservoir for initial storage. Suitable monitoring equipment must be installed to constantly monitor the water level and abstraction quantities in terms of license requirements;</li> <li>Design of pump installation within the limits of authorised abstraction;</li> <li>Abstraction monitoring, recording and control to prevent over abstraction and dewatering of</li> </ul>	LEDA  MMSEZ  Contractor	Compliance to WUL and EA  Documented borehole meter readings	Internal and external compliance audit results.

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	any particular borehole; <ul style="list-style-type: none"> <li>Design the required infrastructure according to functional requirements, applicable standards, guidelines and procedures.</li> </ul>			
<b>13.17 ENERGY</b>				
	<ul style="list-style-type: none"> <li>Consider several energy supply options in the approach to provide cost efficient, reliable power to the large industrial clients within the metallurgical zone;</li> <li>As a viable “clean coal technology” option, the ultra-supercritical coal technology proved most favourable, preferably with Circulating Fluidised Bed (CFB) combustion technology or post combustion SO<sub>2</sub> removal;</li> <li>Follow steps in the energy master plan to form a sound baseline of the project information and inputs. The baseline can be formed through conducting a feasibility study by an appropriate energy expert/specialist.</li> </ul>	LEDA  MMSEZ		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
13.18 PLANNING				
	<ul style="list-style-type: none"> <li>In terms of the planning impact assessment for the two proposed township developments on farm portions within the proposed SEZ, SANBI recommends that:               <ul style="list-style-type: none"> <li>-Critical Biodiversity Area 2 is maintained in natural or near-natural ecological condition. Compatible uses include open space and low impact ecotourism and recreation uses;</li> <li>-Ecological Support Area 1 is maintained in at least semi-natural ecological condition. Compatible uses include open space and low impact ecotourism and recreation uses, sustainably managed rangelands and certain forms of housing;</li> <li>-the best use of Other Natural Areas should be determined through a multi-sectoral planning process. From a biodiversity perspective, these areas can be used for a range of intensive land uses;</li> </ul> </li> <li>A consulting engineer has been appointed for the internal stormwater reticulation designs. The stormwater management plans should be submitted to the municipalities, with township phasing applications, when designs have been finalised;</li> <li>The approved township layout plan should be surveyed by a professional land surveyor to create the township general plan which must</li> </ul>	LEDA  MMSEZ  China Metallurgical Group Corporation (MCC)  Consulting Engineer		

MANAGEMENT ASPECT	MITIGATION (-ve) OR ENHANCEMENT (+ve) MEASURES / PROCEDURES	RESPONSIBLE PARTIES	MONITORING AND PERFORMANCE EVALUATION	
	<p>then be submitted to the Surveyor General for approval;</p> <ul style="list-style-type: none"> <li>If the SEZ is authorised, the SDF for both municipalities (Musina and Makhado) will need to be amended to include the SEZ and adopted as a statutory document. Proposals to amend each SDF must be subject to a public participation process where the public are to be provided an opportunity to review and comment on the draft SDF before the formal adoption of a final SDF. The land uses proposed in the approved SDF/s for the SEZ location of the municipality will then need to be incorporated into both municipalities planning scheme.</li> </ul>			

## APPENDIX A: INCIDENT REGISTER

The following Incident Register will be used to record all incidents that occur on site during the Construction Phase of the project.

### INCIDENT REGISTER

DATE OF INCIDENT \_\_\_\_\_ RECORDED BY \_\_\_\_\_

INCIDENT NUMBER \_\_\_\_\_ REPORTABLE TO DEA Yes ☐ No ☐

DESCRIPTION OF INCIDENT: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

CORRECTIVE ACTION TAKEN \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## APPENDIX B: COMPLAINTS REGISTER

The following Complaints Register must be completed if and when complaints have been received.

<b>COMPLAINT NUMBER:</b>	
<b>DATE OF COMPLAINT:</b>	
<b>COMPLAINANT'S NAME &amp; SURNAME:</b>	
<b>COMPLAINANT'S CONTACT NUMBER:</b>	
<b>NATURE OF COMPLAINT:</b>	
<b>CORRECTIVE ACTION TAKEN:</b>	
<b>DATE OF COMPLETION OF ACTION:</b>	
<b>MONITORED BY:</b>	



## TRAINING RECORD

[illegible]

## APPENDIX D: ACCEPTANCES

### DECLARATION OF UNDERSTANDING BY THE DEVELOPER (LIMPOPO ECONOMIC DEVELOPMENT AGENCY)

I, \_\_\_\_\_

Representing \_\_\_\_\_

Declare that I have read and understood the contents of the Environmental Management Program for:

Contract \_\_\_\_\_

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the Contract. I also declare that I am aware that the management measures contained in this EMPr is binding on all contractors, labourers and personnel onsite.

Signed: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Witness 1: \_\_\_\_\_

Witness2: \_\_\_\_\_

## DECLARATION OF UNDERSTANDING BY THE OPERATOR

I, \_\_\_\_\_

Representing \_\_\_\_\_

Declare that I have read and understood the contents of the Environmental Management Program for:

Contract \_\_\_\_\_

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the Contract. I also declare that I am aware that the management measures contained in this EMPr is binding on all contractors, labourers and personnel onsite.

Signed: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Witness 1: \_\_\_\_\_

Witness2: \_\_\_\_\_

**DECLARATION OF UNDERSTANDING BY THE CONTRACTOR (if applicable)**

I, \_\_\_\_\_

Representing \_\_\_\_\_

Declare that I have read and understood the contents of the Environmental Management Program for:

Contract \_\_\_\_\_

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the Contract. I also declare that I am aware that the management measures contained in this EMPr is binding on all contractors, labourers and personnel onsite.

Signed: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Witness 1: \_\_\_\_\_

Witness2: \_\_\_\_\_

## APPENDIX E: METHOD STATEMENTS

### METHOD STATEMENT: **Solid Waste Management**

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** [give a brief description of the works to be undertaken on site that will generate waste (hazardous and non-hazardous wastes)]: \* Note: please attach extra pages if more space is required.

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

**METHOD STATEMENT:** **Solid Waste Management (contd.)**

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

**Start Date:**.....

**End Date:**.....

**HOW IS WASTE TO BE MANAGED ON SITE?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement** **Solid Waste Management (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with



approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

---

### Crew Camps and Construction Lay Down Areas

CONTRACT:..... DATE:.....

**WHAT CREW CAMPS AND CONSTRUCTION LAY DOWN AREAS ARE REQUIRED ON SITE DURING CONSTRUCTION?** (give a brief description of these): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE CREW CAMPS AND CONSTRUCTION LAY DOWN AREAS TO BE LOCATED?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required



**\*Insert additional pages as required**

## METHOD STATEMENT:

### Crew Camps and Construction Lay Down Areas (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE CREW CAMPS AND CONSTRUCTION LAY DOWN AREAS TO BE MANAGED?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Crew Camps and Construction Lay Down Areas (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

**Workshop and Maintenance/Cleaning of Plant**

**CONTRACT:**..... **DATE:**.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKSHOPS AND CLEANING BAYS TO BE LOCATED?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required



## METHOD STATEMENT:

### Workshop and Maintenance / Cleaning of Plant (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE WORKSHOPS AND PLANT MAINTENANCE / CLEANING TO BE MANAGED DURING CONSTRUCTION?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Workshop and Maintenance / Cleaning of Plant (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Cement and Concrete Batching

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

## METHOD STATEMENT:

### Cement and Concrete Batching (contd.)

#### START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE THE WORKS TO BE UNDERTAKEN?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Cement and Concrete Batching (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_



**METHOD STATEMENT:** **Dust Control**

**CONTRACT:**..... **DATE:**.....

**WHAT WORK IS TO BE UNDERTAKEN ON SITE THAT COULD GENERATE DUST?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

**METHOD STATEMENT: Dust Control (contd.)**

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

**Start Date:**.....

**End Date:**.....

**HOW ARE THE WORKS TO BE UNDERTAKEN SO AS TO MINIMISE AND CONTROL DUST GENERATION ON SITE?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Dust Control (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Hydrocarbon and Emergency Spill Procedure

CONTRACT:..... DATE:.....

**WHAT HAZARDOUS SUBSTANCES (INCL. FUELS) ARE TO BE STORED ON SITE?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE THESE SUBSTANCES TO BE STORED ON SITE?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

## METHOD STATEMENT:

### Hydrocarbon and Emergency Spill Procedures (contd.)

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE HAZARDOUS SUBSTANCES TO BE MANAGED TO AVOID SPILLAGES AND WHAT EMERGENCY PROCEDURES ARE TO BE IMPLEMENTED IN CASE OF A SPILLAGE?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required



**DECLARATIONS for Method Statement**

**Hydrocarbon and Emergency Spill Procedures (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Diesel Tanks and Re-fueling Procedures

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the number and capacity of diesel tanks to be kept on site): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

## METHOD STATEMENT:

### **Diesel Tanks and Re-fueling Procedures (contd.)**

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

**Start Date:**.....

**End Date:**.....

**HOW ARE DIESEL TANKS TO BE MANAGED AND RE-FUELLING TO BE UNDERTAKEN?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

**DECLARATIONS for Method Statement**

**Diesel Tanks and Re-fuelling Procedure (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Topsoil Management

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the works to be undertaken that require topsoil to be stripped): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required



**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

## METHOD STATEMENT:

### Topsoil Management (contd.)

#### START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE TOPSOIL STOCKPILES TO BE MANAGED?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Topsoil Management (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

**Fire Management**

**CONTRACT:**..... **DATE:**.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

## METHOD STATEMENT:

### Fire Management (contd.)

#### START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE THE WORKS TO BE UNDERTAKEN?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Fire Management (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with



approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Stormwater Management

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

## METHOD STATEMENT:

### Stormwater Management (contd.)

#### START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE THE WORKS TO BE UNDERTAKEN?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**DECLARATIONS for Method Statement**

**Stormwater Management (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
(Print name)

Dated:..\_\_\_\_\_

**2) CONTRACTOR**

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

---

(Signed)

---

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Soil Erosion Management

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of the works): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**



## METHOD STATEMENT:

### Soil Erosion Management (contd.)

#### START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:.....

End Date:.....

**HOW ARE THE WORKS TO BE UNDERTAKEN?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

***DECLARATIONS for Method Statement***

**Soil Erosion Management (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_

(Signed)

\_\_\_\_\_

(Print name)

Dated: . \_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_

(Signed)

\_\_\_\_\_

(Print name)

Dated: \_\_\_\_\_

## 2) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

\_\_\_\_\_

(Signed)

\_\_\_\_\_

(Print name)

Dated: \_\_\_\_\_

## METHOD STATEMENT:

### Rehabilitation of Crew Camps and Other Disturbed Areas

CONTRACT:..... DATE:.....

**WHAT WORK IS TO BE UNDERTAKEN?** (give a brief description of works to be undertaken that may result in the need for rehabilitation of the affected areas): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

**WHERE ARE THE WORKS TO BE UNDERTAKEN?** (where possible, provide an annotated plan and a full description of the extent of the works): \* Note: please attach extra pages if more space is required

**\*Insert additional pages as required**

## METHOD STATEMENT:

### Rehabilitation of Crew Camps and Other Disturbed Areas (contd.)

**START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:**

**Start Date:**.....

**End Date:**.....

**HOW ARE THE REHABILITATION WORKS TO BE UNDERTAKEN?** (provide as much detail as possible, including annotated sketches and plans where possible): \* Note: please attach extra pages if more space is required

\*Insert additional pages as required

***DECLARATIONS for Method Statement***

**Rehabilitation of Crew Camps and Other Disturbed Areas (contd.)**

**1) ENGINEER**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_

(Signed)

\_\_\_\_\_

(Print name)

Dated: . \_\_\_\_\_

**2) ECO**

The work described in this Method Statement, if carried out according to the methodology described, is satisfactory to prevent or control environmental harm and is thus approved:

\_\_\_\_\_

(Signed)

\_\_\_\_\_

(Print name)

Dated: \_\_\_\_\_

## 2) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement

\_\_\_\_\_

(Signed)

\_\_\_\_\_

(Print name)

Dated: \_\_\_\_\_



## APPENDIX F: ALIEN MANAGEMENT PLAN

### 13.19 CONSTRUCTION PHASE ACTIVITIES

The following management actions are aimed at reducing soil disturbance during the construction phase of the development, as well as reducing the likelihood that alien species will be brought onto site or otherwise encouraged.

**Table 13-1: Construction phase activities**

Action	Frequency
The ECO must provide permission prior to any vegetation clearing.	Daily
Clearing of vegetation should be undertaken as the work progresses – mass clearing should not occur unless the cleared areas will be affected by construction immediately afterwards.	Weekly
Action	Frequency
Areas that will be exposed for some time should be protected with packed brush, or appropriately battered with fascine work. Alternatively, jute (Soil saver) may be pegged over the soil to protect it.	Weekly
Cleared areas that have become invaded can be sprayed with appropriate herbicides if these are such that break down on contact with the soil. Herbicides with a residual action should not be used to encourage the emergence of indigenous plants.	Weekly
Although organic matter is frequently used to encourage regrowth of vegetation on cleared areas, no foreign material such as straw and manure should be brought onto site. Brush of an indigenous nature from cleared areas should be used as much as possible. The use of manure or other soil amendments is likely to encourage invasion.	Weekly
<p>Clearing of vegetation is not allowed in the following instances:</p> <ul style="list-style-type: none"> <li>• Within 32 metres of any wetland;</li> <li>• Within 1:100-year flood lines;</li> <li>• On slopes steeper than 1:3.</li> </ul> <p>Permission should be granted by the ECO to specifically allow construction activities in these areas.</p>	Weekly

Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. (Attention must be paid to imported material such as building sand or dirty earth-moving equipment.) Stockpiled material should be checked on a regular basis and any weeds emerging from material stockpiles should be removed.	Weekly
Alien vegetation regrowth on areas disturbed by construction must be controlled throughout the entire site during the construction period.	Monthly
The alien plant removal and control method guidelines should adhere to the best practice for the species involved. Such information can be obtained from the DWS Working for Water website.	Monthly
Clearing activities must be contained within the affected zones and may not spill over into demarcated No-Go areas.	Daily
Pesticides may not be used. Registered herbicides may be used to control listed alien weeds and invaders only.	
Wetlands and other sensitive areas should remain demarcated with appropriate fencing or hazard tape. These areas are no-go areas (this must be explained to all workers) that must be excluded from all development activities.	Daily

## 13.20 MONITORING DURING CONSTRUCTION PHASE

The following monitoring actions should be implemented during the construction phase of the development.

**Table 13-2: Monitoring activities during the construction phase**

Monitoring action	Indicator	Timeframe
Document all alien species observed at the site	List of alien species	Pre-construction
Document alien plant distribution patterns	Alien plants distribution map within priority areas	3 Monthly
Document & record alien control measures implemented	Record of clearing activities	3 Monthly
Review & evaluate the control success rate	Decline in documented alien plant abundance over time	Bi-annually

## 13.21 OPERATIONAL PHASE ACTIVITIES

The following management actions are aimed at reduction of alien plant species within the site and maintaining non-invaded areas clear of aliens.

**Table 13-3: Operational phase activities**

Action	Frequency
Surveys for alien species should be conducted on a regular basis. Six monthlies for the first two years after construction and annually thereafter. All aliens identified should be cleared.	Every 6 months for 2 Years and annually thereafter
Where areas of natural vegetation have been disturbed by construction activities, revegetation with indigenous, locally occurring species should take place where the natural vegetation is slow to recover or where repeated invasion has taken place following disturbance.	Biannually, but Re-vegetation should take place at the start of the rainy season
Areas of natural vegetation that need to be managed to reduce plant height or biomass, should be controlled using methods that leave the soil protected, such as using a weed-eater to mow above the soil level.	When necessary
No alien species should be cultivated on-site. If vegetation is required for aesthetic purposes, then non-invasive, water-wise species indigenous to the area should be used.	When necessary

## 13.22 MONITORING OPERATIONAL PHASE

The following monitoring and evaluation actions should take place during the operational phase of the development.

**Table 13-4: Monitoring during the operational phase**

Monitoring Action	Indicator	Timeframe
Document alien species Distribution and abundance over time at the site	Alien plant distribution map	Biannually
Document alien plant control Measures implemented & success rate achieved	Records of control measures and their success rate. A decline in alien distribution and cover over the time	Biannually

Document rehabilitation measures implemented and success achieved in problem areas	Decline in vulnerable open areas over time	Biannually
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## APPENDIX G: SENSITIVITIES





## APPENDIX H: ENVIRONMENTAL AWARENESS

### SITE ENVIRONMENTAL RULES

**TOOLBOX TALK 1:** Site environmental rules.

**ISSUE:** Do's and Don'ts of the Construction Site.

**PRESENTER:**

**What is the Environment?**

**Environment** (NEMA, 1998) - means the surroundings within which humans exist and that are made up of:

- the land, water and atmosphere of the earth;
- microorganisms, plant and animal life;
- any part or combination of (i) and (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing;

**What is the Pollution?**

**Pollution** (NWA, 1998) - means the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it -

(a) less fit for any beneficial purpose for which it may reasonably be expected to be used; or

(b) harmful or potentially harmful -

(aa) to the welfare, health or safety of human beings;

(bb) to any aquatic or non-aquatic organisms;

(cc) to the resource quality; or

(dd) to property;

**What is an EMPr?**

**Environmental Management Programme** – refers to a document that is used to investigate, assess and evaluate the impacts that a development is likely to have on the environment during the construction, operation and decommission phases.

**Why should we protect the Environment?**

- It is our right to live in a clean and healthy environment.
- To ensure that future generations live in a clean environment.
- To prevent the loss of species diversity.
- To prevent loss of ecological goods and services

**Environmental Site Rules:**

- *No urinating or defecating on site. Toilet facilities provided at the construction site must be used at all times.*
- *Do not waste water.*
- *No littering.*
- *No washing of cars or other vehicles on site.*
- *No open fires allowed on site.*

<b>DATE:</b>	<b>TIME:</b>	<b>LOCATION:</b>
<b>TOPIC:</b>	Site environmental rules	
<b>ISSUE:</b>	EMPR COMPLIANCE	

## DISPENSING, STORAGE AND DISPOSAL OF HYDROCARBONS/CHEMICALS

### TOOLBOX TALK 2: Dispensing, storage and disposal of hydrocarbons / chemicals

**ISSUE:** Do's and Don'ts.

#### **What is a Hydrocarbon (mineral oil)?**

Diesel/hydraulic oil etc. are hydrocarbons and therefore classified as hazardous substances. A hazardous substance is any material that poses an unreasonable risk to people, property and the environment. The environment is our surroundings, soil, air and water.

#### **Chemicals**

Hydrocarbons/chemicals are toxic if swallowed by humans or animals. The presence of Hydrocarbons/ chemicals in water can also prevent aquatic organisms from breathing and may result in aquatic kills depending on the extent of the spill. Hydrocarbons should therefore be prevented from contaminating ground or surface water.

#### **Note:**

Only 1 litre of oil can contaminate a soccer field size of water. It is therefore essential to prevent spillages as far as possible and to ensure that if they do occur that they are properly cleaned up and that the resulting material is disposed of correctly.

#### **What is a spillage?**

All situations involving the spilling of a Hydrocarbons/chemicals on to the floor or ground or in water, irrespective of volume.

#### **How do we manage this?**

- 1 Correct Storage:**
  - a. Refer to issues around the bunded area.
  - b. Should be contained in waterproof and leak proof containers. Any containers or points that are leaking to be addressed immediately.
  - c. Should be stored in a dedicated area on site.
- 2 Correct Dispensing:**
  - a. Should check lines for leaks before starting with dispensing.
  - b. Place drip tray so as to catch any drips. How would you and into what would you empty the drip tray?
  - c. Ensure all residual Hydrocarbons/chemicals is drained from pipe before disconnecting.
- 3 Maintenance of vehicles and equipment**
  - a. Check equipment and vehicles for leaks daily. Report leaks to supervisor immediately. Contain slow drips using a drip tray.
  - b. Do not use excessive grease when greasing vehicle or equipment parts.
- 4 Correct Spillage Handling and Disposal:**
  - a. Clean all spillages immediately. This means treat using spill kit and remove spillage.
  - b. Dispose in hazardous waste drum or skip.
  - c. Report spillage to supervisor.

<b>DATE:</b>	<b>TIME:</b>	<b>LOCATION:</b>
<b>TOPIC:</b>	Dispensing, storage and disposal of Hydrocarbons/chemicals	
<b>ISSUE:</b>	<b>SPILLAGE</b>	



### USE AND MAINTENANCE OF DRIP TRAYS

**TOOLBOX TALK 3:** Use and maintenance of drip trays.

**ISSUE:** Do's and Don'ts of the Construction Site.

#### **What is a Drip Tray?**

A drip tray is a plastic or metal container that can be used to contain a liquid. A container is suitable to be used as a drip tray, if

- It is heavy enough not to be blown away;
- Has no holes in the base or side from which a liquid could leak; and
- The sides are high enough that the liquid will not overflow.

The drip tray must be sized according to the amount of liquid that needs to be captured and contained.

What is the risk?

There is a risk of spillage of hydrocarbons or other chemicals under the following circumstance:

- Various equipment and vehicles may develop slow hydrocarbon leaks (oils);
- During maintenance of vehicles and equipment, there is a risk that hydrocarbons, grease, diesel/petrol may be spilt;
- Refuelling of equipment and vehicles;
- During decanting of chemicals such as paint and curing compound etc., some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

Under all these circumstances the correct use of a drip tray could prevent a spillage on to the ground or into water.

#### **What is correct use of a drip tray?**

Note that the use of a drip tray should be an additional precaution to other controls. For example:

- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided. A drip tray should be used only as a precaution in case there is a spill.
- Vehicles and equipment should be checked daily and maintained correctly to prevent leaks. Drip trays should be placed underneath equipment and vehicles when stationary as a precaution in case there is a leak.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- When refuelling vehicles or equipment a drip tray should be used to capture any excess or spillages from the nozzle of the hose. There should be no overfilling of vehicles and equipment.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound.

#### **Correct maintenance?**

Drip trays should be maintained empty. Drip trays are to be checked daily, cleaned and emptied into the hazardous waste skip. Drip trays that are not being used should be stored under cover to prevent them filling with rain water.

<b>DATE:</b>	<b>TIME:</b>	<b>LOCATION:</b>
<b>TOPIC:</b>	Use and maintenance of drip trays	
<b>ISSUE:</b>	<b>SPILLAGE</b>	

## USE, HANDLING AND STORAGE OF CHEMICALS

**TOOLBOX TALK 4:** Use. Handling and storage of chemicals

**ISSUE:** Do's and Don'ts of the Construction Site.

### **What is a Hazardous Chemical?**

*These are substances that may be dangerous to humans and or the environment if not handled, stored and disposed of correctly. The definition of a hazardous chemical is based on the amount, concentration or inherent properties of the waste.*

e.g. Consumption of Alcohol,

Amount – the effect of 1 glass versus 5 litres. It is the same with a chemical. One drop may not be harmful but continuous dripping over a period of a week could be very harmful

Concentration – Beer as opposed to wine, there is alcohol in both but there is more alcohol in the wine than in the beer. It is the same with some chemicals

Inherent properties – Methylated spirits versus Beer, one bottle of methylated spirits could kill you but one beer won't because of the type of alcohol in the beer versus that in methylated spirits. It is the same with some chemicals

### **What is the risk?**

There is a risk of spillage of chemicals under the following circumstance:

- During decanting of chemicals such as paint and curing compound etc, some of the chemicals may be spilt on the ground; and/or
- While applying paint or grease you need something to put the tin, paint brush or roller into.
- Temporary storage of chemicals at point of use

### **What is the correct use, handling and storage of hazardous chemicals?**

- Hazardous chemicals should be stored in a roofed, bunded area that is kept locked. Entry of rain water into the bunded area must be prevented.
- All chemicals or chemical contaminated items should be stored within the bunded area. NOT on the wall of the bunded area or outside the bunded area on a concrete slab.
- Empty chemical containers and drums should be stored in the bunded area until removed or smaller containers thrown in the hazardous waste skip e.g. paint tins, paint brushes or rollers.
- Decanting of chemicals should be done within a bunded area as far as possible. A funnel should be used when discharging liquids into a container with a small opening. Spillage of chemicals should always be avoided.
- All chemical containers should be labelled. No food related containers are to be used for the storage of chemicals e.g. cool drink bottles.
- Temporary storage of chemicals at point of use. Chemicals should always be returned to chemical store at the end of the shift.
- Drip trays may be used for the placing of paint brushes and rollers while applying curing compound or shutter oil.
- All these chemicals must have an MSDS (material safety data sheet). This information is required to ensure that all chemicals are stored, handled and disposed of in the best possible way to ensure the safety of staff and the environment.

### **Correct maintenance of bunded area**

Any cracks in the walls or floors and holes in the roof are to be repaired as soon as possible. Bunded area is to be kept free of spillages.

Any spillages are to be cleaned up and disposed of as hazardous waste.

<b>DATE:</b>	<b>TIME:</b>	<b>LOCATION:</b>
<b>TOPIC:</b>	Use and storage of hazardous chemicals	
<b>ISSUE:</b>	<b>SPILLAGE</b>	

## WASTE SEGREGATION AND SEPARATION

**TOOLBOX TALK 5: Waste segregation and separation.**

**ISSUE:** Do's and Don'ts of the Construction Site.

**What is waste separation?**

This is the separation of hazardous and general waste

**Some examples of hazardous wastes generated on site:**

Used oils (hydrocarbons), contaminated spill absorbent or sand, paints, batteries (acid), fluorescent tubes (mercury), concrete.

**Some examples of general waste generated on site:**

Cool drink bottles, chip packets, plastic, leftover food, paper etc.

**Correct handling, storage and disposal**

- General waste must be disposed of designated marked bins or marked skips provided
- Hazardous waste to be thrown in designated marked skips provided or 210L marked drums provided in certain areas
- The two must not be mixed!
- If hazardous waste is found in general waste, all must be disposed of as hazardous waste.

**Why?**

- The two waste types are disposed of at different waste dumps. The general waste dump is built only to deal with general waste. Hazardous waste accidentally disposed of here, could pollute the water and harm the people in the area.
- Disposal of general waste at a hazardous waste site results in an unnecessary cost to the company, as it is a lot more expensive to dispose of hazardous waste than general waste.

**What is an incident?**

- Mixed waste in any of the skips or bins.

<b>DATE:</b>	<b>TIME:</b>	<b>LOCATION:</b>
<b>TOPIC:</b>	Waste segregation and separation	
<b>ISSUE:</b>	<b>WASTE MANAGEMENT</b>	

ENVIRONMENTAL INCIDENTS

**TOOLBOX TALK 6:** Environmental Incidents

**ISSUE:** Do's and Don'ts of the Construction Site.

**What constitutes an environmental incident?**

Any incident which could potentially negatively impact the environment such as a watercourse, protected plant, historic graves, or an animal irrespective of how minor or severe e.g. 5l oil spill on soil, animal caught in snare, honey sucker overturning and sewage flowing into river etc. are all environmental incidents.

**What to do in case you come across an environmental incident:**

Report the incident immediately to the ESO and your direct supervisor. ESO will advise on corrective actions to be taken.

When reporting an environmental incident, be specific, stipulating who, what, where and when.

<b>DATE:</b>	<b>TIME:</b>
<b>TOPIC:</b>	Wasting drinking water
<b>ISSUE:</b>	<b>SCARCITY OF DRINKING WATER</b>
	<b>EXPENSE TO SUPPLY DRINKING WATER</b>

## APPENDIX I: GENERAL PROCEDURES

	SITE INCEPTION	CONSTRUCTION	POST CONSTRUCTION	OPERATION	KEY ISSUES
GENERAL ADMINISTRATION	<p><b>SITE INCEPTION</b></p> <ul style="list-style-type: none"> <li>• An emergency response plan must be available on site as must a copy of the EMPr and the EA.</li> <li>• A complaints register must be maintained and kept on site.</li> <li>• A record of training must be maintained and kept on site.</li> <li>• Records proving source of materials must be kept on site.</li> <li>• A record of audits conducted on operations, as well as findings must be kept by the Site Engineer, and findings from audits are to be communicated to the Foreman on site. Proof of communication of findings is to be kept on site.</li> <li>• The site must be sufficiently lit, enabling security and policing should work be required at night.</li> <li>• The following details are to be available at each site: <ul style="list-style-type: none"> <li>▪ Emergency contact numbers: Name, contact details</li> <li>▪ Environmental Control Officer: Name, contact details</li> <li>▪ A list of the sensitive areas identified for that site</li> <li>▪ Proof of communication of these details to the staff at that particular site.</li> </ul> </li> <li>• A hazardous chemical/waste storage area must be provided for, if required. This could be in the form of a leak proof container or suitably sized drip tray. An inventory of goods stored must be maintained and updated weekly.</li> <li>• General waste bins with lids must be provided on site. Accumulated waste must be removed from site regularly and disposed of at a suitably licensed landfill site.</li> <li>• Adequate spill kits and containers for spilled and contaminated material must be provided on site.</li> <li>• Designated areas for stockpiling of raw materials must be identified on site. No stockpiling is to occur on or near slopes or watercourses. All stockpiling areas must be approved by the Site Engineer.</li> <li>• Haulage roads must be identified and demarcated at site set up. Turning areas must be identified and clearly demarcated. Roads may not be located in the designated sensitive areas.</li> <li>• Temporary stormwater protection measures must be established before construction activities commence.</li> </ul> <p>All staff is to be trained on their environmental responsibilities before commencing work. All new staff is to be trained before they start work on site. All construction staff will have basic environmental awareness training, which can be conducted at the same time as the required health, &amp; safety training. Training should include (1) the definition of environment (people + air + soil + water +business); (2) reasons for conserving and protecting the environment; (3) how the following activities can impact the environment: - Not using assigned ablutions, hazardous materials, uncleaned spills, mixing of cement or paint on soil or grass surfaces, waste management i.e. use of waste receptacles and waste separation for recycling, vehicle washing polluting soil &amp; ground water; litter; (4) What to do to prevent the above impacting the environment i.e. assign impermeable mixing areas, no vehicle washing on site, use of waste</p>				

## APPENDIX J: FLORAL RELOCATION PLAN

Plant rescue is considered to be a last resort to conserve individual plants, when authorization for development has been obtained and construction is imminent. The ecosystem within the footprint of the development, with all its species diversity, genetic variation and ecological interrelationships will be lost and the objective is to salvage something prior to the destruction. Some considerations are as follows:

- 1) Plant rescue can usually only salvage a small proportion of the plants onsite. This is due to two main factors, firstly, the fact that different species appear at different times and some species will almost certainly be dormant at the time that the Search and Rescue is undertaken, and secondly, there may be practical limitations in terms of how much plant material can be salvaged.
- 2) Globally, it has been recognised that the selection of plants to rescue is based on criteria that may have little to do with conservation, for example, ease of access, horticultural value and probability of survival. However, in the case of the current project, it has been specified in the RoD which species are to be targeted for Search and Rescue.
- 3) Plants chosen for rescue may not thrive or even survive. It is highly unlikely that all rescued plants will survive. This is based on the fact that it is virtually impossible to predict without experimentation and research exactly what artificial conditions will be required for the management of each species in order to ensure survival.
- 4) Various agencies globally (e.g. IUCN) and nationally (e.g. SANBI) have expressed concern regarding the concept of plant rescue. The concern is that the implementation of a plant Search and Rescue can weaken support for habitat conservation by fostering the perception that rescuing selected plants can compensate for destruction of an entire habitat, or that landscape plantings can substitute for natural areas.
- 5) Plant rescue can divert time, energy, resources and leadership from tasks that may be more effective in protecting natural habitats.
- 6) Plants can be used for rehabilitation of affected areas, thereby restoring something resembling the natural vegetation.
- 7) It can also make a long-term contribution to public education by providing native plants for public gardens and nature centres (Hoare).

### 13.1 PRE-CONSTRUCTION

Before construction commences at the site, the following actions should be taken:

- 1) Search and rescue operation within the development footprint. Affected individuals of suitable species should be translocated to a similar habitat outside of the development footprint and marked for monitoring purposes. The ecological walk-through provides the basis for the search and rescue and the search and rescue itself should also be used as an opportunity to identify additional individuals of listed species for rescue.
- 2) Ideally, translocation should happen during one of the cooler months in order to promote survival, with the optimal period at the site likely to be March to June. This will give the translocated plants sufficient time to recover before the next hot season. Permits will be required from GDARD for relocating plants.
- 3) Although species such as geophytes are best translocated when they are dormant, they can be hard to locate at this time and therefore, any time would be acceptable for such species.

### 13.2 CONSTRUCTION PHASE

- 1) The ECO to monitor vegetation clearing at the site. Any deviations from the plans that may be required should first be checked for listed species by the ECO and any listed species present which are able to survive translocation should be translocated to a safe site.
- 2) The ECO should monitor construction activities in sensitive habitats such as near rivers and wetlands carefully to ensure that impacts to these areas are minimized.
- 3) Populations of sensitive species or important habitats near the development footprint should be cordoned-off with construction tape or similar barrier and marked as no-go areas.
- 4) No unauthorised personnel to be allowed on-site.
- 5) No fires on-site.

### 13.3 OPERATION

- 1) Access to the site should be strictly controlled and all personnel entering or leaving the site should be required to sign in and out with the security officers.
- 2) The collecting of plants or their parts should be strictly forbidden and signs stating so should be placed at the entrance gates to the site.



