

APPENDIX

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ENVIRONMENTAL
MANAGEMENT
PROGRAMME

MUKONDELELI WIND ENERGY FACILITY (RF) (PTY) LTD

PROPOSED MUKONDELELI WIND ENERGY
FACILITY UP TO 132KV GRID CONNECTION
NEAR SECUNDA, MPUMALANGA
(REFERENCE: 1/3/1/16/1G-276)

ENVIRONMENTAL MANAGEMENT PROGRAMME

13 MARCH 2023

PUBLIC





PROPOSED
MUKONDELELI WIND
ENERGY FACILITY UP
TO 132KV GRID
CONNECTION NEAR
SECUNDA,
MPUMALANGA
(REFERENCE:
1/3/1/16/1G-276)

ENVIRONMENTAL
MANAGEMENT PROGRAMME

MUKONDELELI WIND ENERGY FACILITY
(RF) (PTY) LTD

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This Environmental Management Programme (Report) for the Proposed the proposed Mukondeleli Wind Energy Facility 132 kV up to 132 kV Grid Connection Transmission Line has been prepared by WSP Group Africa Proprietary Limited (WSP) on behalf and at the request of Mukondeleli Wind Energy Facility (RF) (Pty) Ltd (Client), as part of the application process for Environmental Authorisation.

Unless otherwise agreed by us in writing, we do not accept responsibility or legal liability to any person other than the Client for the contents of, or any omissions from, this Report.

To prepare this Report, we have reviewed only the documents and information provided to us by the Client or any third parties directed to provide information and documents to us by the Client. We have not reviewed any other documents in relation to this Report, except where otherwise indicated in the Report

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GLOSSARY OF TERMS AND ABBREVIATIONS

ABBREVIATION	DEFINITION
AEL	Atmospheric Emissions License
BBBEE	Broad-Based Black Economic Empowerment
Contractor	A person or company appointed by the Project Company to carry out stipulated activities
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
ECF	Employment Creation Fund
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
Emergency	An undesired event that may result in a significant environmental impact and requires the notification of the relevant statutory body such as a local authority
EMPr	Environmental Management Programme
EMS	Environmental Management System
Environment	In terms of the National Environmental Management Act (No. 107 of 1998), “environment” means the surroundings within which humans exist and that are made up of: <ul style="list-style-type: none"> — the land, water and atmosphere of the earth; — micro-organisms, plant and animal life; — any part or combination of (i) of (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 well-being.
Environmental Control Officer	A suitably qualified individual who, on behalf of the Project Company, would on a weekly basis monitor the project compliance with conditions of the EMPr and conditions of the environmental authorisation.

ABBREVIATION	DEFINITION
Environmental Impact	A change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services
FMP	Fire Management Plan
General Waste	Waste that does not pose an immediate hazard or risk to health or to the environment and includes domestic waste, building and demolition waste, business waste and inert waste.
GNR	Government Notice Regulation
Hazardous Waste	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.
Incident	An undesired event which may result in a significant environmental impact but can be managed through internal response
km	Kilometre
m	Metre
SDS	Safety Data Sheets
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs
NCR	Non-conformance register
NEMA	National Environmental Management Act (No. 107 of 1998)
NEMWA	National Environmental Management Waste Act (No. 59 of 2008)
NWA	National Water Act (No. 36 of 1998)
PPE	Personal Protective Equipment
Project Manager	An appointed person, appointed to act as the manager of the project on behalf of the Project Company
SANS	South African National Standard
Site Manager	The Project Company appointed person, appointed to act as Site Manager by the Project Company, and is responsible for managing the construction process onsite
WUL	Water Use License
WSP	WSP Group Africa (Pty) Ltd

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APPENDICES

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- B** EAP DECLARATION OF INTEREST AND UNDERTAKING
- C** SENSITIVITY MAP
- D** OHPL GENERIC EMPR
- E** SUBSTATION GENERIC EMPR

1 INTRODUCTION

1.1 BACKGROUND

Mukondeleli Wind Energy Facility (RF) (Pty) Ltd (the Developer) is proposing the development of Mukondeleli Wind Energy Facility (WEF) in an area of approximately 3 650ha, with a maximum export capacity of up to 300MW and a 132 kV Grid Connection. The proposed project will be operated under a Special Purpose Vehicle (SPV). **This report is specific to the 132kV Grid Connection.**

In order for the proposed project to proceed, it will require an Environmental Authorisation (EA) from the Competent Authority (CA) (i.e. the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)).

WSP Group Africa (Pty) Ltd (WSP) has been appointed by Mukondeleli Wind Energy Facility (RF) (Pty) Ltd as the independent Environmental Assessment Practitioner (EAP) to facilitate the Basic Assessment (BA) process in accordance with the Environmental Impact Assessment (EIA) Regulations (2014, as amended).

1.2 DETAILS OF THE APPLICANT

Mukondeleli Wind Energy Facility (RF) (Pty) Ltd is the project proponent (Applicant) with regards to this application for the construction and operation of the proposed Mukondeleli 132kV Grid Connection project. **Table 1-1** provides the relevant details of the project proponent.

Table 1-1: Details of Project Proponent

PROPONENT MUKONDELELI WIND ENERGY FACILITY (RF) (PTY) LTD

Contact Person:	Mercia Grimbeek / Kyle Swartz
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Email:	Mercia.Grimbeek@enertrag.com / kyle.swartz@enertrag.com

1.3 TERMS OF REFERENCE AND DETAILS OF THE EAP

WSP has been appointed in the role of Independent EAP to undertake the BA processes for the proposed Project. This Environmental Management Programme (EMPr) was compiled as part of the BA process and must be read in conjunction with the Basic Assessment Report (BAR) in support of the EA application. The EAP declaration of interest and undertaking is included in **Appendix A**. **Table 1-2** details the relevant contact details of the EAP. In order to adequately identify and assess potential environmental impacts, a number of specialists will support the EAP.

Table 1-2: Details of the EAP

ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP) WSP GROUP AFRICA (PTY) LTD

Contact Person:	Ashlea Strong
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Telephone:	011 361 1392
Fax:	011 361 1381
E-mail:	Ashlea.Strong@wsp.com
Professional Registration:	EAPASA (2019/1005)
Qualifications:	<ul style="list-style-type: none"> — Masters in Environmental Management, University of the Free State — B Tech, Nature Conservation, Technikon SA — National Diploma in Nature Conservation, Technikon SA

STATEMENT OF INDEPENDENCE

Neither WSP nor any of the authors of this Report have any material present or contingent interest in the outcome of this Report, nor do they have any business, financial, personal or other interest that could be reasonably regarded as being capable of affecting their independence. WSP has no beneficial interest in the outcome of the assessment.

1.4 ENVIRONMENTAL MANAGEMENT PROGRAMME STRUCTURE

Table 1-3 cross-references the sections within the EMPr with the legislated requirements as per Appendix 4 of GNR 982 of 2014.

Table 1-3: Legislation Requirements as detailed in Appendix 4 of GNR 982

APPENDIX 4 LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 982		REPORT SECTION
(a)	Details of	
	i) the EAP who compiled the EMPr; and	Section 1.3 Appendix A
	ii) the expertise of the EAP, including a Curriculum Vitae	Section 1.3 Appendix A
(b)	Detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	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 any areas that should be avoided, including buffers;	Appendix C
(d)	A description of the impact management objectives, 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-	
	i) Planning and design;	Section 3
	ii) Pre-construction activities;	Section 4

APPENDIX 4 LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 982

REPORT SECTION

	iii) Construction activities	Section 5
	iv) Rehabilitation of the environment after construction and where applicable post closure; and	
	v) Where relevant, operation activities.	
(e)	A description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);	Section 7 Section 7
(f)	A description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to -	
	i) Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	Section 5 Section 7
	ii) Comply with any prescribed environmental management standards or practices;	
	iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	
	iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	
(g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 4
(h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 4
(i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 4 Section 5 Section 7
(j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 5 Section 7
(k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 4
(l)	A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	Section 4
(m)	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	Section 4
	ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(n)	any specific information that may be required by the competent authority	N/A

1.5 PROJECT DESCRIPTION

This section provides a description of the location of the project site location and a summary of the project details. The descriptions encompass the activities to be done during the construction, operational and decommissioning (should it be decided that the facility will be decommissioned) phases, as well as the consideration for the needs and desirability of the project in accordance with Appendix 3 of GNR 326.

1.5.1 SITE LOCATION

The proposed Project is located in the Govan Mbeki Local Municipality under the jurisdiction of the Gert Sibande District Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa (**Figure 1-1**). The proposed Project entails the construction of a 132kV overhead powerline (OHPL) and the onsite substation at the proposed Mukondeleli WEF to connect to a private off-taker substation located inside the Sasol Secunda Primary Area. The project area covers 11 farm portions as shown in **Table 1-4**.

The preferred alignment is detail in **Table 1.5** and **Figure 1-2**.

Table 1-4: Farm portions on which the proposed development is located

PORTION NUMBER	FARM NUMBER	FARM NAMES	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
2	317	van Tondershoek	TOIS00000000031700002
4	291	Bojesspruit	TOIS00000000029100004
8	291	Bosjesspruit	TOIS00000000029100008
9	291	Bosjesspruit	TOIS00000000029100009
10	291	Bosjesspruit	TOIS00000000029100010
12	317	van Tondershoek	TOIS00000000031700012
3	285	Twistdraai	TOIS0000 00000285 00003
5	285	Twistdraai	TOIS0000 00000285 00005
6	285	Twistdraai	TOIS0000 00000285 00006
0	318	Brandspruit	TOIS00000000031800000
3	318	Brandspruit	TOIS0000 00000318 00003

Table 1.5: Co-ordinates of the preferred route and associated infrastructure

POINT	CO-ORDINATES	
OHPL Option 1 (Preferred)		
PL1	26°36'59.30"S	29°11'19.65"E
PL2	26°36'59.45"S	29°11'17.47"E
PL3	26°36'53.07"S	29°11'13.45"E
PL4	26°36'55.29"S	29°10'59.40"E
PL5	26°36'48.48"S	29°10'55.54"E
PL6	26°35'59.63"S	29°10'41.18"E

POINT	CO-ORDINATES	
PL7	26°35'7.14"S	29° 9'51.97"E
PL8	26°34'53.03"S	29° 9'56.25"E
PL9	26°34'45.15"S	29° 9'52.44"E
PL10	26°34'41.96"S	29° 9'30.17"E
PL11	26°34'17.65"S	29° 9'25.50"E
PL12	26°33'53.46"S	29° 9'29.04"E
PL13	26°33'50.44"S	29° 9'40.92"E
Mukondeleli Substation - Option 1 (Preferred)		
1A	26°36'57.14"S	29°11'19.43"E
1B	26°36'57.25"S	29°11'24.54"E
1C	26°37'1.97"S	29°11'24.72"E
1D	26°37'1.96"S	29°11'19.81"E
Sasol Substation (including BESS)		
SA	26°33'45.12"S	29° 9'38.16"E
SB	26°33'46.28"S	29° 9'47.44"E
SC	26°33'51.36"S	29° 9'46.68"E
SD	26°33'50.22"S	29° 9'37.77"E

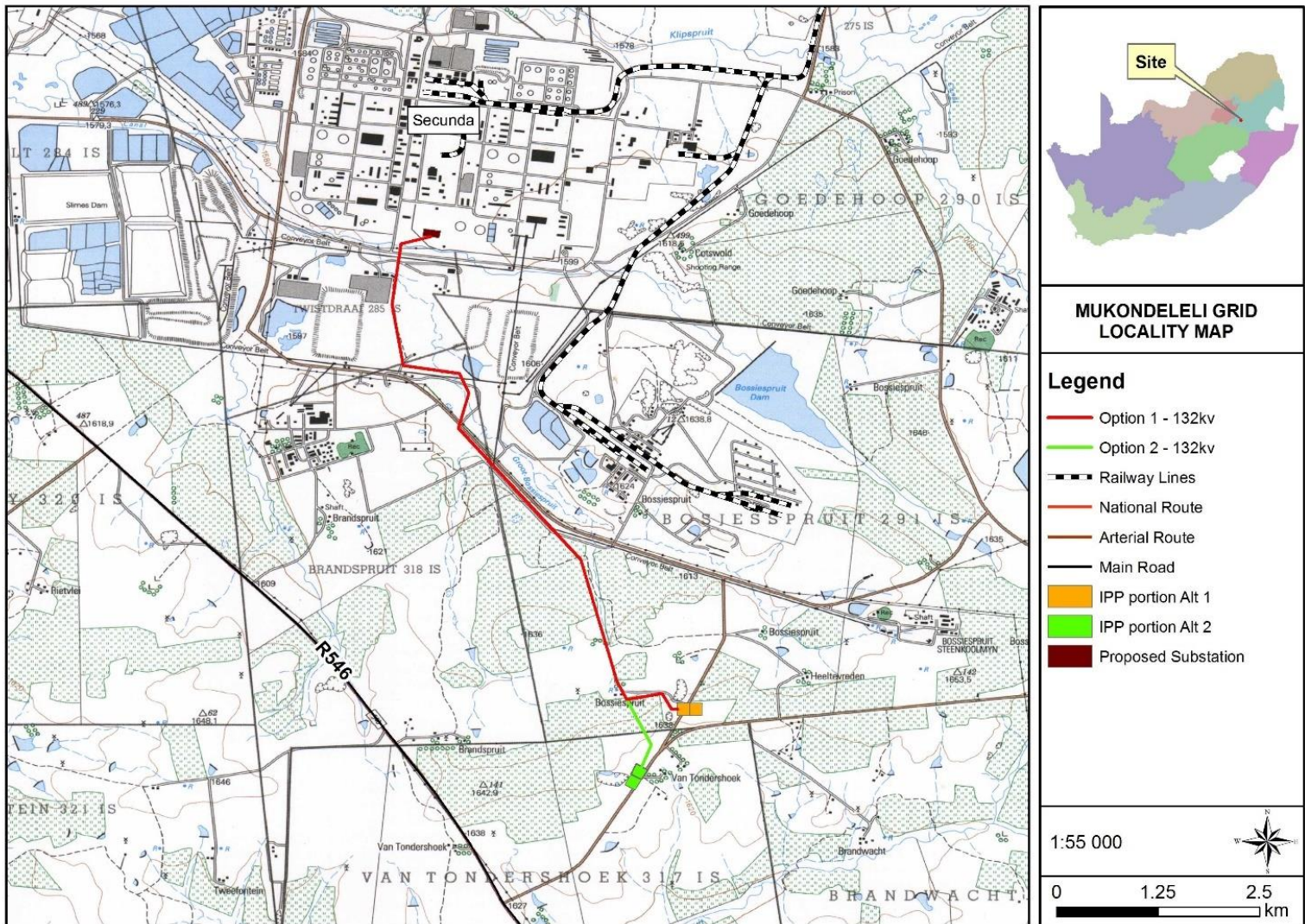


Figure 1-1: Locality Map of the proposed Mukondeleli up to 132 kV grid connection transmission line



Figure 1-2: Preferred Alignment for the Mukondeleli up to 132kV OHPL

1.5.2 ELECTRICITY POWER TRANSMISSION AND DISTRIBUTION

Electricity is carried at high voltages (kilovolts, or kV) along transmission lines in order to reduce the electrical losses that occur over long distances between power generation and consumption points. In order for electricity to be transmitted safely and efficiently over long distances, it must be at a high voltage and a low current.

The voltages at which power is generated at the power generation facility are too low for transmission over long distances. To overcome this problem, transformers are installed at the power stations and substations to increase the voltage level. Transformer's step-up the voltage from, for example, 11 or 22 kV to higher voltages such as 66 kV, 132kV, 220 kV, 275 kV, 400 kV or 765 kV, and feed the generated power into the substation located within the Sasol site.

When the electricity arrives at a distribution substation, bulk supplies of electricity are taken for primary distribution to towns and industrial areas, groups of villages, farms and similar concentrations of consumers. The lines are fed into intermediate substations where transformers reduce (step-down) the voltage level. This could be 11 kV in large factories and 380/220 Volts in shops and homes. Power is distributed to end-users via reticulation power lines and cables. Figure illustrates a typical distribution system.

As of March 2019, South Africa's transmission network comprised 32,802 km of line length, 167 substations and 152,135 MVA of transformer capacity. All the high voltage lines, plus the transformers and related equipment, form the transmission system also known as the national grid.

COMPONENTS OF A TYPICAL TRANSMISSION LINE SYSTEM

The main components of a typical electrical transmission system include the following:

TRANSMISSION STRUCTURES

Transmission structures are the most visible components of the power transmission system. Their function is to inter alia, keep the high-voltage conductors separated from their surroundings and from each other. Some structure designs reflect the specific function of the structure, while others have come about as a result of technological progress. Structure design alternatives for this project are discussed in Section 5.2.

CONDUCTORS

Conductors carry the power through and from the grid. Generally, several conductors per phase are strung from structure to structure. The number of conductors per phase depends on the performance of the line, typically, more than one conductor per phase is used when the operating voltage exceeds 132kV. Conductors are constructed primarily of aluminium, aluminium-alloy, steel or other types of materials as appropriate.

SUBSTATIONS

The very high voltages used for power transmission are converted at substations to lower voltages for further distribution and consumer use. Substations vary in size and configuration but may cover several hectares; they are cleared of vegetation and typically surfaced with gravel. They are fenced, and are normally reached by a permanent access road. In general, substations include a variety of indoor and outdoor electrical equipment such as switchgear, transformers, control and protection panels and batteries, and usually include other components such as control buildings, fencing, lighting etc.

For the substation to perform it needs sophisticated protection equipment to detect faults and abnormal conditions that may occur on the network. Action may consist for example, of automatically tripping a transmission line to cater for abnormal conditions such as lightning strikes, fires or trees falling on transmission lines. This action is necessary for safety reasons in the event of an accident or to maintain electricity supply and limit the disruption caused.

Figure 1-3 provides an illustration of a typical substation layout.

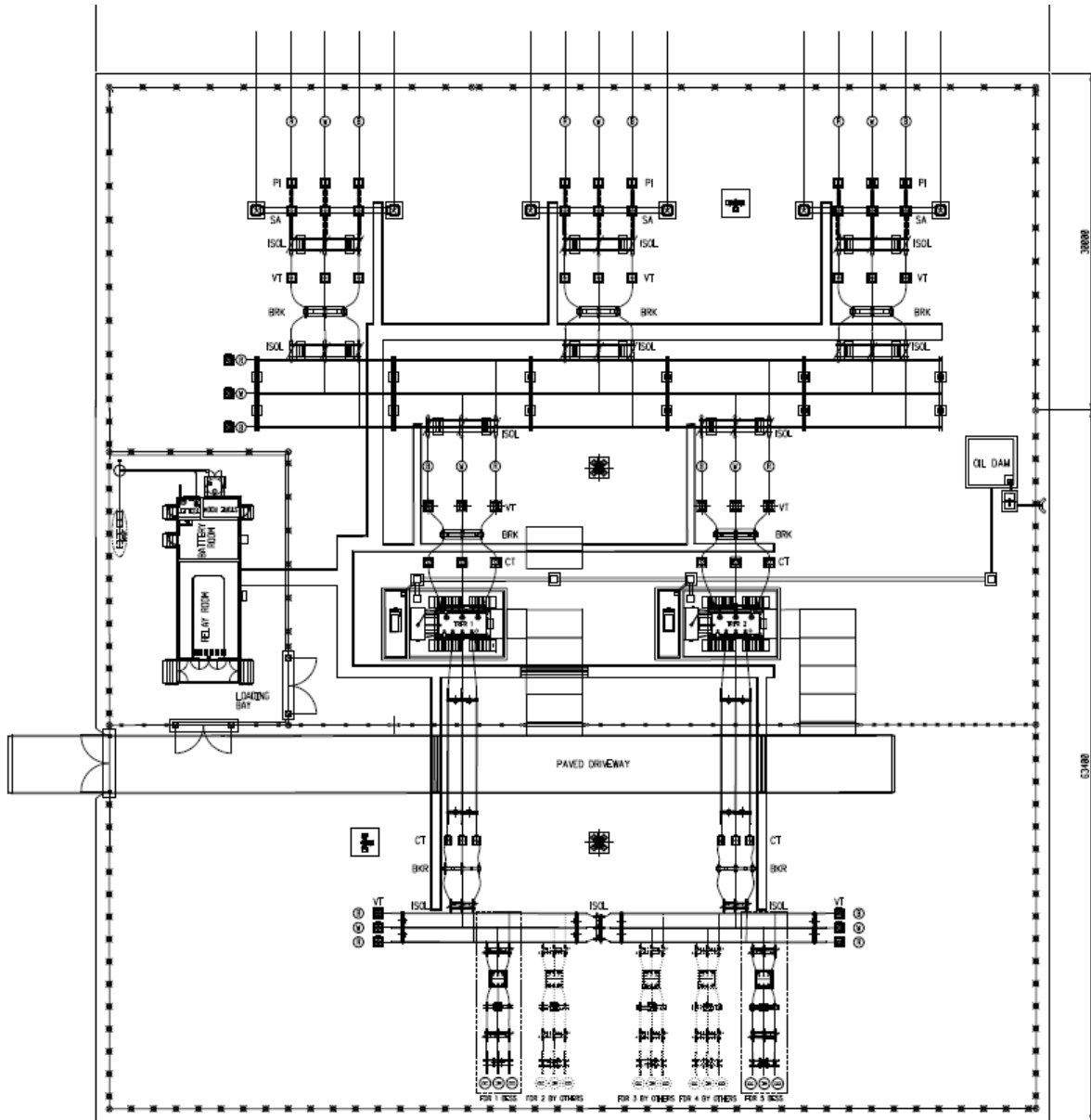


Figure 1-3: Typical Substation Layout

TRANSFORMERS

Transformers are major items found in a transmission or distribution substation. There may be a number of different types of transformers in a substation such as power transformers, voltage transformers or current transformers.

A power transformer is a very simple device piece of electrical equipment where alternating current (AC) is led through a primary coil of wire, which produces an alternating magnetic field in the ring-shaped core of soft iron. This in turn creates a voltage in a secondary coil, from which the output current can be drawn. If the secondary coil has more turns than the primary coil, the output voltage is higher than the input voltage. This is a step-up transformer. A step-down transformer has more turns in the primary coil than in the secondary coil to reduce the voltage.

1.5.3 PROJECT INFRASTRUCTURE

The proposed project entails the construction of 1 x up to 132kV OHPL from the Alternative 1 substation (preferred Mukondeleli WEF onsite substation) to the private off taker substation at Sasol Secunda. The proposed project will comprise the following key components:

- Construction of 1 x up to 132kV OHPL (either single or double circuit) between the Mukondeleli WEF onsite substation (Alternative 1 preferred substation) to the private off taker substation at Sasol Secunda. The powerline will have a 250m assessment corridor to allow for micro-siting.
- Establishment of the substation (with a footprint of approximately 2 ha) at the preferred Mukondeleli substation area.
- Standard substation electrical equipment, i.e., transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be needed.
- Battery Energy Storage System (BESS) and Sasol Substation will have a combined footprint of up to 4 ha. The BESS storage capacity will be up to 300MW/1 200 megawatt-hour (MWh) with up to four hours of storage. It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, Lithium Nickel Manganese Cobalt oxides or Vanadium Redox flow technologies will be considered as the preferred battery technology however the specific technology will only be determined following Engineering, Procurement, and Construction (EPC) procurement. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers. The BESS components will arrive on site pre-assembled;
- The control building, telecommunication infrastructure, oil dam(s) etc,
- All the access road infrastructure to and within the substation
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).

COMPONENTS OF THE TRANSMISSION LINE

A brief overview of the physical/technical requirements of the project is as follows:

- 1 x up to 132kV OHPL (either single or double circuit) between the Alternative 1 substation (preferred Mukondeleli WEF onsite substation) and private off taker substation at Sasol Secunda;
- Straight line distance between Alternative 1 substation (preferred Mukondeleli WEF substation) and private off taker substation at Sasol Secunda is approximately 7.78 km;
- The assessment corridor for 1x up to 132kVA OHPL is 250 m.
- The maximum height for an up to 132kV OHPL structure is approximately 40m.
- Minimum conductor clearance is between 8.1 and 12.6m.
- Span length between pylon structures is typically up to 250m apart, depending on complexity and slope of terrain.
- The design of 132kV structure is currently unknown, the following options will be used to determine preferred design:
 - Intermediate self-supporting monopole
 - Inline or angle-strain self-supporting monopole
 - Suspension self-supporting monopole
 - Triple pole structure
 - Steel lattice structure
- The up to 132 kV structures will have a concrete foundation and the sizes may vary depending on design type up to 80m² (10m by 8m), with depths reaching up to 3.5m typically in a rectangular ‘pad’ shape. The actual number of structures required will vary according to the final route alignment determined.

CLEARANCE REQUIREMENTS FOR TRANSMISSION LINES

For safety reasons, transmission lines require certain minimum clearance distances. These are as follows:

- The minimum vertical clearance distance between the ground and the transmission line is 6.7m.
- The minimum vertical clearance to any fixed structure that does not form part of the OHPL is 9.4m - 11m.
- The minimum distance between a 132kV OHPL and an existing road is 60m – 120m (depending on the type of road).
- Any farming activity can be practiced under the conductors provided that safe working clearances and building restrictions are adhered to.
- Minimum servitude to other parallel lines.

PROPOSED ASSOCIATED INFRASTRUCTURE

The proposed Grid Connection project will require the following with respect to the permanent infrastructure:

- Where the OHPL crosses a fence between neighbouring landowners and there is no suitable gate in place, a suitable gate will be erected in consultation with the landowner. These gates are necessary in order to ensure access to the line for maintenance and repair purposes.
- Existing road infrastructure will be used as far as possible to provide access for construction vehicles during the construction of the line. Thereafter, the roads are used for inspection and maintenance purposes. Where appropriate roads may be upgraded to access transmission lines and substations. Where no roads exist, access roads may be created for maintenance and inspection purposes.
- Fibre Optic cable could be strung on the earth cable if required for telecommunication
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).

PROPOSED SWITCHING SUBSTATIONS

Two alternative substation locations have been proposed for the Mukondeleli WEF (Preferred Alternative 1 and Alternative 2). It must be indicated that both substation alternatives are planned to be constructed on approximately 10 ha. Based on the plan, an IPP substation and a Switching substation will be constructed for each of the alternatives. The substations will be constructed next to each other on areas of 2ha each. Electricity generated from the Mukondeleli WEF will be distributed through the IPP substation to the Switching substation, from the Switching substation electricity will be distributed by the proposed up to 132kV grid connection transmission line into the ECSS before being distributed to the national grid via a up to 400kV grid connection transmission line through Mukondeleli Power station.

The substation will consist of a high voltage substation yard to allow for multiple up to 132kV feeder bays and transformers, control building telecommunication, and other substation components as required. Supporting infrastructure such as Control room, parking, oil spillage containment dam, fence, and other infrastructure will be constructed as part of the Switching substation (**Figure 1-4**).

There is a potential that the electricity generated will only feed into Sasol and not to the national electricity grid, in which instance the substations will be privately owned and managed and not transferred to Eskom.



Figure 1-4: Example of substation

1.5.4 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

- The typical steps involved in the construction and operation of a transmission line is summarised below:
- Planning Phase
 - Step 1: Surveying of the development area and negotiation with affected landowners; and
 - Step 2: Final design and micro-siting of the infrastructure based on geotechnical, topographical conditions and potential environmental sensitivities.
- Construction Phase
 - Step 3: Vegetation clearing;
 - Step 4: Assembly and erection of infrastructure on site;
 - Step 5: Stringing of conductors; and
 - Step 6: Rehabilitation of disturbed areas and protection of erosion sensitive areas.
- Operation Phase
 - Step 7: Continued maintenance during operation.

CONSTRUCTION PHASE

CONSTRUCTION SCHEDULE

Construction of the OHPL is anticipated to take 6 - 12 months.

SITE ESTABLISHMENT AND TRANSPORTATION OF MATERIALS AND EQUIPMENT TO SITE

The selected contractor will establish a temporary site camp including, but not be limited to, temporary offices, laydown areas for equipment and materials, storage facilities, ablutions, waste storage and handling area, and parking area. The location and extent of the Contractors camp, to be established within the Project, are undertaken as part of a different application and are not covered in the EMPr. It is anticipated that materials will be collected on a daily basis from the contractor laydown area for the construction activities along the servitude. This limits areas to be impacted for storage along the servitude as well as for security purposes when activities cease at the end of each day.

The required materials and equipment will be transported to the site via public roads and private farm roads/tracks along the proposed servitude, as far as possible. Large mobile plant including mechanical/hydraulic augers, mobile cranes, bucket trucks/cherry pickers will be used during installation of the OHPL.

Labour Requirements

During site preparation and installation of Project related infrastructure the selected Contractor, working on behalf of Mukondeleli WEF, is anticipated to require 20-30 people to undertake the required works. Approximately 5% of workers would be highly skilled, 15% medium skilled, and 80% low skilled.

VEGETATION CLEARING

Due to the nature of the vegetation within the Project area, which is predominantly sparse, low shrubs and grasses, limited vegetation clearing will be required. Clearing of vegetation will be limited to pylon areas to facilitate installation of each pylon and that required for the substation and associated infrastructure footprints. Clearing will be done in phases along the OHPL route as required prior to installation activities.

INSTALLATION OF OHPL

Standard OHPL installation methods will be employed, which entails the excavations for foundations, planting of tower (concrete casting may be required) and stringing of the conductors.

A number of tower options could be utilised with a maximum height up to 30m above ground level, which are reported to have a life expectancy of more than 25 years. The actual height of the pylons will vary based on the site topography to maintain the specified clearance of the transmission lines.

Once the pylons have been installed, the lines will be strung. The Contractor will be responsible for functional testing and commissioning of the OHPL.

ONSITE SUBSTATION

A new onsite substation will be established within the extent of the authorized Mukondeleli WEF. The Mukondeleli WEF IPP substation environmental authorisation is undertaken as part of a different process; however, the Switching Substation is part of this application. The Switching Substation will be constructed on an area of 2 ha. A second substation (and BESS) will be established at Sasol Secunda with a combined footprint of 4ha.

DEMobilISATION

Upon completion of the installation phase, any temporary infrastructure will be removed, and the affected areas rehabilitated.

OPERATIONAL PHASE

Typically, Eskom would be responsible for managing the operations of the OHPL in line with their internal management systems, however there is a potential that the electricity generated will only feed into Sasol and not to the national electricity grid, in which instance the substations will be privately owned and managed and not transferred to Eskom. The Offtaker is considered to have the requisite expertise to operate and maintain the transmission line. The Offtaker will adhere to all existing Safety Codes and Guidelines for the operation and maintenance of the OHPL infrastructure.

During the operational phase there will be little to no Project-related movement along the servitude as the only activities are limited to maintaining the servitude (including maintenance of access roads and cutting back or pruning of vegetation to ensure that vegetation does not affect the OHPL), inspection of the powerline infrastructure and repairs when required. Limited impact is expected during operation since there will not be any intrusive work done outside of maintenance in the event that major damage occurs to site infrastructure.

Operation of the OHPL will involve the following activities, discussed below.

SERVITUDE MANAGEMENT AND ACCESS ROAD MAINTENANCE

Servitude and access road maintenance is aimed at eliminating hazards and facilitating continued access to the OHPL. The objective is to prevent all forms of potential interruption of power supply due to overly tall

vegetation/climbing plants or establishment of illegal structures within the right servitude. It is also to facilitate ease of access for maintenance activities on the OHPL. During the operational phase of the project, the servitude will be maintained to ensure that the OHPL functions optimally and does not compromise the safety of persons within the vicinity of the OHPL.

TRANSMISSION LINE MAINTENANCE AND OPERATIONS

The power line owner and operator will develop comprehensive planned and emergency programmes through its technical operations during the operation and maintenance phase for the OHPL. The maintenance activities will include:

- The powerline Maintenance Team will carry out periodic physical examination of the OHPL and its safety, security and integrity.
- Defects that are identified will be reported for repair. Such defects may include defective conductors, flashed over insulators, defective dampers, vandalised components, amongst others.
- Maintenance / repairs will then be undertaken.

DECOMMISSIONING PHASE

Decommissioning will be considered when the OHPL is regarded obsolete and will be subject to a separate authorisation and impact assessment process. This is not expected to occur in the near future.

1.6 NEED AND DESIRABILITY OF THE PROJECT

The DEA&DP Guideline (2013) states that the essential aim of need and desirability is to determine the suitability (i.e. is the activity proposed in the right location for the suggested land-use/activity) and timing (i.e. is it the right time to develop a given activity) of the development. Therefore, need and desirability addresses whether the development is being proposed at the right time and in the right place. Similarly, the ‘Best Practicable Environmental Option’ (BPEO) as defined in NEMA is “*the option that provides the most benefit and causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term.*”

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of, and investment in, renewable energy and associated energy distribution infrastructure is supported by the National Development Plan, New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed power line is therefore supported by key policy and planning documents and is in line with South Africa’s strategic energy planning context (Refer to **Section 2** of the BAR).

Due to the fact that the Project will be providing energy to Sasol, the Project will also aid in the increase of exports from South Africa through the production of green hydrogen that has become popular globally. Hydrogen has become one of the latest buzzes for meeting the world’s growing energy needs and a vital component for meeting the global decarbonization goals. Hydrogen is a clean fuel; however, the manufacturing of hydrogen fuel is energy-intensive and traditionally uses fossil fuels to power the production plant.

Sasol’s intent is to lead the energy transition in South Africa. Sasol’s goal is to reduce its greenhouse gas footprint for Scope 1 and 2 emissions by 30% by 2030 and achieve Net Zero by 2050. This will be achieved through a combination of energy and process efficiencies, strategic partnerships, investments in renewables and a shift to incremental natural gas as a transition feedstock and ultimately green hydrogen and sustainable carbon for the Southern African value chain.

At the core of Sasol’s renewable energy strategy is the development of green hydrogen innovations. Green hydrogen is recognised as a key enabler to decarbonisation because of its ability to decarbonise hard-to-abate industries such as aviation, steel and heavy-duty mobility.

The energy security benefits associated with the proposed Mukondeleli WEF is dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure. The proposed OHPL is therefore essential supporting infrastructure to the solar energy facility development, which, once developed, will generate power from renewable energy resources.

No physical or economic displacement will be required along the proposed route.

Furthermore, negative environmental impacts associated with the activity will be mitigated to acceptable levels.

1.7 ENVIRONMENTAL SENSITIVITIES

The following environmental sensitivities were identified on the site, as a result of the Project location and proposed activities and will require specific applications or measures for mitigation to minimise impact.

- **Freshwater:**
 - Aquatic CBAs
 - Wetland features
 - Freshwater ecosystem priority areas
- **Biodiversity:**
 - CBA and ESA
 - Critically endangered and endangered species
- **Avifauna:**
 - High value habitat unit
 - Presence of sensitive species
- **Visual:**
 - Visual receptors
- **Heritage**
 - Heritage resources within study area
- **Palaeontology:**
 - Features with very high paleontological sensitivity
- **Agriculture**
 - Annual crop cultivation
 - Planted pasture rotation

The above sensitivities are discussed in the sub-sections below. The combined environmental sensitivities of the proposed powerline Project footprint are shown in **Figure 1-5**.

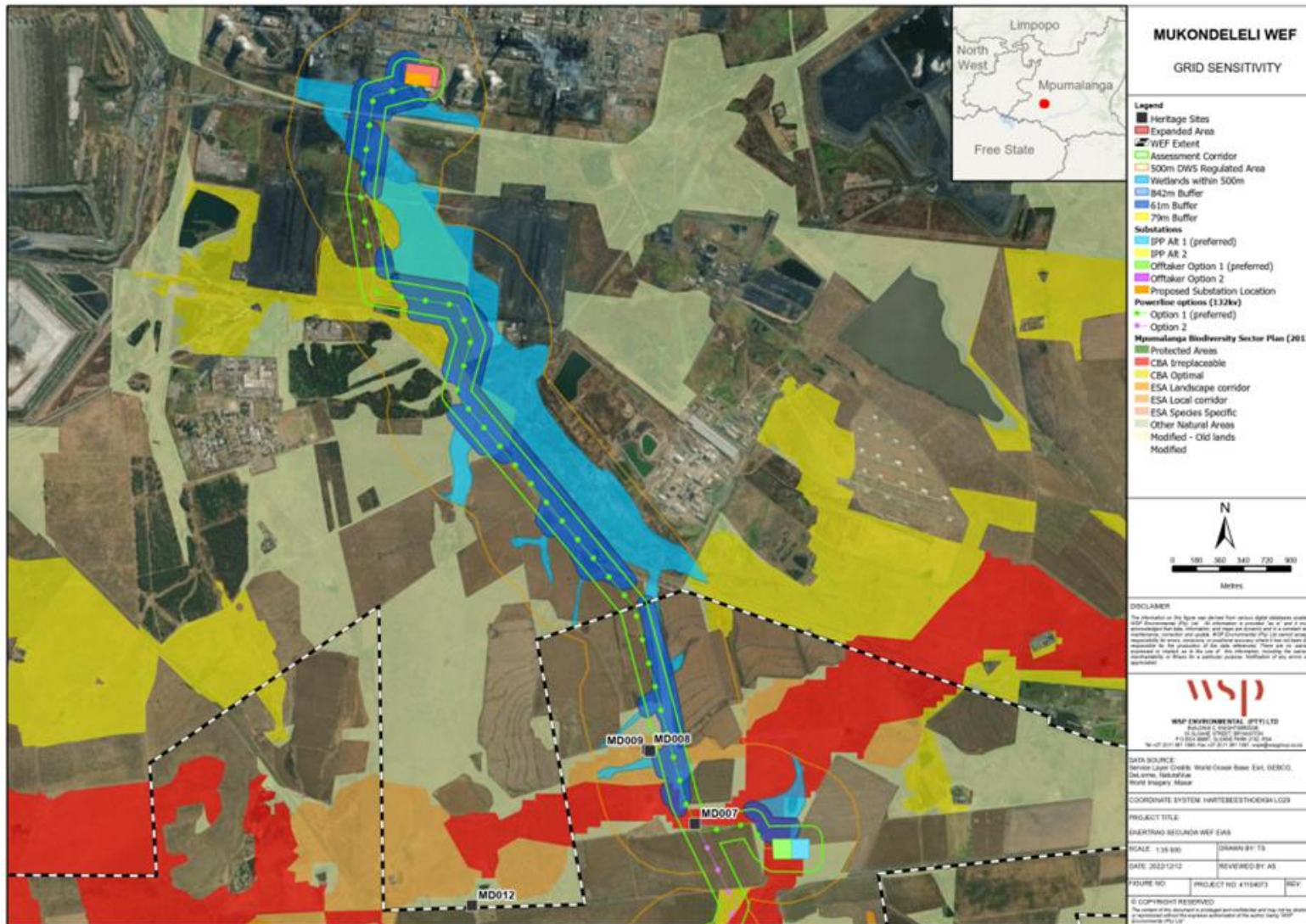


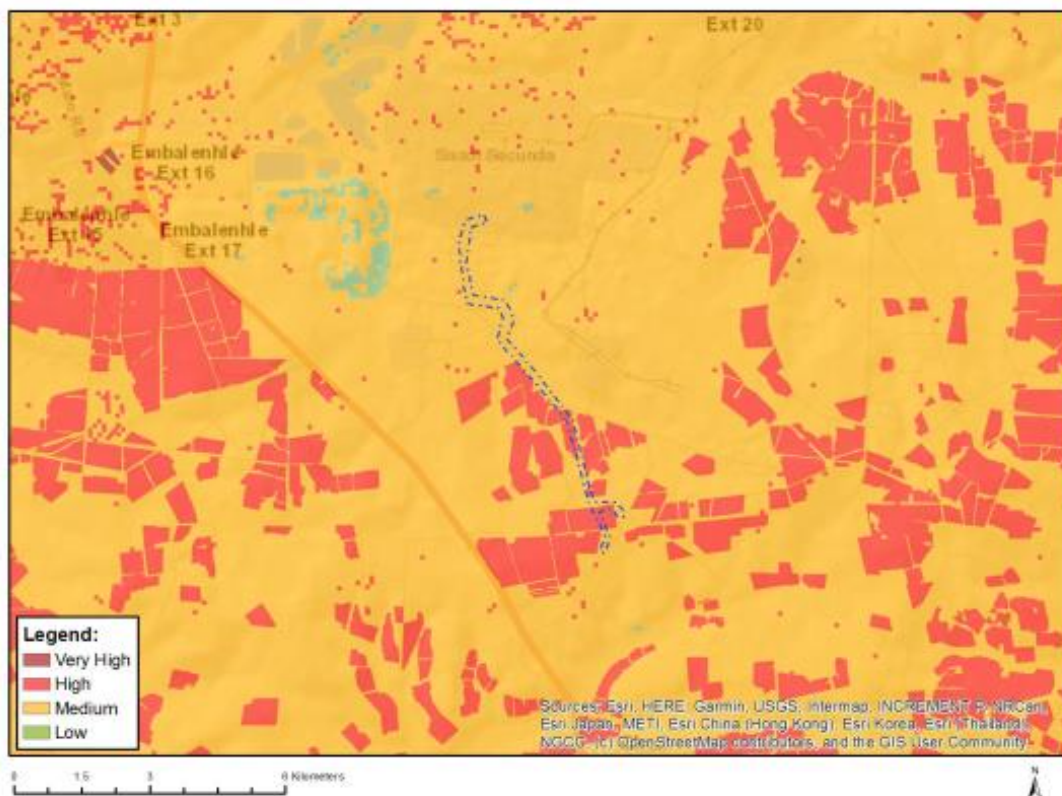
Figure 1-5: Combined Sensitivity Map

PROPOSED MUKONDELELI WIND ENERGY FACILITY UP TO 132KV GRID CONNECTION NEAR SECUNDA, MPUMALANGA (REFERENCE: 1/3/1/16/1G-276)
 Project No. 41104073
 MUKONDELELI WIND ENERGY FACILITY (RF) (PTY) LTD

1.7.1 AGRICULTURAL SENSITIVITY

Based on the Department of Forestry, Fisheries and the Environment (DFFE) Screening Tool the Mukondeleli powerline corridor is classified as Very High Sensitivity with regards to the agricultural theme (Figure 1-6).

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Annual Crop Cultivation / Planted Pastures Rotation; Land capability; 06. Low-Moderate/07. Low-Moderate/08. Moderate
High	Annual Crop Cultivation / Planted Pastures Rotation; Land capability; 09. Moderate-High/10. Moderate-High
Medium	Land capability; 06. Low-Moderate/07. Low-Moderate/08. Moderate

Figure 1-6: DFFE Screening Tool outcome agricultural theme sensitivity

Agricultural sensitivity is a direct function of the capability of the land for agricultural production. All arable land that can support viable crop production, is classified as high (or very high) sensitivity. This is because there is a scarcity of arable production land in South Africa and its conservation for agricultural use is therefore a priority. Land which cannot support viable crop production is much less of a priority to conserve for agricultural use, and is rated as medium or low agricultural sensitivity.

It is important to recognise that the agricultural sensitivity of land, in terms of a particular development, is not only a function of the screening tool sensitivity, but is also a function of the severity of the impact which that development poses to agriculture. This is not recognised in the screening tool classification of sensitivity. So, for example, the sensitivity of an agricultural environment to overhead powerlines is not what the screening tool classifies the sensitivity as, because most agricultural environments have a very low sensitivity to overhead powerlines. This is because powerlines have negligible agricultural impact in most environments, regardless of the agricultural production potential of the land that they cross (see Section 9). Therefore, in the context of the development of overhead powerlines, almost no land can be considered to have high sensitivity for impacts on agricultural resources. For this reason the screening tool sensitivity of the powerline corridor is largely irrelevant. In this assessment, only the footprint of the substation is of relevance.

The screening tool classifies agricultural sensitivity according to only two independent criteria – the land capability rating and whether the land is used for cropland or not. All cropland is classified as at least high sensitivity, based on the logic that if it is under crop production, it is indeed suitable for it, irrespective of its land capability rating.

The screening tool sensitivity categories in terms of land capability are based upon the Department of Agriculture's updated and refined, country-wide land capability mapping, released in 2016. The data is generated by GIS modelling. Land capability is defined as the combination of soil, climate and terrain suitability factors for supporting rain fed agricultural production. It is an indication of what level and type of agricultural production can sustainably be achieved on any land, based on its soil, climate and terrain. The higher land capability values (≥ 8 to 15) are likely to be suitable as arable land for crop production, while lower values are only likely to be suitable as non-arable grazing land.

A map of the proposed powerline and substations alternatives, overlaid on the screening tool sensitivity, is given in **Figure 1-6**, but as noted above, the screening tool sensitivity of the powerline corridor is largely irrelevant to agricultural impact. The only relevance is that pylons should be located outside of or on the edges of cropland, where possible, so that they minimise interference with crop production.

1.7.2 AQUATIC ECOLOGY

Based on the National Web-Based Environmental Screening tool classifies parts of the study area as very high sensitivity due to the presence of wetlands and estuaries (**Figure 1-7**).

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low sensitivity
Very High	Wetlands and Estuaries

Figure 1-7: The DFFE screening tool rating for the Aquatic Biodiversity Theme

In terms of the desktop assessment the study site has conservation significance both in terms of national as well as provincial conservation planning. The site verification assessment indicated that the proposed layout encroaches on the wetlands and their associated buffer areas.

The desktop assessment conducted by DWS indicated that the sub quaternary reaches surrounding the study site are largely natural (B) to moderately modified (C). The site verification indicated that the wetlands are moderately (C) to seriously modified (E) whilst the aquatic macroinvertebrates indicated that the aquatic ecosystems are seriously/critically (E/F) modified. Therefore, the wetland and aquatic ecosystems surrounding the study site do not conform to the desktop assessment and are more impacted than expected.

Based on the field assessments, the wetland delineation and buffer indicate that the current layout encroaches on the wetlands as well as their respective buffer areas. Although the wetland and aquatic ecosystems are impacted, they still fulfil important ecosystem services and also form part of national and provincial conservation targets.

Ideally a walk down should be done on site once the location of each pylon is available to ensure the footprints remain outside of watercourses as far as possible

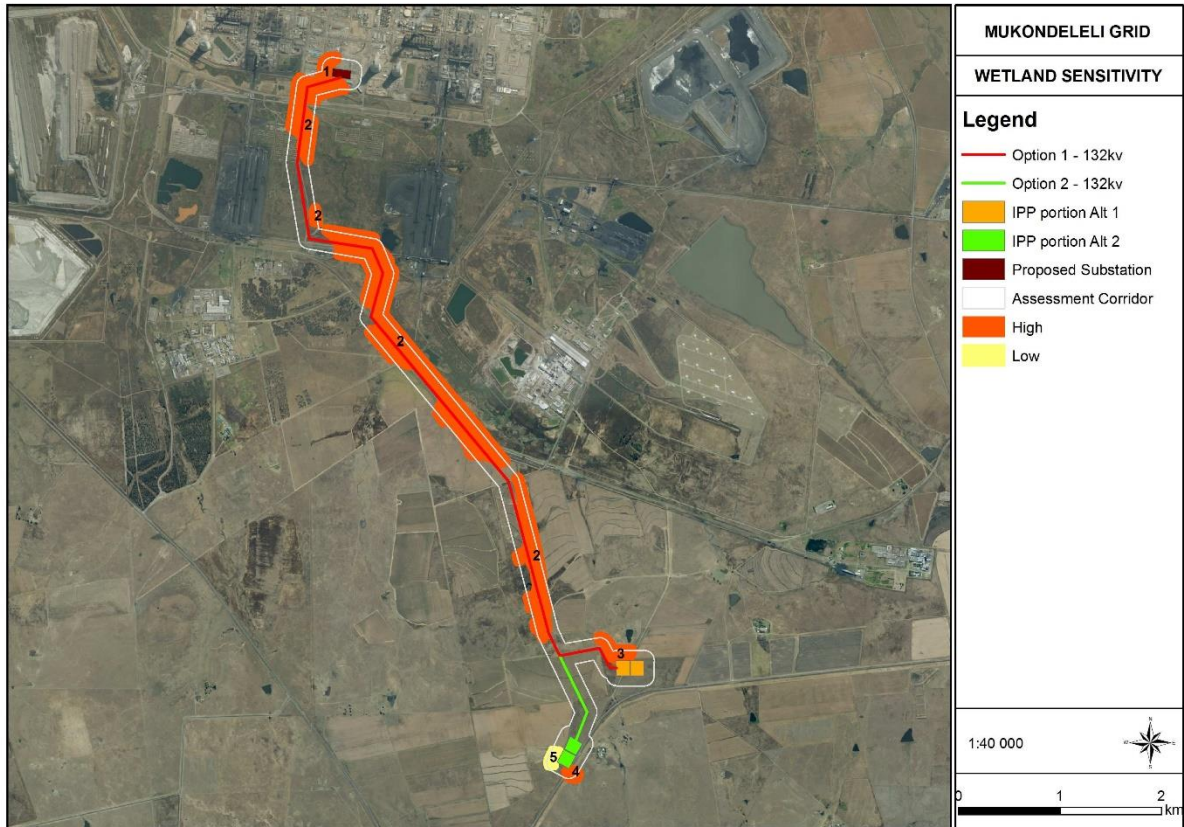


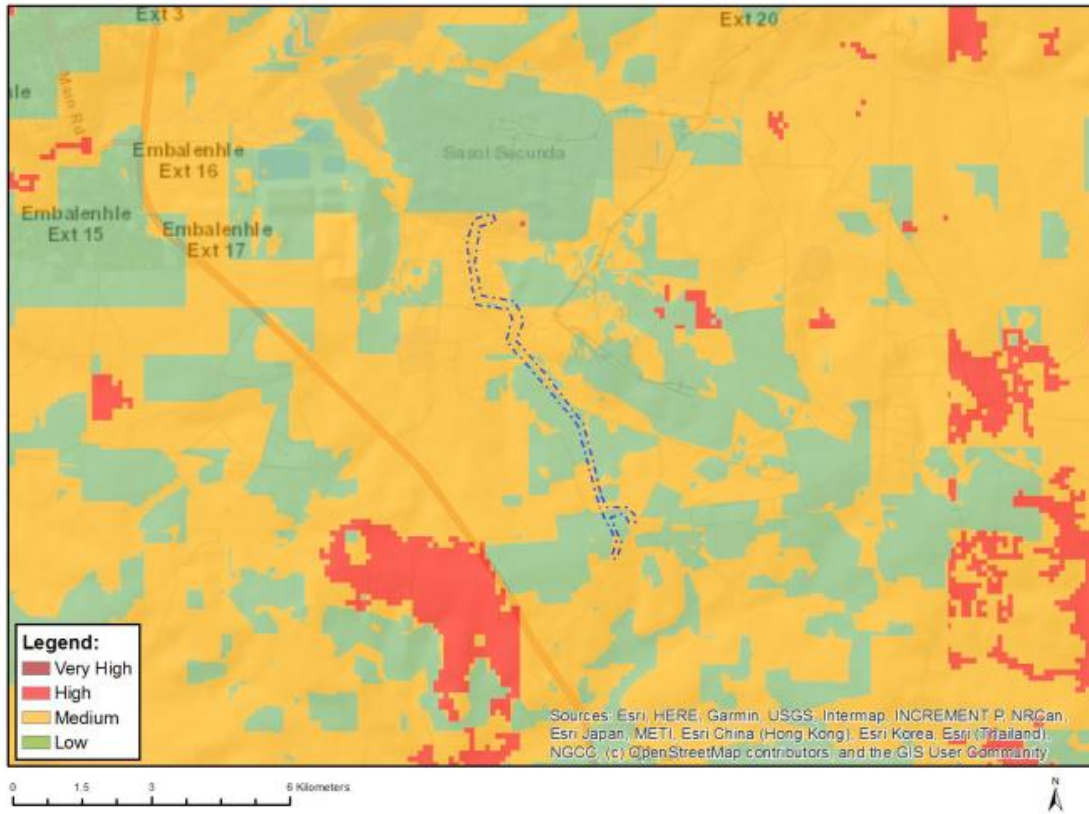
Figure 1-8: Wetland sensitivity based on the Site Ecological Importance (SANBI, 2020) for the proposed Mukondeleli gridline

1.7.3 TERRESTRIAL ECOLOGY

ANIMAL SPECIES THEME

The animal species theme sensitivity, as indicated in the Screening Report of the National Web based Environmental Screening Tool, was derived to be Medium sensitivity, mainly due to the occurrence of three species with an IUCN status of Vulnerable as being of concern such as *Aves-Sagittarius serpentarius*, *Insecta-Lepidochrysops procera* and *Mammalia-Crocidura maquassiensis* (**Figure 1-9**).

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Subject to confirmation
Medium	Aves-Sagittarius serpentarius
Medium	Insecta-Lepidochrysops procera
Medium	Mammalia-Crocidura maquassiensis

Figure 1-9: Animal Species Theme Sensitivity, DEA Screening Report

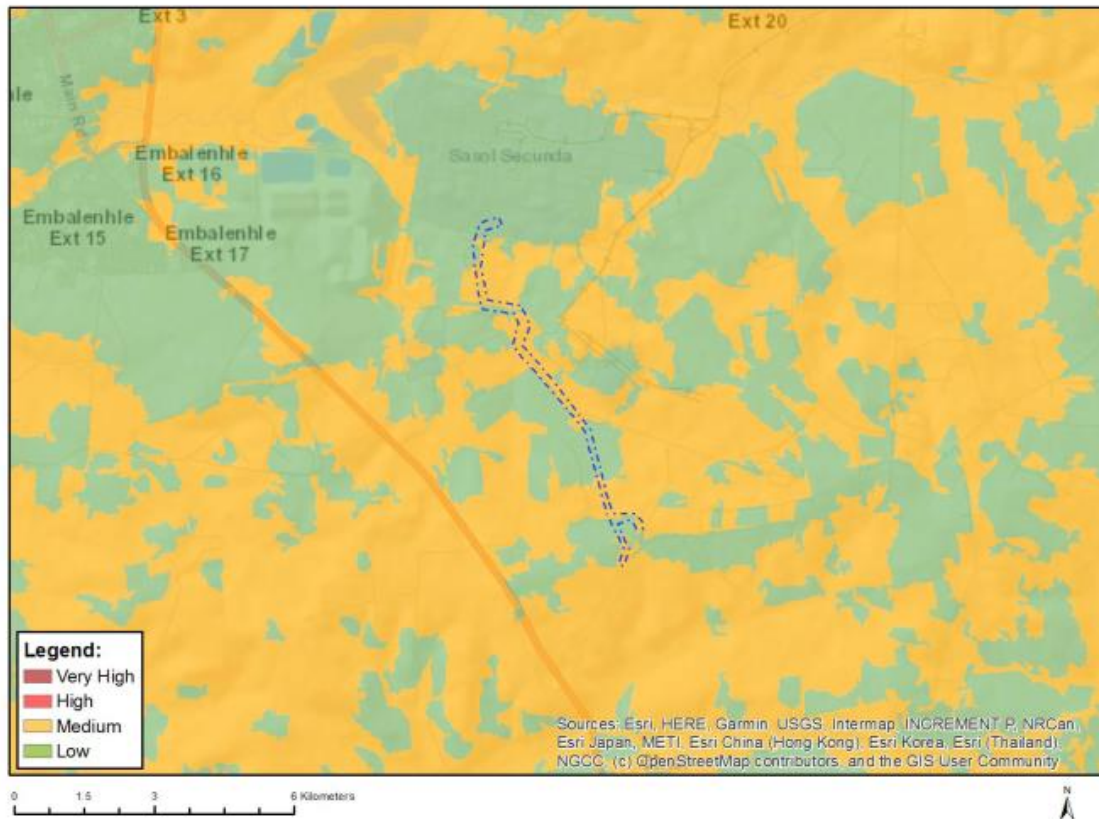
The Screening Tool listed *Lepidochrysops procera* (Lepidoptera) as a SCC for the site. However, it was not listed in the ADU database, the MNCA (1998) provincial species lists or the NEMBA (2007c) ToPS lists. *Lepidochrysops procera* was not recorded on site and is unlikely to occur there because its host plant (*Ocimum obovatum*) was not present on site.

- The Maquassie Musk Shrew *Crocidura maquassiensis* was not listed in the ADU mammal species list or the MNCA (1998) lists for the Mpumalanga province and was not recorded on site during the survey. The Maquassie Musk Shrew depends on wetlands as suitable habitat in savanna and grasslands. Although it has a wide inferred extent of occurrence, it appears to be patchily distributed. *Crocidura maquassiensis* has not been reported from Mpumalanga Province post-1999 and thus there is a very low probability for it to occur on site.
- What the screening tool did not highlight was the possible presence of the Giant girdled lizard, a species with a Vulnerable IUCN status. The species has been reported by one of the landowners on the Mukondeleli WEF site.
- Overall sensitivity of animal theme (avifaunal and bat components excluded) is thus rated as medium. However, if the suggested mitigation measures are followed the animal SCC should not be negatively affected.

PLANT SPECIES THEME

The plant species theme sensitivity, as indicated in the Screening Report of the National Web based Environmental Screening Tool, was derived to be Medium sensitivity, mainly due to the occurrence of Sensitive species 1251 and 691.

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Where only a sensitive plant unique number or sensitive animal unique number is provided in the screening report and an assessment is required, the environmental assessment practitioner (EAP) or specialist is required to email SANBI at eiadatarequests@sanbi.org.za listing all sensitive species with their unique identifiers for which information is required. The name has been withheld as the species may be prone to illegal harvesting and must be protected. SANBI will release the actual species name after the details of the EAP or specialist have been documented.

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

Sensitivity	Feature(s)
Low	Low Sensitivity
Medium	Sensitive species 1252
Medium	Sensitive species 691

Figure 1-10: Plant Species Theme Sensitivity, DEA Screening Report

The Screening Tool rated the sensitivity of the Plant Species Theme as medium and three species were highlighted as being of concern. None of the SCC highlighted by the screening tool were recorded on site and the site verification indicated that most of the site had a low sensitivity.

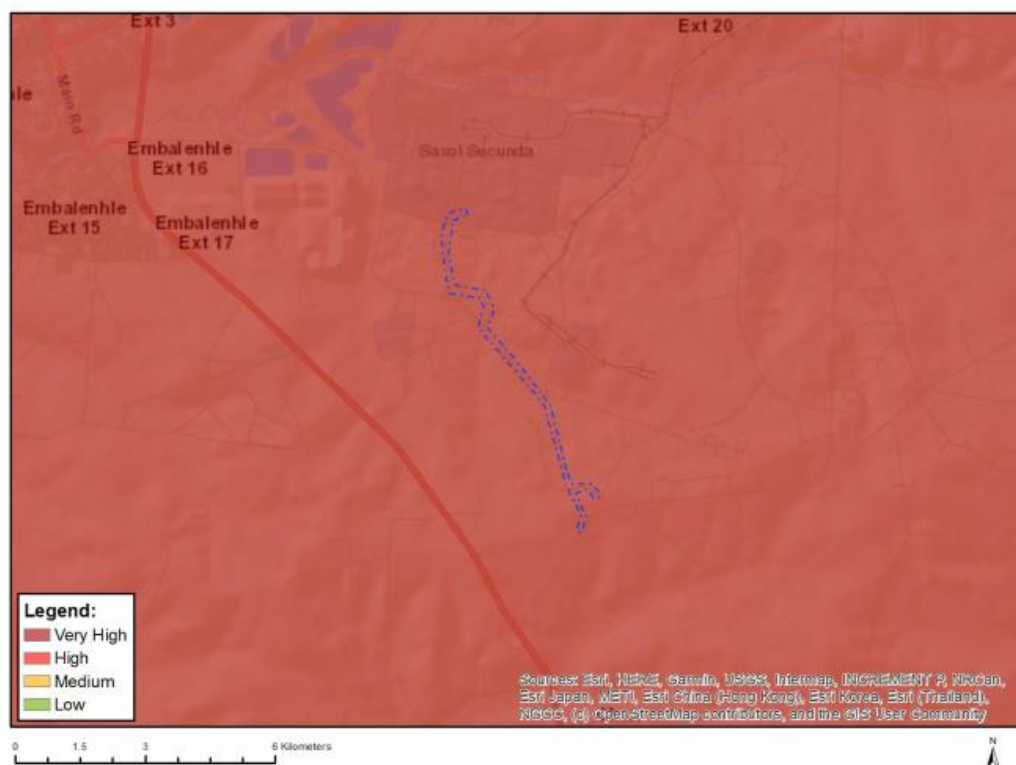
- Sensitive species 691 occurs in damp depressions in shallow soil over rock sheets. This type of habitat is not present along the gridline.

- The habitats on site do not present suitable habitat for sensitive species 1252 because of a lack of wooded habitat.
- The third plant species of concern, *Pachycarpus suaveolens*, prefers grassland, but was not recorded during the site survey. It occurs in areas that are currently extensively transformed by urban development, crop cultivation, mining and invasive alien plants. Its distribution records show it to be more common northwards from the Secunda sites, e.g. in the Witbank- Carolina area.
- A low sensitivity rating is recommended for the Plant Species Theme

TERRESTRIAL BIODIVERSITY THEME

The biodiversity theme sensitivity, as indicated in the Screening Report of the National Web based Environmental Screening Tool, was derived to be Very High sensitivity, mainly due to the presence of a Vulnerable ecosystem, CBAs, ESAs and Protected Area Expansion Strategy (NPAES). River or wetland FEPAs were not flagged by the screening tool as reasons for the very high sensitivity. **(Figure 1-11)**.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Very High	Critical biodiversity area 1
Very High	Critical biodiversity area 2
Very High	Ecological support area: local corridor
Very High	Protected Areas Expansion Strategy
Very High	Vulnerable ecosystem

Figure 1-11: Terrestrial Biodiversity Theme Sensitivity, DEA Screening Report

This theme considers the presence of protected areas, NPAES, CBAs, ESAs and NFEPAs.

- The study area is not located in a protected area nor does it fall in an area earmarked for the NPAES (NPAES 2010). It is also not earmarked for expansion in the 5-year plan of the Mpumalanga PAES.
- Our background study confirms that the Soweto Highveld Grassland vegetation type on site is listed as 'Vulnerable'.
- Our background study indicated that although there are CBAs present on site, our sensitivity analysis rated most of these areas as being of low sensitivity. Nevertheless, the gridline should preferably not be located within the area demarcated as CBA.
- There are ESA Landscape corridors and ESA Local corridors indicated on site (Figure 15), but the presence of the gridline would not impact negatively on them.

- FEPAs or water catchments were not flagged by the screening tool. Based on the site assessment of the vegetation most of the area mapped as upstream river FEPA was rated as having a low or medium sensitivity, with only the drainage lines having a high sensitivity. Several Highveld wetland are present on site (see aquatic specialist report), but these were also not highlighted by the Screening Tool.

Unfortunately, the screening tool on site limits the sensitivity outcome of the Relative Terrestrial Biodiversity Theme to either very high or low. This is an issue which should be revisited by DFFE since it does not give a proper representation of the site conditions. Although we agree with the presence of the CBA, the entire site does not qualify as CBA, since a large proportion of the site is degraded and under cropland or abandoned cropland. Thus if the same 4-tiered scale were to be applied to this theme, as in the case of the other themes, we would rate it as **medium to low**.

ECOLOGICAL SENSITIVITY

Sensitivity is the vulnerability of a plant community or habitat to an impact, for example a wetland or ridge system would be more vulnerable to development than would a sandy plain. Several features of a site can be assessed to derive a sensitivity score, such as:

- Threatened status of the regional vegetation types wherein the proposed site is situated.
- Percentage of IUCN threatened (red-listed) plant species per habitat.
- Number of protected tree species per habitat.
- Percentage of provincially protected plant species per habitat.
- Presence of endemic plant species per habitat or site (endemic to vegetation type).
- Conservation value of plant community (habitat).
- Species richness per habitat or per sample plot (number of plant species).
- Degree of connectivity and/or fragmentation of the habitat, i.e. high connectivity and low fragmentation infers a low rating.
- Soil erosion potential.
- Resilience (this is a measure of the ability of a particular habitat to recover after an impact, i.e. high resilience infers low rating)

Overall, the drainage lines (including dams) (Habitat 7 – high sensitivity) were more sensitive than the other habitats on site. Habitats 1, 2 & 3 did not occur on the Mukondeleli gridline sites. Habitats 8, 9 & 10 are man-made habitats with a low sensitivity rating, e.g. cropland, planted pasture, plantations, wind breaks and diggings.

Pylon positioning should avoid the high sensitivity drainage lines (Habitat 7). The on-site substations currently seems to be located in a CBA1, although the sensitivity of the site was rated as low in the current assessment.

Along the water courses, buffers are applicable to the development. A buffer zone of 32 m is usually applied to drainage lines, but the aquatic specialists may apply wider buffer zones along these habitats. No buffer has been applied in **Figure 1-12**, since it is advised to follow the recommendations of the aquatic specialist in this regard.

Apart from the drainage lines, with high sensitivity, the CBAs did not emerge as being highly sensitive in the sensitivity model that was applied. The areas mapped as FEPAs were largely incorporated into the CBAs and likewise did not emerge as being highly sensitive in the sensitivity model that was applied.

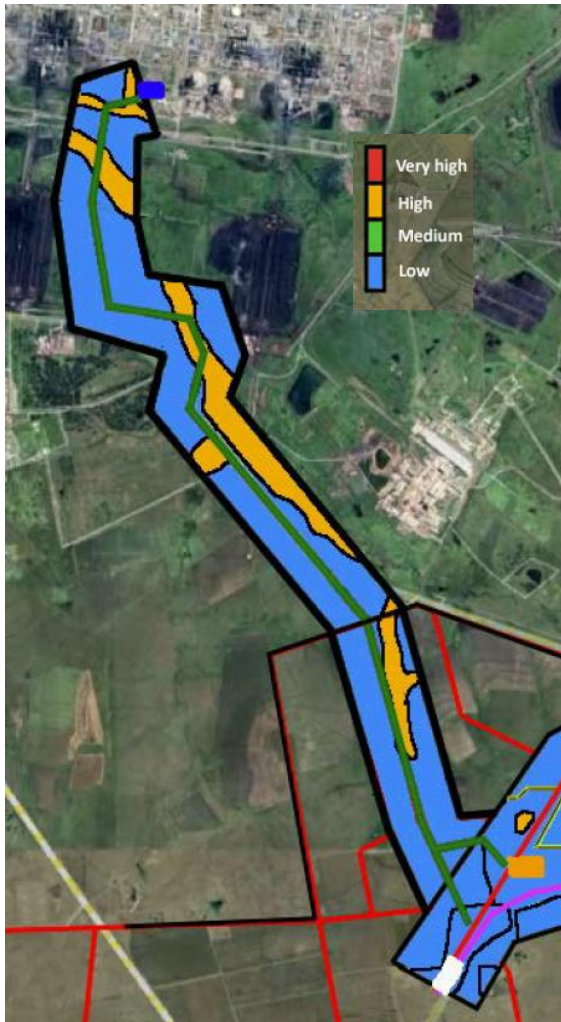


Figure 1-12: Sensitivity map of the Mukondeleli gridline site

1.7.4 AVIFAUNAL SENSITIVITIES

The project site is classified as **Low, Medium and High Sensitivity** for terrestrial animals according to the Terrestrial Animal Species Theme¹.

The high sensitivity classification is linked to the potential occurrence of Caspian Tern (Globally Least Concern, Regionally Vulnerable). The Medium sensitivity is linked to African Marsh Harrier (Globally Least Concern, Regionally Endangered), Caspian Tern (Globally Least Concern, Regionally Vulnerable), White-bellied Bustard (Globally Least Concern, Regionally Vulnerable), Secretarybird (Globally Endangered, Regionally Vulnerable) and African Grass Owl (Globally Least Concern, Regionally Vulnerable) (**Figure 1-9**).

The project site contains confirmed habitat for these species of conservation concern (SCC) as defined in the Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial animal species (Government Gazette No 43855, 30 October 2020), namely listed on the IUCN Red List of Threatened Species or South Africa's National Red List website as Critically Endangered, Endangered, Vulnerable, Near Threatened, and Data Deficient species.

¹ The Avifauna Wind Theme is only relevant to developments in Renewable Energy Development Zones (REDZ). The Terrestrial Animal Species Theme must be used for those developments located outside of REDZ.

The occurrence of Secretarybird (Globally Endangered, Regionally Vulnerable) and additional SCC was confirmed during the surveys i.e., Black-winged Pratincole (Globally Near Threatened, Regionally, Near Threatened), Blue Crane (Globally, Vulnerable, Regionally Near Threatened), Blue Korhaan (Globally, Vulnerable, Regionally Least Concern), Greater Flamingo (Globally Least Concern, Regionally Near Threatened), and Lanner Falcon (Globally Least Concern, Regionally Vulnerable) were recorded in the project site.

In summary, based on the Site Sensitivity Verification field surveys conducted, habitat within the PAOI is suitable for Black-winged Pratincole, Blue Crane, Blue Korhaan, Greater Flamingo, Lanner Falcon, and Secretarybird. Therefore, a classification of **High Sensitivity** for avifauna tool for the Terrestrial Animal Species theme is suggested for the project site.

The following specific environmental sensitivities were identified from an avifaunal perspective:

Drainage lines, dams, pans and associated wetlands. These habitat features are important attractions for many powerline sensitive species, particularly waterbirds, including Red List species such as Blue Crane and Maccua Duck. Birds commuting between these areas will be at risk of collision with the earthwire if they have to cross over the grid connection. Spans crossing these areas, or situated between two or more such areas, must be identified during the walk-through inspection once the final tower positions have been determined and marked with Bird Flight Diverters.

Natural grassland. The natural grassland is vital breeding, roosting and foraging habitat for a variety of Red List powerline sensitive species and will therefore be associated with significant flight activity. These include Secretarybird, Blue Korhaan, Pallid Harrier, Red-footed Falcon and Blue Crane. Spans crossing these areas, or situated between two or more such areas, must be identified during the walk-through inspection once the final tower positions have been determined and marked with Bird Flight Diverters.

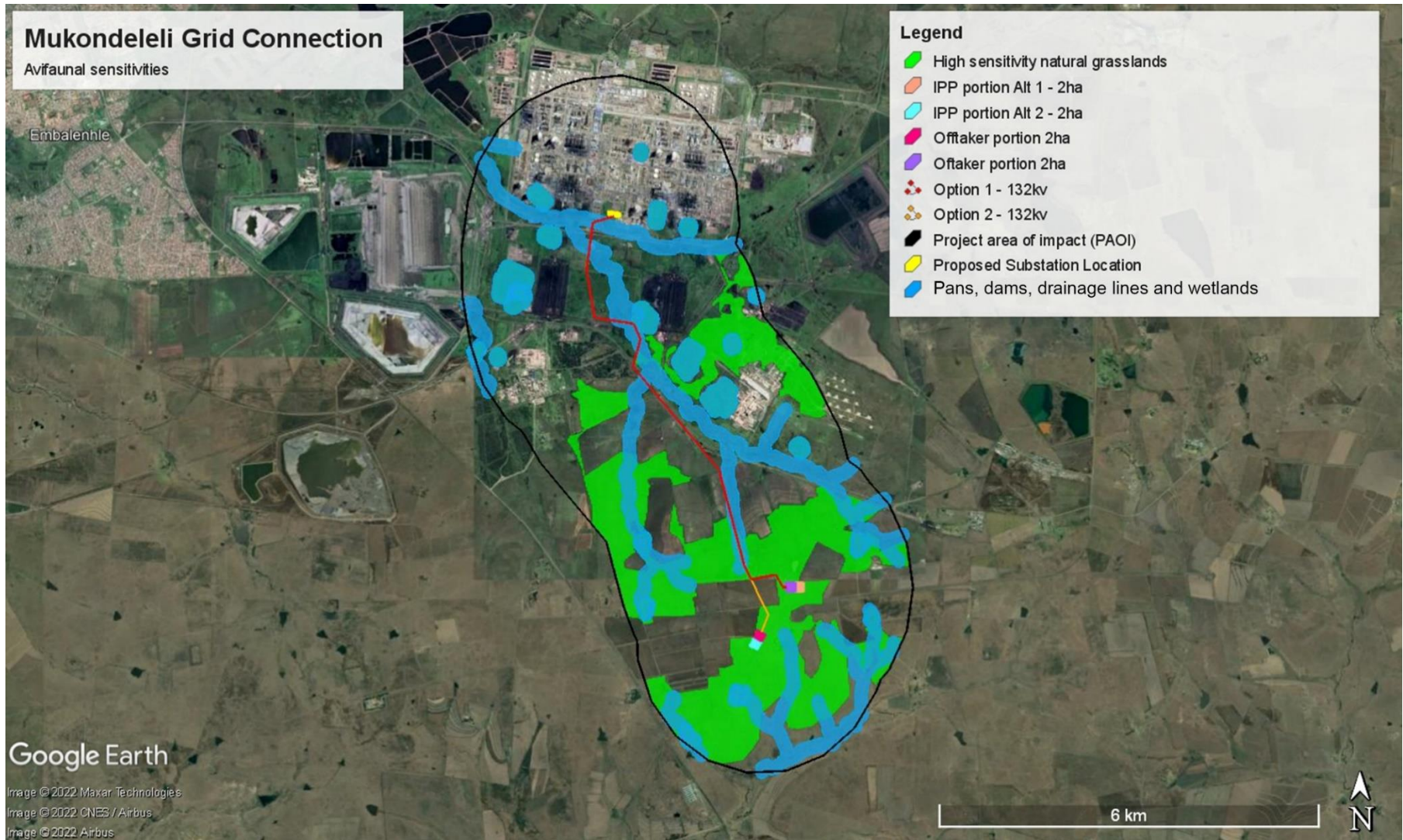


Figure 1-13: Avifaunal sensitivities within the Mukondeleli Grid Connection project area of impact

1.7.5 VISUAL SENSITIVITY

In assessing visual sensitivity, the proposed development was examined in relation to the Landscape Theme of the National Environmental Screening Tool to determine the relative landscape sensitivity for the development of grid connection infrastructure. The tool does not however identify any landscape sensitivities in respect of the proposed powerline.

OUTCOME OF THE SPECIALIST SENSITIVITY ANALYSIS AND VERIFICATION

Visual sensitivity can be defined as the inherent sensitivity of an area to potential visual impacts associated with a proposed development. It is based on the physical characteristics of the area (i.e., topography, landform and land cover), the spatial distribution of potential receptors, and the likely value judgements of these receptors towards a new development (Oberholzer: 2005). A viewer's perception is usually based on the perceived aesthetic appeal of an area and on the presence of economic activities (such as recreational or nature-based tourism) which may be based on this aesthetic appeal.

In order to assess the visual sensitivity of the receiving environment, a matrix has been developed based on the characteristics of the receiving environment which, according to the Guidelines for Involving Visual and Aesthetic Specialists in the EIA Processes, indicate that visibility and aesthetics are likely to be 'key issues' (Oberholzer: 2005).

Based on the criteria in the matrix (**Table 1-6**), the visual sensitivity of the area is broken up into a number of categories, as described below:

- **High** - The introduction of a new development such as a powerline is likely to be perceived negatively by receptors in this area; it would be considered to be a visual intrusion and may elicit opposition from these receptors.
- **Moderate** – Receptors are present, but due to the nature of the existing visual character of the area and likely value judgements of receptors, there would be limited negative perception towards the new development as a source of visual impact.
- **Low** - The introduction of a new development would not be perceived to be negative, there would be little opposition or negative perception towards it.

Table 1-6 outlines the factors used to rate the visual sensitivity of the study area. The ratings are specific to the visual context of the receiving environment within the study area.

Table 1-6: Environmental factors used to define visual sensitivity of the study area

FACTORS	DESCRIPTION	RATING									
		1	2	3	4	5	6	7	8	9	10
Pristine / natural / scenic character of the environment	Study area is largely pastoral with some areas of scenic value, although some areas are significantly transformed.										
Presence of sensitive visual receptors	No sensitive receptors have been identified in the study area, although <i>potentially</i> sensitive receptors are present.										
Aesthetic sense of place / visual character	Visual character is a typical rural / pastoral landscape, although significantly transformed by urban / industrial development and mining activity.										
Irreplaceability / uniqueness / scarcity value	Few areas of scenic value were found within the study area.										
Cultural or symbolic meaning	Much of the area is a typical rural / pastoral landscape.										
Protected / conservation areas in the study area	No protected or conservation areas were identified in the study area.										
Sites of special interest present in the study area	No sites of special interest were identified in the study area.										
Economic dependency on scenic quality	No tourism/leisure-based facilities were found in the area										
International / regional / local status of the environment	Study area is typical of rural / pastoral landscapes, although significantly transformed by urban / industrial development and mining activity.										
**Scenic quality under threat / at risk of change	Introduction of new powerlines will alter the visual character and sense of place, giving rise to significant cumulative impacts										

**Any rating above '5' for this specific aspect will trigger the need to undertake an assessment of cumulative visual impacts.

Low			Moderate				High		
10	20	30	40	50	60	70	80	90	100

Based on the above factors, the total score for the study area is 28, which according to the scale above, would result in the area being rated as having a **LOW** visual sensitivity. It should be stressed however that the concept of visual sensitivity has been utilised indicatively to provide a broad-scale indication of whether the landscape is likely to be sensitive to visual impacts and is based on the physical characteristics of the study area, economic activities and land use that predominates. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs and this has been factored into the sensitivity rating above. No formal protected areas, leisure-based tourism activities or sensitive receptor locations were identified in the study area.

As part of the visual sensitivity assessment, a screening exercise was undertaken with the aim of indicating any areas that should be precluded from the proposed development footprint. From a visual perspective, these are areas where the establishment of powerlines would result in the greatest probability of visual impacts on any sensitive or potentially sensitive visual receptors.

Using GIS-based visibility analysis, it was possible to determine which sectors of the combined assessment corridor would be visible to the highest numbers of receptors in the study area. This analysis confirmed that areas of higher elevation are visible to greater numbers of potentially sensitive receptors. Hence the visual prominence of a tall structure such as a powerline tower would be exacerbated if located on any ridges or a relatively higher-lying plateaus. It is noted that a small section of the proposed powerline route alignment traverses an area of relatively higher elevation that could be seen as an area of potentially high visual sensitivity.

However, due to the relatively low number of potentially sensitive receptors in the area, the presence of existing powerlines and road infrastructure as well as the fact that the study area as a whole is rated as having a low visual sensitivity, the sensitivity rating of this area would be reduced to “Medium”.

In determining visual sensitivity, consideration must be given to the direct visual impact of the powerlines on any farmsteads or receptors located in, or within 500m of, the combined assessment corridor. Only one (1) receptor was found to be within 500m of the combined assessment corridor, this being VR75 and as such a 500m zone of potential visual sensitivity has been delineated around this farmstead. However, as this receptor is located within the Mukondeleli WEF project area, it is assumed that the owner of this property is involved in the development and is unlikely to view the proposed EGI in a negative light. Hence this zone, as shown in **Figure 1-14**, is not considered to be a “no go area”, but rather should be viewed as a zone of potential visual sensitivity.

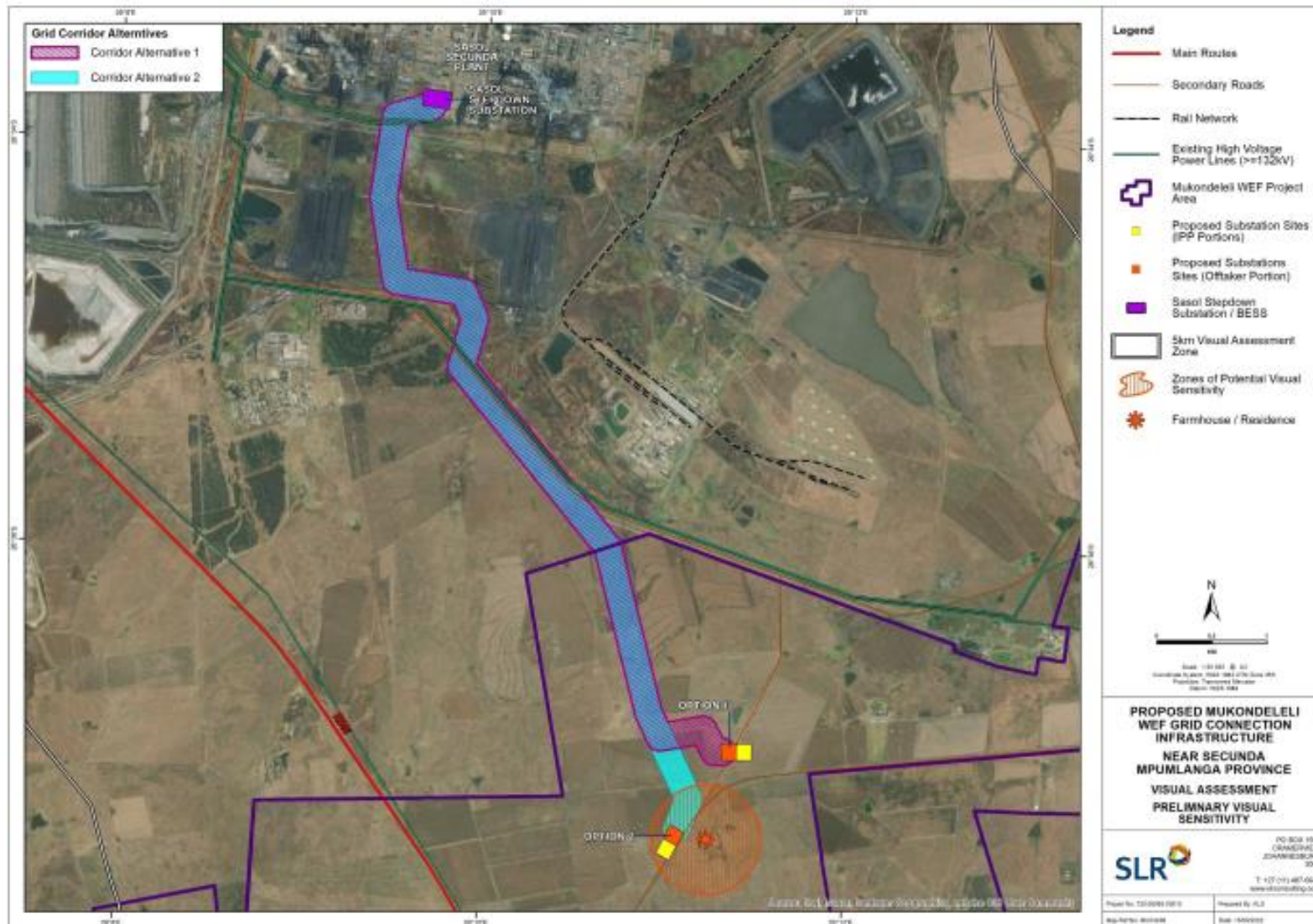
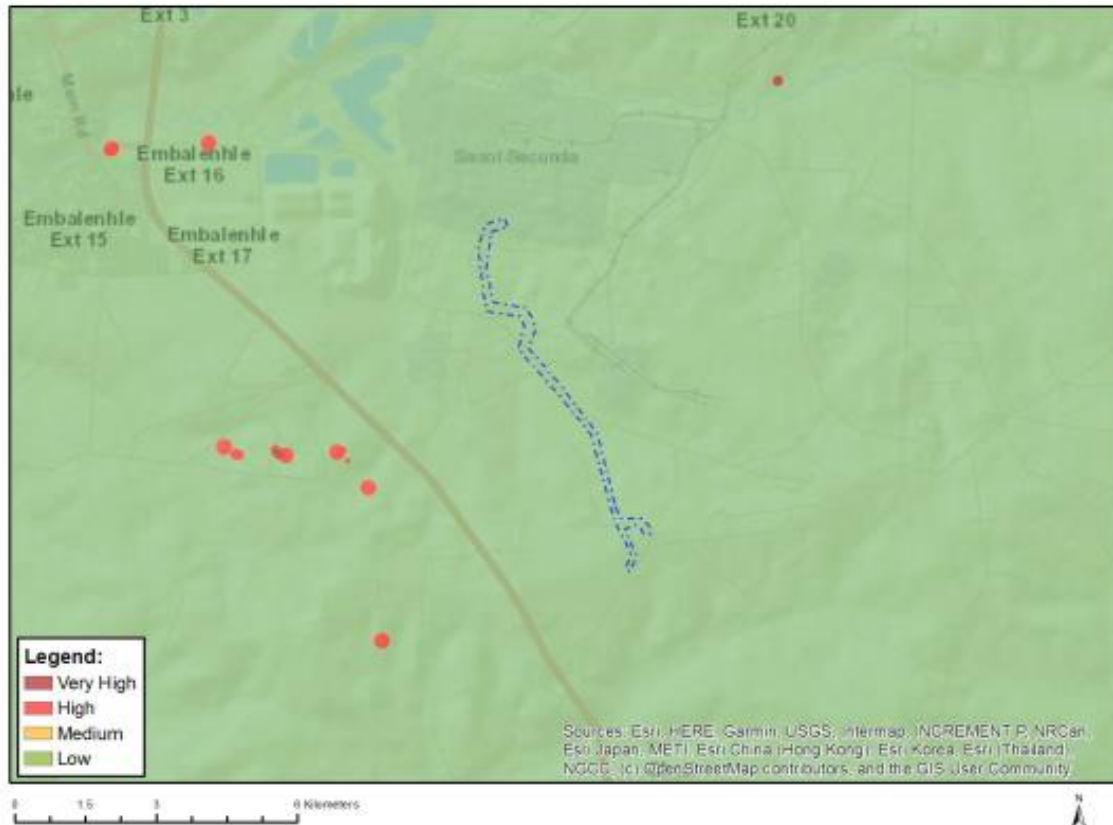


Figure 1-14: Visual Sensitivity on the Mukondeleli EGI Assessment Corridor

1.7.6 HERITAGE SENSITIVITY

Based on the DFFE Screening Tool the Mukondeleli powerline corridor is classified as Low sensitivity with regards to the archaeological and cultural heritage theme, with the exception of one pocket (where an archaeological resource of medium cultural significance was found) considered to be of high sensitivity (Figure 1-15).

MAP OF RELATIVE ARCHAEOLOGICAL AND CULTURAL HERITAGE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
			X

Sensitivity Features:

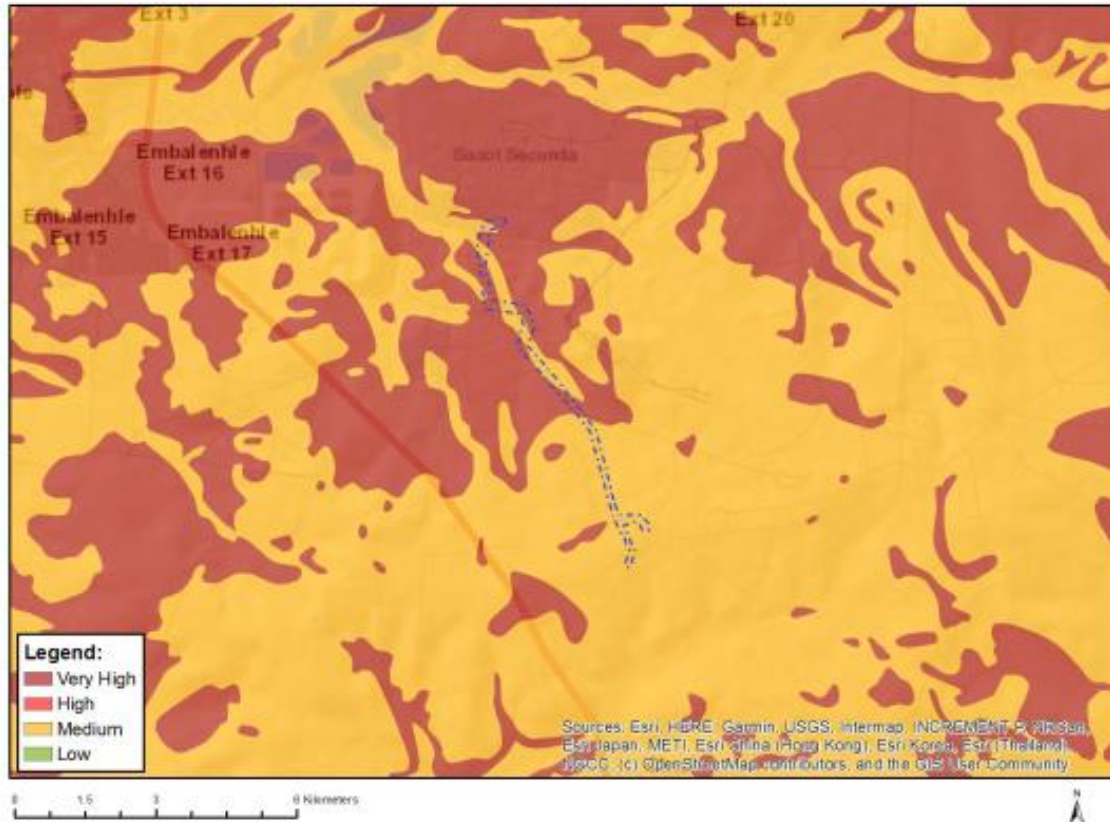
Sensitivity	Feature(s)
Low	Low sensitivity

Figure 1-15: DFFE Screening Tool outcome archaeological and cultural heritage theme sensitivity

1.7.7 PALAEOLOGY SENSITIVITY

Based on the DFFE Screening Tool the Mukondeleli powerline corridor is classified as Very High Sensitivity with regards to the palaeontology theme, due to the occurrence of features with Very High Palaeontological sensitivity (**Figure 1-16**).

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Medium	Features with a Medium paleontological sensitivity
Very High	Features with a Very High paleontological sensitivity

Figure 1-16: DFFE Screening Tool outcome palaeontology theme sensitivity

1.8 FINDINGS OF THE IMPACT ASSESSMENT

A summary of the identified impacts and corresponding significance ratings for the proposed powerline is provided in **Table 1.7** below.

Table 1.7: Impact Summary Table

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	STATUS	WITH MITIGATION	STATUS
			SIGNIFICANCE		SIGNIFICANCE	
Air Quality	Generation of Dust and PM	Construction	Moderate	(-)	Low	(-)
Noise	Noise Emissions	Construction	Low	(-)	Low	(-)
Soils, Land Capability and Agricultural Potential	Agricultural Production Potential	Construction	Very Low	(-)	Very Low	(-)
Soil Erosion & Contamination	Soil Erosion	Construction	Moderate	(-)	Low	(-)
	Soil Contamination	Construction	Moderate	(-)	Low	(-)
	Soil Contamination	Operation	Low	(-)	Low	(-)
Groundwater	Deterioration of Groundwater Quality	Construction	Moderate	(-)	Low	(-)
Aquatic	Changes in Water Flow Regime	Construction	Moderate	(-)	Low	(-)
	Changes In Sediment Entering And Exiting The System	Construction	Moderate	(-)	Low	(-)
	Introduction and spread of alien vegetation	Construction	Moderate	(-)	Low	(-)
	loss and disturbance of watercourse habitat and fringe vegetation	Construction	Moderate	(-)	Low	(-)
	Changes in water quality due to pollution	Construction	Moderate	(-)	Low	(-)
	Loss of Aquatic Biota	Construction	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Changes in Water Flow Regime	Operation	Moderate	(-)	Low	(-)
	Changes in sediment entering and exiting the system	Operation	Moderate	(-)	Low	(-)
	Introduction and spread of alien vegetation	Operation	Moderate	(-)	Low	(-)
	loss and disturbance of watercourse habitat and fringe vegetation	Operation	Moderate	(-)	Low	(-)
	Changes in water quality due to pollution	Operation	Moderate	(-)	Low	(-)
	Loss of Aquatic Biota	Operation	Moderate	(-)	Low	(-)
Biodiversity	Clearing Natural Vegetation	Construction	Moderate	(-)	Low	(-)
	The Loss Of Threatened, Protected & Endemic Plant Species	Construction	Moderate	(-)	Low	(-)
	Loss Of Faunal Habitat	Construction	Moderate	(-)	Low	(-)
	Direct Faunal Mortalities Due To Construction And Increased Traffic	Construction	Moderate	(-)	Low	(-)
	Increased Dust Deposition	Construction	Moderate	(-)	Low	(-)
	Increased Human Activity, Noise And Light Levels	Construction	Moderate	(-)	Low	(-)
	Establishment Of Alien Vegetation	Construction	Moderate	(-)	Low	(-)
	Establishment Of Alien Vegetation	Operation	Low	(-)	Very Low	(-)
	Faunal Mortalities	Decommissioning	Very Low	(-)	Very Low	(-)
	Increased Dust Deposition	Decommissioning	Low	(-)	Very Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Establishment Of Alien Vegetation	Decommissioning	Low	(-)	Very Low	(-)
Avifauna	Displacement due to disturbance associated with the construction	Construction	Moderate	(-)	Low	(-)
	Displacement due to habitat transformation associated with the construction	Construction	Moderate	(-)	Low	(-)
	Mortality of priority species due to collisions	Operation	High	(-)	Low	(-)
	Electrocution of priority species on the on-site substation infrastructure	Operation	High	(-)	Very Low	(-)
	Displacement of priority species due to disturbance associated with decommissioning of the on-site substation and 132kV overhead power line	Decommissioning	Moderate	(-)	Low	(-)
Visual	Potential visual impact of construction activities on sensitive visual receptors in close proximity to the proposed grid connection infrastructure	Construction	Low	(-)	Low	(-)
	Potential visual impact on sensitive visual receptors located during the operational phase	Operation	Low	(-)	Low	(-)
	Potential visual impact on sensitive visual receptors located during the decommissioning phase	Decommissioning	Low	(-)	Low	(-)
Heritage	Impacts to Archaeological resources	Construction	High	(-)	Low	(-)
	Impacts to Graves	Construction	Moderate	(-)	Very Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Impacts to the Cultural Landscape	Construction	Moderate	(-)	Moderate	(-)
	Impacts to the Cultural Landscape	Operation	Moderate	(-)	Moderate	(-)
	Impacts to the Cultural Landscape	Decommissioning	Moderate	(-)	Moderate	(-)
Palaeontology	Impacts on palaeontological resources	Construction	Very Low	(-)	Very Low	(-)
Socio-economic	Creation of employment and business opportunities during the construction phase	Construction	Low	(+)	Moderate	(+)
	Potential impacts of Construction Workers On Local Communities	Construction	Low	(-)	Low	(-)
	Potential risk to safety, livestock and damage to farm infrastructure associated with the presence of construction workers on site	Construction	Moderate	(-)	Low	(-)
	Potential noise, dust and safety impacts associated with movement of construction related activities and movement of traffic to and from the site	Construction	Low	(-)	Low	(-)
	Potential impact of increased risk of veld fire	Construction	Moderate	(-)	Low	(-)
	Potential impacts associated with the loss of farm land	Construction	Moderate	(-)	Low	(-)
	Provide Energy Infrastructure To Support The Use Of Renewable Energy To Produce Green Hydrogen And Ammonia	Operation	Moderate	(-)	Moderate	(+)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	STATUS	WITH MITIGATION	STATUS
			SIGNIFICANCE		SIGNIFICANCE	
	Creation of employment, skills development and business opportunities associated with the operational phase	Operation	Low	(+)	Moderate	(+)
	Generate income for affected landowners	Operation	Low	(+)	Moderate	(+)
	The generation of additional income represents a significant benefit for the local affected farmer(s) and reduces the risks to their livelihoods posed by droughts and fluctuating market prices for sheep and farming inputs, such as feed etc.	Operation	Low	(+)	Moderate	(+)
	Creation Of Employment And Business Opportunities	Operation	Low	(+)	Low	(+)
	Generate Income For Affected Landowners	Operation	Low	(+)	Moderate	(+)
	Visual Impact And Impact On Sense Of Place	Operation	Moderate	(-)	Low	(-)
	Impact On Farming Operations During Maintenance	Operation	Moderate	(-)	Low	(-)
Safety, Health and Environmental Risk	Human health - chronic exposure to toxic chemical or biological agents for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human health - exposure to noise for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human health - exposure to temperature extremes and/or humidity for SSL BESS	Construction	Low	(-)	Very Low	(-)
	Human health - exposure to psychological stress for SSL BESS	Construction	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	STATUS	WITH MITIGATION	STATUS
			SIGNIFICANCE		SIGNIFICANCE	
	Human health - exposure to ergonomic stress for SSL BESS	Construction	Low	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to explosion over pressures for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to violent release of kinetic or potential energy for SSL BESS	Construction	High	(-)	Low	(-)
	Human and equipment safety - exposure to electromagnetic waves for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Environment - emissions to air for SSL BESS	Construction	Low	(-)	Very Low	(-)
	Environment - emissions to water for SSL BESS	Construction	Low	(-)	Low	(-)
	Environment - emissions to earth for SSL BESS	Construction	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	STATUS	WITH MITIGATION	STATUS
			SIGNIFICANCE		SIGNIFICANCE	
	Environment - waste of resources e.g. water, power etc for SSL BESS	Construction	Low	(-)	Very Low	(-)
	Public – aesthetics for SSL BESS	Construction	Low	(-)	Low	(-)
	Investors – financial for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Employees and investors – security for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Emergencies for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Investors – legal for SSL BESS	Construction	Moderate	(-)	Low	(-)
	Human health - chronic exposure to toxic chemical or biological agents for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Human health - exposure to noise for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Human health - exposure to temperature extremes and/or humidity for VRF BESS	Construction	Low	(-)	Very Low	(-)
	Human health - exposure to psychological stress for VRF BESS	Construction	Low	(-)	Low	(-)
	Human health - exposure to ergonomic stress for VRF BESS	Construction	Low	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to explosion over pressures for VRF BESS	Construction	Very Low	(-)	Very Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human and equipment safety - exposure to acute toxic chemical and biological agents for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to violent release of kinetic or potential energy for VRF BESS	Construction	High	(-)	Low	(-)
	Human and equipment safety - exposure to electromagnetic waves for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Environment - emissions to air for VRF BESS	Construction	Low	(-)	Very Low	(-)
	Environment - emissions to water for VRF BESS	Construction	Low	(-)	Low	(-)
	Environment - emissions to earth for VRF BESS	Construction	Low	(-)	Low	(-)
	Environment - waste of resources e.g. water, power etc for VRF BESS	Construction	Low	(-)	Very Low	(-)
	Public – aesthetics for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Investors – financial for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Employees and investors – security for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Emergencies for VRF BESS	Construction	Moderate	(-)	Low	(-)
	Investors – legal for VRF BESS	Construction	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human health - chronic exposure to toxic chemical or biological agents for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human health - chronic exposure to toxic chemical or biological agents for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human health - exposure to noise for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human health - exposure to temperature extremes and/or humidity for SSL BESS	Operational	Low	(-)	Very Low	(-)
	Human health - exposure to psychological stress for SSL BESS	Operational	Low	(-)	Very Low	(-)
	Human health - exposure to ergonomic stress for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to explosion over pressures for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Operational	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to violent release of kinetic or potential energy for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to electromagnetic waves for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Environment - emissions to air for SSL BESS	Operational	Low	(-)	Very Low	(-)
	Environment - emissions to water for SSL BESS	Operational	Low	(-)	Low	(-)
	Environment - emissions to earth for SSL BESS	Operational	Low	(-)	Very Low	(-)
	Environment - waste of resources e.g. water, power etc for SSL BESS	Operational	Low	(-)	Very Low	(-)
	Public – aesthetics for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Investors – financial for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Employees and investors – security for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Employees and investors – security for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Emergencies for SSL BESS	Operational	Moderate	(-)	Low	(-)
	Investors – legal for SSL BESS	Operational	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human health - chronic exposure to toxic chemical or biological agents for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human health - chronic exposure to toxic chemical or biological agents for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human health - exposure to noise for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human health - exposure to temperature extremes and/or humidity for VRF BESS	Operational	Low	(-)	Very Low	(-)
	Human health - exposure to psychological stress for VRF BESS	Operational	Low	(-)	Very Low	(-)
	Human health - exposure to ergonomic stress for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to fire radiation for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to explosion over pressures for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to acute toxic chemical and biological agents for VRF BESS	Operational	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human and equipment safety - exposure to acute toxic chemical and biological agents for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to violent release of kinetic or potential energy for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Human and equipment safety - exposure to electromagnetic waves for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Environment - emissions to air for VRF BESS	Operational	Low	(-)	Very Low	(-)
	Environment - emissions to water for VRF BESS	Operational	Low	(-)	Low	(-)
	Environment - emissions to earth for VRF BESS	Operational	Low	(-)	Very Low	(-)
	Environment - waste of resources e.g. water, power etc for VRF BESS	Operational	Low	(-)	Very Low	(-)
	Public – aesthetics for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Investors – financial for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Employees and investors – security for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Emergencies for VRF BESS	Operational	Moderate	(-)	Low	(-)
	Investors – legal for VRF BESS	Operational	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	WITH MITIGATION		
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Human health - chronic exposure to toxic chemical or biological agents for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human health - exposure to noise for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human health - exposure to temperature extremes and/or humidity for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human health - exposure to psychological stress for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human health - exposure to ergonomic stress for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human and equipment safety - exposure to fire radiation for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human and equipment safety - exposure to explosion over pressures for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human and equipment safety - exposure to acute toxic chemical and biological agents for both BESS types	Decommissioning	Very Low	(-)	Very Low	(-)
	Human and equipment safety - exposure to violent release of kinetic or potential energy for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Human and equipment safety - exposure to electromagnetic waves for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION	STATUS	WITH MITIGATION	STATUS
			SIGNIFICANCE		SIGNIFICANCE	
	Environment - emissions to air for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Environment - emissions to water for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Environment - emissions to earth for SSL BESS	Decommissioning	Moderate	(-)	Low	(-)
	Environment - waste of resources e.g. water, power etc for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Public – aesthetics for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Investors – financial for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Employees and investors – security for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Emergencies for SSL BESS	Decommissioning	Very Low	(-)	Very Low	(-)
	Investors – legal for SSL BESS	Decommissioning	Moderate	(-)	Low	(-)

1.9 APPLICABLE DOCUMENTATION

The following documents are to be read in conjunction with the EMPr:

- BAR for the Proposed Mukondeleli up to 132kV grid connection transmission line;
- Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity; and
- Generic EMPr for the development and expansion for overhead electricity transmission and distribution infrastructure; and
- Environmental Authorisation (EA) issued by the MDARDLEA in terms of the NEMA (once issued).

2 GOVERNANCE FRAMEWORK

2.1 SOUTH AFRICAN LEGISLATION

The South African regulatory framework establishes well-defined requirements and standards for environmental and social management of industrial and civil infrastructure developments. Different authorities at both national and regional levels carry out environmental protection functions. The applicable legislation and policies are shown in **Table 2-1**.

Table 2-1: Applicable National Legislation²

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998)	<p>In terms of Section 24(2) of the NEMA, the Minister may identify activities, which may not commence without prior authorisation. The Minister thus published GNR 983 (as amended) (Listing Notice 1), GNR 984 (as amended) (Listing Notice 2) and GNR 985 (as amended) (Listing Notice 3) listing activities that may not commence prior to authorisation.</p> <p>The regulations outlining the procedures required for authorisation are published in the EIA Regulations of 2014 (GNR 982) (as amended). Listing Notice 1 identifies activities that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity.</p> <p>WSP undertook a legal review of the listed activities according to the proposed project description to conclude that the activities listed in in this section are considered applicable to the transmission line. A BA process must be followed.</p> <p>An EA is required and will be applied for with the MDARDLEA.</p>
Listing Notice 1: GNR 983, as amended	<p>Activity II(i):</p> <p><i>The development of facilities or infrastructure for the transmission and distribution of electricity—</i></p> <p><i>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</i></p> <p><i>excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —</i></p> <p><i>(a) temporarily required to allow for maintenance of existing infrastructure;</i></p> <p><i>(b) 2 kilometres or shorter in length;</i></p> <p><i>(c) within an existing transmission line servitude; and</i></p> <p><i>(d) will be removed within 18 months of the commencement of development.</i></p> <p>Applicability:</p>

² It should be noted that all dimensions outlined in relation to Listing Notice 1, 2 and 3 are provisional and are subject to final design.

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	<p>The 132 kV OHPL will connect the Mukondeleli WEF to a substation located within the Sasol Secunda Primary Area. As illustrated in Figure 2-1 and Figure 2-2 the entire transmission line (including substations), is located inside the urban edge.</p> <p>This activity is therefore <u>Not Applicable</u> to this application.</p>
<p>Listing Notice 1: GNR 983, as amended</p>	<p>Activity 12 (ii), (a) and (c): <i>The development of—</i> <i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</i> <i>where such development occurs—</i> <i>(a) within a watercourse; or</i> <i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse</i></p> <p>Applicability: The OHPL will require the erection of tower structures, which may require a construction area of approximately 100m². There is the potential that a tower structure or access road will transverse a watercourse (or drainage line) and maybe constructed within 32 m of these watercourses. This activity will potentially be triggered by the proposed construction of the transmission infrastructure and access road.</p>
<p>Listing Notice 1: GNR 983, as amended</p>	<p>Activity 14 <i>The development and related 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 combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.</i></p> <p>Applicability: A BESS is proposed to be developed at the Sasol Substation. In the event that Redox Flow Battery technology is considered preferred, storage and handling of dangerous goods will be required. It is anticipated that the storage capacity will be greater than 80m³ but not exceeding 500m³.</p>
<p>Listing Notice 1: GNR 983, as amended</p>	<p>Activity 19: <i>The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.</i></p> <p>Applicability: The OHPL will require the erection of tower structures and an access road. There is the potential that a tower structure or access road will transverse a watercourse (or drainage line) which will require excavation or removal of soil or sand from the watercourse. This activity will potentially be triggered by the proposed construction of the transmission infrastructure and access road..</p>
<p>Listing Notice 1: GNR 983, as amended</p>	<p>Activity 27: <i>The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for-</i> <i>(i) the undertaking of a linear activity; or</i> <i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p> <p>Applicability:</p>

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	<p>The OHPL are considered a linear activity and therefore this activity is not triggered by the proposed construction of the transmission lines. However, the construction of the common 132 kV substation will require the clearance of indigenous vegetation of more than 1ha but less than 20 ha.</p>
<p>Listing Notice 3: GNR 985, as amended</p>	<p>Activity 4(f)(ii)(aa)(bb) – <i>The development of a road wider than 4 metres with a reserve less than 13,5 metres.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>ii. Inside urban areas:</i></p> <p><i>(aa) Areas zoned for use as public open space; or</i></p> <p><i>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.;</i></p> <p>Applicability:</p> <p>An access road will be required along the length of the OHPL alignment where it is not adjacent to existing roads. The access road is typically a two track gravel road that will potentially be wider than 4m. The alignment of the transmission line is located within, within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).</p> <p>As illustrated in Figure 2-1 and Figure 2-2 the entire OHPL (including substations), is located inside the urban edge. However, portions of the area are zoned as a major open space system. This activity is therefore triggered by the proposed construction of the transmission infrastructure and the access road.</p>
<p>Listing Notice 3: GNR 985, as amended</p>	<p>Activity 12(f)(ii) <i>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>ii. Within critical biodiversity areas identified in bioregional plans; or</i></p> <p>Applicability:</p> <p>The route for the proposed OHPL traverses CBAs. The OHPL will require the erection of tower structures, an access road, and a common 132 kV on-site substation which will cumulatively require the clearance of indigenous vegetation of more than 300m². This activity is therefore triggered by the proposed construction of the transmission infrastructure and the access road.</p>
<p>Listing Notice 3: GNR 985, as amended</p>	<p>Activity 14(ii)(a)(c)(f)(ii)(aa)(bb) <i>The development of—</i></p> <p><i>(ii) infrastructure or structures with a Physical footprint of 10 Square metres or more; where such development occurs—</i></p> <p><i>(a) within a watercourse;</i></p> <p><i>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</i></p> <p><i>f. Mpumalanga</i></p> <p><i>ii. Inside urban areas:</i></p>

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	<p><i>(aa) Areas zoned for use as public open space; or</i></p> <p><i>(bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose.;</i></p> <p>Applicability:</p> <p>The physical footprint of the transmission infrastructure will be within 32 m of the outer extent of the delineated watercourses on site located within CBA and ESA.</p> <p>As illustrated in Figure 2-1 and Figure 2-2 the entire OHPL (including substations), is located inside the urban edge. However, portions of the area are zoned as a major open space system. This activity is therefore triggered by the proposed construction of the transmission infrastructure and the access road.</p>
<p>Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (GNR 320, 20 March 2020 and GNR 1150, 30 October 2020)</p>	<p>The protocols provide the criteria for specialist assessment and minimum report content requirements for impacts for various environmental themes for activities requiring environmental authorisation. The protocols replace the requirements of Appendix 6 of the EIA Regulations, 2014, as amended. The assessment and reporting requirements of the protocols are associated with a level of environmental sensitivity identified by the national web based environmental screening tool (screening tool).</p> <p>The following environmental themes were applicable to the Mukondeleli 132kV Grid Connection project:</p> <ul style="list-style-type: none"> — Agricultural Theme — Animal Species Theme — Aquatic Biodiversity Theme — Archaeological and Cultural Heritage Theme — Civil Aviation Theme — Defence Theme — Palaeontology Theme — Plant Species Theme — Terrestrial Biodiversity Theme
<p>National Environmental Management: Waste Act (59 of 2008) (NEM:WA)</p>	<p>This Act provides for regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act also provides for the licensing and control of waste management activities through GNR. 921 (2013), as amended: List of Waste Management Activities that Have, or are Likely to Have, a Detrimental Effect on the Environment.</p> <p>The proposed project does not constitute a Listed Activity requiring a Waste Management Licence (WML) as defined in GNR 921, as amended.</p> <p>This EMP include reasonable measures for the prevention of pollution and good international industry practice (GIIP).</p>
<p>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<p>The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA’s primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI).</p> <p>SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country’s biodiversity and conservation status of all listed threatened or protected species and ecosystems.</p>

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	<p>During screening CBAs were identified, which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives.</p> <p>Based on the screening, a significant part of the Project Area falls within CBA (Irreplaceable and Optimal), especially the especially the western part of the site. There are also some Ecological Support Area (ESA) Local and Landscape corridors demarcated along the Mukondeleli 132kV OHPL corridor and substations.</p> <p>According to the description for the Mpumalanga Biodiversity Sector Plan (MBSP) Terrestrial Assessment categories, CBAs are areas that are required to meet biodiversity targets (for biodiversity pattern and ecological process features). The management approach is that they should remain in a natural state. CBAs are areas of high biodiversity value which are usually at risk of being lost and usually identified as important in meeting biodiversity targets, except for Critically Endangered Ecosystems or Critical Linkages. CBAs in the Province can be divided into two sub-categories:</p> <ul style="list-style-type: none"> — Irreplaceable (parts of the site are within this sub-category), and — Optimal (northern parts of the site are within this sub-category). <p>The site is located in the Soweto Highveld Grassland vegetation type (Mucina & Rutherford 2006, SANBI 2006-2018) which is classified as "Vulnerable" (NEMA 2011, Skowno et al. 2018).</p> <p>Terrestrial ecology studies have been undertaken (Appendix F-2 of the BAR) to inform the assessment of impacts and will include flora surveys of the project footprint to determine the presence of flora species of concern (SoC), and bird surveys of the area to define the potential risks to bird SoC.</p> <p>The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants will be included in the Environmental Management Programme (EMPr).</p>
<p>National Environmental Management Protected Areas Act (No. 57 of 2003)</p>	<p>The purpose of the National Environmental Management Protected Areas Act (No. 57 of 2003) (NEMPAA) is to, inter alia, provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. To this end, it provides for the declaration and management of various types of protected areas.</p> <p>According to the National Protected Area Expansion Strategy (NPAES), there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas. The study area is therefore outside the NPAES focus area. In addition, the site is also not earmarked in the 5-year plan of the Mpumalanga PAES (data supplied by M. Lötter, MTPA).</p>
<p>The National Water Act (No. 36 Of 1998)</p>	<p>The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment.</p> <p>The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water that the Minister may declare a watercourse.</p> <p>Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses applicable to the proposed Project include:</p> <p>a) <i>Taking water from a water resource;</i></p>

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	<p>c) <i>Impeding or diverting the flow of water in a watercourse;</i></p> <p>g) <i>Disposing of waste in a manner which may detrimentally impact on a water resource;</i></p> <p>i) <i>Altering the bed, banks, course or characteristics of a watercourse;</i></p> <p>The DWS will make the final decision on water uses that are applicable to the project through a pre-application meeting after which a Water Use Authorisation Application (WUA) as determined by the risk assessment will be undertaken in compliance with procedural regulations published by the DWS within General Notice 267 (GN267). These regulations specify required information per water use and the reporting structure of required supporting technical information.</p>
<p>The National Heritage Resources Act (No. 25 Of 1999)</p>	<p>The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA), and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development.</p> <p>Part 2 of the NHRA details specific activities that require a Heritage Impact Assessment (HIA) that will need to be approved by SAHRA. Parts of Section 35, 36 and 38 apply to the proposed project, principally:</p> <ul style="list-style-type: none"> — Section 35 (4) - No person may, without a permit issued by the responsible heritage resources authority- — destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; — destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite. — Section 38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as- — any development or other activity which will change the character of a site— (i) exceeding 5 000 m² in extent, 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. <p>In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the proposed Mukondeleli 132kV Grid connection, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).</p> <p>A desktop Heritage Scoping Report (Appendix F-3 of the BAR) has been carried out by a suitably qualified specialist, revealing four finds (three stone features and one possible grave).</p> <p>The proposed project will be loaded onto the SAHRIS portal for comment by SAHRA.</p>
<p>Mineral and Petroleum Resources Development Act (No. 28 of 2002)</p>	<p>The aim of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA) is to make provision for equitable access to and sustainable development of the nation’s mineral and petroleum resources.</p> <p>Section 53(1) of the MPRDA provides that any person who intends to use the surface of any land in any way that may be contrary to any object of the MPRDA, or which is likely to impede any such object, must apply to the Minister of Mineral Resources (the Minister) for approval. Section 53 of the MPRDA provides a mechanism for ensuring that, inter alia, the mining of mineral resources is not detrimentally affected through the use of the surface of land and which may, for example, result in the sterilisation of a mineral resource.</p>

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	<p>A Section 53 approval will be required due to the fact that the project is located on various mining right areas.</p> <p>The Amendment Regulations (GNR 420 of 27 March 2020) introduced a template for section 53 applications (Form Z) and the specific information that applicants will need to provide as part of a section 53 application.</p>
<p>Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)</p>	<p>In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards, SABS) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act 73 of 1989 (ECA), provisions were made to control noise from a National level in the form of the Noise Control Regulations (GNR 154 of January 1992). In later years, the ECA was replaced by the NEMA as amended. The National Environmental Management: Air Quality Act 39 of 2004 (NEMAQA) was published in line with NEMA and contains noise control provisions under Section 34:</p> <p><i>(1) The minister may prescribe essential national standards –</i></p> <p><i>(a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or</i></p> <p><i>(b) for determining –</i></p> <p><i>(i) a definition of noise; and</i></p> <p><i>(ii) the maximum levels of noise.</i></p> <p><i>(2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards.</i></p> <p>Under NEMAQA, the Noise Control Regulations were updated and are to be applied to all provinces in South Africa. The Noise Control Regulations give all the responsibilities of enforcement to the Local Provincial Authority, where location specific by-laws can be created and applied to the locations with approval of Provincial Government. Where province-specific regulations have not been promulgated, acoustic impact assessments must follow the Noise Control Regulations.</p> <p>Furthermore, NEMAQA prescribes that the Minister must publish maximum allowable noise levels for different districts and national noise standards. These have not yet been accomplished and as a result all monitoring and assessments are done in accordance with the South African National Standards (SANS) 10103:2008 and 10328:2008.</p>
<p>Conservation of Agricultural Resources Act (No. 43 of 1983)</p>	<p>The Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) provides for the implementation of control measures for soil conservation works as well as alien and invasive plant species in and outside of urban areas.</p> <p>In terms of the amendments to the regulations under the CARA, landowners are legally responsible for the control of alien species on their properties. Various Acts administered by the DFFE and the DWS, as well as other laws (including local by-laws), spell out the fines, terms of imprisonment and other penalties for contravening the law. Although no fines have yet been placed against landowners who do not remove invasive species, the authorities may clear their land of invasive alien plants and other alien species entirely at the landowners' cost and risk.</p> <p>The CARA Regulations with regards to alien and invasive species have been superseded by NEMBA Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014.</p>
<p>Civil Aviation Act (No. 13 of 2009)</p>	<p>Civil aviation in South Africa is governed by the Civil Aviation Act (Act 13 of 2009). This Act provides for the establishment of a stand-alone authority mandated with controlling, promoting, regulating, supporting, developing, enforcing and continuously improving levels of safety and security throughout the civil aviation industry. This mandate is fulfilled by South African Civil Aviation Authority (SACAA) as an agency of the Department of Transport (DoT). SACAA achieves the objectives set out in the Act by complying with the Standards and Recommended</p>

LEGISLATION**DESCRIPTION OF LEGISLATION AND APPLICABILITY**

	<p>Practices (SARPs) of the International Civil Aviation Organisation (ICAO), while considering the local context when issuing the South African Civil Aviation Regulations (SA CARs).</p> <p>As of the 1st of May 2021, Air Traffic and Navigation Services (ATNS) has been appointed as the new Obstacle application Service Provider for Windfarms and later Solar Plants. Their responsibility would pertain to the assessments, maintenance, and all other related matters in respect to Windfarms and in due time Power Plant assessments.</p> <p>The DEA Screening Tool Report identified Civil Aviation as having high sensitivity for the proposed Mukondeleli 132kV Grid Connection, and as being located between 8 and 15km of other civil aviation aerodrome.</p> <p>An Application for the Approval of Obstacles will also be submitted to ATNS. SACAA will be included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought from these authorities as applicable.</p>
Occupational Health and Safety Act (No. 85 of 1993)	<p>The National Occupational Health and Safety Act (No. 85 of 1993) (OHSA) and the relevant regulations under the Act are applicable to the proposed project. This includes the Construction Regulations promulgated in 2014 under Section 43 of the Act. Adherence to South Africa's OHSA and its relevant Regulations is essential.</p>
National Energy Act (No. 34 of 2008)	<p>The National Energy Act aims to ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors.</p> <p>The main objectives of the Act are to:</p> <ul style="list-style-type: none"> — Ensure uninterrupted supply of energy to the Republic; — Promote diversity of supply of energy and its sources; — Facilitate effective management of energy demand and its conservation; — Promote energy research; — Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy; — Ensure collection of data and information relating to energy supply, transportation and demand; — Provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and a sustainable development; — Provide for certain safety, health and environment matters that pertain to energy; — Facilitate energy access for improvement of the quality of life of the people of Republic; — Commercialise energy-related technologies; — Ensure effective planning for energy supply, transportation, and consumption; and — Contribute to sustainable development of South Africa's economy. <p>In terms of the act, the Minister of Energy is mandated to develop and, on an annual basis, review and publish the Integrated Energy Plan (IEP) in the Government Gazette. The IEP analyses current energy consumption trends within different sectors of the economy (i.e. agriculture, commerce, industry, residential and transport) and uses this to project future energy requirements, based on different scenarios. The IEP and the Integrated Resource Plan are intended to be updated periodically to remain relevant. The framework is intended to create a balance between energy demand and resource availability so as to provide low-cost electricity for social and economic development, while taking into account health, safety and environmental parameters.</p>
Electricity Regulation Act (No. 4 of 2006)	<p>The Electricity Regulation Act (No. 4 of 2006) (ERA) aims to:</p> <ul style="list-style-type: none"> — Achieve the efficient, effective, sustainable and orderly development and operation of electricity supply infrastructure in South Africa;

LEGISLATION**DESCRIPTION OF LEGISLATION AND APPLICABILITY**

	<ul style="list-style-type: none"> – Ensure that the interests and needs of present and future electricity customers and end users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic; – Facilitate investment in the electricity supply industry; – Facilitate universal access to electricity; – Promote the use of diverse energy sources and energy efficiency; – Promote competitiveness and customer and end user choice; and – Facilitate a fair balance between the interests of customers and end users, licensees, investors in the electricity supply industry and the public. <p>The Act establishes a National Energy Regulator as the custodian and enforcer of the National Electricity Regulatory Framework. The Act also provides for licenses and registration as the manner in which generation, transmission, distribution, trading and the import and export of electricity are regulated.</p>
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2.2 POLICIES AND PLANS

Table 2-2 Summarised key policies and plans as an outline of the governance framework for the project.

Table 2-2: Applicable Regional Policies and Plans

APPLICABLE POLICY	DESCRIPTION OF POLICY
National Development Plan	<p>The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development.</p> <p>Chapter 3, Economy and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes that from an environmental perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green low-carbon economy, is one of these challenges.</p> <p>In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place.</p> <p>Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes:</p> <ul style="list-style-type: none"> – Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation. – Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate

APPLICABLE POLICY

DESCRIPTION OF POLICY

	<p>supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted.</p> <p>The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.</p>
<p>Integrated Resource Plan 2010 – 2030</p>	<p>The IRP is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost. On 6 May 2011, the then Department of Energy (DoE) released the Integrated Resource Plan 2010-2030 (IRP 2010) in respect of South Africa's forecast energy demand for the 20-year period from 2010 to 2030. The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development.</p> <p>The IRP recognises that Solar photovoltaic (PV), wind and concentrated solar power (CSP) with storage present an opportunity to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Renewable technologies also present huge potential for the creation of new industries, job creation and localisation across the value chain.</p>
<p>New Growth Path</p>	<p>Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: energy, transport, communication, water, and housing.</p>
<p>National Infrastructure Plan</p>	<p>The South African Government adopted a National Infrastructure Plan (NIP) in 2012. The NIP aims to transform the South African economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. It outlines the challenges and enablers which needs to be addressed in the building and developing of infrastructure. The Presidential Infrastructure Coordinating Commission (PICC) was established by the Cabinet to integrate and coordinate the long-term infrastructure build.</p> <p>The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, <i>electricity plants</i>, hospitals, schools and dams will contribute to improved economic growth.</p>
<p>Integrated Energy Plan</p>	<p>The development of a National IEP was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the Government Gazette. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development.</p> <p>The IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of</p>

APPLICABLE POLICY**DESCRIPTION OF POLICY**

energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives are identified, namely:

- Objective 1: Ensure security of supply.
- Objective 2: Minimise the cost of energy.
- Objective 3: Promote the creation of jobs and localisation.
- Objective 4: Minimise negative environmental impacts from the energy sector.
- Objective 5: Promote the conservation of water.
- Objective 6: Diversify supply sources and primary sources of energy.
- Objective 7: Promote energy efficiency in the economy.
- Objective 8: Increase access to modern energy.

The IEP provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and also take into account the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others.

Based on this information the IEP then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic impacts are also analysed. The IEP is therefore focused on determining the long-term energy pathway for South Africa, taking into account a multitude of factors which are embedded in the eight objectives.

As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios:

- The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term.
- The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy.
- The Resource Constrained Scenario in which global energy commodity prices (i.e. coal, crude oil and natural gas) are high due to limited supply.
- The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan (NDP), are met.

The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of existing electricity generation capacity, the IEP indicates that existing capacity starts to decline notably from 2025, with significant plant retirement occurring in 2031, 2041 and 2048. By 2050 only 20% of the current electricity generation capacity remains. As a result, large investments are required in the electricity sector in order to maintain an adequate supply in support of economic growth.

By 2020, various import options become available, and some new coal capacity is added along with new wind, solar and gas capacity. The mix of generation capacity technologies by 2050 is considerably more diverse than the current energy mix, across all scenarios. The main differentiating factors between the scenarios are the level of demand, constraints on emission limits and the carbon dioxide externality costs. In all scenarios the energy mix for electricity generation becomes more diverse over the period to 2050, with coal reducing its share from about 85% in 2015 to 15–20% in 2050 (depending on the scenario). Solar, wind, nuclear, gas and electricity imports increase their share. The Environmental Awareness and Green Shoots scenarios take on higher levels of renewable energy.

APPLICABLE POLICY**DESCRIPTION OF POLICY**

	<p>An assessment of each scenario against the eight objectives with reference to renewable energy notes while all scenarios seek to ensure that costs are minimised within the constraints and parameters of each scenario, the Base Case Scenario presents the least cost followed by the Environmental Awareness, Resource Constrained and Green Shoots scenarios respectively when total energy system costs are considered. In terms of promoting job creation and localisation potential the Base Case Scenario presents the greatest job creation potential, followed by the Resource Constrained, Environmental Awareness and Green Shoots scenarios respectively. In all scenarios, approximately 85% of total jobs are localisable. For electricity generation, most jobs result from solar technologies followed by nuclear and wind, with natural gas and coal making a smaller contribution. The Environmental Awareness Scenario, due to its stringent emission constraints, shows the lowest level of total emissions over the planning horizon. This is followed by the Green Shoots, Resource Constrained and Base Case scenarios. These trends are similar when emissions are considered cumulatively and individually by type.</p>
<p>National Protected Area Expansion Strategy, 2010</p>	<p>The NPAES areas were identified through a systematic biodiversity planning process. They 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 protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2010). According to the NPAES, there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas.</p> <p>The study area is therefore outside the NPAES focus area.</p>

2.3 PROVINCIAL AND MUNICIPAL LEGAL FRAMEWORK

Table 2-3: Provincial Plans

APPLICABLE PLAN**DESCRIPTION OF PLAN**

<p>Mpumalanga Growth and Development Path</p>	<p>The primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) (2011) is to foster economic growth that creates jobs, reduce poverty and inequality in the Province. The MEGDP identifies supporting the development of clean forms of energy such as wind and hydro power generation opportunities, as well as opportunities including gas production from landfill and organic waste, as one of the key interventions to facilitate growth and job creation in the manufacturing sector. A focal point of the MEGDP is massive investments in infrastructure as a key driver of job creation across the economy, with alternative energy production identified as one of the key opportunities in the Mpumalanga Economic sectors.</p>
<p>Mpumalanga Spatial Development Framework (MSDF), 2019</p>	<p>The Mpumalanga Spatial Development Framework (SDF) (2019) identifies that tourism is an important economic sector and has emerged as a robust driver of growth for emerging economies. The SDF also notes that a significant portion of Mpumalanga's land area is classified as Moderate to High-Very High agricultural potential which can be utilised for agricultural production. However, there are other factors affecting the agricultural sector including loss of agricultural land to other activities, availability of water, contamination of the water used for irrigation by other economic activities, and access to the market. The SDF further notes that mining is the largest economic sector in the province and has assisted other sectors such as manufacturing and power generation, to grow in the province. However, the mining sector has posed some key challenges, including soil and water contamination and environmental pollution, development of mines on good agricultural soil thus threatening food security, restriction of animal movement due to open cast mining thus affecting the ecosystem etc. It also notes that</p>

APPLICABLE PLAN**DESCRIPTION OF PLAN**

	<p>Mpumalanga’s manufacturing plants and coal fired power plants are the key polluters of air, with climate change also identified as a key challenge in the province. Therefore, the province must carefully design interventions that provide a gradual shift from mining oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy.</p> <p>The SDF notes that a significant amount of the country’s electricity comes from coal-fired stations in Mpumalanga. It also observes that there is a steady increase in the demand for electricity in the province, mostly attributed to residential, commercial and industrial development, including mining and heavy industry. The Provincial SDF also notes that the abundance of coal has led to the development of many coal-fired power stations in the province, however these coalfields are depleting, therefore making it necessary to consider renewable power sources in Mpumalanga. The SDF also recognises that Mpumalanga’s Coal Mining and Coal Fired Power Plant region (mainly the Highveld area) will be under immense pressure for environmental considerations and as a result, the region will witness a possible decline in demand of coal and large-scale employment. The SDF proposes to diversify the regional economy and facilitate the gradual transition of economic activities in the region.</p>
Mpumalanga Industrial Development Plan	In terms of industry, the purpose of the Mpumalanga Industrial Development Plan (MIDP) (2015) is to promote the establishment of new industries and promote growth of existing industries in the province.
Mpumalanga Conservation Act (No. 10 of 1998)	<p>This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project:</p> <ul style="list-style-type: none"> – Various species are protected; – The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species. <p>The Act provides lists of protected species for the Province. According to the Mpumalanga Nature Conservation Act, a permit is required for the removal of any species on this list.</p>

Table 2-4: District and Local Municipality Plans**APPLICABLE PLAN****DESCRIPTION OF PLAN**

Gert Sibande Municipality Integrated Development Plan	<p>According to the Municipal Systems Act (Act 32 of 2000) (MSA), all municipalities have to undertake an Integrated Development Plan (IDP) process. The IDP is a legislative requirement thus it has legal status and supersedes all other plans that guide development at local government level.</p> <p>The Gert Sibande Municipality (GSM) IDP Review (2019/ 2020) and Final IDP (2020/2021) has identified the following development priorities:</p> <ul style="list-style-type: none"> – Municipal Transformation and Organisational Development – Basic Service Delivery and Infrastructure Development – Local Economic Development – Municipal Financial Viability and Management – Good Governance and Public Participation – Spatial Development Analysis and Rationale
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APPLICABLE PLAN**DESCRIPTION OF PLAN**

	<p>The main goal and strategic objective of the Basic Service Delivery and Infrastructure Development priority is a reliable and sustainable service. One of the main strategic objectives for reaching the goal is the provision of basic services such as water and electricity to an approved minimum level of standards in a sustainable manner; as per the national guidelines.</p>
<p>Govan Mbeki Local Municipality IDP</p>	<p>The GMM Revised IDP (2020/2021) has identified the following key Municipal priorities:</p> <ul style="list-style-type: none"> — Providing sustainable, quality services; — Enabling diversified local economic development and job creation; — Ensuring the financial sustainability of the Municipality; — Working together with our stakeholders; — Empowering our workforce; and — Ensuring sound corporate governance. <p>The Vision, Mission and Values are informed by six Key Strategic objectives of which Strategic Objective 3, To facilitate and create an enabling environment for diversified local economic development, social cohesion, and job creation and Strategic Objective 5, To develop spatially integrated, safe communities and a protected environment, are relevant to the proposed development.</p> <p>The IDP also refers to the establishment of a Special Economic Zone (SEZ) in the GMM, including the establishment of an industrial park. The proposed Industrial Park is to be located on an identified portion of land north west of Secunda. The success of the park and other industrial developments in the GMM will be dependent on the provision of reliable energy.</p>
<p>Govan Mbeki Spatial Development Framework</p>	<p>The GMM SDF is informed by six strategic objectives, including:</p> <ul style="list-style-type: none"> — Strategic Objective 1: Economic development and job creation supporting and guiding development; — Strategic Objective 2: Promoting education, training, and innovation; — Strategic Objective 3: Accommodating urbanisation and transforming human settlements; — Strategic Objective 4: Promote the development of the rural areas within GMM that can support sustainable economic, social, and engineering infrastructure; — Strategic Objective 5: Protect biodiversity, water, and agricultural resources; and — Strategic Objective 6: Infrastructure Investment. <p>Strategic Objective 1, 5 and 6 are relevant to the proposed development:</p> <ul style="list-style-type: none"> — Strategic Objective (SO)1: Of specific relevance SO 1 refers to the need to diversify the local mining dependent economy by phasing in renewable energy options, which include concentrated solar power, wind, and natural gas, reducing dependence on coal resources. — Strategic Objective (SO) 5: Of specific relevance SO5 highlights the need to minimise the consumption of scarce environmental resources, particularly water, electricity and land and protect biodiversity, water, and agricultural resources. — Strategic Objective (SO) 6: Of specific relevance SO6 highlights the need to ensure efficient supply of electricity and water install green infrastructure, including renewable energy. <p>The SDF also defines the urban edge for the local municipality. The Urban Edge is illustrated in Figure 2-1. The location of the powerline in relation to the urban edge is illustrated in Figure 2-2.</p>

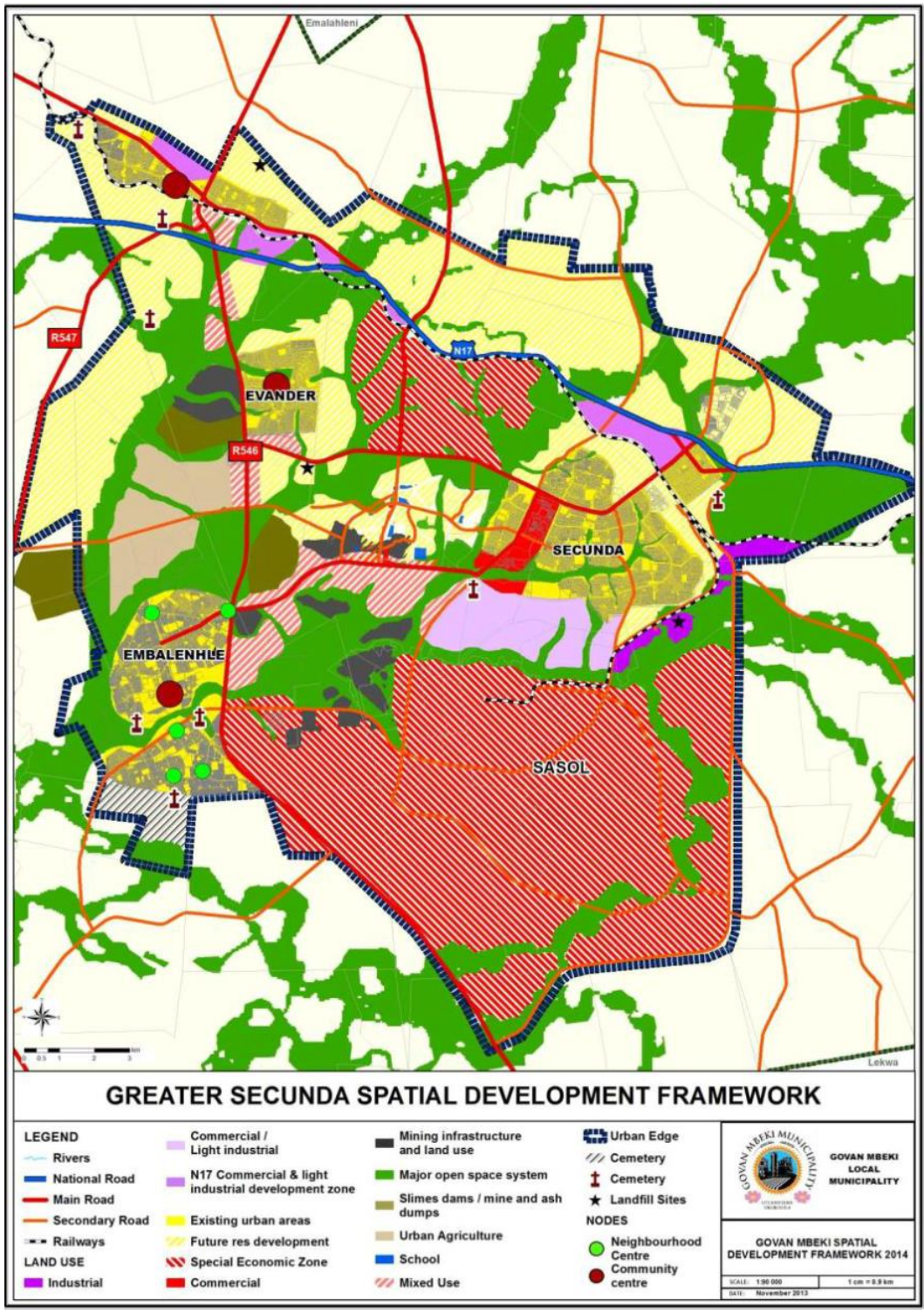


Figure 2-1: Greater Secunda Spatial Development Framework illustrating the Urban Edge

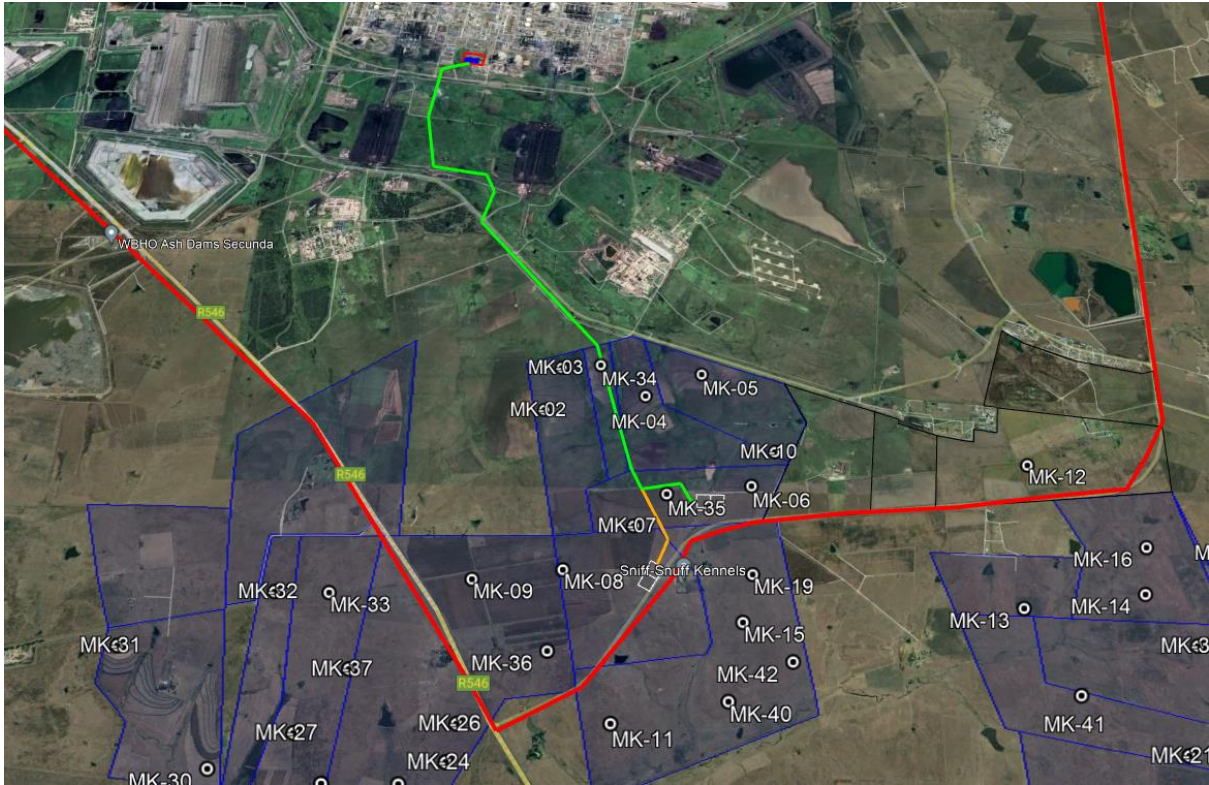


Figure 2-2: Location of the 132kV Powerline in relation to the Urban Edge (Red Line)

2.4 INTERNATIONAL ENVIRONMENTAL AND SOCIAL STANDARDS

2.4.1 IFC PERFORMANCE STANDARDS

The International Finance Corporation (IFC) is an international financial institution that offers investment, advisory, and asset management services to encourage private sector development in developing countries. The IFC is a member of the World Bank Group (WBG) and is headquartered in Washington, D.C., United States. It was established in 1956 as the private sector arm of the WBG to advance economic development by investing in strictly for-profit and commercial projects that purport to reduce poverty and promote development.

The IFC's stated aim is to create opportunities for people to escape poverty and achieve better living standards by mobilizing financial resources for private enterprise, promoting accessible and competitive markets, supporting businesses and other private sector entities, and creating jobs and delivering necessary services to those who are poverty-stricken or otherwise vulnerable. Since 2009, the IFC has focused on a set of development goals that its projects are expected to target. Its goals are to increase sustainable agriculture opportunities, improve health and education, increase access to financing for microfinance and business clients, advance infrastructure, help small businesses grow revenues, and invest in climate health.

The IFC is owned and governed by its member countries but has its own executive leadership and staff that conduct its normal business operations. It is a corporation whose shareholders are member governments that provide paid-in capital and which have the right to vote on its matters. Originally more financially integrated with the WBG, the IFC was established separately and eventually became authorized to operate as a financially autonomous entity and make independent investment decisions. It offers an array of debt and equity financing services and helps companies face their risk exposures, while refraining from participating in a management

capacity. The corporation also offers advice to companies on making decisions, evaluating their impact on the environment and society, and being responsible. It advises governments on building infrastructure and partnerships to further support private sector development.

The IFC’s Sustainability Framework articulates the Corporation’s strategic commitment to sustainable development and is an integral part of IFC’s approach to risk management. The Sustainability Framework comprises IFC’s Policy and Performance Standards on Environmental and Social Sustainability, and IFC’s Access to Information Policy. The Policy on Environmental and Social Sustainability describes IFC’s commitments, roles, and responsibilities related to environmental and social sustainability. IFC’s Access to Information Policy reflects IFC’s commitment to transparency and good governance on its operations and outlines the Corporation’s institutional disclosure obligations regarding its investment and advisory services. The Performance Standards (PSs) are directed towards clients, providing guidance on how to identify risks and impacts, and are designed to help avoid, mitigate, and manage risks and impacts as a way of doing business in a sustainable way, including stakeholder engagement and disclosure obligations of the client in relation to project-level activities. In the case of its direct investments (including project and corporate finance provided through financial intermediaries), IFC requires its clients to apply the PSs to manage environmental and social risks and impacts so that development opportunities are enhanced. IFC uses the Sustainability Framework along with other strategies, policies, and initiatives to direct the business activities of the Corporation to achieve its overall development objectives. The PSs may also be applied by other financial institutions (FIs).

The Project is considered a Category B project in terms of the IFC Policy on E&S Sustainability (2012), having the potential to cause limited adverse environmental or social risks and/or impacts that are few in number, generally site specific, largely reversible, and readily addressed through mitigation measures.

The objectives and applicability of the eight PSs are outlined in **Table 2-5**.

Table 2-5: IFC Performance Standards Applicability to the Project

REFERENCE REQUIREMENTS	PROJECT SPECIFIC APPLICABILITY									
Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts										
Overview	Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders.									
Objectives	<ul style="list-style-type: none"> — To identify and evaluate environmental and social risks and impacts of the project. — To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. — To promote improved environmental and social performance of clients through the effective use of management systems. — To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately. — To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated. 									
Aspects	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">1.1</td> <td style="width: 40%;">Policy</td> </tr> <tr> <td style="text-align: center;">1.2</td> <td>Identification of Risks and Impacts</td> </tr> <tr> <td style="text-align: center;">1.3</td> <td>Management Programmes</td> </tr> <tr> <td style="text-align: center;">1.4</td> <td>Organisational Capacity and Competency</td> </tr> </table>	1.1	Policy	1.2	Identification of Risks and Impacts	1.3	Management Programmes	1.4	Organisational Capacity and Competency	The IFC Standards state under PS 1 (Guidance Note 23) that “ <i>the breadth, depth and type of analysis included in an ESIA must be proportionate to the nature and scale of the proposed project’s potential impacts as identified during the course of the assessment process.</i> ” This document is the first deliverable from the BA process undertaken for the proposed Project. The impact assessment comprehensively assesses the key environmental and social impacts and complies with the requirements of the South African EIA Regulations. In addition, a formal project specific
1.1	Policy									
1.2	Identification of Risks and Impacts									
1.3	Management Programmes									
1.4	Organisational Capacity and Competency									

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	1.5	Emergency Preparedness and Response	ESMS will be compiled in the event that the project is developed in the future.
	1.6	Monitoring and Review	
	1.7	Stakeholder Engagement	
	1.8	External Communication and Grievance Mechanism	
	1.9	Ongoing Reporting to Affected Communities	

Performance Standard 2: Labour and Working Conditions;

Overview Performance Standard 2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers.

- Objectives**
- To promote the fair treatment, non-discrimination, and equal opportunity of workers.
 - To establish, maintain, and improve the worker-management relationship.
 - To promote compliance with national employment and labour laws.
 - To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client’s supply chain.
 - To promote safe and healthy working conditions, and the health of workers.
 - To avoid the use of forced labour.

Aspects	2.1	<ul style="list-style-type: none"> — Working Conditions and Management of Worker Relationship — Human Resources Policy and Management — Working Conditions and terms of Engagement — Workers organisation — Non- Discrimination and Equal Opportunity — Retrenchment — Grievance Mechanism 	<p>The construction activities will require contractors for completion. A safe working environment and fair contractual agreements must be in place. The operational phase will have permanent employees for day-to-day activities as well as contractors who will all need a safe working environment and fair contractual agreements.</p> <p>Whilst PS2 will be applicable to the Project, it is not intended to be addressed in detail at the ESIA stage. Recommendations are provided concerning development of a detailed Human Resources (HR) and Occupational Health and Safety (OHS) system by the developer and its partners as the Project moves towards implementation. In addition, measures to address the Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19 are referenced.</p> <p>The requirements for compliance with local and international Labour and Working legislation and good practice on the part of the contractors have been incorporated in this EMPr.</p>
	2.2	<ul style="list-style-type: none"> — Protecting the Workforce — Child Labour — Forced Labour 	
	2.3	Occupational health and Safety	
	2.4	Workers Engaged by Third Parties	
	2.5	Supply Chain	

Performance Standard 3: Resource Efficiency and Pollution Prevention

Overview Performance Standard 3 recognises that increased economic activity and urbanisation often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens

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PROJECT SPECIFIC APPLICABILITY

	the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world.	
Objectives	<ul style="list-style-type: none"> — To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities. — To promote more sustainable use of resources, including energy and water. — To reduce project related GHG emissions. 	
Aspects	3.1	<ul style="list-style-type: none"> — Policy Resource Efficiency — Greenhouse Gases — Water Consumption <p>PS3-related impacts, such as the management of construction waste, hazardous substances, and stormwater are assessed in the BAR.</p>
	3.2	<ul style="list-style-type: none"> — Pollution Prevention — Air Emissions — Stormwater — Waste Management — Hazardous Materials Management — Pesticide use and Management <p>There are no material resource efficiency issues associated with the Project. General resource efficiency measures have been included in this EMPr.</p> <p>The project is not GHG emissions intensive and a climate resilience study or a GHG emissions-related assessment is not deemed necessary for a project of this nature. However, the Mukondeleli WEF seeks to facilitate resource efficiency and pollution prevention by contributing to the South African green economy.</p> <p>Dust air pollution in the construction phase has been adequately addressed in the EMPr (Section 6 - Air Quality Management).</p> <p>The Project will not result in the release of industrial effluents. Potential pollution associated with sanitary wastewater is low and mitigation measures have been included in this EMPr.</p> <p>Land contamination of the site from historical land use (i.e. low intensity agricultural / grazing) is not considered to be a cause for concern.</p> <p>The waste generation profile of the project is not complex. Waste mitigation and management measures have been included in this EMPr.</p> <p>Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel etc.) are the only wastes expected to be associated with the project. The EMPr identifies these anticipated hazardous materials and recommends relevant mitigation and management measures. Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel etc.) are the only wastes expected to be associated with the project. The EMPr identifies these anticipated hazardous materials and recommends relevant mitigation and management measures (Section 6).</p>
Performance Standard 4: Community Health, Safety, and Security		
Overview	Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.	
Objectives	<ul style="list-style-type: none"> — To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances. — To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities. 	
Aspects	4.1	<ul style="list-style-type: none"> — Community Health and Safety — Infrastructure and Equipment Design and Safety <p>The requirements included in PS 4 will be addressed in the BA process and the development of the EMPr.</p> <p>During the construction phase there will be an increase in vehicular traffic along public roads, largely due to the need for importation of construction material. Pedestrian and road safety risks will be</p>

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	<ul style="list-style-type: none"> — Hazardous Materials Management and Safety — Ecosystem Services — Community Exposure to Disease — Emergency Preparedness and Response 	<p>qualitatively evaluated in the BA process and the clients’ standard safety and security measures, as well as potential additional measures recommended by WSP.</p>
4.2	Security Personnel	

Performance Standard 5: Land Acquisition and Involuntary Resettlement

Overview	<p>Performance Standard 5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.</p>	
Objectives	<ul style="list-style-type: none"> — To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs. — To avoid forced eviction. — To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. — To improve, or restore, the livelihoods and standards of living of displaced persons. — To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites. 	
Aspects	<p>5.1</p> <ul style="list-style-type: none"> — Displacement — Physical Displacement — Economic Displacement — Private Sector Responsibilities under Government Managed Resettlement 	<p>PS5 is not applicable to the proposed Mukondeleli 132kV Grid Connection as no physical or economic displacement or livelihood restoration will be required.</p> <p>The proposed Mukondeleli 132kV OHPL will traverse privately owned land that is utilised for agriculture by the landowners. The significance of all potential agricultural impacts is kept low by the very small proportion of the land that is impacted.</p>

Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources

Overview	<p>Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.</p>	
Objectives	<ul style="list-style-type: none"> — To protect and conserve biodiversity. — To maintain the benefits from ecosystem services. — To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities. 	
Aspects	<p>6.1</p> <p>Protection and Conservation of Biodiversity</p>	<p>A significant part of the grid connection corridor falls within CBAs (Irreplaceable and Optimal) and some ESA Local and Landscape corridors are demarcated along the Mukondeleli 132kV OHPL corridor and substation locations. A Biodiversity Impact Assessment as well as an Avifaunal Impact Assessment and Freshwater Ecology Impact Assessment have been included in the EIA scope, Appendix F of the BAR.</p> <p>These specialist assessments comprise of a combination of literature review, in-field surveys and sensitivity mapping, as well as the assessment of impacts on biodiversity associated with the</p>

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PROJECT SPECIFIC APPLICABILITY

		<p>proposed project. This substantively complies with the PS 6 general requirements for scoping and baseline assessment for determination of biodiversity and ecosystem services issues, as well as the risks and impacts identification process requirements. The determination of habitat sensitivity was undertaken within the legal and best practice reference framework for South Africa.</p> <p>Specific mitigation and management measures for alien invasive species control are included in this EMP.</p>
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Performance Standard 7: Indigenous People

Overview	<p>Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded.</p>
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Objectives	<ul style="list-style-type: none"> — To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. — To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts. — To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. — To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project’s life-cycle. — To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present. — To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.
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Aspects	7.1	<p>General</p> <ul style="list-style-type: none"> — Avoidance of Adverse Impacts — Participation and Consent 	<p>As per the international instruments under the United Nations (UN) Human Rights Conventions, no indigenous peoples are present within the study area. The Project does not involve displacement. PS7 will not be triggered.</p>
	7.2	<p>Circumstances Requiring Free, Prior, and Informed Consent</p> <ul style="list-style-type: none"> — Impacts on Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use — Critical Cultural Heritage — Relocation of Indigenous Peoples from Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use 	
	7.3	<p>Mitigation and Development Benefits</p>	
	7.4	<p>Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues</p>	

Performance Standard 8: Cultural Heritage

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

Overview	Performance Standard 8 recognizes the importance of cultural heritage for current and future generations.		
Objectives	<ul style="list-style-type: none"> — To protect cultural heritage from the adverse impacts of project activities and support its preservation. — To promote the equitable sharing of benefits from the use of cultural heritage. 		
Aspects	8.1	Protection of Cultural Heritage in Project Design and Execution	<p>A Heritage Impact Assessment Report (Appendix F-3 of the BAR) has been carried out by a suitably qualified specialist, revealing that no archaeological sites of significance were noted, and finds were limited to several ruins and graves recorded in the Project area. Based on the current layout, none of the recorded sites will be directly impacted on.</p> <p>A Chance Find Procedure has been included in this EMPr.</p>

2.4.2 EQUATOR PRINCIPLES

The Equator Principles (EPs) is a risk management framework, adopted by financial institutions, for determining, assessing, and managing environmental and social risk in projects and is primarily intended to provide a minimum standard for due diligence to support responsible risk decision-making.

The EPs apply globally to all industry sectors and to five financial products 1) Project Finance Advisory Services, 2) Project Finance, 3) Project-Related Corporate Loans, 4) Bridge Loans and 5) Project-Related Refinance and Project-Related Acquisition Finance. The relevant thresholds and criteria for application is described in detail in the Scope section of the EP. Currently 125 Equator Principles Financial Institutions (EPFIs) in 37 countries have officially adopted the EPs, covering the majority of international project finance debt within developed and emerging markets. EPFIs commit to implementing the EPs in their internal environmental and social policies, procedures and standards for financing projects and will not provide Project Finance or Project-Related Corporate Loans to projects where the client will not, or is unable to, comply with the EPs.

While the EPs are not intended to be applied retroactively, EPFIs apply them to the expansion or upgrade of an existing project where changes in scale or scope may create significant environmental and social risks and impacts, or significantly change the nature or degree of an existing impact. The EPs have greatly increased the attention and focus on social/community standards and responsibility, including robust standards for indigenous peoples, labour standards, and consultation with locally affected communities within the Project Finance market.

The EPs have also helped spur the development of other responsible environmental and social management practices in the financial sector and banking industry and have supported member banks in developing their own Environmental and Social Risk Management Systems.

The requirements and applicability of the EPs are outlined in **Table 2-6**.

It should be noted that Principles 8 and 10 relate to a borrower's code of conduct and are therefore not considered relevant to the S&EIR process and have not been included in this discussion.

Table 2-6: Requirements and Applicability of the Equator Principles

REQUIREMENT		PROJECT SPECIFIC APPLICABILITY
Principle 1: Review and Categorisation		
Overview	When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorise such project based on the magnitude of its potential impacts and risks in	Based upon the significance and scale of the Project's environmental and social impacts, the proposed project is regarded as a Category B project i.e. a project with potential limited adverse environmental or social risks

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
<p>accordance with the environmental and social screening criteria of the IFC.</p> <p>Using categorisation, the EPFI's environmental and social due diligence is commensurate with the nature, scale, and stage of the Project, and with the level of environmental and social risks and impacts.</p> <p>The categories are:</p> <ul style="list-style-type: none"> — Category A: Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented; — Category B: Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and — Category C: Projects with minimal or no adverse environmental and social risks and/or impacts. 	<p>and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.</p>
Principle 2: Environmental and Social Assessment	
<p>Overview</p> <p>For all Category A and Category B Projects, the EPFI will require the client to conduct an appropriate Assessment process to address, to the EPFI's satisfaction, the relevant environmental and social risks and scale of impacts of the proposed Project (which may include the illustrative list of issues found in Exhibit II). The Assessment Documentation should propose measures to minimise, mitigate, and where residual impacts remain, to compensate/ offset/ remedy for risks and impacts to Workers, Affected Communities, and the environment, in a manner relevant and appropriate to the nature and scale of the proposed Project.</p> <p>The Assessment Documentation will be an adequate, accurate and objective evaluation and presentation of the environmental and social risks and impacts, whether prepared by the client, consultants or external experts. For Category A, and as appropriate, Category B Projects, the Assessment Documentation includes an Environmental and Social Impact Assessment (ESIA). One or more specialised studies may also need to be undertaken. For other Category B and potentially C Projects, a limited or focused environmental or social assessment may be appropriate, applying applicable risk management standards relevant to the risks or impacts identified during the categorisation process.</p> <p>The client is expected to include assessments of potential adverse Human Rights impacts and climate change risks as part of the ESIA or other Assessment, with these included in the Assessment Documentation.</p>	<p>This document is the <u>second</u> deliverable (i.e. <u>final BAR</u>) from the BA process undertaken for the proposed Project. The assessment appropriately and comprehensively assessed the key environmental and social impacts and complies with the requirements of the South African EIA Regulations and this Principle. A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in the EMPr will serve as the basis for an ESMS for the proposed Project.</p>
Principle 3: Applicable Environmental and Social Standards	
<p>Overview</p> <p>The Assessment process should, in the first instance, address compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.</p>	<p>As South Africa has been identified as a non-designated country, the reference framework for environmental and social assessment is based on the IFC PS. In addition, this BA process has been</p>

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
<p>The EPFI's due diligence will include, for all Category A and Category B Projects globally, review and confirmation by the EPFI of how the Project and transaction meet each of the Principles.</p> <p>For Projects located in Non-Designated Countries, the Assessment process evaluates compliance with the then applicable IFC PS and WBG EHS Guidelines. For Projects located in Designated Countries, compliance with relevant host country laws, regulations and permits that pertain to environmental and social issues.</p>	<p>undertaken in accordance with NEMA (the host country's relevant legislation).</p>
<p>Principle 4: Environmental and Social Management System and Equator Principles Action Plan</p>	
<p>Overview</p> <p>For all Category A and Category B Projects, the EPFI will require the client to develop or maintain an Environmental and Social Management System (ESMS).</p> <p>Further, an Environmental and Social Management Plan (ESMP) will be prepared by the client to address issues raised in the Assessment process and incorporate actions required to comply with the applicable standards. Where the applicable standards are not met to the EPFI's satisfaction, the client and the EPFI will agree on an Equator Principles Action Plan (EPAP). The EPAP is intended to outline gaps and commitments to meet EPFI requirements in line with the applicable standards.</p>	<p>A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in the EMPr will serve as the basis for an ESMS for the proposed Project.</p>
<p>Principle 5: Stakeholder Engagement</p>	
<p>Overview</p> <p>EPFI will require the client to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally appropriate manner with Affected Communities Workers and, where relevant, Other Stakeholders. For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process.</p> <p>To accomplish this, the appropriate assessment documentation, or non-technical summaries thereof, will be made available to the public by the borrower for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The borrower will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation.</p> <p>Disclosure of environmental or social risks and adverse impacts should occur early in the Assessment process, in any event before the Project construction commences, and on an ongoing basis.</p> <p>All Projects affecting Indigenous Peoples will be subject to a process of Informed Consultation and Participation, and will need to comply with the rights and protections for Indigenous Peoples contained in relevant national law, including those laws implementing host country obligations under international law.</p>	<p>The BA process includes an extensive stakeholder engagement process which complies with the South African EIA Regulations. The process includes consultations with local communities, nearby businesses, and a range of government sector stakeholders (state owned enterprises, national, provincial and local departments).</p> <p>The stakeholder engagement process solicits interest from potentially interested parties through the placement of site notices and newspaper advertisements as well as written and telephonic communication.</p> <p>The stakeholder engagement process is detailed in Stakeholder Engagement Report (SER) included in Appendix D of the BAR.</p>

REQUIREMENT	PROJECT SPECIFIC APPLICABILITY
Principle 6: Grievance Mechanism	
Overview	<p>For all Category A and, as appropriate, Category B Projects, the EPFI will require the client, as part of the ESMS, to establish effective grievance mechanisms which are designed for use by Affected Communities and Workers, as appropriate, to receive and facilitate resolution of concerns and grievances about the Project's environmental and social performance.</p> <p>The borrower will inform the Affected Communities and Workers about the grievance mechanism in the course of the stakeholder engagement process and ensure that the mechanism addresses concerns promptly and transparently, in a culturally appropriate manner, and is readily accessible, at no cost, and without retribution to the party that originates the issue or concern.</p>
Principle 7: Independent Review	
Overview	<p>For all Category A and, as appropriate, Category B Projects, an Independent Environmental and Social Consultant, not directly associated with the client, will carry out an Independent Review of the Assessment Documentation including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation in order to assist the EPFI's due diligence, and assess Equator Principles compliance.</p>
Principle 9: Independent Monitoring and Reporting	
Overview	<p>To assess Project compliance with the Equator Principles after Financial Close and over the life of the loan, the EPFI will require independent monitoring and reporting for all Category A, and as appropriate, Category B projects. Monitoring and reporting should be provided by an Independent Environmental and Social Consultant; alternatively, the EPFI will require that the client retain qualified and experienced external experts to verify its monitoring information, which will be shared with the EPFI in accordance with the frequency required.</p>

2.4.3 INTERNATIONAL LABOUR STANDARDS

The International Labour Organisation (ILO) brings together governments, employers, and workers of 187 member states, to set labour standards, develop policies and devise programmes promoting decent work for all women and men. The ILO advocates and governs a set of International Labour Standards (ILS). The ILS is a system of standards that are fundamental, universal, and invisible human rights for all working people across the world. The aim of the international labour standards is to ensure that the growth of the global economic provides benefits to all. These standards are legal instruments drawn up by ILO's constituents setting out basic principles and rights at work. These instruments are either Conventions (or Protocols), which are legally binding international treaties that may be ratified by member states, or recommendations, which serve as non-binding guidelines. The fundamental instruments of the ILO and ILS outlined in **Table 2-7**.

Table 2-7: Fundamental Instruments of the ILO and ILS

INTERNATIONAL LABOUR STANDARDS: FUNDAMENTAL INSTRUMENTS	PROJECT SPECIFIC APPLICABILITY
1. Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)	The Constitution of the Republic of South Africa (1996) allows for all workers to:
2. Right to Organise and Collective Bargaining Convention, 1949 (No. 98)	<ul style="list-style-type: none"> — Section 18: Freedom of Association — Section 23: Labour Relations — Everyone has the right to fair labour practices; — Every worker has the right to form and join a trade union and to participate in the union’s activities; — Every worker has the right to strike — Every employer has the right to form and join an employers’ organization and to participate in the activities of the organization; and — Every trade union, employers’ organization and employer has the right to engage in collective bargaining. <p>The Mukondeleli WEF project (inclusive of the grid connection) shall abide by all laws and rights enshrined by The Constitution of The Republic of South Africa (1996).</p>
3. Forced Labour Convention, 1930 (No. 29) (and its 2014 Protocol)	The South African Constitution (1996) and Basic Conditions of Employment Act (as amended) prohibits any forced labour in the country. Therefore, the Mukondeleli WEF project (inclusive of the grid connection) commits to not undertake any forced labour over the lifespan of the project. During the operational phase labour audits will be conducted on the project’s main contractors and subcontractors.
4. Abolition of Forced Labour Convention, 1957 (No. 105)	
5. Minimum Age Convention, 1973 (No. 138)	According to the South African Basic Conditions of Employment Act and entrenched in the Constitution of the Republic of South Africa (1996), it is a criminal offence to employ a child younger than 15, except in the performing arts with a permit from the Department of Labour. Children aged 15 to 18 may not be employed to do work inappropriate for their age or work that place them at risk.
6. Worst Forms of Child Labour Convention, 1999 (No. 182)	
7. Equal Remuneration Convention, 1951 (No. 100)	This WEF project will follow The Promotion of Equality and Prevention of Unfair Discrimination Act, 2000 (PEPUDA or the Equality Act, Act No. 4 of 2000). This is a comprehensive South African anti-discrimination law. It prohibits unfair discrimination by the government and by private organisations and individuals and forbids hate speech and harassment.
8. Discrimination (Employment and Occupation) Convention, 1958 (No. 111)	
9. Occupational Safety and Health Convention, 1981 (No. 155)	The Mukondeleli WEF development (inclusive of the grid connection) will abide by the South African Occupational Health and Safety Act 85 of 1993. This act intends to:
10. Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)	

**INTERNATIONAL LABOUR STANDARDS:
FUNDAMENTAL INSTRUMENTS**

PROJECT SPECIFIC APPLICABILITY

	<ul style="list-style-type: none">— to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery;— the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work;— to establish an advisory council for occupational health and safety; and— to provide for matters connected therewith.
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2.5 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS

2.5.1 WORLD BANK GROUP ENVIRONMENTAL, HEALTH, AND SAFETY GUIDELINES

In support of the Performance Standards, the World Bank Group (WBG) has published a number of Environmental Health and Safety (EHS) Guidelines. The EHS Guidelines are technical reference documents that address IFC's expectations regarding the industrial pollution management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimising, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC Performance Standards, particularly in those aspects related to PS3: Pollution Prevention and Abatement, as well as certain aspects of occupational and community health and safety.

Where host country regulations differ from the levels and measures presented in the EHS Guidelines, projects seeking international funding may be expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required.

The following IFC / WBG EHS Guidelines have been generally consulted during the preparation of the BA in order to aid the identification of EHS aspects applicable to the project

EHS GENERAL GUIDELINES

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents with general and industry-specific examples of GIIP. They contain the performance levels and measures that are generally considered to be achievable in new facilities by existing technology at reasonable costs.

The EHS General Guidelines contain information on cross-cutting environmental, health and safety issues potentially applicable to all industry sectors, used together with the relevant industry sector guideline(s), to guide the development of management and monitoring strategies for various project-related impacts.

EHS GUIDELINES FOR ELECTRIC POWER TRANSMISSION AND DISTRIBUTION

The EHS Guidelines for Electric Power Transmission and Distribution (2007) include information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas.

The Guidelines includes industry-specific impacts and management, provides a summary of EHS issues associated with electric power transmission and distribution that occur during the construction and operation phases of a facility, along with recommendations for their management. Additionally, it includes performance indicators and monitoring related to the environment an occupational health and safety.

These Guidelines have been considered in the impact assessment and formulation of mitigation measures in this EMPr.

2.5.2 GENERIC EMPr RELEVANT TO AN APPLICATION FOR SUBSTATION AND OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

NEMA requires that an EMPr be submitted where an EIA has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation. The content of an EMPr must either contain the information set out in Appendix 4 of the EIA Regulations, 2014, as amended, or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the CA.

GN 435 of 22 March 2019 identified a generic EMPr relevant to applications for substations and overhead electricity transmission and distribution infrastructure which require authorisation in terms of Section 42(2) of NEMA. Applications for overhead electricity transmission and distribution infrastructure that trigger Activity 11 of Listing Notice 1 or Activity 9 of Listing Notice 2 and any other listed or specified activities must use the generic EMPr.

The objective of the generic EMPr is “*to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.*”³

Both the generic EMPr for transmission lines as well as the generic EMPr for substations have been used as a basis for this EMPr. The *Generic EMPr for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure* is attached as **Appendix D** and the *Generic EMPr for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity* is attached as **Appendix E**.

³ DEA (2019) *Appendix 1: Generic Environmental Management Programme (EMPr) for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure*

3 ENVIRONMENTAL MANAGEMENT OBJECTIVES

An EMPr is defined as “an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented or mitigated, and that the positive benefits of the projects are enhanced.”

This EMPr has been compiled in accordance with Appendix 4 of GNR 982, in compliance with section 24N of NEMA, with the purpose of ensuring that negative impacts are reduced, and positive effects are enhanced through a process of continual improvement, during both the construction and operational phases of the collector substation and 132kV grid connection project.

To facilitate compliance to the EMPr by appointed contractors and sub-contractors, it is required that all onsite personnel are aware of the requirements of the EMPr as well as the prescribed penalties should a non-conformance be identified during the construction, operation and decommissioning activities.

Further to the above, appointed contractors and sub-contractors will also be required to comply with all relevant legislation and standards.

3.1 EMPR OBJECTIVES

This EMPr has the following objectives:

- Identify mitigation measures and environmental specifications which are required to be implemented for the planning, construction and rehabilitation, operation, and decommissioning phases of the project in order to manage and minimise the extent of potential environmental impacts associated with the facility;
- Ensure that all the phases of the proposed project do not result in undue or reasonably avoidable adverse environmental impacts, and ensure that any potential environmental benefits are enhanced;
- Identify entities responsible for the implementation of the measures and outline functions and responsibilities;
- Create management structures that address the concerns and complaints of interested and affected parties (I&APs) with regards to the proposed project;
- Propose mechanisms and frequency for monitoring compliance, and preventing long-term or permanent environmental degradation; and
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the EIA process.

Please note: This EMPr is a working document and therefore subject to change depending on the requirements of the various Project phases. When applicable, these changes are to be approved in accordance with legislative requirements.

3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, the EA holder (via the appointed EPC or principal contractor) must comply with all relevant legislation and standards and make all personnel aware of the requirements of the EMPr, as well as the prescribed penalties should a non-conformance be identified during the different phases of the proposed Project.

It is recommended that environmental objectives (as outlined in this document) be emphasised as minimum requirements. Objectives include:

- Encourage good management practices through planning and commitment to environmental issues; and
- Provide rational and practical environmental guidelines to:
 - Minimise disturbance of the natural environment;

- Minimise impact of added traffic into the area;
- Ensure surface and groundwater resource protection;
- Prevent or minimise all forms of pollution;
- Protect indigenous flora and fauna;
- Prevent soil erosion;
- Promote sustainable use of resources;
- Adopt the best practical means available to prevent or minimise adverse environmental impacts;
- Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Promote the reduction, reuse, recycling and recovery of waste;
- Develop waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste;
- Describe all monitoring procedures required to identify impacts on the environment;
- Define how the management of the environment is reported and performance evaluated; and
- Train onsite personnel with regard to their environmental obligations.

4 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS

4.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITY

Formal responsibilities are necessary to ensure that key management measures/procedures are executed. The holder of the EA, hereafter referred to as “The Project Company”, together with the appointed EPC Contractor, will be responsible for the overall control of the project site during the pre-construction, construction, operation, decommissioning and rehabilitation phases of the project. The Project Company’s responsibilities will include the following:

- Appointing an independent environmental control officer (ECO) for the duration of the Contract and notify the MDARDLEA of their contact details;
- Being fully familiar with the BA Report, EA conditions and the EMPr;
- Applying for an amendment of the EA from the MDARDLEA as and when required in line with the prevailing legislation;
- The overall implementation of the EMPr;
- Ensuring compliance, by all parties, and the imposition of penalties for noncompliance;
- Implementing corrective and preventive actions, where required;
- Preventing pollution and actions that will harm or may cause harm to the environment;
- Ensuring the activity does not commence within 30 days of the EA being issued;
- Notifying the MDARDLEA within 30 days that construction activity will commence;
- Notifying the MDARDLEA in writing within 24 hours if any condition in the EA cannot be or is not adhered to; and
- Notifying the MDARDLEA 14 days prior to commencement of the operational phase.

Specific roles and responsibilities for the construction phase of this project are as defined in **Table 4-1**.

Table 4-1: Roles and Responsibilities – Construction (EPC Contractor)

RESPONSIBLE PERSON	RESPONSIBILITIES
Project Manager (EPC Contractor)	<ul style="list-style-type: none"> – Ensure that the Project Company and the relevant contractor/s are aware of all specifications, legal constraints pertaining to the project specifically with regards to the environment – Ensure that all stipulations within the EMPr and conditions of the environmental authorisation are communicated and adhered to by the Project Company and its contractor(s) – Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes – Be fully conversant with the BAR for the project, the conditions of environmental authorisation and all relevant environmental legislation
Site Manager (EPC Contractor)	<ul style="list-style-type: none"> – Be fully conversant with the BAR, the conditions of environmental authorisation and the EMPr – Approve method statements – Provide support to the ECO

RESPONSIBLE PERSON RESPONSIBILITIES

	<ul style="list-style-type: none"> — Be fully conversant with all relevant environmental legislation and ensure compliance thereof — Have overall responsibility for the implementation of the EMPr and conditions of the environmental authorisation — Ensure that audits are conducted to ensure compliance to the EMPr and conditions of the environmental authorisation — Liaise with the Project Manager or his delegate, the ECO and others on matters concerning the environment — Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution and unnecessary degradation onsite — Confine construction activities to demarcated areas
<p>Environmental Officer (EO) (EPC Contractor)</p>	<p>The EO must be appointed by the Contractor and is responsible for managing the day-to-day onsite implementation of the EMPr, and for the compilation of weekly environmental monitoring reports. In addition, the EO must act as liaison and advisor on all environmental and related issues, seek advice from the ECO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable manner and timely manner. The EO shall be a full-time dedicated member of the Contractor’s team and must be approved by the Project Company.</p> <p>The following qualifications, qualities and experience are recommended for the individual appointed as the EO:</p> <ul style="list-style-type: none"> — A relevant environmental diploma or degree in natural sciences, as well as a minimum of three years’ experience in construction site monitoring, excluding health and safety; — A level-headed and firm person with above-average communication and negotiating skills. The ability to handle and address conflict management situations will be an advantage; and — Relevant experience in environmental site management and EMPr compliance monitoring. <p>The EO’s responsibilities include:</p> <ul style="list-style-type: none"> — Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the EA, environmental legislation and EMPr; — Keeping a register of compliance / non-compliance with the environmental specifications; — Identifying and assessing previously unforeseen, actual or potential impacts on the environment; — Ensuring that a brief weekly environmental monitoring report is submitted to the ECO; — Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ECO and Contractor; — Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land; — Attending site meetings (scheduled and ad hoc); — Presenting environmental awareness training to all staff, Contractors and Sub contractors, and monitoring the environmental awareness training for all new personnel on-site, as undertaken by the Contractor; — Ensuring that a copy of the EA and the latest version of the EMPr are available on site at all times, and maintaining a records-keeping system of all compliance and environmental documentation; — Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the MDARDLEA;

RESPONSIBLE PERSON RESPONSIBILITIES

	<ul style="list-style-type: none"> — Assisting the Contractor in drafting environmental method statements and/or the Environmental Policy where such knowledge/expertise is lacking; — Undertaking daily environmental monitoring to ensure the Contractor’s activities do not impact upon the receiving environment. Such monitoring shall include dust, noise and water monitoring; and — Maintaining the following on site: <ul style="list-style-type: none"> — A weekly site diary. — A non-conformance register (NCR). — An I&AP communications register, and — A register of audits. — Records of all communication received in relation to compliance actions. <p>The EO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to the Operator.</p>
<p>ECO (Independent)</p>	<p>A suitably qualified ECO must be appointed by the Project Company to monitor the project compliance with the EMPr and conditions of the environmental authorisation on a monthly basis. Proof of external ECO appointment must be maintained onsite).</p> <p>Responsibilities of the ECO include:</p> <ul style="list-style-type: none"> — Be fully conversant with the BAR, the conditions of environmental authorisation and the EMPr; — Be fully conversant with all relevant environmental legislation and ensure compliance thereof; — Approve method statements; — Remain employed until the completion of the construction activities; and — Report to the Project Manager, including all findings identified onsite. <p>In addition, the ECO will:</p> <ul style="list-style-type: none"> — Undertake monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation; — Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed; — Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and — Ensure that activities onsite comply with all relevant environmental legislation.
<p>Contractors, Staff and Service Providers</p>	<ul style="list-style-type: none"> — Complying with the Project Company’s environmental management specifications — Be conversant with all EMPr and conditions of the environmental authorisation, and ensure compliance thereto — Adhering to any environmental instructions issued by the Site Manager/Project Manager on the advice of the ECO

Refer to: Table 1 (Part A, Section 3) of the Generic EMPr for the development of overhead transmission and distribution infrastructure, attached as Appendix C and Table 1 (Part A, Section 3) of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.

4.2 ENVIRONMENTAL AWARENESS AND COMPETENCE

Legislation (NEMA) requires that the Project Company (via the appointed EPC contractor/principle contractor) must develop an environmental awareness plan that describes the manner in which the Project Company intends to inform employees of any environmental risks which may result from their work and the manner in which the risks must be dealt with in order to avoid pollution or the degradation of the environment. In recognition of the need to protect our environment, environmental management should not only be seen as a legal obligation but also as a moral obligation.

It is important to ensure that all relevant personnel have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental degradation and harm.

To achieve effective environmental management, it is important that employees, contractors (including subcontractors) are aware of the responsibilities in terms of the relevant environmental legislation and the contents of the EMPr, conditions of the EA.

The Project Company via the appointed EPC contractor/principle contractor will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. The Project Company will require that all managers associated with the project adhere to the mitigation/management measures detailed in the EMPr and identify, evaluate, and minimise risks to the social, physical and biophysical environments. This will be implemented by educating employees in social and environmental matters and responsibilities relating to performance of their assigned tasks. Furthermore, employees will be entrusted to maintain the necessary level of environmental performance for their activities. Contractors, and their associated sub-contractors, will also need to demonstrate compliance to mitigation/management measures included in the EMPr.

The following methodology will be used to implement and ensure environmental and social awareness and competence:

4.2.1 INTERNAL COMMUNICATION

Internal communication of environmental and social issues to ensure environmental awareness will be achieved by using any combination of the following means:

- Meetings;
- Memos;
- Notice boards;
- Briefs;
- Reports;
- Monthly themes;
- Toolbox talks;
- Daily operational bulletins;
- Newsletters;
- E-mail;
- Telephone; and
- Induction training.

4.2.2 STANDARD MEETINGS

The following standard meetings will be held at specific times to ensure that environmental and social awareness; potential problems; complaints etc. are heard and addressed proactively:

- Safety, Health and Environmental Meetings will be held monthly by the Senior Management;

- Safety, Health and Environmental Meetings will be held weekly (during construction) and monthly (during operation) by the relevant personnel, environmental and social issues will form part of the agenda;
- Communication between all personnel and Senior Management will be facilitated through the appropriate reporting lines, or by using complaint and incident forms.

Minutes of all meetings must be compiled by the EPC Contractor and kept on file.

4.2.3 ENVIRONMENTAL AND SOCIAL TALK TOPICS

Monthly environmental and social talk topics will be compiled and distributed to relevant personnel and will be displayed on appropriate notice boards. As a minimum, the following topics must be covered:

- Water Quality;
- Water Use and Consumption;
- Air Quality i.e. dust;
- Power Consumption and Energy Efficiency;
- Waste Management;
- Fauna and Flora;
- Emergency Procedures;
- Incidents Reporting;
- Systems;
- Noise;
- Heritage Impacts;
- Landowner Etiquette; Speed Limits;
- Health Risks (such as HIV/ Aids and COVID-19);
- General Awareness (e.g. World Environment Day, National Arbour Day);
- Grievance Procedures;
- Policy awareness; and
- Code of Conduct.

4.2.4 GENERAL COMMUNICATIONS

Communication to the community, government, landowners, neighbouring farmers, environmental groups, non-government organisations and other stakeholders will be communicated to ensure environmental and social awareness by means of the following:

- Fax or E-mail;
- Telephone;
- Formal meetings; and
- Open days.

4.2.5 TRAINING

It is important to ensure that all personnel, contractors and their sub-contractors have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and on-going minimisation of environmental harm. As a minimum environmental training must include the following:

- Employees must have a basic understanding of the key environmental features of the site and the surrounding environment.
- Employees will be thoroughly familiar with the requirements of the EMPr and the environmental specifications as they apply to the project.

- Employees must undergo training for the operation and maintenance activities associated with project and have a basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated.
- Awareness of any other environmental matters, which are deemed to be necessary by the Environmental Officer.
- Training must include the environment, health and safety as well as basic HIV/AIDS education.

The following facets to training form part of this Environmental and Social Awareness Plan:

- **Induction:** Environmental and social awareness training will be given at induction when personnel join the company and/or return from leave. Induction training will also be given to visitors entering the site. Induction training will include, inter alia:
 - A discussion on the environment concept, what does it comprise of and how do we interact with it;
 - A description on the components and phases of the specific renewable power generation facility;
 - A general account of how the facility and its associated activities can affect the environment, giving rise to what are called environmental impacts;
 - A discussion on what staff can do in order to help prevent the negative environmental impacts from degrading the environment i.e. environmental impact management.
- **Job Specific Training:** Job specific training programmes will be developed as and when required. The programs will be based on the significant environmental and social aspects/ impacts that are identified during regular audits and site inspections. Supervisory staff will be equipped with the necessary knowledge and information to guide their employees on environmental and social aspects applicable to performing a specific task.
- **Competency Training:** The Environmental Officer will be responsible for the environmental and social competency and awareness training of Middle Management and supervisors. This training will be performed both on a one-on-one basis and through workshops and presentations. Competence and the effectiveness of training and development initiatives will be determined through the following methods:
 - Trend analysis of incidents reported; and
 - Analysis of work areas during visits and audits.

The process to declare competency of personnel is documented in the ISO9001:2000 procedure. This plan will be amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.

- **Training Records:** Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Persons having received training must indicate in writing that they have indeed attended a training session and have been notified in detail of the contents and requirements of the EMPr. The attendance registers must be kept on file.

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place. **Table 4-2** indicates the minimum requirements as set out in the generic EMPrs for the development of overhead transmission and distribution infrastructure and for the development and expansion of substation infrastructure for the transmission and distribution of electricity.

Table 4-2: Documentation Reporting and Compliance Requirements as per the generic EMPrs

ASPECT	REFER TO GENERIC EMPr (PART A)
Document control/Filing system	Section 4.1
Documentation to be available	Section 4.2
Weekly Environmental Checklist	Section 4.3
Environmental site meetings	Section 4.4
Required Method Statements	Section 4.5

ASPECT**REFER TO GENERIC EMPR (PART A)**

Environmental Incident Log (Diary)	Section 4.6
Non-compliance	Section 4.7
Corrective action records	Section 4.8
Photographic record	Section 4.9
Complaints register	Section 4.10
Claims for damages	Section 4.11
Interactions with affected parties	Section 4.12
Environmental audits	Section 4.13
Final environmental audits	Section 4.14

Refer to: Part A, Section 4 of the Generic EMPr for the Development and Expansion for Overhead Electricity Transmission and Distribution Infrastructure is attached as Appendix D and for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity is attached as Appendix E.

4.3 MONITORING

The EPC contractor EO will monitor the day-to-day site activities on an ongoing basis and will produce weekly monitoring reports. The external ECO will undertake monthly audits to ensure compliance with the EMPr and conditions of the environmental authorisation during the construction activities and will report to the Site Manager should any non-compliance be identified, or corrective action deemed necessary.

During the operational phase, the Project Company via the appointed EPC contractor/principle contractor will establish, implement and maintain a procedure to monitor and measure, on a regular basis, the key characteristics of the operations that may have a significant environmental impact. The procedure shall include the documenting of information to monitor performance, applicable operational controls and conformity with the operation's environmental objectives and targets.

The Project Company via the appointed EPC contractor/principle contractor will ensure that all instruments and devices used for the measurement or monitoring are calibrated and appropriately operated and maintained. Calibration records must be kept on site or in close proximity to the equipment for ease of availability. All the conditions outlined in the EMPr will be subject to the required internal day-to-day monitoring and external compliance monitoring. Where required, any specific additional monitoring has been outlined in the EMPr.

4.4 NON-CONFORMANCE AND CORRECTIVE ACTION

The auditing of the construction and operational activities may identify non-conformances to the EMPr and conditions of the environmental authorisation. Non-conformances may also be identified through incidents, emergencies or complaints recorded. In order to correct non-conformances, the source must be determined, and corrective actions must be identified and implemented.

4.4.1 COMPLIANCE WITH THE EMPR AND CONDITIONS OF THE ENVIRONMENTAL AUTHORISATION

- A copy of the EMPr and conditions of the environmental authorisation will be available onsite at all times for the duration of the construction and operational activities;
- All persons employed by a contractor or their sub-contractors will abide by the requirements of the EMPr and conditions of the environmental authorisation;
- Any members of the workforce found to be in breach of any of the specifications contained within the EMPr and conditions of the environmental authorisation may be ordered by the Site Manager to leave the site. A contractor will not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMPr and conditions of the environmental authorisation;
- Should a contractor be in breach of any of the specifications contained in the EMPr and conditions of the environmental authorisation, the Site Manager will, in writing, instruct the contractor responsible for the incident of non-compliance regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, implement a penalty and/or indicate that work will be suspended should non-compliance continue;
- Should non-compliance continue, further written notification will be forwarded to the contractor responsible for the incident of non-compliance outlining the required corrective and/or remedial action, the timeframe for implementation, penalties and/or work will be suspended as specified previously; and
- Departmental officials will be given access to the property referred to in the EIR and EMPr for the purpose of assessing and/or monitoring compliance with the EMPr and conditions of the environmental authorisation, at all reasonable times.

4.4.2 DUTY OF CARE

All personnel involved with the construction and operational activities onsite will be responsible for implementing measures to prevent pollution or degradation of the environment from occurring, continuing or recurring. Insofar as such harm to the environment is authorised by law, or cannot reasonably be avoided or stopped, personnel shall minimise and rectify such pollution or degradation of the environment.

4.5 DOCUMENTATION AND REPORTING

The following documentation must be kept onsite in order to record compliance with the EMPr and conditions of the environmental authorisation:

- Record of complaints; and
- Record of emergencies and incidents.

The contractor will be required to report on the following:

- Environmental incidents involving contractor/ employees and/or the public;
- Environmental complaints and correspondence received from the public; and
- Incidents that cause harm or may cause harm to the environment.

The above records will form an integral part of the ECO's reports and records thereof maintained for the duration of the project. These records will be kept with the EMPr and conditions of the environmental authorisation, and will be made available for scrutiny if so requested by the Site Manager or his delegate and the ECO.

The contractor will ensure that the following information is recorded for all environmental complaints/incidents/emergencies:

- Date of complaint/incident/emergency;
- Location of complaint/incident/emergency;
- Nature of complaint/incident/emergency;
- Causes of complaint/incident/emergency;

- Party/parties responsible for causing complaint/incident/emergency;
 - Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident/emergency;
 - Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident/emergency;
 - Timeframes and the parties responsible for the implementation of the corrective or remedial actions;
 - Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and
 - Copies of all correspondence received regarding complaints/incidents/emergency.
-

4.6 PUBLIC COMPLAINTS

A signboard must be erected at the entrance to the project site, informing the public of the construction activities taking place. The signboard must include the following information:

- The name of the contractor; and
- The name and contact details of the site representative to be contacted in the event of emergencies or the location of the complaint registration.

5 GENERIC ENVIRONMENTAL CONTROLS

This section refers to construction related activities that are common to most power line projects as defined within the pre-approved generic EMPs. For each activity, a set of prescribed environmental controls and associated management actions have been identified. Contractors shall implement these controls as a minimum requirement for mitigating the impact of particular construction related activities.

These control measures are defined within Part B: Section 1 of the pre-approved generic EMPs (attached as **Appendix D** and **Appendix E**). The format of a general environmental control is shown below, see **Table 5-1**. The boxes shaded in green are predefined and represent minimum standards for the management of that particular aspect. The Contractor will be required to adhere to all impact management actions (where applicable to the construction related activity) for the Project. The boxes shaded in red assign responsibility for the implementation and monitoring of the impact management actions. This implementation and monitoring information is project specific and shall be completed by the Contractor prior to commencement of construction.

Table 5-1: Format of a general environmental control illustrating aspects which are predefined versus those which still need to be completed by the contractor

Management Objective:	Predefined as part of Generic EMP					
Management Outcome:	Predefined as part of Generic EMP					
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Predefined as part of Generic EMP	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

The construction related activities addressed within Part B: Section 1 of the pre-approved generic EMPs are as follows:

Table 5-2: Activities and management measures as per generic EMP (Part B: Section 1)

ACTIVITY	REFER TO GENERIC EMP FOR THE DEVELOPMENT OF OVERHEAD TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE, ATTACHED AS APPENDIX C (PART B: SECTION 1)	REFER TO GENERIC EMP FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)
Environmental awareness training	5.1	5.1
Site Establishment development	5.2	5.2
Access restricted areas	5.3	5.3
Access roads	5.4	5.4

ACTIVITY

REFER TO GENERIC EMPR FOR THE DEVELOPMENT OF OVERHEAD TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE, ATTACHED AS APPENDIX C (PART B: SECTION 1)

REFER TO GENERIC EMPR FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)

Fencing and Gate installation	5.5	5.5
Water Supply Management	5.6	5.6
Storm and wastewater management	5.7	5.7
Solid and hazardous waste management	5.8	5.8
Protection of watercourses and estuaries	5.9	5.9
Vegetation clearing	5.10	5.10
Protection of fauna	5.11	5.11
Protection of heritage resources	5.12	5.12
Safety of the public	5.13	5.13
Sanitation	5.14	5.14
Prevention of disease	5.15	5.15
Emergency procedures	5.16	5.16
Hazardous substances	5.17	5.17
Workshop, equipment maintenance and storage	5.18	5.18
Batching plants	5.19	5.19
Dust emissions	5.20	5.20
Blasting	5.21	5.21
Noise	5.22	5.22
Fire prevention	5.23	5.23
Stockpiling and stockpile areas	5.24	5.24
Finalising tower positions	5.25	
Civil works	5.25	5.25
Excavation (and Installation) of foundations	5.26	5.26
Installation of foundations, cable trenching and drainage systems	5.27	5.27
Assembly and erecting towers	5.27	

ACTIVITY	REFER TO GENERIC EMPr FOR THE DEVELOPMENT OF OVERHEAD TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE, ATTACHED AS APPENDIX C (PART B: SECTION 1)	REFER TO GENERIC EMPr FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)
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Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)	5.28	5.28
Stringing (and cabling)	5.28	5.30
Testing and Commissioning (all equipment testing, earthing system, system integration)	5.31	5.31
Socio-economic	5.29	5.32
Temporary closure of site	5.30	5.33
Dismantling of old equipment	5.34	5.34
Landscaping and rehabilitation	5.31	5.35

Refer to: Part B – Section 1 of the Generic EMPr for the development of overhead transmission and distribution infrastructure, attached as Appendix D and Part B – Section 1 of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix E.

6 SITE SPECIFIC CONTROLS

The EMPr contains guidelines, operating procedures, rehabilitation and pollution control requirements which will be binding to the onsite personnel working for, or on behalf of Mukondeleli Wind Energy Facility (RF) (Pty) Ltd. It is essential that the EMPr be carefully studied, understood, implemented and adhered to at all times.

In instances where the method statements provided by the contractor conflict with the EMPr, such conflicts will be discussed between the Site Manager, ECO and contractor and if unresolved the EMPr will take precedent.

The EMPr identifies various actions which are undertaken throughout the construction and operational phases of the Mukondeleli 132kV grid connection. Not every action will be required during the entire course of activities. Therefore, the actions identified in the EMPr have been given priority timeframes for proposed implementation. The columns in the structure of the EMPr have been described **Table 6-1** below.

Table 6-1 : Structure of EMPr

COLUMN	DESCRIPTION
Activity / Aspect	Highlights the various activities/aspects associated with the project i.e. the contractors' activities that will interact with the environment. Each activity / aspect is cross referenced to the impacts identified in the EIA report.
Environmental Measures and Action Plans	Indicates the actions required to prevent and/or minimise the potential impacts on the environment that are associated with the project
Responsibility	Indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr. Please note that the site manager will have authority to stop works if/as necessary
Development Phase	Indicates during which phase of development the actions for the specific aspect must be implemented and/or monitored
Condition of Authorisation	Indicates whether the specific mitigation measures should or should not be included as a condition in the Environmental authorisation
Additional Monitoring Requirements	Indicates the method and frequency of any additional monitoring requirements over and above the day-to-day monitoring undertaken by the EO and the monthly compliance monitoring undertaken by the ECO.

The following assumptions have been made in the development of the environmental specification in this EMPr:

- An environmental file containing the information/documentation required by this EMPr is to remain onsite and to be made available at the request of the auditor or similar monitoring body; and
- For ease of reference, any person(s) employed to assist in the project i.e. contractors, sub-contractor and permanent and temporary staff, will be collectively referred to as 'onsite personnel'.

6.1 CONTRACTOR LAYDOWN AREA AND SITE ACCESS

6.1.1 OBJECTIVES

To implement measures to minimise impacts on the environment from the initiation of construction activities through planning, careful site access route selection and implementation of mitigation measures.

6.1.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Health, safety, environmental and community incident and complaints management system register;
 - Close-out on incidents, non-conformances and audit findings;
 - Monitoring and audit reports;
 - Inductions training and register; and
 - Environmental awareness programme/toolbox talks.
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6.1.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-2: Project Initiation

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Project Initiation of Construction Activities	Appoint an ECO to manage and verify compliance with the EA and EMPr.	Project Manager	Construction
	The development footprint must be demarcated to ensure that only the demarcated areas are impacted upon. Any no-go areas identified must be demarcated before the construction or decommissioning commences. This includes all wetlands and the associated buffers, and any high sensitivity areas. Use the wetland shapefiles to signpost the edge of the wetlands closest to site.	EO Contractor (Site Manager)	Decommissioning

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Place the sign 25 m from the edge (this is the buffer zone). Label these areas as environmentally sensitive areas, keep out.		
	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area and wetlands to inform importance of these areas and their conservation. A signed register of attendance must be kept for proof.		Construction Operation
	Site clearing must be limited to the footprint of the infrastructure requirements.		Construction
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	Firefighting equipment must be securely placed and inspected monthly.		

6.2 VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT

6.2.1 OBJECTIVES

To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite.

6.2.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Health, safety, environmental and community incident and complaints management system register;
- Close-out on incidents, non-conformances and audit findings;
- Monitoring and audit reports;

- Transport route delineation;
- Daily equipment, machinery and vehicle checklists; and
- Incident classification and reporting procedure.

6.2.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-3: Vehicle and equipment management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Vehicle and Equipment Maintenance	Undertake all significant vehicle maintenance work off-site at a registered workshop. Evidence of such maintenance must be recorded and maintained onsite for verification.	EO Contractor	Construction
	Minor maintenance can be undertaken onsite within a designated area on a hard standing.	Operator	Operation
	Utilise drip trays under all stationary vehicles and equipment.		De-commissioning
Operation of Equipment, Machinery and Vehicles	Adequately maintain equipment, machinery and vehicles so as to reduce the potential for spillages of oil, diesel, fuel or hydraulic fluid, as well as to ensure road-worthiness. Evidence of such maintenance must be recorded and maintained onsite for verification.		
	Large loads must be secured before entering the local road network.		
	Increase visibility of heavy vehicles by utilising sufficient reflectors and activating headlights during operation		
	Do not allow machinery or plant equipment used onsite to pose a pollution hazard. The contractor must order any equipment to be repaired or withdrawn from use if evident that it is not operating optimally. The contractor shall inspect all vehicles, machinery and equipment every morning for defects (indicator lights, oil leaks, etc.) and excessive emissions		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Identify and use transport routes that will least impact local road users and traffic i.e. routes which minimise right turns across traffic. Identified routes must be documented and made available for inspection on request.		
	Avoid heavy vehicle use on the local road network during peak hours i.e. 07h00 – 08h00 and 16h00 – 17h00		
	Undertake fuel and chemical management for storage, handling and spillages in accordance with the Fuel and Chemical Management section		

6.3 FUEL AND CHEMICAL MANAGEMENT

6.3.1 OBJECTIVES

To ensure the correct storage and handling of fuels and chemicals in order to prevent impacts to the surrounding environment

6.3.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Maintenance records;
- Safe Disposal certificates (if applicable);
- Material safety data sheets;
- Health, safety, environmental and community incident and complaints management system register;
- Chemicals management procedure (to be developed);
- Waste management procedure (to be developed);

- Monitoring and audit reports; and
- Training records.

6.3.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-4: Fuel and chemical management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Fuel and Chemical Management	Undertake fuel and chemical management for storage, handling and spillages in accordance with an Incident Classification and Reporting Procedure	EO Contractor	Construction Operation
	Securely fence and lock the storage areas to accommodate all hazardous substances such as fuel, oils and chemicals. The storage area must be covered and the floor must be an impermeable surface and suitably bunded as per the requirements outlined in SANS 10089-1 (2008)	Operator	Operation
	Indicate the location of the fuel and chemical storage area on the layout plans.	Operator	Operation
	Develop and implement a procedure for the management of all hydrocarbon spillages	Operator	Operation
	Maintain oil traps or interceptors on a regular basis and maintain records	Operator	Operation
	Develop and implement a procedure for the storage and handling of chemicals, hydrocarbon materials and hazardous substances onsite. The procedure must ensure adherence to the Hazardous Substances Act (No. 15 of 1973) and its relevant regulations.	Operator	Operation
	Label all liquids (chemicals and hydrocarbons) stored onsite for easy identification. Safety data sheets (SDS) for onsite chemicals, hydrocarbon materials and hazardous substances must be readily available. SDSs must include mitigation measures to ameliorate potential environmental impacts which may result from a spill, incorporating health and safety mitigation measures	Operator	Operation

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	A spill management plan must be in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.		
	No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers for safe disposal.		
	In cases where a surface leak occurs during loading and off-loading activities, the spill material will be cleaned using a spill kit.		
	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair		
	Keep fuels, oils or other chemicals used outside of the bunded area to a minimum and use suitable secondary containment in the form of drip trays.		
Health and Safety	Display “no smoking” and “no naked flame” signs in and around the project area, as well as near the hazardous material store	EO Contractor	Construction Operation De-commissioning
	Strategically place the correct types of fire extinguishers onsite and near the hazardous material store. Train key personnel on basic firefighting skills		
	Frequently inspect and maintain containment facilities and retain records onsite		

6.4 WASTE MANAGEMENT

6.4.1 OBJECTIVES

To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste.

6.4.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Induction training and records;
- Material safety data sheets;
- Waste Management Procedure (to be developed);
- Relevant SANS Codes of Practice;
- Safety disposal certificates and waste manifests (all waste streams);
- Emergency preparedness and response procedure (to be developed);
- Incident classification and reporting management procedure (to be developed);
- Waste manifest documentation;
- Health, safety, environmental and community incident and complaints management system register; and
- Monitoring and audit reports.

6.4.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-5: Waste management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
General Waste Management	General waste generated as a result of construction and operational activities <u>must</u> be managed in accordance with a Waste Management Procedure	EO Contractor	Construction
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the Waste Management Procedure		Operation
	Prohibit littering and burning of waste onsite		De-commissioning
	Place an adequate number of general waste bins around the site during construction and operational activities in order to minimise littering. The bins must be suitably labelled “General Waste” to prevent mixing of waste. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility		
	Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. <ul style="list-style-type: none"> — Refuse bins will be emptied and secured. — Temporary storage of domestic waste shall be in covered waste skips. — Maximum domestic waste storage period will be 10 days. 		
	Retain records of appropriate waste manifest documentation and safety disposal certificates associated with general waste removal, transportation and disposal		
	Prohibit the mixing of general waste with hazardous waste. Should general waste be mixed with hazardous waste, it will be considered hazardous waste		
	Recover, recycle and reuse waste of general waste as far as possible.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Hazardous Waste Management	Hazardous waste generated as a result of construction, operational and de-commissioning activities must be managed in accordance with a Waste Management Procedure.	EO Contractor	Construction Operation De-commissioning
	The Waste Management Procedure must include a procedure for handling spillages.		
	Train and inform all onsite personnel regarding hazardous waste minimisation, management and disposal as per the Waste Management Procedure		
	A designated and appropriately demarcated and covered hazardous waste storage area must be established on a hard standing area (SANS 10089-1 (2008)).		
	Ensure that all hazardous wastes temporarily stored on site are stored in a covered skip and are placed on a hard standing		
	Clean areas where hazardous waste spills have occurred and dispose of the hazardous material appropriately. Key personnel must be trained on handling spillages.		
	Retain records of appropriate safety disposal certificates associated with hazardous waste removal, transportation and disposal		
	Ensure that waste manifest documentation (as per the Waste Classification and Management Regulations – GNR 634) is prepared and maintained for the generation, transportation and disposal of waste.		
	Ensure cognisance of the following SANS codes of practice: <ul style="list-style-type: none"> — SANS 10234: Classification and Labelling of Chemicals — SANS 10228: The Identification and Classification of Dangerous Substances — SANS 10229: Packing of Dangerous Goods for Road and Rail Transportation 		
	Manage all liquid hazardous waste spillages as per the Waste Management Procedure		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	An emergency preparedness and response plan is to be developed by the contractor/operator for any hazardous waste being removed, transported and disposed of offsite		
	Ensure that waste manifest documentation (as per the draft Classification and Management Regulations, GNR.614 of 2012) is prepared and maintained for the generation, transportation and disposal of hazardous waste		
	Should Redox-flow batteries energy systems be implemented, process controls in place for the BESS to prevent contamination and deterioration of electrolyte leading to excessive purging.	EO Operator	Operation

6.5 SOIL, LAND MANAGEMENT AND AGRICULTURE POTENTIAL

6.5.1 OBJECTIVES

To prevent any disturbance, erosion or contamination of soil resources

6.5.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Induction training and records;
- Waste Management Procedure (to be developed);
- Incident Classification and Reporting Management Procedure (to be developed);
- Health, safety, environmental and community incident and complaints management system register;
- Monitoring and audit reports; and

6.5.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-6: Soil and land management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Change in land use due to vegetation clearance and establishment of infrastructure	Limit earthworks and vehicle movement to demarcated paths and areas.	EO Contractor	Construction
	Limit removal of vegetation to demarcated areas only.		
	Rehabilitate disturbed areas around the poles as soon as practicable following disturbance thereof.		
Agricultural production potential loss due to vegetation clearance, soil disturbance and high traffic movement on site	Maintain vegetation and facilitate re-vegetation.	EO Contractor	Construction
	Strip, stockpile and re-spread topsoil.		
Increased potential for soil erosion due to vegetation clearance, soil disturbance and high traffic movement on site.	Only the proposed monopole foundation footprint areas should be cleared of vegetation. This should be done in stages as construction works progress, if possible.	EO Contractor	Construction Operational Operation
	Limit earthworks and vehicle movement to demarcated paths and areas.		
	Implement stormwater management measures that will help to reduce the speed of the water. These measures must also assist with the prevention of water pollution, erosion and siltation.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Any exposed earth should be rehabilitated promptly, and this could include planting suitable vegetation (vigorous indigenous grasses) that mimics the surrounding environment to protect the exposed soil.		
	If excavations or foundations fill up with stormwater, these areas should immediately be drained and measures to prevent access to these areas should be implemented.		
	Erosion control measures should be implemented during the construction phase on large, exposed areas and where stormwater is temporarily channelled.		
	Stormwater channels and preferential flow paths should be delineated, filled with aggregate and/or logs (branches included) to dissipate and slow flows, limiting erosion.		
	Rehabilitate the area to manage erosion as soon as practicably possible.		
	Limit the duration of construction activities where possible, especially those involving earthwork / excavations.		
	Access roads associated with the development should have gradients or surface treatment to limit erosion, and road drainage systems should be accounted for.		
	Soil stripping should be undertaken in the dry season, if necessary, and silt fences erected if unexpected weather washes loose soil into the relatively nearby watercourse		
	Gabions, Reno Mattresses or Hessian should be used where evidence of erosion is present.		
	Upon completion of construction, the laydown areas and construction camp sites are to be rehabilitated.		
	The site should be monitored for signs of erosion continually and an erosion management plan should be put in place.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Potential spillage of hazardous substances such as oils, fuel, grease from construction and operational vehicles, and sewage from on-site sanitation systems	The proper handling and storage of hazardous materials, the use of hardstanding in storage areas of hazardous substances and where spillages are possible. The use of bunding around storage of hazardous materials and proper upkeep of machinery and vehicles. A complete spill kit must be onsite at all times.	Contractor	Construction, Operational Decommissioning
	All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks.		
	Plant and vehicles are to be repaired immediately upon developing leaks.		
	Drip trays shall be supplied for all idle vehicles and machinery.		
	No repair work may be undertaken on machinery onsite or within the site camp area.		
	Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants.		
	Drip trays are to be inspected daily for leaks and effectiveness and emptied when necessary. This is to be closely monitored during rain events to prevent overflow.		
	Ensure appropriate handling of hazardous substances.		
	Keep adequate spill kits onsite and train personnel to use them appropriately.		
	Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded.		
Implement stormwater management measures that will help to reduce the speed of the water flows.	EO	Construction	
Stockpile Management			Adequately maintain stockpiled material to prevent becoming the source air pollution (windblown dust). Maximum height of stockpiles should not exceed 2m.

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Level and shape the area designated for the deposition of stockpiled material to ensure the efficient drainage of the site. No general or hazardous waste may be disposed of at this site	Contractor	
	Stormwater control systems must be implemented within the site and must be managed and maintained to ensure no contamination of soil reserves	Contractor	
Soil and Land Management	Soils excavated during construction of the facility must be appropriately stored in stockpiles which are protected so as to limit the loss of soils. The stockpile shall be located away from seepage zones, floodlines, water courses and other ecological sensitive areas (drainage lines).	EO ECO Contractor	Construction
	Topsoil is expected to have a higher fertility than the subsoil horizons, and contains the vegetation seeds. As a result, the topsoil must be stored separately from the subsoils. Topsoil stock piles must be designated and not higher than 2m.		
	Due to the potential for soil compaction due to vehicles, traffic must be limited to existing or proposed roadways as far as possible.		
	The construction of roads must be limited in width and length as far as is practical to limit impacts.		
	Where soil compaction outside of the designated development areas occurs, this needs to be rehabilitated to the pre-development soil permeability to maintain infiltration		
	Vegetation removal must be kept to a minimum and limited to the area of development		
	Where an impact to the vegetation outside of the development footprint occurs, rehabilitation measures must be undertaken to maintain the baseline vegetation population and health		
	Once the operations have concluded, the stockpiled soils must be returned to the impacted land to reinstate the land capability, with topsoil being returned as the top layer.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	If necessary, soil amelioration in the form of fertilisers may be required to return the fertility to baseline conditions.	Contractor	Operation Decommissioning
	To limit erosion, it must be ensured that the soils are rehabilitated to their pre-development characteristics as far as is practicable to ensure infiltration and vegetation rooting.		
	When the site is decommissioned, the surface profile thereof can be altered to more closely resemble its current profile through earthworks		
	The ECO or a suitably qualified ecologist must be appointed to monitor the rehabilitation and to ensure that the vegetation health is returned to the baseline health where practically feasible		
	Erosion observed (both on- and off-site) must be rehabilitated, with mitigation measures adopted in high risk areas (i.e. gabions, gabion mattresses)		
	Machinery must be regularly checked to ensure hydrocarbon leaks (including fuel and hydraulic fluids) are not occurring. Drip trays must be used where necessary. In addition, during the filling of vehicles this must be undertaken in a designated area where any spills are contained.		
	Fuels and oils must be stored within bunded areas. Parking areas for staff vehicles must ideally be placed on hardstanding (e.g. asphalt) to limit the impacts of oil leaks to the soil environment		
	Sufficient on-site ablutions must be made available during site construction and decommissioning		
	Weed and invader species growth needs to be appropriately monitored and managed, both during the site construction, operation and after decommissioning		
The decommissioning and rehabilitation measures must be phased to limit areas of exposed soil. Vegetation must be reintroduced during rehabilitation as soon as possible to limit erosion	EO Project Manager	Decommissioning	

6.6 WATER MANAGEMENT

6.6.1 OBJECTIVES

- To implement measures to prevent the contamination on surface and groundwater resources; and
 - To prevent erosion and loss of topsoil.
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6.6.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Induction training and records;
 - Waste Management Procedure (to be developed);
 - Incident classification and reporting management procedure (to be developed);
 - Environmental awareness programme/toolbox talks; and
 - Stormwater management plan (to be developed).
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6.6.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-7: Water management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Alterations of flow regimes of watercourses, in close proximity to	Pylons should be placed outside delineated watercourses and their associated buffer zones.	Contractor	Planning and Design
	Prevent access of heavy vehicles and machinery in the wetlands or riparian areas.	Operator	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
the site, or that is proposed to be traversed	Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction.	Surface Water and Aquatic Specialists	Operation Decommissioning
	Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.		
	Implementation of best management practices.		
	Conduct a pre-construction inspection to identify Red List species that may be breeding within the project footprint to ensure that the impacts to breeding species (if any) are adequately managed.		
	All water abstraction required by the project should be in compliance the requisite water use authorisation under the requirements of the National Water Act.		
	Existing access routes should be utilised. Should access roads need to traverse watercourse, these should be perpendicular to the watercourse with appropriately designed culverts.		
	The pole sites should be contoured to allow for surface water to readily drain away (as it would under natural conditions) and to prevent ponding of water within areas where it would not have ponded before the construction activities.		
	Vegetation clearing, soil stripping and major earthmoving activities must be phased to minimise the extent of bare soils surfaces exposed at any one time. Ideally, this should be undertaken during the dry season.		
	Implement comprehensive rehabilitation / monitoring plan from the project onset i.e. during the detailed design phase prior to construction, to ensure a net benefit to the environment within all areas that will remain undisturbed.		
	Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Effective culverts should be incorporated into the design of access roads.		
Surface Water Management	Where development is located upslope from wetlands, a temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse.	Project Manager	Planning
		ECO	Construction
	Where development is located upslope from wetlands, effective stormwater management including sediment barriers should be a priority during both construction and operational phase. This should be monitored as part of the EMP.	Contractor	Operation
	Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area.		
	Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.		
	Monitoring should be done to ensure that sediment pollution is timeously dressed.		
	Prevent access of heavy vehicles and machinery in the delineated watercourses.		
	Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction phase and that plan must be implemented immediately upon completion of construction.		
	Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.		
A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems.			

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	The stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed watercourses.		
	To appropriately manage storm water, the Storm Water Management Plan needs to be implemented, including the following recommendations incorporating measures outlined in the DWA GN704 and Best Practice Guidelines as well as on-site observations		
	To prevent contamination, it must be ensured that there is no storage and handling of materials (i.e. raw materials, product and waste material) within the designated “clean areas”		
	All channels must be checked monthly and after any major rainfall events to ensure that there are no blockages and that the water will not be restricted in any way		
	Spills must be appropriately managed on site, including within the bunds		
	At the outlet of the stormwater channel discharging to the environment, erosion protection is required		
	To reduce the velocity of runoff generated from site, velocity dissipation infrastructure must be constructed at the point of stormwater discharge to the environment. Any areas of erosion must be suitably rehabilitated		
	No runoff may be discharged or directed into the Pans, as these are not tolerant of excessive / regular volumes of water and would then change in nature and attributes. Suitable measures must be implemented to prevent such runoff, i.e. stormwater detention pond (or similar appropriate measure).		
	Ensure proposed locations of the BESS facilities are a suitable distance from the closest water course.	Site Manager Contractor Operator/Developer	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Groundwater Management	Construction areas should be demarcated, and wetland areas marked as “restricted” in order to prevent the unnecessary impact to and loss of these systems.	EO Contractor	Construction Operation
	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.		
	Laydown yards, camps and storage areas must be beyond the wetland areas where applicable.		
	During construction, contractors used for the Project must have spill kits available to ensure that any fuel or oil spills are cleaned-up and disposed of correctly.		
	A suitable stormwater management plan must be generated for the project to control the movement of water on the substation site.		
	The stormwater management plan should incorporate “soft” engineering measures as much as possible, limiting the use of artificial materials.		
	As much material must be pre-fabricated and then transported to site to avoid the risks of contamination associated with mixing, pouring and the storage of chemicals and compounds on site.		
	All chemicals and toxicants during the construction and operation phase must be stored in bunded areas.		
	All machinery and equipment should be inspected regularly for faults and possible leaks; these should be serviced off-site.		
	All contractors and employees should undergo induction which is to include a component of environmental awareness. The induction is to include aspects such as the need to avoid littering, the reporting and cleaning of spills and leaks and general good “housekeeping”.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Adequate sanitary facilities and ablutions on the servitude must be provided for all personnel throughout the Project area. Use of these facilities must be enforced (these facilities must be kept clean so that they are a desired alternative to the surrounding vegetation).		
	Have action plans on site, and training for contactors and employees in the event of spills, leaks and other impacts to the aquatic systems.		
Potable Water Management	Onsite staff are to be provided with an appropriate potable water supply, safe and healthy sanitary facilities and protection against exposure to environmentally dangerous or unhealthy situations or conditions.		
	Onsite staff must be made aware and encouraged to use water sparingly such that there is no water wastage.		
	Appropriate ablation facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated watercourses and pans/depressions or the buffers shown.		
Water quality of wetlands	Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone.	EO Contractor	Construction Operation
	Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.		
	The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse i.e. water runoff from cleaning of equipment, vehicle access etc.		
	Maintenance of construction vehicles/equipment should not take place within the watercourse or watercourse buffer.		
	Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects.		
	Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Regular independent water quality monitoring should form part of operational procedures in order to identify pollution.		
	Treatment of pollution identified should be prioritized according to best practice guidelines.		
	Develop norms and standards for the treatment of spills such as oil or hydraulic fluid. Ensure that the required equipment is available on hand to contain any spills..		
	Appoint a reliable contractor for the removal of refuse during the construction and operational phase.		
	Areas for waste disposal should be clearly demarcated and should be bunded and on hard standing. These areas should be located outside the riparian zone.		
	Ensure that no equipment is washed in the streams and wetlands of the area, and if washing facilities are provided, that these are located outside the riparian zone.		
	Procedures for containment of leaks/spills as well as associated emergency response plans should be developed.		
	Potential contaminants used and stored at the proposed project site should be stored and prepared on bunded surfaces to contain spills and leaks.		
	No water should be abstracted from the wetland area. Ideally water required during the construction phase must be sourced from an external source (i.e. outside of the wetland contributing area).		
Loss Of Wetland And Riparian Functionality	The Powerline and substation currently located either within a wetland or within the buffer of a wetland should be moved into nearby impacted areas like agricultural fields.	EO Contractor	Construction Operation
	Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.		
	Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas.		
	Operational activities should not impact on rehabilitated or naturally vegetated areas.		
	Areas for waste disposal should be clearly demarcated and should be bunded and on hard standing. These areas should be located outside the riparian zone.		
	A layout plan must be compiled indicating the limits of disturbance associated with the proposed infrastructure in relation to the identified sensitive areas (i.e. wetlands). No-go areas and any stormwater infrastructure must be indicated on this plan together with erosion and sediment, controls and measures		
	In the event that poles or access roads need to be placed within the wetland or riparian systems, an application for a Water Use Licence (WUL) in terms of Section 21 of the National Water Act (NWA) (Act 36 of 1998) must be undertaken.		

6.7 BIODIVERSITY MANAGEMENT

6.7.1 OBJECTIVES

To ensure that impacts to the biodiversity (fauna and flora) of the surrounding environment are ameliorated

6.7.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Induction training and records;
- Incident Classification and Reporting Management Procedure (to be developed);
- Environmental awareness programme/toolbox talks; and
- Biodiversity monitoring procedure (to be developed).

6.7.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-8: Biodiversity management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
General	A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.	EO Contractor	Construction Operation
	It must be noted that it is a legal requirement to obtain permits for specimens or protected species that will be lost due to construction of the project.		
	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.		
	A Fire Management Plan needs to be compiled to restrict the impact of fire. This is especially concerning stochastic fire events such as discarding of lit cigarette butts and/or glowing embers from cooking fires. The fire management plan must ensure that natural fire regimes of the surrounding vegetation is not affected.		
	Dust control measures to be implemented such as wetting of road surfaces and properly managed stockpiles.		
	Development and implementation of an Erosion Management Programme		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Poaching of plants must not be tolerated and made a punishable offence.		
	Speed control measures must be implemented.		
	Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals.		
	No trapping, killing, or poisoning of any wildlife is to be allowed. Signs must be put up to enforce this and must be made a punishable offence.		
	The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna.		
	Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.		
	Personnel to be educated about protection status of species, including distinguishing features, to be able to identify protected species.		
	Development and implementation of a Waste Management Plan		
Loss Of faunal and floral Habitat Due To Infrastructure Development	Vegetation clearance should be confined to the footprint of the development and unnecessary clearance should be avoided. The severity of the vegetation clearance can be mitigated if only a service road would be cleared and a vegetative groundlayer would be retained in the rest of the servitude.	EO Contractor	Construction
	Construction crew, in particular the drivers, should undergo environmental training (induction) to increase their awareness of environmental concerns. This includes awareness as to remaining within demarcated construction areas, no littering, handling of pollution and chemical spills, avoiding fire hazards and minimising wildlife interactions.		
	Ensure that all temporary use areas e.g. laydown areas and construction camp, are located in areas of low sensitivity.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Footprints of the pylons, roads and substation locations should be clearly demarcated.		
	Watercourses, wetlands, rocky outcrops/sheets should be avoided (Habitats 1 & 7).		
	Observe buffer zones along drainage lines (see report of aquatic specialist).		
	All vehicles are to remain on demarcated roads and no driving through the veld should be allowed.		
	The ECO is to provide supervision on vegetation clearing activities and other activities that may cause damage to the environment, especially when construction commences and most vegetation clearing is taking place.		
	Designs capacity must be kept to a minimum feasibility in Very High Sensitive Ecological areas, with set-aside areas created in support of conservation		
	No plants may be translocated or otherwise uprooted or disturbed without express permission from the ECO.		
	Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.		
	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.		
	Several Search and Rescue operations must occur in the proposed infrastructure footprint to ensure that species are relocated to proximal natural areas.		
	Placement of infrastructure should be done in such a way as to minimise the impact on protected species.	EO	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
The loss of threatened protected & endemic plant species	The construction crew should undergo environmental training (induction) to make them aware of the importance of protected species.	ECO Contractor	
	The areas to be developed must be specifically demarcated to prevent movement into surrounding environments.		
	Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.		
	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.		
	A Walk-through Survey must be undertaken to enable micro-siting of infrastructure so that it does not overlap SCC.		
Direct Mortality Of Fauna Including Species Of Conservation Concern (SCC) Due To Roadkill, Blasting And Earthworks	For any plants that are transplanted, annual monitoring should take place to assess survival. This should be undertaken as per the frequency specified in the management plan and be undertaken by a qualified botanist. The monitoring programme must be designed prior to translocation of plants and should include control sites (areas not disturbed by the project) to evaluate mortality relative to wild populations.	EO Contractor	Construction
Encroachment Of Disturbed Areas By Invasive Alien Plants (IAPs)	An Invasive Alien Plant Management Programme must be developed and implemented.	EO	Construction
	Erosion Control Programme must be developed and implemented.	ECO Contractor	Operation
	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be included into the EMPr during final approval.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	All denuded areas to be rehabilitated using local indigenous species.		
	The powerline and substation currently located either within a wetland or within the buffer of a wetland should be moved into nearby impacted areas like agricultural fields.		
	Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.		
	Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area and returning it where possible afterwards.		
	Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan.		
	Rehabilitate or revegetate disturbed areas.		
	A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the presence of indigenous fauna.		
Behavioural Changes And Emigration Of The Fauna Community Due To Disturbance From Noise And Vibration Pollution	Vegetation clearance should be confined to the smallest possible footprint of the development and unnecessary clearance should be avoided.	EO ECO Contractor	Construction Operation
	Construction crew should undergo environmental training (induction) to increase their awareness of environmental concerns.		
	Speed limits should be set on all roads and strictly adhered to.		
	Development should avoid water courses, wetlands and rocky outcrops/sheets.		

**IMPACT /
ACTIVITY**

MITIGATION AND MANAGEMENT MEASURE

**RESPONSIBLE
PERSON**

**APPLICABLE
DEVELOPMENT
PHASE**

	Proper waste management procedures should be in place to avoid waste lying around and to remove all waste material from the sites.		
	Night-time construction related activities must be avoided as far as possible to limit impacts to amphibians.		
	No activity, including night driving, should be allowed at the site after sunset.		
	Unauthorised staff and contractors are not allowed to go beyond their specific demarcated working areas.		
	Ensure that cabling and electrical infrastructure at the site are buried sufficiently deeply to avoid being excavated by fauna and that where such infrastructure emerges above-ground that it is sufficiently protected from gnawing animals.		
	Any dangerous fauna (e.g. snakes, scorpions) that are encountered during construction should not be handled or molested by construction staff and the ECO (or other suitably qualified person) should be contacted to remove the animals to safety.		
	Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days, should have an escape ramp to allow any fauna that fall in to escape.		
	If there is any part of the site that needs to be lit at night for security reasons, then appropriate lighting should be installed to minimise negative effects on nocturnal animals.		
	Should electrical fences be erected it must be done according to the norms and standards of the Nature Conservation Authorities in Mpumalanga.		
	Access to the site should be regulated to reduce the opportunities for poaching.		
Plant species	Prior to construction commencing, a Plant Rescue Plan must be compiled to be approved by the appropriate authorities as part of the EMPr approval.	EO Contractor	Construction Operation

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Prior to construction commencing, undertake a detailed walk- through survey of footprint areas that are within habitats where SCC are likely to occur.	EO Contractor	Pre-construction Construction Decommissioning
	Where significant populations of SCC are found, collect the data for any flora permits or micro-siting of infrastructure that may be required.		
	Prior to construction commencing, compile a Plant Rescue Plan, including monitoring specifications (timeframe, frequency etc).		
	Undertake monitoring (as per the Plant Rescue Plan specifications) to evaluate whether further measures would be required to manage impacts		
Animal Species	It is a legal requirement to obtain permits for specimens or protected species that will be lost due to construction of the project.	EO Contractor	Construction
	No driving of vehicles off-road outside of construction areas.	Operator	Operation
	Apply mitigation measures recommended in the Terrestrial Biodiversity Assessment to minimize loss of natural vegetation.		Decommissioning
	Personnel on site should undergo environmental induction training, including the need to abide by speed limits, the increased risk of collisions with wild animals on roads in rural areas.		
	Proper waste management must be implemented, ensuring no toxic or dangerous substances are accessible to wildlife. This should also apply to stockpiles of new and used materials to ensure that they do not become a hazard.		
	No collecting, hunting or poaching of any animal species.		
	Personnel to be educated about protection status of species, including distinguishing features, to be able to identify protected species.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Appropriate lighting should be installed to minimize impacts on nocturnal animals, as per visual specialist assessment.		

6.8 AVIFAUNA MANAGEMENT

Construction activities impact on birds through disturbance; this could lead to breeding failure if the disturbance happens during a critical part of the breeding cycle. Construction activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. A potential mitigation measure is the timeous identification of nests and the timing of the construction activities to avoid disturbance during a critical phase of the breeding cycle, although this is often impractical to implement due to tight construction schedules. Powerline sensitive species which are potentially vulnerable to displacement due to habitat transformation are mostly ground nesting species. During the construction of powerlines, service roads (jeep tracks), substations and other associated infrastructure, habitat destruction/transformation inevitably takes place. These activities could impact on birds breeding, foraging and roosting in or in close proximity of the proposed powerline and collector substation through the transformation of habitat.

Species that could be impacted are African Grass Owl, Black-bellied Bustard, Blue Crane, Blue Korhaan, Denham's Bustard, Grey Crowned Crane, Helmeted Guineafowl, Marsh Owl, Northern Black Korhaan, Secretary bird, Spotted Eagle-Owl and White-bellied Bustard. The impact is rated as moderate pre-mitigation and will be reduced to a low-level post-mitigation.

Collisions could be the biggest threat posed by transmission lines to birds in southern Africa (Van Rooyen 2004). Most heavily impacted upon are bustards, storks, cranes and various species of waterbirds, and to a lesser extent, vultures. These species are mostly heavy-bodied birds with limited manoeuvrability, which makes it difficult for them to take the necessary evasive action to avoid colliding with transmission lines (Van Rooyen 2004, Anderson 2001). Despite doubts about the efficacy of line marking to reduce the collision risk for bustards (Jenkins et al. 2010; Martin et al. 2010), there are numerous studies which prove that marking a line with PVC spiral type Bird Flight Diverters (BFDs) generally reduce mortality rates (e.g. Bernardino et al. 2018; Sporer et al. 2013, Barrientos et al. 2011; Jenkins et al. 2010; Alonso & Alonso 1999; Koops & De Jong 1982). Using a controlled experiment spanning a period of nearly eight years (2008 to 2016), the Endangered Wildlife Trust (EWT) and Eskom tested the effectiveness of two types of line markers in reducing power line collision mortalities of large birds on three up to 132kV transmission lines near Hydra substation in the Karoo. Marking was highly effective for Blue Cranes, with a 92% reduction in mortality, and large birds in general with a 56% reduction in mortality.

Species potentially at risk are African Black Duck, African Darter, African Grass Owl, African Sacred Ibis, African Spoonbill, Black Heron, Black-bellied Bustard, Black-crowned Night Heron Black-headed Heron, Black-necked Grebe, Blue Crane, Blue Korhaan, Blue-billed Teal, Cape Shoveler, Cape Teal, Cape Vulture, Denham's Bustard, Egyptian Goose, Fulvous Whistling Duck, Glossy Ibis, Goliath Heron, Great Egret, Greater Flamingo, Grey Crowned Crane, Grey Heron, Hadada Ibis, Hamerkop, Intermediate Egret, Lesser Flamingo, Little Egret, Little Grebe, Mallard, Marsh Owl, Northern Black Korhaan, Purple Heron, Red-billed Teal, Red-knobbed Coot, Reed

Cormorant, Secretary bird, South African Shelduck, Southern Bald Ibis, Southern Pochard, Spotted Eagle-Owl, Spur-winged Goose, Squacco Heron, Wattled Crane, Western Barn Owl, Western Cattle Egret, White Stork, White-backed Duck, White-bellied Bustard, White-breasted Cormorant, White-faced Whistling Duck, Yellow-billed Duck.

Electrocutions within the proposed substation yard are possible but should not affect the more sensitive Red List bird species, as these species are unlikely to use the infrastructure within the substation yard for perching or roosting. Species that are more vulnerable to this impact are corvids, owls, and certain species of waterbirds.

The powerline sensitive species which are potentially vulnerable to electrocution impact are Common Buzzard, Jackal Buzzard, Cape Crow, Pied Crow, African Fish Eagle, Black-chested Snake Eagle, Brown Snake Eagle, Long-crested Eagle, Martial Eagle, Spotted Eagle-Owl, Amur Falcon, Lanner Falcon, Peregrine Falcon, Helmeted Guineafowl, Black-headed Heron, Hadada Ibis, Southern Bald Ibis, Black-winged Kite, Yellow-billed Kite, Western Osprey, African Grass Owl, Marsh Owl, Western Barn Owl, Black Sparrowhawk and Cape Vulture.

6.8.1 OBJECTIVES

To ensure that impacts to avifauna are ameliorated

6.8.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Induction training and records;
- Incident classification and reporting management procedure (to be developed);
- Environmental awareness programme/toolbox talks; and
- Avifauna monitoring procedure (to be developed).

6.8.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-9: Avifaunal management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Displacement of powerline sensitive	Conduct a pre-construction inspection to identify Red List species that may be breeding within the project footprint to ensure that the impacts to breeding species (if any) are adequately managed.	EO	Pre-Construction

**IMPACT /
ACTIVITY**

MITIGATION AND MANAGEMENT MEASURE

**RESPONSIBLE
PERSON**

**APPLICABLE
DEVELOPMENT
PHASE**

species due to disturbance and habitat transformation in the construction phase	The authorised alignment must be inspected by an avifaunal specialist by means of a “walk-through” inspection i.e., through a combination of satellite imagery supplemented with in situ inspections by vehicle and where necessary, on foot, once the pole positions have been finalised. The objective would be to demarcate the sections of the powerline that need to be fitted with Bird Flight Diverters.	Contractor Avifaunal specialist	Construction
	Once the relevant spans have been identified, Bird Flight Diverters must be fitted according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines).		
	Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible.		
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of powerline sensitive species.		
	Measures to control noise and dust should be applied according to current best practice in the industry.		
	Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.		
	Vegetation clearance should be limited to what is necessary.		
	The mitigation measures proposed by the biodiversity specialist must be strictly enforced.		
	The mitigation measures proposed by the biodiversity specialist must be strictly enforced.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Mortality due to electrocution on the electrical infrastructure within the proposed on-site collector substation	<p>It is recommended that regular inspections are performed of the onsite substation yard to monitor the electrocution mortality. If on-going impacts are recorded once operational, site specific mitigation (insulation) be applied reactively.</p> <p>This is an acceptable approach because SCC are unlikely to frequent the switching station infrastructure.</p> <p><u>An Environmental control officer should be appointed to monitor compliance and avifauna mortalities.</u></p>	EO Contractor	Construction Operation
Displacement of powerline sensitive species due to disturbance linked to dismantling activities in the decommissioning phase	<p>Conduct an avifaunal inspection of the powerline prior to its decommissioning to identify nests on the poles/towers.</p> <p>Measures to control noise and dust should be applied according to current best practice in the industry.</p> <p>Decommissioning activity should be restricted to the immediate footprint of the infrastructure as far as possible.</p> <p>Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of powerline sensitive species.</p> <p>Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.</p>	EO Contractor	Decommissioning

6.9 AIR QUALITY MANAGEMENT

Emissions during construction are associated with land clearing, drilling, and blasting, ground excavation, cut and fill operations and the movement of heavy construction vehicles on temporary roads. Pollutants associated with construction activities are typically Total Suspended Particulates (TSP), PM₁₀ and PM_{2.5} with lesser contributions of CO, NO₂, from vehicle exhausts.

Heavy construction activity is a source of dust emissions that can have a significant but transient impact on local air quality. The amount of dust emitted from construction operations depends on the area of land being worked, the proportion of land lying exposed at any time, the clearing and dozing equipment used, the number and type of

vehicles on temporary roads, and the duration of the construction phase. The majority proportion of dust emissions result from heavy vehicle traffic movement on temporary gravel roads at the construction site.

6.9.1 OBJECTIVES

To ensure that impacts to air quality of the surrounding environment are ameliorated.

6.9.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Complaints register
- Incident reporting system
- Health, safety, environmental and community incident and complaints management system register
- Incident Classification and Reporting Management Procedure (to be developed)
- Equipment, machinery and vehicle maintenance/inspection registers

6.9.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-10: Air quality management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Dust	Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and soil/material stockpiles especially. This includes wetting of exposed soft soil surfaces and not conducting activities during high wind periods which will increase the likelihood of dust being generated	EO Contractor	Construction De-commissioning
	All stockpiles (if any) must be restricted to designated areas and may not exceed a height of two (2) metres		
	Earth-moving works have the potential to generate large amounts of dust. Pre-planning of earth-moving works can reduce dust emissions by limiting the time the site is exposed. Options for dust control can include the following:		

**IMPACT / MITIGATION AND MANAGEMENT MEASURE
ACTIVITY**

**RESPONSIBLE
PERSON**

**APPLICABLE
DEVELOPMENT
PHASE**

	<ul style="list-style-type: none"> — Plan earth-moving works so that they are completed just prior to the time they are needed — Observe weather conditions and do not commence or continue earth moving works if conditions are unsuitable e.g., under conditions of strong winds — Reduce off-site hauling via balanced cut and fill operations — Pre-water areas to be disturbed 		
	<p>Ensure that all vehicles, machines and equipment are adequately maintained to minimise emissions</p>		
	<p>It is recommended that the clearing of vegetation from the site should be selective, be kept to the minimum feasible area, and be undertaken just before construction so as to minimise erosion and dust potential.</p>		
	<p>All materials transported to, or from, site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials.</p>		
	<p>Enforcing of speed limits. Reducing the dust generated by the listed activities, putting up signs to enforce speed limit in access roads.</p>		
	<p>No burning of waste, such as plastic bags, cement bags and litter is permitted</p>		
	<p>All issues/complaints must be recorded in the complaints register</p>		
	<p>Watering is a very effective short-term measure. However, its efficiency decreases as wind velocity and evaporation rate increase. Dust emissions can be minimised using the following watering procedures:</p> <ul style="list-style-type: none"> — The surface must be dampened to prevent dust from becoming airborne but must not be wet to the extent of producing run-off. Alternatively, wetting agents could be used, particularly for non-wetting soils — Watering is more effective when undertaken prior to strong breezes — In cases where severe water restrictions are imposed, other measures like the use of wetting agents such as chemical stabilisation or hydromulch, could be considered 		

**IMPACT / MITIGATION AND MANAGEMENT MEASURE
ACTIVITY**

**RESPONSIBLE
PERSON**

**APPLICABLE
DEVELOPMENT
PHASE**

NO ₂ , & CO ₂ Emissions	All equipment, machinery and vehicles must be fitted with appropriate emission control equipment, are maintained frequently and serviced to the manufacturers' specifications	EO Contractor	Construction Operation
	Ensure incident and complaint registers are established and maintained	Operator	De-commissioning
	Prohibit burning of waste or vegetation onsite		

6.10 NOISE MANAGEMENT

6.10.1 OBJECTIVES

To ensure that noise impacts to the surrounding environment are minimal or mitigated.

6.10.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Complaints register;
- Incident reporting system;
- Health, safety, environmental and community incident and complaints management system register;
- Incident classification and reporting management procedure (to be developed); and
- Equipment, machinery and vehicle maintenance/inspection registers.

6.10.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-11: Noise management

IMPACT ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
General Noise Management	Regular maintenance of equipment to reduce the generation of additional unwanted noise	EO	Construction
	Align working times with the substation related operational times	Contractor	Operation
	Install noise reducing fittings on machinery (if required)		
	Fit equipment, machinery and vehicles generating excessive noise with appropriate noise abatement measures and undergo regular maintenance to ensure optimum efficiency during operation		
	Provide complaints register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure		
Acoustic impact on residential receptors during construction and de-commissioning	Avoid or minimizing project transportation through community areas as far as possible	EO	Construction
	Ensure equipment is well-maintained to avoid additional noise generation	Contractor	De-commissioning

6.11 CULTURAL, HERITAGE OR PALAEOLOGICAL FINDS

Based on the current layout, three ruins might be directly impacted on by the proposed Grid infrastructure. Alt 1 will impact on CA 002 and CA012 and the LILO will impact on CA 010. The significance of the recorded ruins (CA002, 010 and 012) ranges from low to high (if associated with stillborn graves) and the sites should be indicated on development plans and avoided during construction (and this can be done with micro siting of pylons of the powerline) after which the impacts will be very low Impacts to heritage resources without mitigation within the project footprint will be permanent and negative and occur during the construction activities.

Any additional effects to subsurface heritage resources can be successfully mitigated by implementing a Chance Find Procedure. All known sites should be avoided and additional recommendations in this report should be implemented during all phases of the project. With the implementation of the recommended mitigation measures impacts of the project on heritage resources is acceptable.

6.11.1 OBJECTIVES

To ensure that sites/artefacts of heritage or palaeontological value are identified and protected.

6.11.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Health, safety, environmental and community incident and complaints management system register;
- Chance Find Procedure;
- Incident Classification and Reporting Management Procedure (to be developed); and
- Monitoring and audit reports

6.11.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-12: Cultural, Heritage and Palaeontological management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
General Project area	Surveying the as yet unsurveyed areas (but arable lands need not be covered).	EO	Construction
	Micrositing of infrastructure as required to avoid any impacts as well as reporting any further sites discovered during construction.	ECO Contractor	
	Implement Chance Find Procedure in case possible heritage finds are uncovered		
	Monitoring by the ECO.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Heritage walkdown of final pylon positions.		
	Minimising the construction duration.		
	Minimising landscape disturbance in general and ensuring rehabilitation of areas not needed during operation.		
	Recorded heritage features should be indicated on development plans and avoided with a 30 m buffer;		
Impacts to graves as a result of construction activities	Avoid all graves and potential graves.	EO Contractor	Construction
	Report any chance finds of unmarked graves during construction.	Contractor Project Manager	
	A pre-construction survey should also be undertaken to determine whether any graves are visible in the final footprint.		
Monitoring Programme for Palaeontology – to commence once the excavations / drilling activities begin.	The following Chance Find Procedure is only required if fossils are seen on the surface and when drilling/excavations commence.	EO Contractor	Construction
	When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.	Project Manager	
	Photographs of similar fossils must be provided to the contractor/s to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.		
	Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	If there is any possible fossil material found by the contractor/s /environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.		
	Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. If required annual reports must be submitted to SAHRA as required by the relevant permits.		
	If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.		
	If no fossils are found and the excavations have finished, then no further monitoring is required.		

6.12 VISUAL IMPACT MANAGEMENT

6.12.1 OBJECTIVES

To ensure that the changes to the landscape character of the area are mitigated to minimise the negative impact.

6.12.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Monitoring and audit reports.

6.12.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-13: Visual impact management

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Visual Impact of Construction Activities	Carefully plan to minimise the construction period and avoid construction delays.	EO	Construction
	Where possible restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.	Contractor	
	Position storage/stockpile areas in unobtrusive positions in the landscape, where possible.		
	Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.		
	Vegetation clearing should take place in a phased manner.		
	Make use of existing gravel access roads where possible.		
	Limit the number of vehicles and trucks travelling to and from the construction site, where possible.		
	Ensure that suitable dust suppression techniques are implemented: <ul style="list-style-type: none"> — on all access roads; — in all areas where vegetation clearing has taken place; — on all soil stockpiles. 		
	Maintain a neat construction site by removing litter, rubble and waste materials regularly.		
	Inform receptors within 500m of the proposed power line and / or substation of the construction programme and schedules;		
Visual Impact Of Operational phase	Where possible, limit the number of maintenance vehicles using access roads.		EO
	Ensure that dust suppression techniques are implemented on all gravel access roads.		

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	As far as possible, limit the amount of security and operational lighting present on the substation site whilst adhering to safety standards.	Operator	
	Light fittings for security at night should reflect the light toward the ground and prevent light spill.		
	Lighting fixtures should make use of minimum lumen or wattage whilst adhering to safety standards.		
	Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used.		
	If possible, make use of motion detectors on security lighting.		
	The buildings on the substation site should not be illuminated at night unless required to adhere to safety standards and should be painted in natural tones that fit with the surrounding environment.		
	Non-reflective surfaces should be used where possible.		
	Light fittings for security at night should reflect the light toward the ground and prevent light spill.		
Visual Impact Of Operational phase Decommissioning	All infrastructure that is not required for post-decommissioning use should be removed.	EO Contractor	Decommissioning
	Maintain a neat decommissioning site by removing rubble and waste materials regularly.		
	Position storage / stockpile areas in unobtrusive positions in the landscape, where possible.		
	Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase.		
	All cleared areas should be rehabilitated as soon as possible.		
	Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.		

6.13 HEALTH AND SAFETY

6.13.1 OBJECTIVES

- To ensure communication with members of the public to promote safety awareness;
 - To prevent public access to construction sites and storage areas; and
 - To ensure safety for all onsite personnel.
-

6.13.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Induction training and records
 - Health, safety, environmental and community incident and complaints management system register
 - Monitoring and audit reports
 - Incident classification and reporting management procedure (to be developed)
 - PPE register
 - Occupational health and safety plan (to be developed)
 - Health and safety protocol (to be developed)
-

6.13.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-14: Health And Safety Management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Health and Safety	The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations.	Site Manager	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of the conditions contained herein.	Contractor EO	Operation
	Development and implementation of an occupational health and safety plan and SHERQ policy	Contractor/Operator Site Manager	Construction Operation
	The appointed contractor will be responsible for the development of a comprehensive health and safety protocol which must be adhered to.	Contractor	Construction
	Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.		
	Provide and wear appropriate PPE onsite.	Contractor/Operator Site Manager	Construction Operation
	All normal procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction begins	Contractor/Operator Site Manager	Construction Operation
	All necessary good hygiene practices to be in place, e.g. provision of toilets, eating areas, infectious disease controls. Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others. Prior to construction determine the dangerous species in the area and what responses are needed to bites/exposure/attacks.	Site Manager Contractor EO	Construction Operation
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents.	Site Manager Contractor EO	Construction Operation

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<p>Outside work must be stopped during thunderstorms.</p> <p>Lighting conductors may be required for the final installation, to be confirmed during design phase.</p>	<p>Site Manager</p> <p>Contractor</p> <p>EO</p>	<p>Construction</p> <p>Operation</p>
<p>Facility emergencies</p>	<p>Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as:</p> <p>appointment of emergency controller,</p> <p>emergency isolation systems for electricity,</p> <p>emergency isolation and containment systems for electrolyte,</p> <p>provision of PPE for hazardous materials response,</p> <p>provision of emergency facilities for staff at the main office building,</p> <p>provision of first aid facilities,</p> <p>first responder contact numbers etc</p>	<p>Operator</p>	<p>Operation</p>
	<p>A detailed risk assessment of all normal operating and maintenance activities on site to be compiled, and form the basis of operating instructions, prior to commencing commissioning.</p>	<p>Operator</p>	<p>Operation</p>
	<p>Material Safety Data Sheets (MSDSs) must be made available for all chemicals and substances on site</p>	<p>Site Manager</p> <p>Contractor</p> <p>Operator</p> <p>EO</p>	<p>Construction</p> <p>Operation</p>
<p>Fire risk</p>	<p>Full Process Safety Management system with all elements to be implemented to highest international best practice levels.</p>	<p>Site Manager</p> <p>Contractor</p>	<p>Construction</p> <p>Operation</p>

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<p>Suitable fire-fighting equipment on site near source of fuel, e.g. diesel tank, generators, mess, workshops etc</p> <p>Grass cutting and fire breaks around the battery installations to prevent veld fires.</p> <p>Safety integrity level rating of equipment (failure probably) with suitable redundancy if required.</p> <p>Ensure regular testing of emergency alarm systems are undertaken.</p> <p>Emergency Response plan in compliance with SANS 1514 to be compiled, e.g. plan from transport and construction phase to be extended to operational phase to include the hazards of the systems containing large quantities of highly hazardous chemicals.</p>	Operator EO	
Risk associated with the BESS	<p>Suitably competent transport companies should be appointed for the transport of batteries.</p> <p>Port Authorities should be alerted to the overall project and the hazardous nature of the contents of battery containers being imported.</p> <p>Drivers must be trained in the hazards of containerized batteries.</p> <p>PPE to be specified including possible exposure to chemicals and fumes as well as radiate heat.</p> <p>Batteries to be packaged in a manner that ensures no short-circuiting during transport.</p> <p>Transport to prevent excessive vibration considerations as battery internal may be damaged leading to thermal run-away during commissioning.</p> <p>Pre-assembled containers will most likely be supplied. These will be fitted with the necessary protective measures by the supplier considering marine and road transport as well as lifting, setting down etc.</p>	Project Manager Site Manager Contractor EO	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Lighting conductors may be required for the installation, to be confirmed during design		
	Bunding under any temporary tanks, curbing under truck offloading areas and sealed surfaces (e.g. concrete) under truck parking area is particularly important.		
	Battery containers to be painted white, not left as reflective steel.		
	Emergency response plan to be in place before construction begins.		
	Ability to shut off power to systems in use on site.		
	End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery unit from day 1.		
	Except during shipping, ideally the units should not be stored any closer to each other than they would be in the final installation so that propagation is prevented, i.e. laydown area needs to be considered.		
	Safety Data Sheets (SDSs) to be available on site.		
	First responders must be familiar with what media to use for extinguishing fires, especially if water totally unsuitable and if there are no connection points for water etc.		
	The hazardous nature of the electrical and battery equipment should be clearly indicated – e.g. Skull and Cross Bones or other signs.		
Provided portable equipment for calibration and for testing/verification of defective equipment, e.g. volt/current meters, infrared camera			

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Undertake a hazardous area classification of the inside of the container to confirm the rating of electrical equipment. Might be zone 2 due to possible leaks of electrolyte or generation of flammable gases under thermal run away.		
	No combustible materials to be stored in or near the batteries or electrical infrastructure, e.g. separation of site diesel tank.	Site Manager Contractor	Operation
	Fire resistant barrier between the batteries and the PCS side if in the same container.	Site Manager Contractor	Operation
	Electrolyte areas fully banded to 110% of largest tank, or more.	Site Manager Contractor	Operation
Public Safety	Restrict public access by employing full time security for the site.	Project Manager EO	Construction Operation
Decommissioning of facility	End of Life shutdown procedure including a risk assessment of the specific activities involved.	Operator	Decommissioning
	Re-purpose the equipment with associated Environmental impact considered.	EO	
	Disposal according to local regulations and other international directives.		
	Operator should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.		

6.14 SOCIO-ECONOMIC IMPACT MANAGEMENT

6.14.1 OBJECTIVES

- To ensure that the negative socio-economic impacts are mitigated and managed; and
- To ensure that the positive economic impacts are enhanced.

6.14.2 INDICATOR AND COMPLIANCE MECHANISMS

The following general indicator and compliance mechanisms are applicable:

- Induction training and records;
- Health, safety, environmental and community incident and complaints management system register;
- Monitoring and audit reports;
- Incident classification and reporting management procedure (to be developed);
- PPE register;
- Occupational health and safety plan;
- Health and safety protocol;
- HIV/AIDS awareness and prevention program;
- Business and skills development plan (to be developed);
- Grievance mechanism.

The following project specific indicator and compliance requirements are applicable:

- Local employment and business targets to be formalised in a document before the construction phase commences;
- Database of potential local service providers to be developed, before the construction phase commences;
- Record of engagement with the Local Municipality and community representatives in respect of employment opportunities and community upliftment projects;
- Health and Safety Plan prepared and implemented during the construction phase;
- HIV/AIDS campaign implemented throughout the construction and operations phase;
- Number of complaints raised by stakeholders;

- Code of conduct for workers in place, signed, and implemented; and
- Retrenchments meet South African Labour legislation.

6.14.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-15: Social impact management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Creation of local employment, training, and business opportunities	Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.	EO	Construction
	Where reasonable and practical, the proponent should appoint local contractors and implement a ‘locals first’ policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.	Contractor	
	Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.		
	Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.		
	The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		
	Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.		
	The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<p>The proponent should liaise with the MM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.</p>		
<p>Impact of construction workers on local communities</p>	<p>Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.</p>	EO	<p>Construction</p>
	<p>Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.</p>	Contractor	
	<p>The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.</p>		
	<p>Where possible, the proponent should make it a requirement for contractors to implement a ‘locals first’ policy for construction jobs, specifically for semi and low-skilled job categories.</p>		
	<p>The proponent and the contractor(s) should develop a code of conduct for the construction phase. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation.</p>		
	<p>The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP.</p>		
	<p>The contractor should provide transport for workers to and from the site on a daily basis. This will enable the contractor to effectively manage and monitor the movement of construction workers on and off the site.</p>		
	<p>The contractor must ensure that all construction workers from outside the area are transported back to their place of residence within 2 days for their contract coming to an end.</p>		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Risk to safety, livestock, and farm infrastructure	Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.	EO Contractor	Construction
	Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.		
	The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for.		
	All farm gates must be closed after passing through.		
	Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.		
	The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover losses and costs associated with fires caused by construction workers or construction related activities		
	Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms		
	Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the Code of Conduct. All dismissals must be in accordance with South African labour legislation.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Increased risk of grass fires	Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.	EO	Construction
	Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.	Contractor	
	The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc., during the construction phase will be compensated for.		
	Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.		
	Smoking on site should be confined to designated areas.		
	Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy summer months.		
	Contractor should provide adequate fire-fighting equipment on-site, including a fire fighting vehicle.		
	Contractor should provide fire-fighting training to selected construction staff.		
	It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities		
Nuisance impacts associated with construction related activities	Ongoing communication with land owners and road users during construction period.	EO	Construction
	Establishment of a Grievance Mechanism that provides local farmers and other road users with an effective and efficient mechanism to address issues related to construction related impacts, including damage to local gravel farm roads.	Contractor	
	Repair of affected road portions at the end of construction period where required.		
	Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers.		
	All vehicles must be roadworthy, and drivers must be qualified and made aware of the potential road safety issues and need for strict speed limits.		
Improve energy security and support the renewable energy sector	Maximise the number of employment opportunities for local community members.	Contractor	Operational
	Implement training and skills development programs for members from the local community.		
	Maximise opportunities for local content and procurement.		
Creation of employment and business opportunities	The proponent should investigate providing training and skills development to enable locally based service providers to provide the required services for the maintenance of the powerline.	Contractor	Operational
	Maximise the number of employment opportunities for local community members, where feasible.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Implement training and skills development programs for members from the local community.		
	Maximise opportunities for local content and procurement.		
	Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		
	Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.		
	Before the construction phase commences the proponent should meet with representatives from the MM to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.		
	The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		
	Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.		
	The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		
	The proponent should liaise with the MM with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Potential impact on farming operations during maintenance	Implement agreements with affected landowners.	EO Contractor	Operational
	The loss of high-quality agricultural land should be avoided and or minimised by careful planning in the final layout of the proposed WEF facilities, where possible.		
	Affected property owners should be notified in advance of the timing and duration of maintenance activities.		
	Maintenance teams must ensure that all farm gates must be closed after passing through		
	Property owners should be compensated for damage to farm property and or loss of livestock or game associated maintenance related activities.		
	Movement of traffic and maintenance related activities should be strictly contained within designated areas associated with transmission lines and substations.		
	Strict traffic speed limits must be enforced on the affected farms.		
	It is recommended that no maintenance workers, with the exception of security personnel, should be permitted to stay over-night on the site.		

6.15 TRAFFIC MANAGEMENT

6.15.1 OBJECTIVES

To ensure that the traffic impacts of the project are mitigated and managed.

6.15.2 INDICATOR AND COMPLIANCE MECHANISMS


The following indicator and compliance mechanisms are applicable:

- Induction training and records;
- Health, safety, environmental and community incident and complaints management system register;
- Monitoring and audit reports;
- Incident classification and reporting management procedure (to be developed);
- PPE register;
- Occupational health and safety plan;
- Health and safety protocol; and
- Traffic and transportation management plan.

6.15.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-16: Traffic Impact management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Traffic Management	The posted speed limit on the R354 in the vicinity of the proposed development is currently 120km/h. It is suggested that the speed limit must be reduced to 60km/h in advance of the site access roads, if permitted by the relevant authority.	Project Manager	Construction
	Intersection warning signs must be erected either side of the access roads in accordance with the requirements of the South African Road Traffic Signs Manual and it is recommended that supplementary warning plates be added to these warning signs indicating the presence of heavy vehicles at the intersection. The aforementioned road signs are shown below:	Contractor	Decommissioning

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
			
	<p>The transport route/s of the construction materials, components and any oversized/weight components may be National, Provincial or Local roads; and approval will have to be obtained from each authority for the transportation of any oversized or abnormally heavy components.</p>		
	<p>All heavy vehicles must ensure that their headlights are on to increase their visibility to other vehicles and pedestrians</p>		
Increase in Traffic due to construction	<p>All drivers must comply with the relevant traffic laws and regulations</p>	Contractor	Construction
	<p>All unsurfaced roads must be regularly sprayed with water to prevent dust generation</p>		
	<p>All vehicles that access the site must be roadworthy to ensure noise and emissions levels comply to national vehicle standards, thereby reducing noise/pollution levels</p>		

6.16 BESS MANAGEMENT (LITHIUM OR VANADIUM REDOX FLOW BATTERIES - TO BE CONFIRMED)

6.16.1 OBJECTIVES

- To ensure that all components related to the BESS installation are managed to avoid incidents.
-

6.16.2 INDICATOR AND COMPLIANCE MECHANISMS

The following indicator and compliance mechanisms are applicable:

- Complaints register.
 - Incident reporting system.
 - Health, safety, environmental and community incident and complaints management system register.
 - Health and Safety risk assessment and plan
 - Incident classification and reporting management procedure (to be developed).
 - Emergency preparedness plan
 - Equipment maintenance.
-

6.16.3 MITIGATION AND MANAGEMENT MEASURES

Table 6-17: BESS Management

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
BESS transport	Once an import route has been chosen, e.g. Richards Bay or Durban and along N2/N3/N11 etc, then the appointed transport company should ensure key emergency services on route could be given awareness training in battery fire/accident response.	Project Manager Contractor	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<ul style="list-style-type: none"> — Appointed transport company to ensure transport in accordance with Regulation 8 of the National Road Traffic Act 93 of 1996, Dangerous Goods. — Not permitted to transport prescribed goods in manner not consistent with the prescriptions, e.g. consignor and consignee responsibilities. — Prescription found in SANS 10228/29 and international codes for battery transport etc. — Transport in sealed packages that are kept upright, protected from movement damage etc. — Also packaged to ensure no short-circuiting during transport. — Transport to prevent excessive vibration considerations as battery internal may be damaged leading to thermal run-away during commissioning. — Pre-assembled containers will most likely be supplied. These will be fitted with the necessary protective measures by the supplier considering marine and road transport as well as lifting, setting down etc. — Route selection to consider possible incidents along the way and suitable response, e.g. satellite tracking, mobile communication, 24/7 helpline response. — Standard dangerous goods requirements for Hazmat labels, Trem cards, driver trained in the hazards of the load. 	EO	
BESS storage	<p>Ensure batteries are not stored at 50% charge, thermal run away can happen while in storage on site waiting for installation. In addition, if involved in an external fire thermal run away can happen even with uncharged batteries.</p> <p>Except during shipping, ideally the units should not be stored any closer to each other than they would be in the final installation so that propagation is prevented, i.e. laydown area needs to be considered.</p>	Project Manager Contractor EO	Construction
BESS component damages	<p>Handling protocols to be provided by battery supplier.</p> <p>End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery units from day one.</p> <p>Operating manuals to be provided including start-up, shut-down, steady state, monitoring requirements.</p> <p>Maintenance manuals with make safe, decontamination and repair procedures.</p>	Project Manager Contractor Operator EO	Construction Operation Operation

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Proposed maintenance schedules daily, weekly, monthly, annual etc.		
	Provided portable equipment for calibration and for testing/verification of defective equipment.		
	There needs to be careful thought given to procedures to be adopted before entering into the BESS or a container under normal circumstances (confined space) but particularly after a BMS shut down where there may be flammable or toxic gases present, a fire etc.		

7 MANAGEMENT PLANS

As defined in the generic EMPr various method statements are to be compiled and implemented throughout the construction phase (refer to Part A: Section 4.5 of the generic EMPs attached as **Appendix C** and **Appendix D**).

This section provides an overview of various aspects / thematic areas and requirements whereby the Method Statements / management plans must be developed and followed throughout the proposed construction and operation of the collector substation and 132kV grid connection project. It must be noted that these method statement / management plans can be updated at any stage depending on any changes that may occur on the site.

7.1 ALIEN INVASIVE MANAGEMENT PLAN

Invasive alien species pose the second largest threat to biodiversity after direct habitat destruction. The purpose of this Alien Plant Management Plan is to provide a framework for the management of alien and invasive plant species during the construction and operation of the facility. The broad objectives of the plan include the following:

- Ensure alien plants do not become dominant in parts of the site affected by construction ,operation or decommissioning activities, through the control and management of alien and invasive species presence, dispersal and encroachment.
- Managing and maintaining the ecosystem in a near-natural state and restoring and/or rehabilitating the ecosystems to such a state.
- Develop and implement a monitoring and eradication programme for alien and invasive species.
- Promote the natural re-establishment and planting of indigenous species in order to retard erosion and alien plant invasion.

7.1.1 LEGISLATIVE

Conservation of Agricultural Resources Act (Act No. 43 of 1983)

In terms of the amendments to the regulations under the Conservation of Agricultural Resources Act (Act No. 43 of 1983), all declared aliens must be effectively controlled. Landowners are legally responsible for the control of invasive alien plants on their properties. In terms of this Act, 198 alien species were listed as declared weeds and invaders and ascribed to one of the following categories:

- Category 1: Prohibited and must be controlled.
- Category 2 (commercially used plants): May be grown in demarcated areas provided that there is a permit and that steps are taken to prevent their spread.
- Category 3 (ornamentally used plants): May no longer be planted. Existing plants may be retained as long as all reasonable steps are taken to prevent the spreading thereof, except within the flood line of watercourses and wetlands.

National Environmental Management: Biodiversity Act, 2004 (Act No.10 of 2004)

The National Environmental Management: Biodiversity Act (NEM:BA) regulates all invasive organisms in South Africa, including a wide range of fauna and flora. Regulations have been published in Government Notices R.506, R.507, R.508 and R.509 of 2013 under NEMBA. According to this Act and the regulations, any species designated under Section 70 cannot be propagated, grown, bought or sold without a permit. Below is an explanation of the three categories:

- Category 1a: Invasive species requiring compulsory control. Any specimens of Category 1a listed species need, by law, to be eradicated from the environment. No permits will be issued.
- Category 1b: Invasive species requiring compulsory control as part of an invasive species control programme. Remove and destroy. These plants are deemed to have such a high invasive potential that infestations can qualify to be placed under a government sponsored invasive species management programme. No permits will be issued.

- Category 2: Invasive species regulated by area. A demarcation permit is required to import, possess, grow, breed, move, sell, buy or accept as a gift any plants listed as Category 2 plants. No permits will be issued for Category 2 plants to exist in riparian zones.
- Category 3: Invasive species regulated by activity. An individual plant permit is required to undertake any of the following restricted activities (import, possess, grow, breed, move, sell, buy or accept as a gift) involving a Category 3 species. No permits will be issued for Category 3 plants to exist in riparian zones.

Plants listed under the categories above are detailed within Notice 1 of the Alien and Invasive Species published in GNR599 of 01 August 2014. The following guide is a useful starting point for the identification of alien species: Bromilow, C. 2010. Problem Plants and Alien Weeds of South Africa. Briza, Pretoria.

It is important to note that alien species that are regulated in terms of the Conservation of Agricultural Resources Act (Act 43 of 1983) (CARA) as weeds and invader plants are exempted from NEM:BA. This implies that the provisions of the CARA in respect of listed weed and invader plants supersede those NEM:BA.

The site-specific Invasive Alien Plant Management Programme for the 132kV OHPL and substations project is included in **Appendix E**.

7.1.2 ALIEN PLANT MANAGEMENT PRINCIPLES

A. PREVENTION AND EARLY ERADICATION

A prevention strategy must be considered and established, including regular surveys and monitoring for invasive alien plants, effective rehabilitation of disturbed areas and prevention of unnecessary disturbance of natural areas.

Monitoring plans must be developed which are designed to identify Invasive Alien Plant Species shortly after they arrive in the project area. Keeping up to date on which weeds are an immediate threat to the site is important, but efforts should be planned to update this information on a regular basis. When new Invasive Alien Plant Species are recorded on site, an immediate response of locating the site for future monitoring and either hand-pulling the weeds or an application of a suitable herbicide should be planned. It is, however, better to monitor regularly and act swiftly than to allow invasive alien plants to become established on site.

B. CONTAINMENT AND CONTROL

If any alien invasive plants are found to become established on areas of the site affected by construction, operation or decommissioning activities, action plans for their control must be developed, depending on the size of the infestations, budgets, manpower considerations and time. Appropriate registered chemicals and other possible control agents must be considered in the action plans for each site/species. The key is to ensure that no invasions get out of control. Effective containment and control will ensure that the least energy and resources are required to maintain this status over the long-term. This will also be an indicator that natural systems are impacted to the smallest degree possible.

C. GENERAL CLEARING & GUIDING PRINCIPLES

Alien control programs are long-term management projects and must include a clearing plan which includes follow up actions for rehabilitation of the cleared area. The lighter infested areas must be cleared first to prevent the build-up of seed banks. Pre-existing dense mature stands ideally must be left for last, as they probably won't increase in density or pose a greater threat than they are currently. Collective management and planning with neighbours may be required in the case of large woody invaders as seeds of aliens are easily dispersed across boundaries by wind or water courses. All clearing actions must be monitored and documented to keep records of which areas are due for follow-up clearing.

CLEARING METHODS

Different species require different clearing methods such as manual, chemical or biological methods or a combination of both. Care should however be taken that the clearing methods used do not encourage further invasion. As such, regardless of the methods used, disturbance to the soil must be kept to a minimum.

Fire must not be used for alien control or vegetation management at the site. The best-practice clearing method for each species identified must be used. The preferred clearing methods for most alien species can be obtained from the DWAF Working for Water Website. <http://www.dwaf.gov.za/wfw/Control/>

MECHANICAL CONTROL

This entails damaging or removing the plant by physical action. Different techniques could be used, e.g. uprooting, felling, slashing, mowing, ringbarking or bark stripping. This control option is only really feasible in sparse infestations or on small scale, and for controlling species that do not coppice after cutting. Species that tend to coppice, need to have the cut stumps or coppice growth treated with herbicides following the mechanical treatment. Mechanical control is labour intensive and therefore expensive and could cause severe soil disturbance and erosion.

CHEMICAL CONTROL

Although it is usually preferable to use manual clearing methods where possible, such methods may create additional disturbance which stimulates alien invasion and may also be ineffective for many woody species which resprout. Where herbicides are to be used, the impact of the operation on the natural environment must be minimised by observing the following:

- Area contamination must be minimised by careful, accurate application with a minimum amount of herbicide to achieve good control.
- All care must be taken to prevent contamination of any water bodies. This includes due care in storage, application, cleaning equipment and disposal of containers, product and spray mixtures.
- Equipment must be washed where there is no danger of contaminating water sources and washings carefully disposed of in a suitable site.
- To avoid damage to indigenous or other desirable vegetation, products must be selected that will have the least effect on non-target vegetation.
- Coarse droplet nozzles must be fitted to avoid drift onto neighbouring vegetation.
- The appropriate health and safety procedures must also be followed regarding the storage, handling and disposal of herbicides.

For all herbicide applications, the following Regulations and guidelines must be followed:

- Working for Water: Policy on the Use of Herbicides for the Control of Alien Vegetation.
- Pesticide Management Policy for South Africa published in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947) – GNR 1120 of 2010.
- South African Bureau of Standards, Standard SANS 10206 (2010).

According to Government Notice No. 13424 dated 26 July 1992, it is an offence to “acquire, dispose, sell or use an agricultural or stock remedy for a purpose or in a manner other than that specified on the label on a container thereof or on such a container”.

Contractors using herbicides need to have a valid Pest Control Operators License (limited weeds controller) according to the Fertilizer, Farm Feeds, Agricultural Remedies and Stock Remedies Act (Act No. 36 of 1947). This is regulated by the Department of Agriculture, Forestry and Fisheries.

BIOLOGICAL CONTROL

Biological weed control consists in the use of natural enemies to reduce the vigour or reproductive potential of an invasive alien plant. Biological control agents include insects, mites, and micro-organisms such as fungi or bacteria. They usually attack specific parts of the plant, either the reproductive organs directly (flower buds, flowers or fruit) or the seeds after they have dropped. The stress caused by the biological control agent may kill a plant outright or it might impact on the plants reproductive capacity. In certain instances, the reproductive capacity is reduced to zero and the population is effectively sterilised. All of these outcomes will help to reduce the spread of the species.

To obtain biocontrol agents, provincial representatives of the Working for Water Programme or the Directorate: Land Use and Soil Management (LUSM), Department of Agriculture, Forestry and Fisheries (DAFF) can be contacted.

D. GENERAL MANAGEMENT PRACTICES

The following general management practices must be encouraged or strived for:

- Establish an ongoing monitoring programme for construction phase to detect and quantify any alien species that may become established and identify the problem species.
- Alien vegetation regrowth on areas disturbed by construction must be immediately controlled once recorded throughout the areas affected by the project activities during construction and operation.
- Care must be taken to avoid the introduction of alien invasive plant species to the site. Particular attention must be paid to imported material such as building sand or dirty earth-moving equipment. Stockpiles must be checked regularly and any weeds emerging from material stockpiles must be removed.
- Cleared areas that have become invaded by alien species can be sprayed with appropriate herbicides provided that these are such that break down on contact with the soil. Residual herbicides must not be used.
- The effectiveness of vegetation control varies seasonally and this is also likely to impact alien species. Control early in the wet season will allow species to re-grow and follow-up control is likely to be required. It is tempting to leave control until late in the wet season to avoid follow-up control. However, this may allow alien species to set seed before control and hence will not contribute towards reducing alien species abundance. Therefore, vegetation control must be aimed at the middle of the wet season, with a follow-up event towards the end of the wet season. There are no exact dates that can be specified here as each season is unique and management must therefore respond according to the state and progression of the vegetation.
- Alien management is an iterative process and it may require repeated control efforts to significantly reduce the abundance of a species. This is often due to the presence of large and persistent seed banks. However, repeated control usually results in rapid decline once seed banks become depleted.
- Regular vegetation control to reduce plant biomass within the site must be conducted. This must be timed so as to coincide with the critical growth phases of the most important alien species on site. This will significantly reduce the cost of alien management as this must contribute towards the control of the dominant alien species and additional targeted control will be required only for a limited number of species.
- No alien species must be cultivated on-site. If vegetation is required for aesthetic purposes, then non-invasive, water-wise locally-occurring species must be used.
- During operation, surveys for alien species must be conducted regularly. It is recommended that this be undertaken every 6 months for the first two years after construction and annually thereafter. All aliens identified must be cleared using appropriate means.

E. MONITORING

In order to monitor the impact of clearing activities, follow-ups and rehabilitation efforts, monitoring must be undertaken. This section provides a description of a possible monitoring programme that will provide and assessment of the magnitude of alien invasion on site as well as an assessment of the success of the management programme.

In general, the following principles apply for monitoring:

- Photographic records must be kept of areas to be cleared prior to work starting and at regular intervals during initial clearing activities. Similarly, photographic records must be kept of the area from immediately before and after follow-up clearing activities. Rehabilitation processes must also be recorded.
- Simple records must be kept of daily operations, e.g. area/location cleared, labour units and, if ever used, the amount of herbicide used.
- It is important that, if monitoring results in detection of invasive alien plants, that this leads to immediate action.

The following monitoring must be implemented to ensure management of alien invasive plant species.

MONITORING ACTION	INDICATOR	TIMEFRAME
Construction Phase		
Document alien species present at the site	List of alien species	Pre-construction

Document alien plant distribution	Alien plant distribution map within priority areas	Pre-construction
Document & record alien control measures implemented	Record of clearing activities	3 Monthly
Review & evaluation of control success rate	Decline in documented alien abundance over time	Annual
Operational Phase		
Document alien species distribution and abundance over time at the site	Alien plant distribution map	Annual
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 time at the site	Annual
Document rehabilitation measures implemented and success achieved in problem areas	Decline in vulnerable bare areas over time	Annual

7.2 PLANT RESCUE AND PROTECTION PLAN

The purpose of the plant rescue and protection plan is to implement avoidance and mitigation measures, in addition to the mitigation measures included in the EMPr to reduce the impact of the development of the project on listed and protected plant species and their habitats, and to provide guidance on search and rescue of species of conservation concern.

For permitting purposes, the following flora survey is required prior to construction activities taking place:

This management plan must be updated prior to project implementation so as to include relevant site-specific information.

Mitigation and management measures include, but are not limited to the following:

- Vegetation clearing must only commence after a walk down has been conducted by a suitably qualified ecologist / botanist and the necessary permits obtained.
- Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.
- Vegetation removal must be limited to the construction site and must be removed only as it becomes necessary rather than removing all the vegetation throughout the site at once
- Materials must not be delivered to the site prematurely which could result in additional areas being cleared or affected.
- No vegetation to be used for firewood.
- Gathering of firewood, fruit, medicinal plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.
- Construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.
- All natural areas impacted during construction must be rehabilitated with locally indigenous plant species.
- Construction activities to be restricted to demarcated construction areas as per the final approved layout plan.
- The use of pesticides and herbicides in the study area must be discouraged as these impacts on important pollinator species of indigenous vegetation.
- Soil stockpiles must not become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation in the soil. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.

Rescued plants

- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.

- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.

Threatened species

- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned.

7.2.1 PRINCIPLES FOR SEARCH AND RESCUE

Successful plant rescue can only be achieved if:

- Species can be removed from their original habitat with minimal damage to the plant, especially the roots.
- All plants removed are safely stored and treated according to their specific requirements prior to being transplanted again.
- They are relocated into a suitable habitat and protected from further damage and all disturbances to aid their re-establishment.
- Steps are taken where necessary to aid the initial establishment of vegetation, including occasional watering.

The following principles apply in terms of plant rescue and protection:

- A permit is required to translocate or destroy any listed and protected species even if they do not leave the property. This permit must be obtained prior to any search and rescue operations being undertaken.
- Where suitable species are identified, a search and rescue operation of these species must be undertaken within the development footprint prior to the commencement of construction.
- During construction, the ECO must monitor vegetation clearing at the site. Any deviations from the plans that may be required must first be checked for listed species by the ECO or Environmental Officer and any listed species present which are able to survive translocation must be translocated to a safe site.
- Any listed species suitable for translocation observed within the development footprint that were not previously observed be translocated to a safe site.
- The collecting of plants or their parts must be strictly forbidden. Staff must be informed of the legal and conservation aspects of harvesting plants from the wild as part of the environmental induction training.
- Sensitive habitats and area outside project development must be clearly demarcated as no go areas during the construction and operational phase to avoid accidental impacts.
- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.

7.3 RE-VEGETATION AND HABITAT REHABILITATION PLAN

The purpose of the rehabilitation plan is to ensure that areas cleared or impacted during construction activities are rehabilitated with a plant cover that reduces the risk of erosion from these areas as well as restores some ecosystem function. The purpose of the rehabilitation plan for the site can be summarised as follows:

- Achieve long-term stabilisation of all disturbed areas to minimise erosion potential.
- Re-vegetate all disturbed areas with suitable local plant species.
- Minimise visual impact of disturbed areas.
- Ensure that disturbed areas are safe for future uses

The rehabilitation plan must be closely aligned with other site-specific plans for the project, including the erosion management plan, soil management plan, alien plant management plan, and plant rescue and protection plan. Prior to commencement of construction, a detailed rehabilitation plan and Method Statement for the site must be compiled by the EPC Contractor.

The site-specific Re-vegetation and Habitat Rehabilitation Plan for the 132kV OHPL and substations project must be developed prior to construction and EMPr approved.

7.4 OPEN SPACE MANAGEMENT PLAN

Open space management measures include, but are not limited to the following:

- Vehicle movement must be restricted to authorised access roads.
- Before construction begins, all areas to be developed must be clearly demarcated.
- All construction camps are to be fenced off in such a manner that unlawful entry is prevented and access is controlled.
- Signage shall be erected at all access points in compliance with all applicable occupational health and safety requirements. All access points to the construction camp must be controlled by a guard or otherwise monitored, to prevent unlawful access.
- The contractor and EO must ensure compliance with conditions described in the EA.
- Records of compliance/ non-compliance with the conditions of the authorisation must be kept and be available on request.
- Records of all environmental incidents must be maintained, and a copy of these records be made available to provincial department on request throughout the project execution.
- All construction equipment must be stored within the construction camp.
- An area for the storage of hazardous materials must be established that conforms to the relevant safety requirements and that provides for spillage prevention and containment
- The Contractor must provide sufficient ablution facilities, in the form of portable / VIP toilets, at the construction camps, and shall conform to all relevant health and safety standards and codes. A sufficient number of toilets shall be provided to accommodate the number of personnel working in the area.
- No fires will be allowed on site.
- The Contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures may include appropriate instruction of employees about fire risks and the construction of firebreaks around the site perimeter.
- Environmental awareness training for construction staff, concerning the prevention of accidental spillage of hazardous chemicals and oil; pollution of water resources (both surface and groundwater), air pollution and litter control and identification of archaeological artefacts.
- Staff must be educated as to the need to refrain from indiscriminate waste disposal and/or pollution of local soil and water resources and receive the necessary safety training.

7.5 TRAFFIC AND TRANSPORT MANAGEMENT PLAN

The purpose of a Traffic and Transportation Management Plan is to address regulatory compliance, traffic management practices, and protection measures to help reduce impacts related to transportation and the construction of temporary and long-term access within the vicinity of the project site. The objectives of this plan include the following:

- To ensure compliance with all legislation regulating traffic and transportation within South Africa National, Provincial, Local and associated regulations and guidelines.
- To avoid incidents and accidents while vehicles are being driven and while transporting personnel, materials, and equipment to and from the project site.
- To raise greater safety awareness in each driver and to ensure the compliance of all safe driving provisions for all the vehicles.

- To raise awareness to ensure drivers respect and follow traffic regulations.
- To avoid the deterioration of access roads and the pollution that can be created due to noise and emissions produced by equipment, machinery, and vehicles

7.5.1 MITIGATION AND MANAGEMENT MEASURES

Mitigation and management measures include, but are not limited to the following:

- All vehicles used during the transport of materials and in the construction activities are required to be roadworthy per the National Road Traffic Act (NRTA) and display all pertinent certificates as required.
- All vehicles travelling to and from the site shall adhere to all laws imposed by the law enforcement agencies, and shall comply with any requests made by the law enforcement officials.
- For each convoy of abnormal vehicles/loads a designated safety officer shall be nominated. All abnormal vehicles and loads to be transported are required to have a valid permit before any trip is begun.
- The route must be assessed to determine if any structures or vegetation need to be temporarily or permanently relocated so as to avoid damage to the load as well as public and private property during the trips.
- A designated transport coordination manager must be appointed to oversee and manage the traffic safety officers. Additionally, the designated transport coordination manager must inform and keep up-to-date the interested and affected parties of all the activities taking place that may have a direct impact on them.
- A traffic safety officer shall be nominated to make all the necessary arrangements to maintain the required traffic measures for the duration of the project as outlined in the “Standard Specifications for Road and Bridge Works for State Road Authorities,’ 1998 edition. The safety officer shall liaise daily with the transportation coordination manager to keep them apprised of the state of all the traffic arrangements.
- All construction vehicles that are entering the site shall also be available via radio or telephone communication to the transport coordination manager. So that in the event of an emergency, all vehicles can be accounted for.
- All vehicles shall comply with the posted speed limits on public roads as well as the speed limits within the development. For additional speed limits that are imposed on the construction traffic, refer to the South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 for the restrictions.
- All construction traffic shall comply with the legal load requirements as outlined in the National Road Traffic Act and National Road Traffic Regulations.
- The South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 is to be used for all traffic during the construction activities of the proposed project.
- During periods of high construction traffic entering and exiting the site, it is recommended that flagmen help direct the traffic. This will enable the safe movement of construction and public traffic at the entrance and reduce the number of potential conflicts.

7.5.2 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

Table 7-1 outlines the applicable definitions, acronyms and abbreviations.

Table 7-1: Applicable Traffic definitions, acronyms and abbreviations

TERM	DESCRIPTION
Company Vehicles and Mobile Construction Equipment	A vehicle and/or mobile equipment leased or rented by the Construction Cluster
Vehicle Coordinator	An employee trained in this procedure who the operation shall contact prior to travelling and report to upon arrival or report back to upon return from a remote site
Operator	The employee trained in this procedure authorized to operate a vehicle or mobile equipment. The employee shall have completed an approved operator course and be assessed as being competent by a suitably authorized person on Site

Remote Site	Any unmanned Site (e.g. exploration or survey area) to which a person intends travelling
Maintenance Schedule	A pre-determined regular maintenance programme done by a competent qualified person to mobile construction equipment on Site

7.5.3 IDENTIFIED HAZARDS

Identified hazards to people working or travelling in, through or around the road construction areas or infrastructure road system include:

- General public and traffic interface;
- Maintenance crews on roads;
- Vehicle interaction and speed;
- Company vehicle operator training;
- Road conditions;
- Communications;
- Traffic Control;
- Road demarcation and signage;
- Restricted areas and escort vehicles;
- Blind crests and corners;
- Excavations;
- Vehicle safety standards;
- Journey management;
- Road rules;
- Equipment and vehicle inspections;
- Defective light vehicles and mobile plant; and
- Search and rescue and emergency access.

7.5.4 GENERAL PUBLIC INTERFACE

Due to interface with the general public, extra precautions are required to restrict access or control traffic in to or through the project area.

This will be achieved by the use of signage and/or demarcations and the issuing of public information bulletins to notify the public that beyond a designated location is a project area and access is restricted to project personnel and contractors only.

Where appropriate, additional warning signs, revolving lights and/or personnel will be used to control traffic flow.

7.5.5 MAINTENANCE CREW ON ROADS

The speed limit for the project is to be limited to a maximum of 40Kph. Roads which have conditions where potentially hazardous work is being undertaken (e.g. culverts, where personnel are close to the access road), shall have a speed restriction of 20Kph, and signs will be placed at both ends of the specific work area.

Where maintenance crews are working close to traffic, additional precautions will be taken to keep visibility and early warning at a maximum. These may include local watering of dust generating areas, wearing of high visibility vests and posting of additional traffic controllers at the extremities of the work environment.

All personnel on site are required to wear high visibility reflective vests or clothing and utilise the correct signage at all times.

7.5.6 RESTRICTED AREAS AND ESCORT VEHICLES

RESTRICTED AREAS

Site personnel will be informed as to the restricted areas of the project. These areas are not to be accessed without authority from the Project Manager.

The speed limit for the project is to be limited to a maximum of 40Kph on site. National road rules apply to all roads.

ESCORT VEHICLE

For large or non-routine loads, an escort vehicle provided by the Contractors must be used in front of and when necessary, behind the vehicle or mobile equipment. Other vehicles must be escorted at the Project Manager's discretion. Drivers entering site must wear the correct PPE.

To minimize the potential of light vehicles entering the blind spots of heavy vehicles, all other equipment and light vehicles and mobile equipment are to give way to heavy vehicles operating on any infrastructure road or facility.

7.5.7 VEHICLE SPEED

Unless otherwise stated (i.e. by means of memo or signage), the following speed restrictions shall apply at all times:

- General speed limit – 40 km/h; and
- Areas of increased hazard (i.e. road works and work groups) – 20 km/h
- Personnel operating a vehicle on any road within the boundaries of facilities, including access roads, **MUST ALWAYS DRIVE TO THE CONDITIONS**, regardless of the posted speed limit signage, e.g. slower in wet weather or poor visibility, lights on.

7.5.8 LIGHT VEHICLE DRIVER TRAINING

All personnel operating light vehicles shall have the required authorized license.

VEHICLE SAFETY STANDARDS

Seatbelts must be installed for each seat in a vehicle and worn at all times by all personnel travelling in the vehicle. Vehicle capacity, stability and terrain capabilities will be considered when selecting suitable light vehicles and mobile equipment for the project facilities.

The responsible vehicle operator shall, at the commencement of each day and when taking over a vehicle, complete a pre-use inspection checklist.

7.5.9 DEFECTIVE LIGHT VEHICLES AND MOBILE EQUIPMENT

Any safety related fault or defect in a vehicle or mobile equipment must be reported immediately to the responsible Mechanic and/or Supervisor/Immediate Line Manager.

An unsafe vehicle or unsafe mobile equipment must have a completed "Out of Service" tag attached to the ignitions witch, steering wheel or controls in the Operator's cabin.

Light vehicles and mobile equipment with an "Out of Service" tag shall not be driven by any persons other than Maintenance Personnel required and authorised to move them for repairs.

NO GO CONDITIONS

Under no circumstances may a vehicle be driven if any of the following no-go conditions exist:

- Defective brakes
- Defective steering
- Radiator water leaks
- Oil leaks
- Defective or no head lights
- Defective or no brake lights
- Defective or no reverse lights
- Smooth or incorrectly inflated tyres
- Indicators not working
- Mirrors damaged or missing

The driver must report all no-go conditions immediately to the responsible Mechanic.

7.5.10 SIGNAGE

All signage must, as a minimum:

- Give clear direction;
- Be visible and not obscured;
- Be maintained;
- Be reviewed regularly for relevance;
- Flashing lights will be placed to warn drivers of any hazards present at night or in poor visibility;
- All side roads to be signed (STOP and NO ENTRY); and
- No red signage to be erected within 5 meters of any railway.

7.6 STORM WATER MANAGEMENT AND SURFACE WATER PROTECTION PLAN

The main principles in stormwater management include:

- Confine or divert any unpolluted water to a ‘clean’ water system, and polluted water to a ‘dirty’ water system;
- ‘Clean’ and ‘dirty’ water systems must be designed and constructed to prevent cross-contamination between the ‘clean’ and ‘dirty’ water systems; and
- Appropriate maintenance and management of storm water related infrastructure.

The proposed water systems or infrastructure are to be designed to prevent any potential contamination of natural water resources in the area.

7.7 FIRE MANAGEMENT PLAN

The purpose of this plan is to address firefighting requirements throughout the construction of the project and to preserve and protect human life as well as tangible goods and equipment in the event of a fire.

Mitigation and management measures include, but are not limited to the following:

- All construction camps shall be provided with portable fire extinguishing equipment, in accordance with all relevant legislation and must be readily accessible.
- The Contractor shall take specific measures to prevent the spread of veld fires, caused by activities at the campsites. These measures may include appropriate instruction of employees about fire risks and the construction of firebreaks around the site perimeter.

- Fire prevention facilities must be present at all storage facilities.
- No open fires shall be allowed on site under any circumstance. All cooking shall be done in demarcated areas that are safe and cannot cause runaway fires.
- The Contractor shall have operational fire-fighting equipment available on site at all times. The level of firefighting equipment must be assessed and evaluated through a typical risk assessment process.
- Emergency numbers for local police and fire department etc. must be placed in a prominent area.
- Firefighting equipment must be placed in prominent positions across the site where it is easily accessible. This includes fire extinguishers, a fire blanket as well as a water tank.
- All construction staff must be trained in fire hazard control and firefighting techniques. Translators are to be used where necessary.
- All flammable substances must be stored in dry areas which do not pose an ignition risk to the said substances.
- Smoking may only be conducted in demarcated areas.
- Firefighting equipment must be regularly maintained by an appropriate company.

7.8 EMERGENCY RESPONSE PLAN

The Project Company will provide appropriate resources to respond to process upset, accidental, and emergency situations for operations and activities during construction, operation and decommissioning phases. The procedures will include plans for addressing training, resources, responsibilities, communication and all other aspects required to effectively respond to emergencies associated with their respective hazards.

The purpose of emergency preparedness and response plan (EPRP) / method statement is to ensure that the relevant parties are adequately prepared and able to respond effectively to potential emergency situations that may arise during project activities. These potential emergency situations include medical emergencies and fires

All operations/ activities associated with the project will require site-specific emergency response plans to mitigate impacts, which meet or exceed all applicable regulations.

The objectives of this plan are as follows:

- Protect the communities and the environment through the development of emergency response strategies and capabilities;
- Set out the framework for hazard identification in order to define procedures for response to the situations including the development of contingency measures;
- Structure a process for rapid and efficient response to and manage emergency situations during the construction, operational and decommissioning phases of the project; and
- Assign responsibilities for responding to emergency situations.

The Emergency Response Plan must take the incident procedures referred to in Section 30 of the NEMA into account.

7.8.1 ROLES AND RESPONSIBILITIES

Roles, responsibility, and authority shall be defined, documented and communicated in order to facilitate effective emergency response through implementation of the EPRP. The table below outlines roles and responsibilities related to each position.

– Emergency Response representative(s)
– Actively participate in the facilities planning, implementation and reviewing of the sites EPRP.
– Ensure all staff members are aware of the procedures outlined in the EPRP.
– Setting up regular practical training schedules (drills) to ensure that all staff are prepared in case of an emergency.
– Report any incidents that occur to senior management staff and/or the relevant authorities.

<ul style="list-style-type: none"> – Appoint an Emergency Response (ER) team which includes an appropriate first aid representative and a fire warden. – Ensure that the appointed ER team undergo the correct training. – Appoint an appropriate Emergency Coordinator.
<ul style="list-style-type: none"> – First Aid representative(s)
<ul style="list-style-type: none"> – Ensuring the first aid box is properly stocked to meet all foreseeable incidents which may occur. – Ensure that the boxes are properly safeguarded, and that First Aiders name appears on the box. – Should any activity involve hazardous chemical substances, or any other specific first aid emergencies, this must be brought to the attention of the emergency coordinator. – Ensure the first aid certificate is current. – Ensure that there is always a first aider available at each shift.
<ul style="list-style-type: none"> – Fire warden(s)
<ul style="list-style-type: none"> – Ensure that the firefighting equipment is regularly serviced. – Attend the relevant firefighting training. – Report any unserviceable or damaged fire-fighting equipment to the ER. – Ensure the firefighting certificate is current. – Ensure that there is always a firefighter available at each shift.
<ul style="list-style-type: none"> – Emergency Co-ordinator
<ul style="list-style-type: none"> – Ensure that an update of the EPRP is kept on file and is easily accessible in case of an emergency. – Ensure that all staff have been issued with the correct Personal Protective Equipment (PPE). – Ensure that a list of emergency telephone numbers, including those of the Emergency Response team, are visible to all staff at a number of locations around the facility. – In the case of an emergency, the emergency coordinator is responsible for undertaking roll call at the designated Assembly points.

7.8.2 EMERGENCY COMMUNICATIONS AND COORDINATION PLAN

In an emergency situation where there is an immediate threat to communities, personnel or the environment, the Project Manager will be notified immediately. The Project Manager will dispatch the Emergency Response Coordinator who will determine the appropriate plan of action depending on the severity of the emergency, the people affected, and the need to evacuate.

If there is a developing emergency or unusual situation, where an emergency is not imminent, but could occur if no action is taken, the Project Manager (or if the Project Manager is absent the Environmental Manager) is to be informed immediately. Once the emergency or unusual situation has been managed, the correct incident/near miss must be reported to the General Manager.

If an emergency situation poses a direct threat to communities in the area, the Environmental Officer and/or Social Officer will advise persons in the vicinity of the emergency to evacuate due to the potential risk. The appropriate government authorities will immediately be notified of such an emergency evacuation. The Emergency Response Coordinator will be tasked with responding to the potential risk. Should the emergency situation be such that it can be managed by the Project Company, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risks.

7.8.3 RESPONSE TO INCIDENTS

An incident is any occurrence that has caused, or has the potential to cause, a negative impact on people, the environment or property (or a combination thereof). It also includes any significant departure from standard operating procedures. The reporting and investigation of all potential and actual incidents that could have a

detrimental impact on human health, the natural environment or property is required so that remedial and preventive steps can be taken to reduce the potential or actual impacts because of all such incidents.

Any incident must immediately be reported to the relevant authorities and all the necessary documentation must be completed and submitted to the relevant authorities within the prescribed timeframes.

The actions resulting from any formal or informal investigations will be used to update the EMPr.

7.8.4 VERIFICATION

An HSE emergency response system will be developed for the execution of emergency drills that will include the following, inter alia:

- Fire Drills;
- Emergency Evacuation Drills; and
- Medical and Environmental Drills.

Reporting and monitoring requirements for the plan will include:

- Inspections and audits;
- Quarterly reporting of accidents/ incidents;
- Reporting at the time of the incident and monthly spill reporting developed by the Environmental and Quality, Health and Safety departments;
- twice a year emergency response drills; and
- Annual reporting on training.

Emergency response drills and reporting will be maintained by the Project Manager and will provide information regarding required revisions to training or the emergency response actions. Each incident reported will be reviewed and investigated upon occurring. Actions will be identified where possible to improve the site's overall response to emergencies. Updates/revisions that are necessary to protect worker or community health and safety will be implemented immediately after approval by the General Manager. twice a year, Key Performance Indicators (KPIs) will be compared against past-performance and analysed for trends to determine if there are areas for improvement. Changes because of the trend analysis and identified areas for improvement will be implemented following the project's change management system as required.

This plan will be amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.

7.9 COVID-19

It should be noted that revision of this plan in line with the ongoing national response to COVID may be required at a later stage. Essentially allowing the need to be able to revisit the Covid response and ensure it aligns with national requirements as they may change.

PREVENTION AND RESPONSE

A dedicated team with responsibilities to identify and implement actions to mitigate the effects of COVID-19 on the company and community should be appointed.

INFORMATION

Information dissemination and training are an effective way to reduce the risk for both the company and the general public.

COVID-19 symptoms include: fever, tiredness, difficulty breathing, dry cough, chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste or smell. Some patients may have nasal congestion, runny nose, or diarrhoea. Symptoms may appear two to 14 days after exposure to the virus.

EMPLOYEE QUESTIONNAIRE

To prevent potentially infected staff from entering the workplace and infecting co-workers, a short questionnaire could be used. Workers should only report to work if they answer “no” to all the questions.

The following is an example:

- Have you, in the last two weeks, been in close contact with a person who has COVID-19?
- Have you, in the last two weeks, been in a country/region with a high number of cases of COVID-19?
- Do you have a fever?
- Have you used medications such as paracetamol or aspirin to suppress fever in the last 24 hours?
- Are you coughing (even mildly)?
- Do you currently experience shortness of breath?

PREVENTION METHODS

SICK PERSONS TO STAY HOME

Workers requested to stay away from work in cases where they exhibit any COVID-19 symptoms or have been in close contact with a confirmed COVID-19 patient during the previous 14 days.

Workers who do not feel well should seek immediate medical advice. An employee who works while evidencing mild COVID-19 symptoms can risk spreading this infectious disease to others.

COUGH HYGIENE

To reduce the risk of infected persons spreading the virus by coughing and sneezing, workers are to be instructed to follow the cough etiquette outlined below:

- Cover the mouth and nose with a tissue when coughing or sneezing and dispose of the used tissue in a wastebasket.
- When no tissue is available, cough or sneeze into the upper sleeve or elbow, not into the hands.
- Clean hands after coughing or sneezing, preferably by thorough water-soap handwashing, following the recommendations of health organizations. If soap and water are not available, use a hand sanitizing gel.

SOCIAL DISTANCING

To prevent person-to-person infection, it is important to minimize direct contact as much as possible. The contractor is to inform workers about the hazards of close contacts, including with direct co-workers, and promote alternative behaviours, such as maintaining safe distances and using alternatives for handshakes.

HAND SANITATION

Promote frequent and thorough water-soap hand washing and provide enough places for workers to wash their hands. If soap and running water are not immediately available, provide alcohol-based hand rubs containing at least 60% alcohol. Ensure that these facilities are sufficient in number and are available close to the work area.

CLEANING AND DISINFECTING

Frequently – and at least daily - clean touched surfaces, such as tables, light switches, appliances, countertops, handles, desks, phones, keyboards, toilets, taps, sinks, and so forth. Use the cleaning agents that are routinely used in these areas and follow the directions on the labels. For multiuse equipment, clean after every use.

Workers are to be instructed to clean their work areas and equipment at the end of each shift. Equipment and instructions on how to do this are to be provided

7.10 EROSION MANAGEMENT

Exposed and unprotected soils are the main cause of erosion in most situations. Therefore, this erosion management plan and the revegetation and rehabilitation plan are closely linked to one another and must not operate independently but should rather be seen as complementary activities within the broader environmental

management of the site and must therefore be managed together. This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion.

The objective of the plan is to provide:

- Introduce measures to reduce the erosion potential;
- Reduce the susceptibility of the area;
- Develop and implement monitoring and rehabilitation measures;
- Manage runoff and reduce the impact on sensitive areas;
- Achieve long-term stabilisation of all disturbed areas and
- Promote the natural re-establishment and planting of indigenous species to reduce erosion.

7.10.1 EROSION CONTROL PRINCIPLES

In the design phase, various stormwater management principles should be considered, including:

- Protect the land surface from erosion.
- Minimise the area of exposure of bare soils to minimise the erosive forces of wind, water and all forms of traffic.
- Contain soil erosion, whether induced by wind or water forces, by constructing protective works to trap sediment at appropriate locations. This applies particularly during construction.
- Avoid situations where slopes may become saturated and unstable (during and after construction process).
- All roads and other hardened surfaces should have runoff control features which redirect water flow and dissipate any energy in the water which may pose an erosion risk.
- Regular monitoring for erosion after construction to ensure that no erosion problems have developed as result of the disturbance.
- All erosion problems observed should be rectified as soon as possible, using the appropriate erosion control structures and re-vegetation techniques.
- A cover of indigenous species should be established in disturbed areas to bind the soil and prevent erosion.
- Construction activities must be restricted and carefully monitored to keep disturbance to a minimum and disturbed areas must be appropriately rehabilitated and managed.
- Planting of vegetation should commence as soon as possible after construction is completed to minimise the potential for erosion.
- Progressive rehabilitation is an important element of the rehabilitation strategy and should be implemented where feasible. Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed
- Once revegetated, areas should be protected to prevent trampling and erosion.
- No construction equipment, vehicles or unauthorised personnel should be allowed onto areas that have been vegetated

Regular audits and maintenance programmes to ensure that plants are growing and serving the purpose for which they were planted. This erosion control can be achieved by:

- Integrating project design with site constraints.
- Planning and integrating erosion and sediment control with construction activities.
- Minimising the extent and duration of disturbance.
- Using erosion controls to prevent on-site damage.

These goals can be achieved by applying the management practices outlined in the following sections.

ONSITE EROSION MANAGEMENT

General factors to consider regarding erosion risk at the site includes the following:

- Any eroded areas observed should be rehabilitated as soon as possible.
 - Reinststate as much of the eroded area to its pre-disturbed geometry.
 - Install protective works (gabions, reno-mattresses) to stabilise and protect unstable banks.
 - Earthen berms or plugs, rock packs or gabions can be used for the plugging of erosion gullies.
 - The area should then be allowed to re-vegetate itself.
 - Any activities within these areas should be avoided as far as possible.
- Soil loss will be greater on steeper slopes. Ensure that steep slopes are not de-vegetated unnecessarily and subsequently becomes hydrophobic, which will increase erosion potential.
- All bare areas should be revegetated with appropriate locally occurring species, to bind the soil and limit the erosion potential.
- Gabions and other stabilisation features should be used on steep slopes and other areas vulnerable to erosion minimise the erosion risk as far as possible.

EROSION CONTROL MECHANISM

The contractor may use the following mechanisms to combat erosion when necessary:

- Reno mattresses
- Slope attenuation
- Hessian material
- Shade catch nets
- Gabion baskets
- Silt fences
- Storm water channels and catch pits
- Soil bindings
- Geofabrics
- Hydro-seeding and/or re-vegetating
- Mulching over cleared areas
- Boulders and size varied rocks
- Tilling

MONITORING

To monitor the impact of construction activities, follow-ups and rehabilitation efforts, monitoring must be undertaken. This section provides a description of a possible monitoring programme that will provide assessment of the erosion on site as well as an assessment of the success of the management programme.

In general, the following principles apply for monitoring:

- Photographic records must be kept of areas to be cleared prior to work starting and at regular intervals during initial clearing activities. Similarly, photographic records should be kept of the area from immediately before and after follow-up clearing activities. Rehabilitation processes must also be recorded.
- The cause of soil erosion must be determined.
- Simple records must be kept of daily operations (location cleared and labour units).
- It is important that, if monitoring results in detection of invasive alien plants, that this leads to immediate action.

7.11 HAZARDOUS SUBSTANCES MANAGEMENT PLAN

Hazardous substances are chemicals or materials that can cause acute or chronic harm to health, be it humans or the environment. The key potential sources of impact related to the management of hazardous chemical substances (HCS) and fuel during construction relate to the risk of accidental release of hydrocarbons to the environment, accidental exposure to workers, and fire and explosion risks.

Potential impacts associated with these risks, if poorly managed, include:

- Impact to soil and/or groundwater, which may result in degradation of the resource and requirement for remedial action;
- Impacts on pastoralist livelihoods due to contamination of pasture or water resources and consequent impacts to their, health, livelihood and animals;
- Impacts on human health & safety due to either direct exposure or through fire/explosion;
- Gas emissions associated with the combustion of fuel, are mainly compounds of nitrogen, carbon including very small traces of sulphur and particulate matter; and
- Fugitive emissions from HCS & fuel storage.

The purpose of this Hazardous Substances Management Plan (HSMP) is to provide a framework for the management of hazardous substances onsite during the construction and operation of the 132kV OHPL and substations project:

- Ensure the handling and storage of hazardous substances are in accordance with relevant standards;
- To ensure that the storage and handling of chemicals and hydrocarbons on-site does not cause pollution to the environment or harm to persons;
- To ensure that the storage and maintenance of machinery onsite does not cause pollution of the environment or harm to persons.

7.11.1 HAZARDOUS SUBSTANCE MANAGEMENT PROCEDURE

A plan for managing the transportation, delivery, storage and handling of hazardous substances onsite is detailed below. A method statement detailing the specific storage and handling practices during construction must be prepared by the Contractor prior to the commencement of construction.

REGISTER OF HAZARDOUS SUBSTANCES

Contractors shall establish inventories or registers of hazardous substances on site. The inventory is to be updated when new hazardous substances are introduced to the workplace or the use of existing hazardous substances is discontinued. Both the chemicals' register and the Material Safety Data Sheets (MSDSs) must be readily available at a central location or near where the chemicals are being stored or used.

MSDS

It is standard practice that an MSDS is provided by the manufacturer or supplier of all hazardous substances. An MSDS is required for all chemicals and substances on site. These MSDSs are to be made available to all parties affected by the use or storage of the chemical. MSDSs are the key to communicating hazards and safe handling practices for chemicals. In addition, MSDS information is to be made available to all employees.

DELIVERIES

Transport of all hazardous substances must be in accordance with the relevant legislation and regulations. Contractors are responsible for identifying and securing any necessary permits for any proposed bulk fuel storage arrangements. The supplier will fill contractors fuel tanks; fuelling is the responsibility of the licensed contractor who will be supervised by the storage/work area supervisor. No 'black-market' or 'grey-import' fuels shall be used. All fuels purchased must be legitimate and subject to required duties and taxes.

Prior to fuel transfer the operator will verify that: all fuel transfer hoses have been connected properly and couplings are tight; transfer hoses are not obviously damaged; fuel transfer personnel are familiar with procedures; for fuelling stations, personnel are located at both the fuel truck and fuel transfer tank(s) and have the ability to shut off fuel flow manually; a means of communication has been established between the two people transferring fuel; and a high liquid level shutoff device can be substituted for the person at the delivery tank, in which case operation of the shutoff will be verified each time it is used;

The fuel contractor will clean up and report any accidents or spills immediately to the project team.

ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY

The following requirements are additional to any applicable requirements established in other management plans such as the Occupational Health & Safety Management Plan:

- Storage facilities will have the applicable Material Safety Data Sheets (MSDS) available;
- Smoking will be strictly prohibited from any areas where fuel loading operations take place;
- Appropriate signage will be used to identify potential spill risks;
- Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. The extent of damage will be reported in writing to WP as well as remedial repairs effected together with the date of repairs and any follow up inspection. Any release of fuels or other substance will be cleaned up;
- All used fuel / oil products will be collected in tanks marked “Waste Oil”; and
- All hydrocarbon associated wastes will be managed in line with the Waste Management Plan.

MATERIALS STORAGE

- All temporary hydrocarbon storage will be situated above ground. There will be no buried storage tanks permitted.
- All chemicals, fuels and other hazardous materials are to be stored in designated and bunded areas, where the bunded area is impermeable and is impervious to the stored substance as per the requirements of SABS 089:1999 Part 1. The bunded area will contain 110% volume of the largest container stored.
- Bunds and service area platforms to be cleaned and maintained regularly.
- SABS approved Spill kits must be made available on-site for the clean-up of spills and leaks of contaminants. The relevant construction crew members must be trained in their use.
- Keep a record of all hazardous substances stored on site. Clearly label all the containers storing hazardous waste.
- The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.
- Chemical and hydrocarbon storage facilities shall be covered to prevent rainfall ingress into secondary containment units and well-ventilated
- Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with.
- An effective monitoring system must be put in place to detect any leakage or spillage of all hazardous substances during their transportation, handling, installation and storage.

SPILL AND LEAK MANAGEMENT AND PREVENTION

- In the event of a major spill or leak of contaminants, the relevant authorities of contaminants. (Please list with contact details) The relevant construction crew members must be trained in their use.
- Spilled cement must be cleaned up immediately and, stored as hazardous waste and disposed of at a suitably licensed hazardous waste disposal facility.
- Routine servicing and maintenance of vehicles must not be undertaken onsite (except for emergencies). If repairs of vehicles must take place, an appropriate drip tray must be used to contain any fuel or oils.

- Any water that collects in bunds must not be allowed to stand. Should the water be contaminated, it is to be removed and treated prior to discharge, or disposed of as hazardous waste. Clean stormwater contained within the bunds may be reused.
 - Construction machinery must be stored in an appropriately sealed area. If machinery cannot be stored in a sealed area then a drip tray must be used to prevent spillage from any leaks.
 - As far as practicable, all equipment servicing / maintenance shall be undertaken within designated workshop areas.
 - All generators on site, including generators that are not in use must be located in a bunded area or on a drip tray.
 - Bunded areas and drip trays must be maintained on a regular basis.
 - Diesel generators and water pumps shall be located in secondary containment areas or shall be self-contained to prevent loss of fuels and oils;
 - Precautions must be in place to limit the possibility of oil and other toxic liquids from entering the soil or clean stormwater system.
 - Upon completion of construction, the area must be cleared of potentially polluting materials.
 - Emergency response planning will be managed via the Emergency Preparedness and Response Plan.
-

7.11.2 OPERATIONAL PHASE

During the operational phase of the project limited hazardous substances and chemicals will be stored onsite. During maintenance activities, contractors will need to produce a method statement detailing the specific storage and handling practices. The following measures need to be implemented onsite during the operational phase of the project.

- Hazardous substances must be stored in sealed containers within a clearly demarcated designated area.
 - Care must be taken to ensure that spillage of oils and other hazardous substances are limited during maintenance. Handling of these materials must take place within an appropriately sealed and bunded area. Should any accidental spillage take place, it must be cleaned up according to specified standards regarding bioremediation.
 - The storage of flammable and combustible liquids such as oils will be in designated areas which are appropriately bunded and stored in compliance with Material Safety Data Sheets (MSDS) files and applicable regulations and safety instructions.
 - Used oils and chemicals:
 - Appropriate disposal must be arranged with a licensed facility in consultation with the administering authority;
 - Waste must be stored and handled according to the relevant legislation and regulations.
-

7.11.3 INSPECTION AND MONITORING

Fuel storage areas must be inspected regularly to ensure bund stability, integrity, and function.

7.11.4 TRAINING

The contents of the Hazardous Substances Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the Training Procedure

Examples of Toolbox Talks include:

- Storage of hazardous substances
- Working with hazardous substances
- Management of hazardous waste
- Spill Prevention

7.12 GRIEVANCE MECHANISM

This Grievance Mechanism has been developed to receive and facilitate grievances and provide a solution to these concerns and grievances. The aim of the grievance mechanism is to ensure that grievances or concerns raised by local landowners, staff and or communities are addressed in a manner that:

- Provides accessible avenues for all internal and external stakeholders to contact the Project Company;
- Provides a predictable, transparent, and credible process to all parties, resulting in outcomes that are seen as fair, effective, lasting and dealt with in a timely manner;
- Builds trust as an integral component of staff and broader community relations activities; and
- Enables more systematic identification of issues and trends affecting a project, facilitating corrective action and pre-emptive engagement.

The aim of this Grievance Mechanism is to address grievances in a manner that does not require a potentially costly and time-consuming legal process. This grievance mechanism also ensures alignment with local and international best practices in human resources development and stakeholder engagement.

7.12.1 RESPONSIBILITIES

Figure 7-1 outlines the reporting structure with regards to grievances.



Figure 7-1: Reporting Structure with regards to Grievances

7.12.2 PROCEDURES

EXTERNAL GRIEVANCE MECHANISM

A key element of this improvement is the implementation of the external grievance mechanism. This process is applicable through all projects and seeks to resolve issues raised by stakeholders during construction and operations. A formal systematic review of the mechanism will be undertaken every year if and when necessary. **Figure 7-2** illustrates the process that is followed for external grievances.

The following best practice guidelines when engaging with external stakeholders:

- IFC Performance Standards;
- IFC Performance standard 1, 4 and 7;
- King III;
- King III recommends the stakeholder inclusive approach to corporate governance;
- South African Legislation; and
- National Environmental Management Act (NEMA) and other relevant legislation.

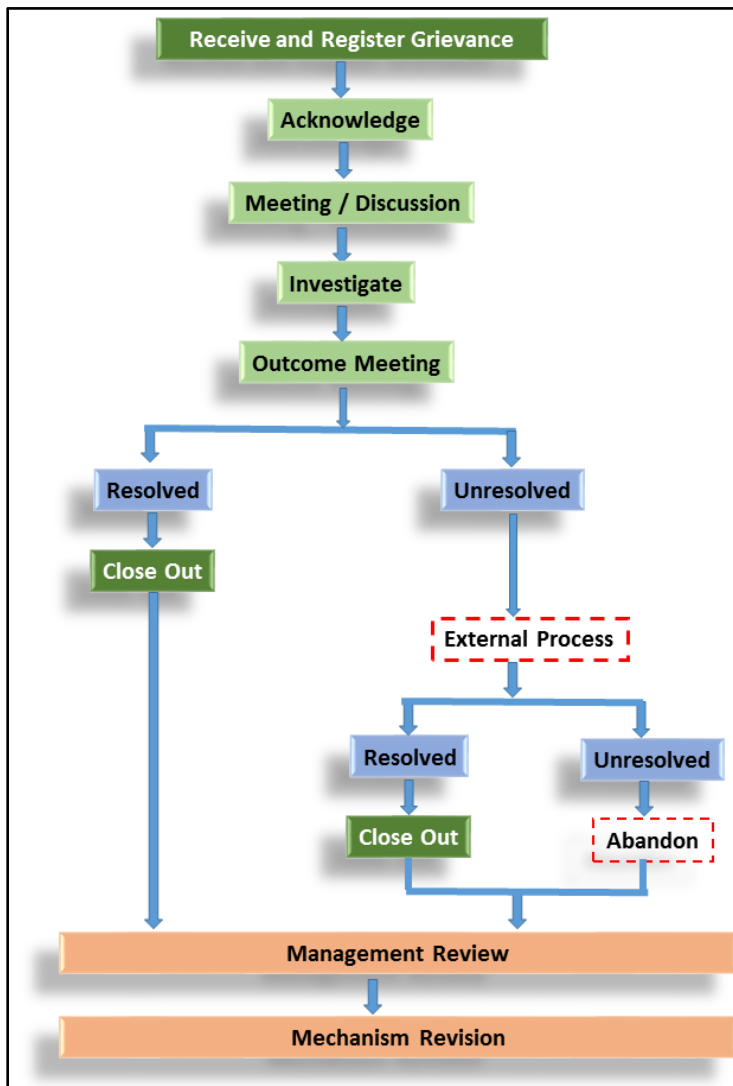


Figure 7-2: Process for External Grievances

GENERAL PROCEDURE FOR RECEIVING AND RESOLVING GRIEVANCES

- Local landowners, communities and authorities must be informed of the grievance mechanism and the process by which grievances can be brought to the attention of the Project Company through its designated representative.
- A company representative must be appointed as the contact person for grievances to be addressed to. The name and contact details of the contact person must be provided to local landowners, communities and authorities.
- Project related grievances relating to the construction, operational and or decommissioning phase must be addressed in writing to the contact person. The contact person should assist local landowners and or communities who may lack resources to submit/prepare written grievances.
- The grievance must be registered with the contact person who, within 2 working days of receipt of the grievance, must contact the complainant to discuss the grievance and agree on suitable date and venue for a meeting in order to discuss the grievances raised. Unless otherwise agreed, the meeting must be held within 2 weeks of receipt of the grievance.
- The contact person must draft a letter to be sent to the complainant acknowledging receipt of the grievance, the name and contact details of complainant, the nature of the grievance, the date that the grievance was raised, and the date and venue for the meeting (once agreed).
- Prior to the meeting being held the contact person must contact the complainant to discuss and agree on the parties who should attend the meeting. The people who will be required to attend the meeting will depend on the nature of the grievance. While the complainant and or proponent are entitled to invite their legal representatives to attend the meeting/s, it should be made clear that to all the parties involved in the process that the grievance mechanism process is not a legal process. It is therefore recommended that the involvement of legal representatives be limited.
- The meeting must be chaired by the company representative appointed to address grievances. A person must be provided to take minutes of and record the meeting/s. Any costs associated with hiring venues must be covered by the Project Company.
- Draft copies of the minutes must be made available to the complainant and the proponent within 4 working days of the meeting being held. Unless otherwise agreed, comments on the draft minutes must be forwarded to the company representative appointed to manage the grievance mechanism within 4 working days of receipt of the draft minutes.
- In the event of the grievance being resolved to the satisfaction of all the parties concerned, the outcome must be recorded and signed off by the relevant parties. The record must provide details of the date of the meeting/s, the names of the people that attended the meeting/s, the outcome of the meeting/s, and where relevant, the measures identified to address the grievance, the party responsible for implementing the required measures, and the agreed upon timeframes for the measures to be implemented.
- In the event of a dispute between the complainant and the proponent regarding the grievance, the option of appointing an independent mediator to assist with resolving the issue should be discussed. The record of the meeting/s must note that a dispute has arisen and that the grievance has not been resolved to the satisfaction of all the parties concerned.
- In the event that the parties agree to appoint a mediator, the Project Company will be required to identify three (3) mediators and forward the names and CVs to the complainant within 2 weeks of the dispute being declared. The complainant, in consultation with the Project Company, must identify the preferred mediator and agree on a date for the next meeting. The cost of the mediator must be borne by the Project Company. A person must be provided to take minutes of and record the meeting/s.
- In the event of the grievance, with the assistance of the mediator, being resolved to the satisfaction of all the parties concerned, the outcome must be recorded and signed off by the relevant parties, including the mediator. The record must provide details on the date of the meeting/s, the names of the people that attended the meeting/s, the outcome of the meeting/s, and where relevant, the measures identified to address the grievance, the party responsible for implementing the required measures, and the agreed upon timeframes for the measures to be implemented.
- In the event of the dispute not being resolved, the mediator must prepare a draft report that summaries the nature of the grievance and the dispute. The report must include a recommendation by the mediator on the proposed way forward with regard to the addressing the grievance.

- The draft report must be made available to the complainant and the Project Company for comment before being finalised and signed by all parties. Unless otherwise agreed, comments on the draft report must be forwarded to the company representative appointed to manage the grievance mechanism within 4 working days. The way forward will be informed by the recommendations of the mediator and the nature of the grievance.

A complaint is closed out when no further action can be or needs to be taken. Closure status will be classified in the complaints register as follows:

- Resolved: Complaints where a resolution has been agreed and implemented and the complainant has signed the confirmation form.
- Unresolved: Complaints where it has not been possible to reach an agreed resolution and the case has been authorised for close out by the appeals committee.
- Abandoned: Complaints where the complainant is not contactable after one month following receipt of a complaint and efforts to trace his or her whereabouts have been unsuccessful.

The grievance mechanism does not replace the right of an individual, community, group or organization to take legal action should they so wish. In the event of the grievance not being resolved to the satisfaction of complainant and or the proponent, either party may be of the opinion that legal action may be the most appropriate option.

7.12.3 INSPECTION AND MONITORING

All grievances will be recorded in the Grievance Register and Guideline and be reviewed on a weekly basis.

A key element of this improvement will be evaluating the effectiveness of this mechanism through internal auditing processes and, if necessary, amend and add to this document. This will include feedback from staff and relevant stakeholders. A formal systematic review will be undertaken every year if considered necessary.

7.12.4 TRAINING

The contents of the Grievance Mechanism must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. Training must also be provided to neighbouring communities to ensure that they are aware that the grievance process exists and how the process works.

7.13 HIV/AIDS MANAGEMENT PLAN

The HIV/AIDS management plan will be compiled in the event that the project is identified as a preferred bidder as part of the REIPPPP. This plan must be compiled in consultation with the Msukaligwa Local Municipality.

The measures must be implemented on site during the construction and operational phases:

- Promote a non-discriminatory and supportive environment for people affected by HIV & AIDS.
- HIV-positive employees must be protected against unfair discrimination, victimisation or harassment.
- Sensitive issues surround HIV & AIDS and it is important to handle matters in a discreet and private manner
- Promote awareness and education programmes to inform employees about HIV & AIDS which will enable them to protect themselves and others against infection by HIV.
- Involve employees and their representatives in the planning and implementation of awareness and counselling programmes, especially as peer educators and counsellors.

7.14 HERITAGE MANAGEMENT PLAN

The purpose of this document is to provide a response guideline should archaeological sites, palaeontological sites or graves become exposed during ground altering activities within the 132kV OHPL and substations project area. Heritage resources are protected in terms of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

7.14.1 CHANCE FIND PROCEDURE

The following procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the 132kV OHPL and substations project area.

GENERAL REQUIREMENTS

The Contractor or other person discovering a potentially significant site or artefact will initiate the following actions:

- Stop work in the immediate area and take digital photographs to record the find;
- Install temporary site protection measures (e.g. delineate a ‘no-go’ area using warning tape, stakes and signage / deploy worker and give instructions to prevent access or further disturbance) and take all reasonable steps to avoid any further disturbance or damage from excavation, vibration, plant or machinery;
- Inform site supervisor/foreman;
- Inform all relevant staff /Contractor personnel of the chance find and whether access to work area or along the right-of-way is being restricted;
- Strictly enforce any no-go area needed to protect the site;
- Notify the Project Company who will advise on any additional measures such as deployment of security guard and consultation or a visit from archaeologist / other heritage specialist. In the event of the latter, the specialist/archaeologist will be responsible for evaluating whether the chance find needs to be classified as cultural heritage and if so, whether it is isolated or part of a larger site or feature. The Project Company will notify the relevant authorities;
- The supervisor must then inform the relevant ECO;
- The ECO shall contact the SAHRA and appoint an archaeological consultant to record the site and excavate if necessary;
- Artefacts are to be left in place for recording by the specialist/archaeologist. It is important they are not disturbed or moved as their setting is as important as the artefact/fossil; if materials are to be collected they will be placed in bags and labelled by the specialist /archaeologist and forwarded to the authorities in a manner that ensures the integrity of the ‘chain of custody’. Project personnel are not permitted to take or keep artefacts as personal possessions as that is a crime;
- Any damage, accidental or otherwise, must be investigated by the site foreman, ESHS Team and the details recorded in an interim Incident Report and, if necessary, an Incident (Chance Find) Investigation Report;
- Appropriate mitigation / treatment strategies will be developed according to the specific circumstances of each find and, as appropriate, take account of the degree of cultural importance of the find –
- Stakeholder engagement may be needed with affected communities to determine the correct mitigation actions or, if applicable, suitable compensation (e.g. reburial costs). Site treatment scenarios may include:
 - Preservation in place through avoidance or re-routing or specialized construction techniques, and/or
 - Rescue excavations to remove, record and relocate in advance of further construction work if avoidance is not possible.
- If the Chance Find is an isolated artefact/site or is not classed as cultural heritage, the Project Company must approve the removal of site protection measures and activity can resume only with consultation and approval of the local authorities;
- If the heritage specialist and/or archaeologist confirms the chance find to be cultural heritage he/she will inform the Project Company and initiate discussions about the handling process;
- If a chance find is a verified cultural heritage site, prepare a final Chance Finds report once required treatment has been completed;
- While required treatment is ongoing, the Project Company will coordinate with the relevant staff / contractor, keeping them informed as to status and schedule of investigations / actions, and informing them when activities may resume;
- The Grievance Procedure and Guidance will apply to any stakeholder complaints relating to cultural heritage and chance finds;

- Chance find recording shall include the following:
 - Incident Notification;
 - Incident Report;
 - Incident (Chance Find) Investigation Report – e.g. detailing corrective actions, with digital images, maps and plans showing any locations that are no-go, limited access or present risks of further chance finds.
-

7.14.2 INSPECTION AND MONITORING

Since it is not practical to have a regular monitoring presence over the construction period by either an archaeologist or palaeontologist, environmental awareness training must be conducted by the ECO for all contractors and subcontractors. The training must include, as a minimum, the following:

- Identifying potential features of heritage significance;
 - Procedures for dealing with heritage resources discovered on site;
 - Applicable Legislation pertaining to the protection of heritage resources; and
 - The importance of protecting heritage resources.
-

7.14.3 TRAINING

The contents of the Heritage Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks.

7.15 FAUNA MANAGEMENT PLAN

The purpose of this fauna management plan is to protect species, habitats and eco-system services, ensuring no net reduction to any critically endangered / endangered species and no net loss of any critical habitats (as defined by IFC Performance Standard 6) whilst minimising disturbance to other species and habitats to the extent practicable. This plan provides a strategy to control potential impacts on fauna during the construction and operation of the 132kV OHPL and substations project.

7.15.1 PRINCIPLE FOR MANAGING IMPACTS ON FAUNA

SNAKE FIND AND HANDLING:

During construction, especially clearing of vegetation, it is likely that snakes will be encountered onsite. The following steps need to be undertaken in the event of a snake onsite:

- All work in that area is to cease;
- The site foreman/ site supervisor is to be notified;
- Snake handling will be undertaken by suitably trained and certified onsite personnel. The site supervisor or foreman needs to contact the relevant onsite personnel, who will safely remove and release the snake at a suitable habitat.

The following measures need to be communicated to all staff to ensure both human and snake safety:

- Under no circumstances may any site staff handle snakes without the proper snake handling training.
- All staff are to be provided with the correct Personal Protective Equipment (PPE to limit the potential for snake bites.
- Signage identifying the service provider appointed for snake handling must be erected around site. It is recommended that an individual onsite undergoes snake handling training to ensure that if an emergency arises it can be dealt with immediately.
- Intentional harming of snakes is prohibited onsite.

MAMMALS AND REPTILES

During the construction phase of the project the following mitigation measures need to be implemented and adhered to at all times to ensure that the impacts to fauna is managed and mitigated where possible.

WALK DOWN PRIOR TO CONSTRUCTION

Prior to the start of any construction or associated activities in areas of potential biodiversity concern, the Contractors will carry out a walk-through over the area accompanied by the EO or ECO. The objective is to identify any sensitive habitats including potential for species of conservation interest (i.e. to consider the presence of any rare species of fauna, but establish possible risk of snake bites; inspect tree cavities for bats, etc.) that may be directly or indirectly affected by the proposed works.

Any important and significant habitats must be suitably demarcated and made a no-go area. An appropriate level of mitigation needs to be implemented prior to starting construction.

LIMIT THE DEVELOPMENT FOOTPRINT

- The development area must be clearly defined and marked off accordingly. All No- Go areas must be demarcated and warning signs prohibiting access erected.
- Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing/ disturbance.

LIMIT DISTURBANCE

- The extent of clearing and disturbance to the native vegetation must be kept to a minimum so that the impact on fauna and their habitats is restricted.
- Where roads pass right next to major water bodies provisions must be made for the fauna such as toads to pass under the roads by using culverts or something similar.
- Vehicles to adhere to speed limits at all times.
- The intentional harming and killing of animals will be prohibited through on-site supervision and worksite rules.
- Any litter onsite needs to be cleaned up immediately to prevent it being blown into the environment surrounding the development site.

INSPECTIONS AND MONITORING

The following inspections and monitoring need to be undertaken during the construction phase:

- Observation of vegetation clearing activities by the Environmental Officer (EO) with ECO auditing.
- Recording faunal fatalities to monitor success of relocation efforts.
- Regular monitoring of construction activities by the designated onsite personnel and the ECO.
- The ESHS team will collate details and investigate all Project-related wildlife complaints and incidents including instances of unauthorised hunting, poaching, bush trade, disturbance of breeding sites and injuries / fatalities. Corrective actions will be instigated where needed to avoid recurrence.

TRAINING

The contents of the Fauna Management Plan must be communicated to the staff through the induction training. On the job training can also be undertaken through the use of Environmental Toolbox Talks. All training must be undertaken as outlined in the Training Procedure

Examples of Toolbox Talks include:

- Snakes bites
- Snake handling
- No-Go areas
- Encountering fauna onsite
- Poaching

7.16 CONSTRUCTION AVIFAUNAL MANAGEMENT PLAN

The purpose of this avifaunal management plan is to provide mitigation and management measures onsite that to minimise the impacts on the priority bird species that potentially occur onsite. A number of the priority species are associated with the aquatic features on the site. Construction activities impact on birds through disturbance; this could lead to breeding failure if the disturbance happens during a critical part of the breeding cycle. Construction activities in close proximity to breeding locations could be a source of disturbance and could lead to temporary breeding failure or even permanent abandonment of nests. A potential mitigation measure is the timeous identification of nests and the timing of the construction activities to avoid disturbance during a critical phase of the breeding cycle, although this is often impractical to implement due to tight construction schedules.

Powerline sensitive species which are potentially vulnerable to displacement due to habitat transformation are mostly ground nesting species. Species that could be impacted are African Grass Owl, Black-bellied Bustard, Blue Crane, Blue Korhaan, Denham's Bustard, Grey Crowned Crane, Helmeted Guineafowl, Marsh Owl, Northern Black Korhaan, Secretary bird, Spotted Eagle-Owl and White-bellied Bustard.

During the construction of powerlines, service roads (jeep tracks), substations and other associated infrastructure, habitat destruction/transformation inevitably takes place. These activities could impact on birds breeding, foraging and roosting in or in close proximity of the proposed powerline and collector substation

through the transformation of habitat. Relevant to this development, very little mitigation can be applied to reduce the significance of this impact as the total permanent transformation of the natural habitat within the construction footprint of the on-site substation is unavoidable. In the case of the powerline, the direct habitat transformation is limited to the on-site substation and pole/tower footprints and the narrow access road/track under the proposed powerline. The loss of habitat in the substation footprint (7 ha) will be a relatively insignificant percentage of the habitat that regularly supports powerline sensitive species, and the resultant impact is likely to be fairly minimal.

Powerline sensitive species which are potentially most vulnerable to displacement due to habitat transformation are mostly ground nesting species: African Grass Owl, Black-bellied Bustard, Blue Crane, Blue Korhaan, Denham's Bustard, Grey Crowned Crane, Helmeted Guineafowl, Marsh Owl, Northern Black Korhaan, Secretary bird, Spotted Eagle-Owl and, White-bellied Bustard.

Electrocutions within the proposed substation yard are possible but should not affect the more sensitive Red List bird species, as these species are unlikely to use the infrastructure within the substation yard for perching or roosting. Species that are more vulnerable to this impact are corvids, owls, and certain species of waterbirds.

The powerline sensitive species which are potentially vulnerable to electrocution impact are Common Buzzard, Jackal Buzzard, Cape Crow, Pied Crow, African Fish Eagle, Black-chested Snake Eagle, Brown Snake Eagle, Long-crested Eagle, Martial Eagle, Spotted Eagle-Owl, Amur Falcon, Lanner Falcon, Peregrine Falcon, Helmeted Guineafowl, Black-headed Heron, Hadada Ibis, Southern Bald Ibis, Black-winged Kite, Yellow-billed Kite, Western Osprey, African Grass Owl, Marsh Owl, Western Barn Owl, Black Sparrowhawk and Cape Vulture.

7.16.1 DESIGN MANAGEMENT PROCEDURES

- Marking overhead cables using deflectors and avoiding use over areas of high bird concentrations, especially for species vulnerable to collision.

7.16.2 CONSTRUCTION MANAGEMENT PROCEDURE

The following mitigation and management measures must be implemented for the displacement of priority species due to disturbance during the construction phase:

- A site-specific construction management Plan (CEMP) must be implemented, which gives appropriate detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMP and must apply good environmental practice during construction. This must be done by an Avifaunal Specialist. The CEMPr must specifically include the following:
 - No off-road driving;
 - Maximum use of existing roads, where possible;

- Measures to control noise and dust according to latest best practice;
- Restricted access to the rest of the property;
- Strict application of all recommendations in the biodiversity specialist report pertaining to the limitation of the footprint.
- Providing adequate briefing for site personnel and, in particularly sensitive locations. Personnel must be adequately briefed on the need to restrict habitat destruction. An ecologist must be appointed during the construction period.
- An ECO must be appointed to oversee activities and ensure that the site-specific CEMP is implemented and enforced.
- Conduct an inspection (avifaunal walk-through) of the final powerline alignment to identify powerline sensitive species that may be breeding within the final footprint. If a SSC nest is occupied, the avifaunal specialist must consult with the contractor to find ways of minimising the potential disturbance to the breeding birds during the construction period.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads.
- Measures to control noise and dust must be applied according to current best practice in the industry.

7.16.3 MONITORING

Monitoring of Red listed species nests (if any) to assess the impact of the construction activities.

It is recommended that regular inspections are performed of the onsite substation yard to monitor the electrocution mortality. If on-going impacts are recorded once operational, site-specific mitigation (insulation) be applied reactively.

7.17 SOIL MANAGEMENT PLAN

Some of the most significant impacts on soil properties occur as a result of activities associated with construction. Construction activity can have adverse impacts on soil in a number of ways by:

- Covering soil with impermeable materials, effectively sealing it and resulting in significant detrimental impacts on soils' physical, chemical and biological properties, including drainage characteristics.
- Contaminating soil as a result of accidental spillage or the use of chemicals.
- Over-compacting soil through the use of heavy machinery or the storage of construction materials.
- Reducing soil quality, for example by mixing topsoil with subsoil.
- Wasting soil by mixing it with construction waste or contaminated materials, which then have to be treated before reuse or even disposed of at landfill as a last resort.

Careful management of topsoil and subsoil is an important aspect of sustainable use of materials that are being stripped. Without a proper Soil Resource Plan there is the risk of losing, damaging or contaminating valuable soil resources. The purpose of this Soil Management Plan is to outline principles for soil management to ensure the integrity of the resource during and post-construction. This plan must be read together with the Emergency Response Plan in order to minimise the risk of contamination of soils.

7.17.1 SOIL HORIZONS

TOPSOIL

Topsoil is the top-most soil layer (0-25 cm) in undisturbed areas; however it should be noted that the majority of the site for the wind farm is farmland and no impacts are expected in undisturbed areas. If no impacts are expected in undisturbed areas, then the principals that follow do not apply. The principals are also applicable to any undisturbed areas affected by the power line. This soil layer is important as it contains nutrients, organic material, seeds, communities of micro-organisms, fungi and soil fauna. All the contents of the topsoil layer are necessary

for soil processes such as nutrient cycling, and support growth of new plants. The biologically active upper layer of soil is fundamental in the development of soils and the sustainability of the entire ecosystem. Fungi, algae, cyanobacteria and non-vascular plants form a 'living crust' on the soil surface that influences the retention of resources (principally nutrients and water), as well as reducing the potential for soil erosion.

In general, the greatest concentration of seeds (i.e. up to 90% of the seedbank) is found in the top 5-10 cm of topsoil. Soil nutrients and other biological elements also have a higher concentration in the top 5 – 10 cm of soil, but can occur up to 25 cm.

SUBSOIL

Subsoil is soil generally deeper than 25 cm. The subsoil contains lower levels of nutrients, but the soil texture is still suitable for plant growth.

OVERBURDEN

Overburden is all the soil below the subsoil layer, generally characterised by a fine soil texture which is sometimes high in clay and salt content which makes plant growth difficult. Such soils comprise a sterile growth medium, devoid of nutrients, and depending on the clay content, are of high salinity and often phytotoxic. Even shallow-lying overburden soils are largely depleted of nutrients. These soils constitute an unsuitable medium for the establishment of plants.

7.17.2 SOIL MANAGEMENT

THE CORRECT HANDLING OF TOPSOIL

- Before beginning work on site, topsoil must be stripped from all areas that will be disturbed by construction activities. Appropriate equipment must be used and appropriate work practices must be implemented for soil stripping as mishandling soil can have an adverse effect on its properties.
- Topsoil must be stripped in the driest condition possible.
- Topsoil must be retained on site in order to be used in site rehabilitation. The correct handling of the topsoil layer is in most cases the key to rehabilitation success.
- It is important that the correct depth of topsoil is excavated in order to ensure good plant growth. If excavation is too shallow, then an important growth medium for new seedlings could be lost. If excavation is too deep, this could lead to the dilution of the seed and nutrient rich topsoil with deeper sterile soil.
- Topsoil and subsoil layers must never be mixed. The mixture of topsoil with the deeper sterile soil hinders the germination of seeds which are buried too deep in the soil layer. Mixture of soil layers also leads to the dilution of nutrient levels which are at highest concentration within the topsoil, resulting in lower levels of nutrients available for new seedlings.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. Stockpiles must not be higher than 2m. Alternatively, topsoil berms can be created on the site boundaries. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- Topsoil must be stored separately from other soil in heaps until construction in an area is complete.
- The duration of topsoil storage must be minimised as far as possible. Storing topsoil for long periods leads to seed bank depletion following germination during storage, and anoxic conditions develop inside large stockpile heaps.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

STRIPPING OF SUBSOIL

The following protocols must be followed when stripping subsoil:

- On many sites subsoil will not need to be stripped but merely protected from damage. However, on other sites it might need to be temporarily removed. Where subsoil is required to be stripped, this must be undertaken before commencement of construction from all areas that are to be disturbed by construction activities or driven over by vehicles.
- Subsoil stripping depths depend on the correct identification of the sub-soil types on an ad-hoc basis, where no formal survey data exists.
- Subsoil must be stripped in the driest condition possible.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

7.18 POST CONSTRUCTION DECOMMISSIONING PLAN

It is assumed that the proposed 132kV OHPL and substations will be utilized for approximately 20 - 25 years and closure EMPr will be compiled during closure phase. The construction activities will require construction of temporary infrastructure such as campsite, campsite fence, mobile offices, toilets, access control and other infrastructure associated with the construction phase. Post construction phase all the infrastructure must be removed from site and rehabilitation undertaken to ensure that no impact result post construction phase.

7.18.1 ACTIVITIES ASSOCIATED WITH DECOMMISSIONING

ACTIVITY	DETAILED DESCRIPTION
Site preparation	Site preparation activities similar to those undertaken in the construction phase will be required during the decommissioning phase. This will include confirming the integrity of site access to the site in order to accommodate the required equipment (e.g. lay down areas and decommissioning camp) and the mobilisation of decommissioning equipment
Disassemble and remove existing components	The components would be disassembled, and reused and recycled (where possible), or disposed of in accordance with regulatory requirements

Road traffic will temporarily increase due to the movement of decommissioning crews and equipment. There may be an increase in particulate matter (dust) in adjacent areas during the decommissioning phase. Additionally, there will be emissions from the diesel engines of construction machinery and equipment which may cause odour disturbance and localized impacts to air quality. Decommissioning activities may lead to temporary elevated noise levels from heavy machinery and an increase in trips to the project location.

The relevant mitigation measures contained under the construction section of the EMPr must be applied during decommissioning.

7.18.2 PRINCIPLES FOR DECOMMISSIONING

In decommissioning the facility, the proponent must ensure that:

- All decommissioning activities must be in compliance with the regulations at the time
- All sites not already vegetated are vegetated as soon as possible after decommissioning is completed with species appropriate to the area (where the impacted area is an indigenous vegetation area - otherwise this is not applicable).

- Any fauna encountered during decommissioning are removed to safety by a suitably qualified person.
- All structures, foundations and sealed areas are demolished, removed and waste material which cannot be recycled disposed of at an appropriately licensed waste disposal site or as required by the relevant legislation.
- All access/service roads not required to be retained by landowners are closed and fully rehabilitated.
- Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and maintained until the site is stabilized.
- All vehicles adhere to low-speed limits (i.e. 40km/h max) on the site, to reduce risk of faunal collisions as well as reduce dust.
- All disturbed areas are compacted, sloped and contoured to ensure drainage and runoff and to minimise the risk of erosion.
- All rehabilitated areas are monitored for erosion until the site is stabilized.
- Components of the facility are removed from the site and recycled or disposed of appropriately.
- Retrenchments must comply with South African Labour legislation of the day.
- Decommissioning and site restoration activities must be undertaken with the input of the landowner(s).
- The process for notification of decommissioning activities will be the same as the process for notification of construction activities. Decommissioning activities may require the notification of stakeholders given the potential for increased noise and traffic volumes at the project location.
- Consult with landowner(s) to determine if access roads must be left in place for their continued use. If not required, roads must be decommissioned, ripped and revegetated.
- Removal of fencing.
- Underground electrical lines running between inverters and the substation will be removed.
- All foundation materials will be removed from the site via truck and managed at appropriate facilities.

DISPOSAL OF MATERIALS

Most of the materials used can be recycled. The majority of the glass and semiconductor materials can be recovered and re-used or recycled. Recyclable materials must be transported off-site by truck and managed at appropriate facilities in accordance with relevant waste management regulations. No waste materials may be left on-site.

All other structures and/or components must be appropriately disposed of at an appropriately licensed waste disposal site by a licensed contractor.

7.19 WASTE MANAGEMENT PLAN

A Waste Management Plan (WMP) plays a key role in achieving sustainable waste management. The purpose of this plan is to ensure that effective procedures are implemented for the handling, storage, transportation and disposal of waste that is generated from the activities on site. The plan prescribes measures for the collection, temporary storage and safe disposal of the waste streams associated with the project and includes provisions for the recovery, re-use and recycling of waste.

This WMP has been compiled as part of the project EMPr and includes waste stream information available at the time of compilation. Construction practices and operations must be measured and analysed in order to determine the efficacy of the plan and whether further revision of the plan is required. This plan should be further updated should further detail regarding waste quantities and categorisation become available, during the construction and/or operational stages.

7.19.1 RELEVANT ASPECTS OF THE SITE

Waste generated on site, originates from various sources including:

- Concrete waste generated from foundations.

- Contaminated water, soil and vegetation due to accidental hydrocarbon spills.
 - Hydrocarbon waste from vehicle, equipment and machinery parts (oil cans, filters, rags etc), and servicing.
 - Hazardous Water (used oils, chemicals, etc.)
 - Recyclable waste in the form of paper, cardboard, glass, metal offcuts, wood/ wood pallets and plastic.
 - Organic waste from food waste and alien vegetation removal.
 - Sewage from portable toilets.
 - Inert waste from excess rock and soil from site clearance and trenching works.
-

7.19.2 LEGISLATIVE REQUIREMENTS

Waste in South Africa is currently governed by means of a number of pieces of legislation, including:

- National Environmental Management: Waste Act (NEM:WA), 2008 (Act 59 of 2008).
- National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014).
- The South African Constitution (Act 108 of 1996).
- Hazardous Substances Act (Act 5 of 1973).
- Health Act (Act 63 of 1977).
- Environment Conservation Act (Act 73 of 1989).
- Occupational Health and Safety Act (Act 85 of 1993).
- National Water Act (Act 36 of 1998).
- The National Environmental Management Act (Act 107 of 1998).
- Municipal Structures Act (Act 117 of 1998).
- Municipal Systems Act (Act 32 of 2000).
- Mineral and Petroleum Resources Development Act (Act 28 of 2002).
- Air Quality Act (Act 39 of 2004).

Where applicable, storage of waste must be undertaken in accordance with the National Norms and Standards for the Storage of Waste published in GN926.

7.19.3 WASTE MANAGEMENT PRINCIPLES

An integrated approach to waste management on site is needed. Such an approach is illustrated in **Figure 7-3**.

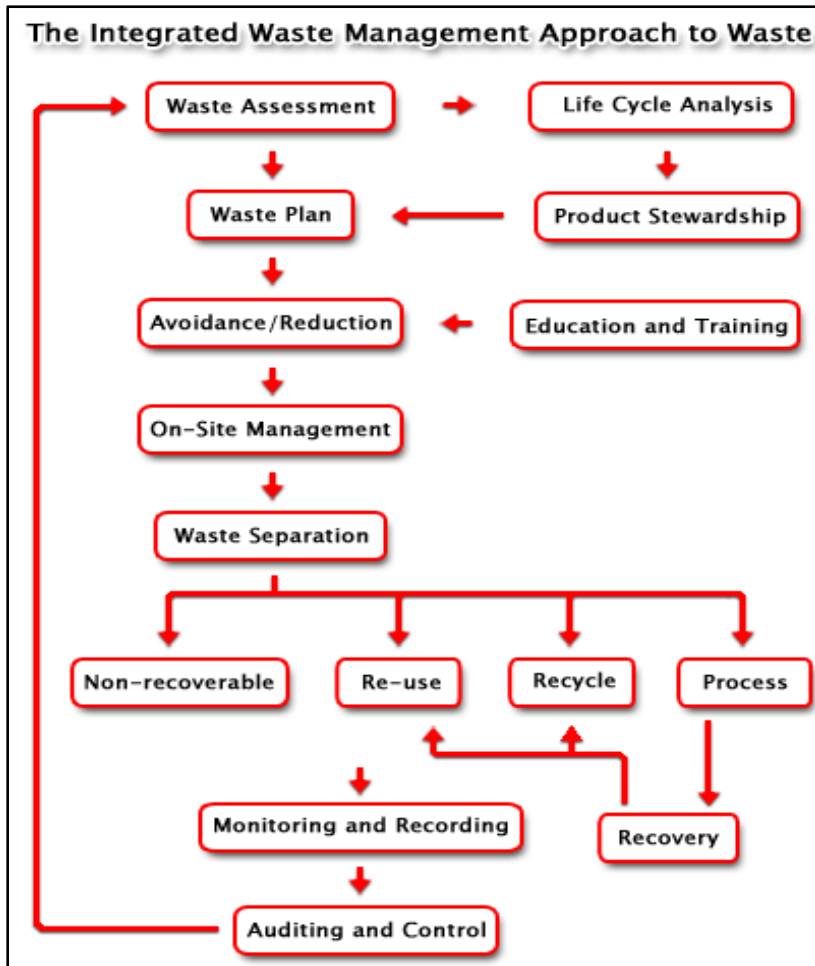


Figure 7-3: Integrated Waste Management Approach to Waste (Source: <http://www.enviroserv.co.za/pages/content.asp?SectionId=496>)

It is important to ensure that waste is managed with the following objectives in mind during all phases of the project:

- Reducing volumes of waste is a priority;
- If reduction is not feasible, the maximum amount of waste is to be recycled; and
- Waste that cannot be recycled is to be disposed of in the most environmentally responsible manner as possible.

CONSTRUCTION PHASE

A plan for the management of waste during construction is detailed below. As previously stated, construction practices must be measured and analysed in order to determine the efficacy of the plan and whether further revision of the plan is required. A Method Statement detailing specific waste management practices during construction must be prepared by the Contractor prior to the commencement of construction.

WASTE ASSESSMENT / INVENTORY

- The Environmental Officer must develop, implement and maintain a waste inventory reflecting all waste generated during construction for both general and hazardous waste streams.
- Construction method and materials must be carefully considered in view of waste reduction, re-use, and recycling opportunities.

WASTE COLLECTION, HANDLING AND STORAGE

- Each subcontractor must implement their own waste recycling system, i.e. separate bins for food waste, plastics, paper, wood, glass, cardboard, metals, etc.

- Portable toilets must be monitored and maintained daily.
- Waste collection bins and hazardous waste containers must be provided by the principal contractor and placed at various areas around site for the storage of organic, recyclable and hazardous waste.
- A dedicated waste area must be established on site for the storage of all waste streams, before removal from site.
- Signage/ colour coding must be used to differentiate disposal areas for the various waste streams (i.e. paper, cardboard, metals, food waste, glass etc.).
- Hazardous waste must be stored within a bunded area constructed according to SABS requirements. The volume of waste stored in the bunds must not exceed 110% of the bund capacity.
- The location of all temporary waste storage areas must aim to minimise the potential for impact on the surrounding environment, including prevention of contaminated runoff, seepage, and vermin control.
- Waste storage shall be in accordance with all Regulations and best-practice guidelines and under no circumstances may waste be burnt on site.
- All waste removed from site must be done so by a registered/ licensed subcontractor, whom must supply information regarding how waste recycling/ disposal will be achieved. The registered subcontractor must provide waste manifests for all removals at least once a month.

MANAGEMENT OF WASTE STORAGE AREAS

- The position of all waste storage areas must be located away from water courses and ensure minimal degradation to the environment. The main waste storage area must have a suitable storm water system separating clean and dirty storm water.
- Waste storage areas must be under roof or the waste storage containers must be covered with tarpaulins (or similar material) to prevent the ingress of water.
- Collection bins placed around site and at subcontractors' camps must be maintained and emptied on a regular basis by the principal contractor.
- Waste must be stored in designated containers and not on the ground.
- Inspections and maintenance of bunds must be undertaken weekly. Bunds must be inspected for leaks or cracks in the foundation and walls.
- It is assumed that any rainwater collected inside the bund is contaminated and must be removed and stored as hazardous waste, and not released into the environment. If any leaks occur in the bund, these must be removed immediately.

DISPOSAL

- Waste generated on site must be removed on a regular basis, as determined by the EO. This frequency may change during construction depending on waste volumes generated at different stages of the construction process.
- Waste must be removed by a suitably qualified contractor and disposed at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor.

RECORD KEEPING

The success of the waste management plan is determined by measuring criteria such as waste volumes, cost recovery from recycling, cost of disposal. Recorded data can indicate the effect of training and education, or the need for education. It will provide trends and benchmarks for setting goals and standards. It will provide clear evidence of the success or otherwise of the plan.

- Documentation (waste manifest, certificate of issue or safe disposal) must be kept detailing the quantity, nature, and fate of any regulated waste for audit purposes.
- Waste management must form part of the monthly reporting requirements in terms of volumes generated, types, storage and final disposal.

TRAINING

Training and awareness regarding waste management shall be provided to all employees and contractors as part of the toolbox talks or on-site awareness sessions.

7.19.4 OPERATION PHASE

It is expected that the operation phase will result in the production of general waste consisting mostly of cardboard, paper, plastic, tins, metals and a variety of synthetic compounds. Limited hazardous wastes (grease, oils) may also be generated during maintenance activities. All waste generated will be required to be temporarily stored at the facility in appropriate sealed containers prior to disposal at a permitted landfill site.

The following waste management principles apply during the operational phase:

- The Site Manager must develop, implement and maintain a waste inventory reflecting all waste generated during operation for both general and hazardous waste streams.
- Adequate waste collection bins at site must be supplied. Separate bins must be provided for general and hazardous waste.
- Recyclable waste must be removed from the waste stream and stored separately.
- Waste generated on site must be removed on a regular basis throughout the operational phase.
- Waste must be removed by a suitably qualified contractor and disposed at an appropriately licensed landfill site. Proof of appropriate disposal must be provided by the contractor.

7.19.5 MONITORING OF WASTE MANAGEMENT

Records must be kept of the volumes/ mass of the different waste streams that are collected from the site throughout the life of the project. The appointed waste contractor is to provide monthly reports to the operator containing the following information:

- Monthly volumes/ mass of the different waste streams collected;
- Monthly volumes/ mass of the waste that is disposed of at a landfill site;
- Monthly volumes/ mass of the waste that is recycled; and
- Data illustrating progress compared to previous months.

This report will aid in monitoring the progress and relevance of the waste management procedures that are in place. If it is found that the implemented procedures are not as effective as required, this WMP is to be reviewed and amended accordingly.

8 CONCLUSION

In terms of NEMA, everyone (i.e. all persons engaging in any component of this project) is required to take reasonable measures to ensure that they do not pollute the environment. 'Reasonable measures' includes informing and educating employees about the environmental risks associated with their work and training them to operate in an environmentally responsible manner.

The Proponent also recognises that, in terms of NEMA, the cost to repair any environmental damage will be borne by the person responsible for the damage. Should the above-mentioned environmental guidelines and mitigation measures be adopted, it is anticipated that the negative environmental impacts of the proposed 132kV OHPL and substations project will be mitigated adequately. The Holder of the EA and the selected Contractor shall appoint relevant personnel, as well as an independent ECO, to monitor the site periodically throughout construction to ensure that the required environmental controls are in place and working effectively. During operation and maintenance, the area specific Environmental Manager and EO, with the support of the maintenance supervisor, will monitor environmental controls.

If you have any further enquiries, please feel free to contact:

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E-mail: ashlea.strong@wsp.com

APPENDIX

A EAP CV





Ashlea Strong

Environmental Planning & Advisory, Principal Associate

CAREER SUMMARY

Ashlea is a Principal Associate with 19 years' experience in the environmental field. She currently provides technical and strategic expertise on a diverse range project in the environmental management field, including environmental scoping and impact assessment studies, environmental management plans, waste and water management, as well as the provision of environmental management solutions and mitigation measures. Ashlea has been involved in the management of a number of large EIAs specifically within the energy sector such as the Medupi Power Station, and Pebble-Bed Modular Reactor (PBMR) and numerous Renewable Energy Developments and Transmission Powerlines. She also has significant environmental auditing experience and expertise having undertaken over 70 compliance audits. Ashlea holds a Masters in Environmental Management; a BTech (Nature Conservation), and a National Diploma (Nature Conservation). She is also a Registered Environmental Assessment Practitioner.



Countries of experience gained include South Africa, Mozambique, Zimbabwe and Zambia.

9 years with WSP

19 years of experience

Area of expertise

- Auditing
- ESIR
- Energy
- Infrastructure
- Mining
- Training
- Waste Management

Language

- English – Fluent
- Afrikaans - Fluent

EDUCATION

Masters in Environmental Management, University of the Free State, South Africa	2006
B Tech, Nature Conservation, Technikon SA, South Africa	2001
National Diploma in Nature Conservation, Technikon SA, South Africa	1999

ADDITIONAL TRAINING

Conduct outcomes-based assessment (NQF Level 5), South African Qualifications Authority (SAQA)	2009
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PROFESSIONAL MEMBERSHIPS

Registered Environmental Assessment Practitioner (Registration Number: 2019/1005)	2020
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Ashlea Strong

Environmental Planning & Advisory, Principal Associate

PROFESSIONAL HISTORY

WSP Group Africa (Pty) Ltd	May 2013 - present
Lidwala Consulting Engineers	April 2010 – April 2013
GIBB	January 2009 – March 2010
Bohlweki Environmental	August 2004 – December 2008
Vuka Environmental	August 2003 – July 2002

PROFESSIONAL EXPERIENCE

Energy Sector

**G7 Renewable Energies, Karreebosch Wind Energy Facility Project, Matjiesfontein, Western Cape.
2022-2023**

Project Manager

Undertaking of a Part 2 Amendment Process as well as the Amendment of the Environmental Management Programme for a 140MW Wind Energy Facility

**G7 Renewable Energies, Karreebosch to Komsberg 132kV Powerline Project, Matjiesfontein, Western Cape.
2022-2023**

Project Manager

Compilation of a Basic Assessment and Environmental Management Programme for the 132kV Powerline

**Enertrag, Camden Renewable Energy Complex, Ermelo, Mpumalanga.
2021-2023**

Project Manager

Compilation of four Environmental Impact Assessments, three Basic Assessments and associated Environmental Management Programmes for the Camden Renewable Energy Complex, including two wind energy facilities, a solar energy facility, one 400kV Grid Connection and three 132kV grid Connections.

**Enertrag, Dalmanutha Renewable Energy Complex, Belfast, Mpumalanga.
2022-2023**

Project Manager

Compilation of one Environmental Impact Assessment, four Basic Assessments and associated Environmental Management Programmes for the Dalmanutha Renewable Energy Complex, including two wind energy facilities and associated Grid Connections

**Enertrag, Mukondeleli and Impumelelo Wind Energy Facilities, Secunda, Mpumalanga.
2022-2023**

Project Manager

Compilation of two Environmental Impact Assessments, two Basic Assessments and associated Environmental Management Programmes for the Secunda Renewable Energy Complex, including two wind energy facilities and associated Grid Connections

**Red Rocket South Africa Limited, Brandvalley Wind Energy Facility Project, Matjiesfontein, Western Cape.
2021-2022**

Project Manager

Undertaking of a Part 2 Amendment Process as well as the Amendment of the Environmental Management Programme for a 140MW Wind Energy Facility



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Red Rocket South Africa Limited, Bon Espirange to Komsberg 132kV Powerline Project, Matjiesfontein, Western Cape.

2021-2022

Project Manager

Compilation of a Basic Assessment and Environmental Management Programme for the 132kV Powerline

Red Rocket South Africa Limited, Rietkloof Wind Energy Facility Project, Matjiesfontein, Western Cape.

2021-2022

Project Manager

Undertaking of a Part 2 Amendment Process as well as the Amendment of the Environmental Management Programme for a 140MW Wind Energy Facility

Calodex (Pty) Ltd., 100MW Solar Photovoltaic (PV) Plant, Springs in Gauteng, South Africa

2021

Project Director

This project involved the compilation of a Basic Assessment and Environmental Management Plan for a 100MW Solar PV Plant.

Eskom Holdings SOC Limited, Erica 400kV Loop-in-Loop-out (LILO) Powerline, Cape Town, Western Cape, South Africa.

2020

Compilation of an environmental screening assessment for the Erica 400kV LILO Powerline.

BioTherm Energy, Maralla East and West Wind Energy Facilities, Sutherland in the Northern and Western Cape, South Africa.

2019

Project Manager

Compilation of two Part 2 Amendment Process for the changes in technical scope of the Wind Energy Facilities.

Eskom Holdings SOC Limited, Ruigtevallei 132kV Powerline, Gariep in the Free State, South Africa

2019

Project Manager

Compilation of a Part 2 Amendment Process for the deviation of the Ruigtevallei – Dreunberg 132 kV powerline.

Globeleq, Nakonde and Mpika Wind Energy Projects, Zambia

2018

Project Manager

Compilation of two Environmental Project Briefs for the establishment of meteorological masts.

G7 Renewable Energies, Rietkloof Wind Energy Facility Project, Matjiesfontein, Western Cape.

2018

Project Director

Compilation of a Basic Assessment and Environmental Management Programme for a 140MW Wind Energy Facility.

Southern African Power Pool (SAPP), Mozambique – Zambia Interconnector Powerline, Mozambique

2018

Project Manager

This project involved the compilation of the Environmental and Social Impact Assessment and Environmental and Social Management Plan for a 300km 400kV powerline between Tete, in Mozambique, and Chipata, in Zambia.

Eskom Holdings SOC Limited, Ankerlig – Koeberg 132kV powerline walkdown, South Africa

2017



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Project Manager

This project involved the compilation of a Construction and Operation Environmental Management Plans for the Ankerlig – Koeberg 132kV powerline.

WSP | Parsons Brinckerhoff, Gwanda 100MW Solar Project, Gwanda, Matebeleland South Province, Zimbabwe

2018

Project Manager

This project involved the high-level review of the Environmental Impact Assessment for a 100MW Photovoltaic (PV) Solar Project against relevant legislation and international standards.

WSP | Parsons Brinckerhoff, Southern Energy Coal Fired Power Station, Hwange, Zimbabwe

2016

Project Manager

This project involved the high-level review of the Environmental Impact Assessment for the Southern Energy Coal Fired Power Station against relevant legislation and standards.

BioTherm Energy (Pty) Ltd, Proposed Solar and Wind Projects, Aggenys and Sutherland Northern and Western Cape Provinces, South Africa

2015

Project Manager

This project involved the compilation of 15 Environmental Impact Assessments and Environmental Management Plans for 2 Solar and 2 Wind energy Projects.

Central Energy Fund (CEF), Proposed Solar Park, Northern Cape Province, South Africa

2012

Strategic Environmental Advisor

This project involved the provision of process expertise for the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Solar Park.

Eskom Transmission, Proposed Tabor - Nzhelele 400kV Transmission Lines and associated infrastructure, Limpopo Province, South Africa

2012

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 100km 400kV powerline between Louis Trichardt and Musina in the Limpopo Province.

Eskom Holdings SOC Limited, Retrofitting of the existing Electrostatic Precipitators with Fabric Filter Plants at Units 2, 3 and 4 at the Grootvlei Power Station, South Africa

2012

Project Manager

This project involved the compilation of a Basic Assessment Report and Environmental Management Plan for the proposed retrofitting of the existing Electrostatic Precipitators with Fabric Filter Plants at the Grootvlei Power Station.

Parsons Brinckerhoff Africa and Mulilo Power, Proposed Mulilo Coal Fired Power Station and associated infrastructure as well as associated power lines and substations, Musina, Limpopo, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Generation, Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure, Western Cape, South Africa



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Transmissions, Proposed Bantamsklip – Kappa 765 kV Transmission Lines and associated infrastructure, Karoo, Western and Northern Cape, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for four 260km 765kV powerlines between the Bantamsklip Nuclear Power Station Site and the proposed new Kappa Substation.

Eskom Transmission Proposed Bantamsklip – Bacchus, Bacchus - Kappa and Bacchus – Muldersvlei 400 kV Transmission Lines and associated infrastructure, Western and Northern Cape, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Distribution – Central region. Westgate – Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure, Gauteng, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom, Environmental Scoping Study for the proposed new distribution line and substation, Dundonald, Mpumalanga, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 132kV powerline as well as a new substation in the Tarlton area of Gauteng. Also involved in the Public Participation Process.

Eskom Distribution, The proposed new 132 kV sub-transmission line between the Dinaledi and GaRankuwa substations for Eskom, GaRankuwa, Northwest, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom, Transmission Expansion of the Transmission powerline network and associated infrastructure between the Perseus substation and the Beta substation, Free State, South Africa

2008

Project Manager

This project involved the compilation of an alignment specific construction Environmental Management Plan for the 13km 765kV Perseus Beta Turn-ins.

Eskom Distribution – Central Region, Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure, Gauteng, South Africa

2008

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Eskom Distribution – Central Regio, Basic Assessment for the proposed Watershed – Mmabatho 88kV Power line. Northwest, South Africa

2008

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan.

Eskom Distribution – Central Region, Proposed Watershed – Mmabatho 88kV Power line. Northwest, South Africa

2007

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Holdings SOC Limited, Proposed Combined Cycle Gas Turbine Plant and Associated Infrastructure near Majuba, Mpumalanga, South Africa

2007

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Generation, Proposed Capacity Increase of the Atlantis OCGT Plant and Associated Infrastructure, Western Cape, South Africa

2006

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Holdings SOC Limited, Proposed Concentrated Solar Thermal Plant in the Northern Cape, South Africa

2006

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Holdings SOC Limited, Proposed Underground Coal Gasification plant, Eskom, Mpumalanga, South Africa

2006

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Generation, Proposed new Coal-fired Power Station in the Lephalale Area for Eskom, Limpopo, South Africa

2005

Project Manager

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Eskom Generation, Proposed Open Cycle. Gas Turbine Power Station at Atlantis for Eskom, Western Cape, South Africa

2005

Environmental Consultant

This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan.

Infrastructure Sector



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

**Sasol South Africa Limited, Boegoebaai Green Hydrogen Project, Northern Cape, South Africa
2022-2023**

Project Manager

This project involved the compilation of an High level Environmental Screening for the Project, in preparation future Environmental Impact Assessment Processes

**Enertrag, Hendrina Green Hydrogen and Ammonia Facility, Mpumalanga, South Africa
2022-2023**

Project Director

This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme

**Enertrag, Camden Green Hydrogen and Ammonia Facility, Mpumalanga, South Africa
2021-2023**

Project Director

This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme

**Anglo American, Emalahleni Water Treatment Plant Amendment Project (EWRP), Emalahleni,
Mpumalanga, South Africa.**

2020

Project Manager

Compilation of a Part 1 Amendment Process for the changes to the EWRP Environmental Authorisation as well as an update of the Environmental Management Programme.

**Eskom Holdings SOC Limited, Hendrina Leachate Dam, South Africa
2018**

Project Manager

This project involves the compilation of a Basic Assessment and Environmental Management Plan for a leachate Dam at the Domestic Waste Landfill Site at the Hendrina Power Station.

SANRAL, Rehabilitation of the R34 between Vryburg and Schweizer-Reneke, Vryburg and Schweizer-Reneke, Northwest, South Africa

2016

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan.

Envirocin Incineration Systems CC, Proposed Expansion of the Cremation Facilities at the Envirocin Pet Crematorium, Kyasands, Gauteng, South Africa

2013

Project Manager

This project involves the compilation of a basic assessment for the expansion of the cremation facilities.

Industrial Development Corporation of SA (Pty) Ltd, Proposed Kraft Paper Mill in Frankfort, Frankfort, Free State, South Africa

2013

Project Manager

This project involved the undertaking of an Environmental Impact Assessment, including the compilation of an Environmental Management Programme.

**SANRAL, Rehabilitation of the N14 between Delerayville and Sannieshof, Northwest, South Africa
2011**

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan as well as the construction of a new bridge over the Hartsriver. This project also included the compilation of Water Use License and Mining Permit Applications.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Makhado Municipality, Proposed new Waterfall Cemetery, Limpopo, South Africa

2011

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan.

Johannesburg Roads Agency, Route determination of the proposed Metro Boulevard, Weltevreden Park Area, Gauteng, South Africa

2008

Project Manager

This project involved the undertaking of an Environmental Impact Assessment.

Eskom Generation, Proposed new fuel supply pipeline between Milnerton and Atlantis, Western Cape, South Africa

2007

Project Manager

This project involved undertaking an Environmental Impact Assessment for the proposed new fuel supply pipeline between Milnerton and Atlantis to supply the Ankerlig Power Station.

Mining Sector

Rietvlei Mining Company, Establishment of the Proposed Rietvlei Opencast Coal Mine, Middelburg, Mpumalanga, South Africa

2013

Project Manager

This project involves the undertaking of an integrated environmental authorisation process, including an Environmental Impact Assessment, Environmental Management Programme Report, Waste Management License Application and Water Use License Application.

AngloGold Ashanti, Decommissioning of Redundant Infrastructure at the Vaal River Operations, Northwest and Free State, South Africa

2013

Project Manager

This project involves undertaking an integrated Environmental Authorisation and Waste Management License process for the proposed decommissioning of redundant infrastructure.

AngloGold Ashanti (Pty) Ltd, Decommissioning of Redundant Infrastructure at the West Wits Operations, Gauteng, South Africa

2013

Project Manager

This project involves undertaking a Basic Assessment process for the proposed decommissioning of redundant infrastructure.

Exxaro Coal (Pty) Ltd Inyanda Mine Pegasus South Expansion, Middelburg, Mpumalanga, South Africa

2011

Project Manager

This project included the compilation of an Environmental Impact Assessment, Environmental Management Plan, the Amendment of the existing Environmental Management Programme Report and the amendment of the existing Water Use License.

Sishen Iron Ore (Pty) Ltd, Sishen Infrastructure Program, Northern Cape, South Africa

2010

Project Manager

This project involved the compilation of an Environmental Impact Assessment and an Environmental Management Plan for the infrastructure expansion programme.

Sound Mining Solutions, Prospecting Permit Applications in the Kuruman area of the Northern Cape, South Africa



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

2011

Project Manager

This project involved the compilation of Environmental Management plans as part of six applications for Prospecting Permits.

Limpopo Department of Roads and Transport, Borrow pits required by the Limpopo Department of Roads and Transport, Limpopo, South Africa

2010

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits required for the rehabilitation of provincial roads.

Eskom Generation, Borrow pits required for the Medupi Coal Fired Power Station, Limpopo, South Africa

2008

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits.

Eskom Generation. Borrow pits required for the Ingula Pumped Storage Scheme, KwaZulu-Natal, South Africa

2008

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits.

Eskom Generation Project Manager, Mining Right Application for a 23 Hectare Borrow Pit required for the Steelpoort Pumped Storage Scheme, Mpumalanga, South Africa

2007

Project Manager

This project entailed the compilation of the required Environmental Management Programme Report in support of a Mining Right Application.

Minexpo, Renewed Mining and Prospecting Activities on the farm Quaggaskop 215, Vanrhynsdorp, Western Cape, South Africa

2004

Environmental Consultant

This project involved the compilation of an Environmental Management Programme Report for the recommencement of mining and prospecting activities.

Waste Management

Sasol Secunda Operations, Sasol Waste Management Environmental Management Programme, Secunda, South Africa

2019

Project Manager

Compilation of an operational Environmental Management Programme for the Sasol Waste Ash Facility, Charlie 1 Disposal Facility and the Waste Recycling Facility.

Eskom Holdings SOC Limited, Proposed continuous Ashing at Majuba Power Station, Mpumalanga, South Africa

2012

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Majuba Power Station in Mpumalanga.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Eskom Holdings SOC Limited, Proposed continuous Ashing at Tutuka Power Station, Mpumalanga, South Africa

2012

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Tutuka Power Station in Mpumalanga.

Hendrina Power Station, Proposed extension of Ash Dams at Hendrina Power Station, Mpumalanga, South Africa

2011

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed extension of the ash dams at the Hendrina Power Station in Mpumalanga.

Coega Development Corporation, Phase 1 of the Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility, Eastern Cape

2005

Project Manager

This project entailed the compilation Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility in the Eastern Cape.

Auditing

Sasol Chemical Industries, Secunda Synfuels Operations Waste Management License Audits for the Sasol Secunda, Mpumalanga, South Africa

2014 – 2021

Lead Auditor

These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities

South 32. Compliance Audits at South 32, Mpumalanga, South Africa

2016 – 2020

Project Manager

This project involved the environmental compliance audits of the Water Use Licenses for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga.

South 32, Compliance Audits at Middelburg Water Reclamation Plant (MWRP), Mpumalanga, South Africa

2016 – 2020

Project Manager

This project involved the environmental compliance audits of the Water Use License and Waste Management License for the MWRP at South 32 in Mpumalanga.

Nedbank, BioTherm Round 4 Lenders Technical Advisor, South Africa

2018 – 2021

Project Manager – Environmental

Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards.

Eskom Holdings SOC Limited, Water Use Licence Audits, Delmas, Mpumalanga, South Africa

2019

Lead Auditor

External compliance audits of the water use licences for the Delmas and Argent Powerlines in Mpumalanga.

Sasol Oil (Pty) Ltd, Sasol Alrode and Pretoria West Depot Audits, Pretoria, South Africa

2016 – 2020

Lead Auditor



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Environmental compliance audits for environmental authorisations and environmental management plans for the Sasol Alrode and Pretoria West Depots.

**Sasol Oil (Pty) Ltd, Sasol Regulation 34 Audits, South Africa
2019**

Lead Auditor

Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations.

**Anglo American Platinum. Regulation 34 Audits at Mogalakwena Mine, Limpopo Province, South Africa
2019**

Project Manager

Environmental compliance audits of the EMPR and various environmental authorisations at the Mogalakwena Mine.

**Sasol Secunda Operations, Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations, Secunda, South Africa
2019**

Lead Auditor

Environmental compliance audits for 49 authorisations for the Sasol Secunda.

**Palabora Company, Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa
2019**

Project Manager

Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine.

**Sasol Mining, Water Use Licence Compliance, Secunda, South Africa
2018**

Project Manager

Environmental compliance audit of six WULs held by mining operations.

South 32, Legal Assessment at South 32, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga, South Africa

2019

Project Manager and Lead Auditor

This project involved the assessment of legal compliance against the mine's legal register.

**Investchem (Pty) Ltd, InvestChem Annual Environmental Compliance Monitoring, Kempton Park, Gauteng, South Africa
2013 – 2019**

Lead Auditor

This project involved the annual environmental compliance auditing for InvestChem's Sulphonation Plant. The monitoring included InvestChem's compliance to various commitments contained in their environmental management programmes and conditions within their environmental authorisations (records of decision).

**Sasol Oil (Pty) Ltd, Compliance Audits at Sasol Alrode and Pretoria West Depots, Gauteng, South Africa
2015 – 2019**

Project Manager and Lead Auditor

Annual Environmental compliance auditing of the Environmental authorisations at the Alrode and Pretoria West Depots in Gauteng.

**Eskom Holdings, Water Use Licence for the Letabo Power Station, Free State, South Africa
2018**

Project Manager



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Environmental compliance audit of the WUL held by Eskom Letabo Power Station.

**Seriti Coal, Compliance Audits at Kriel Colliery, Kriel, Mpumalanga, South Africa
2018**

Project Manager

This project involved the environmental compliance audits of the Water Use Licenses.

**South 32, Legal Assessment at South 32, Mpumalanga, South Africa
2017**

Project Manager and Lead Auditor

This project involved the assessment of legal compliance against the mine's legal register for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections.

**South 32, EMPR Performance Assessment Report at South 32, Mpumalanga, South Africa
2016**

Project Manager

This project involved the formal assessment and verification of the Environmental Management Programme Report for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections.

**ACWA Power, Solafrica Bokpoort CSP Power Plant (Pty) Ltd. Compliance Audit for the Bokpoort Concentrating Solar Power (CSP) Facility, Groblershoop, Northern Cape, South Africa
2016**

Lead Auditor

This project involved the environmental compliance auditing of the Waste Management License, Environmental Authorisation and Water Use License.

**Anglo Thermal Coal, EMPR Performance Assessment Report for the Landau Colliery, Mpumalanga, South Africa
2013**

Auditor

This project involved the formal assessment and verification of the Landau Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002).

**AfriSam Southern Africa (Pty) Ltd, Waste Management License Audit for the Slagment Operation, Vanderbijlpark, Gauteng, South Africa
2013**

Lead Auditor

This project involved the annual environmental compliance auditing for AfriSam's Slagment Operation in Vanderbijlpark in Gauteng Province. The audit included AfriSam's compliance to the conditions of their waste management license.

**Anglo American Thermal Coal, EMPR Performance Assessment Report for the New Vaal Colliery, Free State, South Africa
2006 – 2007**

Auditor

This project involved the formal assessment and verification of the New Vaal Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002).

Environmental Control

**Wood South Africa (on behalf of Sasol South Africa Limited), Clean Fuels Projects (EHN & MFO, Large Tanks) Project, Secunda
2022-2024**

Project Director



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

This project involved the monthly auditing of the contractor's compliance with the conditions of the environmental authorisation and environmental management plan for the Sasol Clean Fuels Projects in Secunda.

SANRAL.N14, rehabilitation between Sannieshof and Delareyville, Northwest, South Africa 2012

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer and SANRAL.

Victor Khanye Municipality. Delmas and Bontleg Wastewater Treatment Works, Mpumalanga, South Africa 2009

Environmental Control Officer

This project involved a once off compliance audit of the above-mentioned Wastewater Treatment Works.

Mkhondo Local Municipality. Nkonjaneni Water Borne Sewer Project in Piet Retief, Mpumalanga, South Africa 2009

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer.

ERWAT, Upgrading of the Waterval Water Care Works, Gauteng, South Africa 2005 – 2007

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan.

City of Tshwane Lotus Gardens, Ext 2 Township establishment, Gauteng, South Africa 2003

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan.

Training

SANRAL, N14 rehabilitation between Sannieshof and Delareyville, Northwest, South Africa 2012

Project Manager

This project involved the provision of training for the staff of the N14 rehabilitation project with regards to the contents of the environmental management plan.

Mintek, Training in Environmental Aspects and Rehabilitation for the Small-Scale Mining Division of Mintek, City, Province, South Africa 2004

Trainer

This project involved the provision of environmental awareness training for delegates involved in the small-scale miner training programme run by the Mintek small scale mining division.

Transwerk, Training in Environmental Aspects and Impacts, Germiston, Gauteng, South Africa 2004

Trainer

This project involved the provision of environmental aspects and impacts training for the staff of Transwerk in Germiston.

APPENDIX

B EAP DECLARATION OF INTEREST AND UNDERTAKING



10.2 The Environmental Assessment Practitioner (EAP)

I Ashlea Strong....., as the appointed environmental assessment practitioner ("EAP") hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent (tick which is applicable):

<input checked="" type="checkbox"/>	other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
-------------------------------------	---

<input type="checkbox"/>	am not independent, but another EAP that is independent and meets the general requirements set out in Regulation 13 has been appointed to review my work (Note: a declaration by the review EAP must be submitted);
--------------------------	--

- have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- will ensure compliance with the EIA Regulations 2014;
- will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application;
- will take into account, to the extent possible, the matters listed in regulation 18 of the regulations when preparing the application and any report, plan or document relating to the application;
- will disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority or the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority (unless access to that information is protected by law, in which case I will indicate that such protected information exists and is only provided to the competent authority);
- will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- declare that all the particulars furnished by me in this form are true and correct;
- am aware that it is an offence in terms of Regulation 48 to provide incorrect or misleading information and that a person convicted of such an offence is liable to the penalties as contemplated in section 49B(2) of the National Environmental Management Act, 1998 (Act 107 of 1998).



Signature of the environmental assessment practitioner

WSP Group Africa (Pty) Ltd

Name of company

17 January 2023

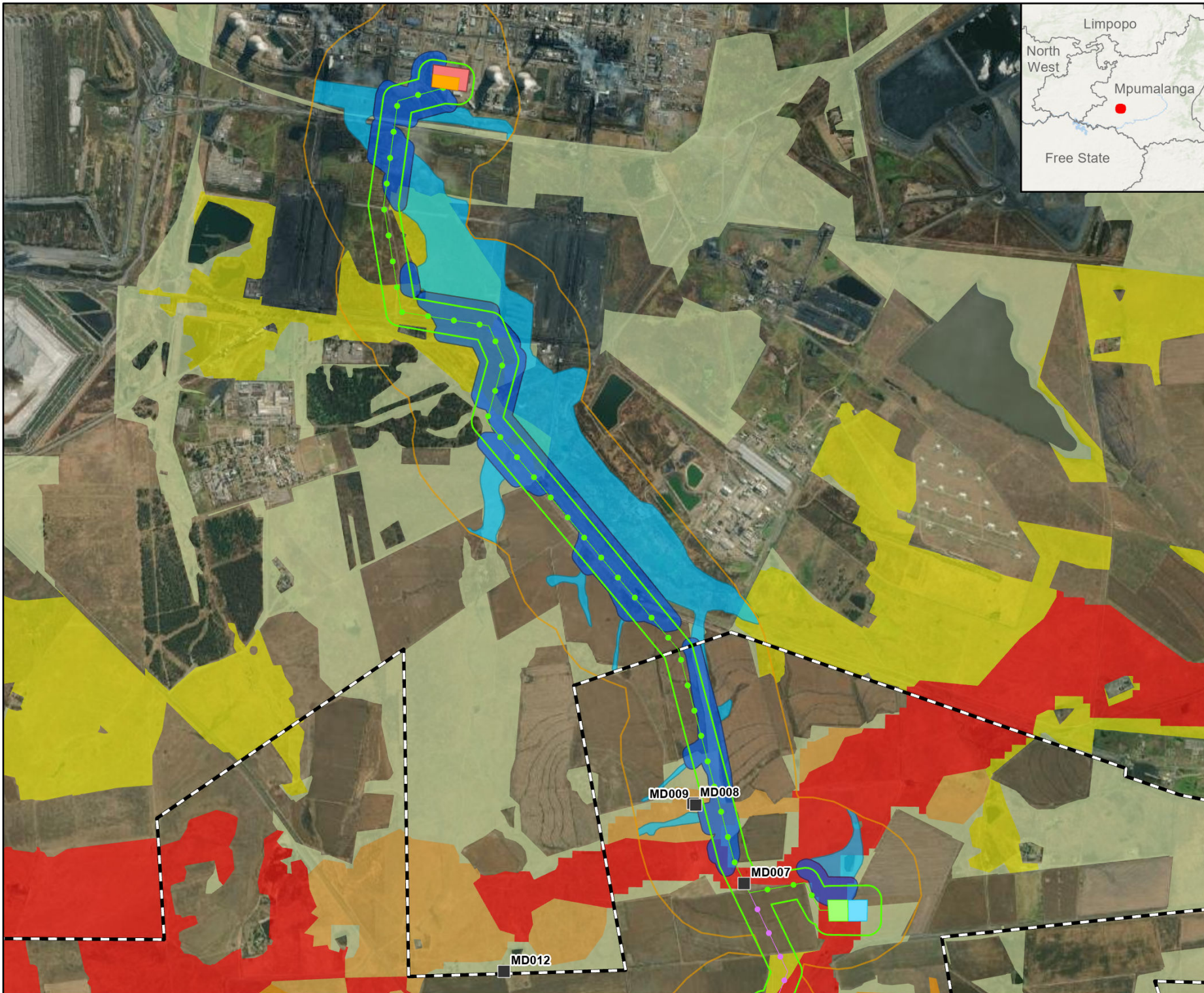
Date

APPENDIX

C

SENSITIVITY MAP

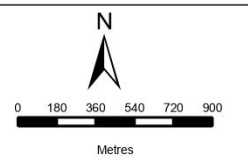




MUKONDELELI WEF

GRID SENSITIVITY

- Legend**
- Heritage Sites
 - Expanded Area
 - WEF Extent
 - Assessment Corridor
 - 500m DWS Regulated Area
 - Wetlands within 500m
 - B42m Buffer
 - 61m Buffer
 - 79m Buffer
- Substations**
- JPP Alt 1 (preferred)
 - JPP Alt 2
 - Offtaker Option 1 (preferred)
 - Offtaker Option 2
 - Proposed Substation Location
- Powerline options (132kv)**
- Option 1 (preferred)
 - Option 2
- Mpumalanga Biodiversity Sector Plan (2013)**
- Protected Areas
 - CBA Irreplaceable
 - CBA Optimal
 - ESA Landscape corridor
 - ESA Local corridor
 - ESA Species Specific
 - Other Natural Areas
 - Modified - Old lands
 - Modified



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DATA SOURCE:
 Service Layer Credits: World Ocean Base; Esri, GEBCO, DeLorme, NaturalVue, World Imagery; Maxar

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:
 ENERTRAG SECUNDA WEF EIAS

SCALE: 1:35 000 **DRAWN BY:** TS

DATE: 2022/12/12 **REVIEWED BY:** AS

FIGURE NO: **PROJECT NO:** 41104073 **REV:**

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APPENDIX

D

OHPL GENERIC EMPR



APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY
TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

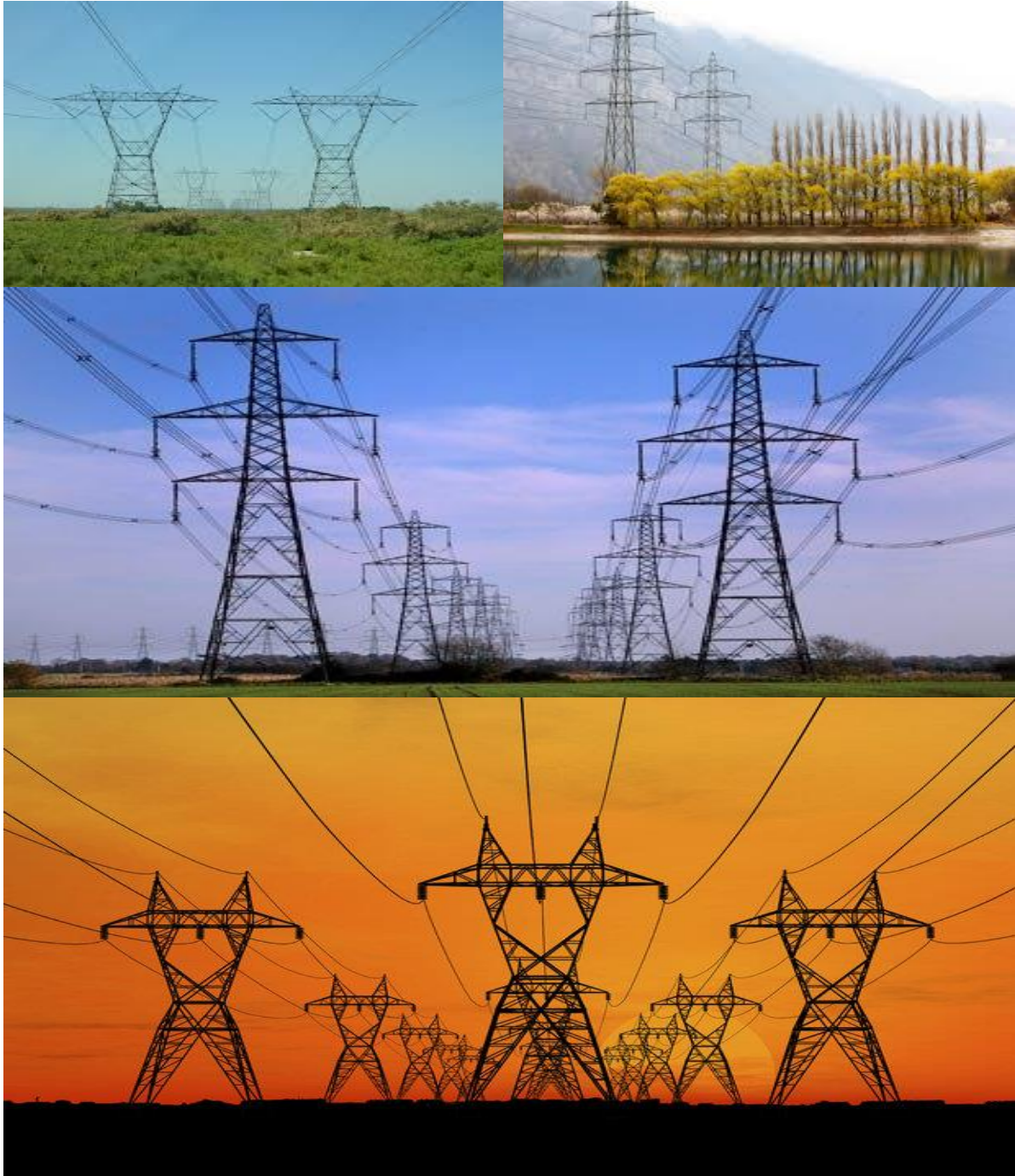


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INTRODUCTION

Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended, (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice, that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including, but not limited to, the applicant and the competent authority (CA).

Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of overhead electricity transmission and distribution infrastructure, and all listed and specified activities necessary for the realisation of such infrastructure.

Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

Scope

The scope of this generic EMPr applies to the development or expansion of overhead electricity transmission and distribution infrastructure requiring EA in terms of NEMA, i.e. with a capacity of 33 kilovolts or more. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realisation of such infrastructure.

Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general and guidance	Definitions, acronyms, roles & responsibilities and documentation and reporting.

Part	Section	Heading	Content
		information and is not legally binding	
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of overhead electricity transmission and distribution infrastructure, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words “not applicable” can be inserted in the template under the “responsible persons” column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template is not required to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	<p>Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are legally binding. The preliminary infrastructure layout must be finalized to inform the final EMPr that is to be submitted with the basic assessment</p>

Part	Section	Heading	Content
			<p>report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and actions have been either pre-approved or approved in terms of <u>Part C</u>.</p> <p>This section must be submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> is applicable to the site, it is required to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP, and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>This section applies only to additional impact management outcomes and impact management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not</p>

Part	Section	Heading	Content
			already included in <u>Part B: section 1</u> .
		Appendix 1	Contains the method statements to be prepared prior to commencement of the activity. The method statements are not required to be submitted to the competent authority.

Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

For implementation

- a 'responsible person',
- a method for implementation,
- a timeframe for implementation

For monitoring

- a responsible person
- frequency
- evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

Amendment of the impact management outcomes: in line with the process contemplated in regulation 37 of the EIA Regulations; and

Amendment of the impact management actions: in line with the process contemplated in regulation 36 of the EIA Regulations.

Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the corridor in which the proposed overhead

electricity transmission and distribution infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps must identify features both within the planned working area and any known sensitive features in the surrounding landscape within 50m from the development footprint. The overhead transmission and distribution profile must be illustrated at an appropriate resolution to enable fine scale interrogation. It is recommended that <20 km of overhead transmission and distribution length is illustrated per page in A3 landscape format. Where considered appropriate, photographs of sensitive features in the context of tower positions must be used.

Sub-section 3 is the declaration that the applicant/proponent or holder of the EA in the case of a change of ownership must complete, which confirms that the applicant/EA holder will comply with the pre-approved generic EMPr template in Section 1 and understands that the impact management outcomes and actions are legally binding.

Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover applicable details with regard to:

- Construction procedures;
- Plant, materials and equipment to be used;
- Transporting the equipment to and from site;
- How the plant/ material/ equipment will be moved while on site;
- How and where the plant/ material/ equipment will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance/ non-compliance; and
- Any other information deemed necessary by the Project Manager.

“**slope**” means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“**solid waste**” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“**spoil**” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“**topsoil**” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil; and

“**works**” means the works to be executed in terms of the Contract

ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered interested and affected parties

ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person (s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u> Be fully conversant with the conditions of the EA; Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); Issuing of site instructions to the Contractor for corrective actions required; Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and Ensure that periodic environmental performance audits are undertaken on the project implementation.</p>
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all</p>

Responsible Person (s)	Role and Responsibilities
	<p>contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> Ensure that all contractors identify a contractor's Environmental Officer (cEO); Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; Issuing of site instructions to the Contractor for corrective actions required; Will issue all non-compliances to contractors; and Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <p><u>Responsibilities</u></p>

Responsible Person (s)	Role and Responsibilities
	<p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> Be aware of the findings and conclusions of all EA related to the development; Be familiar with the recommendations and mitigation measures of this EMPr; Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; Educate the construction team about the management measures contained in the EMPr and environmental licenses; Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc) as well as corrective and preventive actions taken; Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; Assisting in the resolution of conflicts; Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor; In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; Maintenance, update and review of the EMPr; Communication of all modifications to the EMPr to the relevant stakeholders.

Responsible Person (s)	Role and Responsibilities
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u> The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> Be fully conversant with the EMPr; Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; Confine the development site to the demarcated area; Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); Assist the contractors in addressing environmental challenges on site; Assist in incident management; Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; Assist the contractor in investigating environmental incidents and compile investigation reports; Follow-up on pre-warnings, defects, non-conformance reports; Measure and communicate environmental performance to the Contractor; Conduct environmental awareness training on site together with ECO and cEO; Ensure that the necessary legal permits and / or licenses are in place and up to date; Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
<p>Contractor</p>	<p><u>Role</u> The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are</p>

Responsible Person (s)	Role and Responsibilities
	<p>implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion for overhead electricity transmission and distribution infrastructure activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> project delivery and quality control for the development services as per appointment; employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> Be on site throughout the duration of the project and be dedicated to the project; Ensure all their staff are aware of the environmental requirements, conditions and constraints

Responsible Person (s)	Role and Responsibilities
	<p>with respect to all of their activities on site;</p> <ul style="list-style-type: none"> Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; Attend the Environmental Site Meeting; Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; Report back formally on the completion of corrective actions; Assist the ECO in maintaining all the site documentation; Prepare the site inspection reports and corrective action reports for submission to the ECO; Assist the ECO with the preparing of the monthly report; and <p>Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.</p>

ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all overhead electricity transmission and distribution infrastructure projects as a minimum requirement.

Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. At a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

- Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Batch plants;
- Workshop or plant servicing;
- Handling, transport and storage of Hazardous Chemical Substance's;
- Vegetation management – Protected, clearing, aliens, felling;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
- Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);

Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and

General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

The date and time of the incident;

Description of the incident;

The name of the Contractor responsible;

The incident must be listed as significant or minor;

If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;

Remedial or corrective action taken to mitigate the incident; and

Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

Time and date of the non-compliance;

Name of the contractor responsible;

Nature and description of the non-compliance;

Recommended / required corrective action; and

Date by which the corrective action to be completed.

The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the

various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions , as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

- Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
- All bunding and fencing;
- Road conditions and road verges;
- Condition of all farm fences;
- Topsoil storage areas;
- All areas to be cordoned off during construction;
- Waste management sites;
- Ablution facilities (inside and out);
- Any non-conformances deemed to be "significant";
- All completed corrective actions for non-compliances;
- All required signage;
- Photographic recordings of incidents;
- All areas before, during and post rehabilitation; and
- Include relevant photographs in the Final Environmental Audit Report.

Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;
- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
- Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

- Record the full detail of the complaint as described in **(section 4.10)** above;
- The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
- Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
- A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

- Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
- Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
- Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
- Ensure that contact with affected parties is courteous at all times;

Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes must be included in the EMPr file and be submitted to the CA at intervals as indicated in the EA.

An Environmental Audit Report must be prepared monthly. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of overhead electricity transmission and distribution infrastructure. There is a list of aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of overhead electricity transmission and distribution infrastructure.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All staff must receive environmental awareness training prior to commencement of the activities;</p> <p>The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course;</p> <p>Refresher environmental awareness training is available as and when required;</p> <p>All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr;</p> <p>The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum:</p> <p>a) Safety notifications; and</p> <p>b) No littering.</p> <p>Environmental awareness training must include as a minimum the following:</p> <p>a) Description of significant environmental impacts, actual or potential, related to their work activities;</p> <p>b) Mitigation measures to be implemented when carrying out specific activities;</p> <p>c) Emergency preparedness and response procedures;</p>						

<p>d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention.</p> <p>A record of all environmental awareness training courses undertaken as part of the EMPr must be available; Educate workers on the dangers of open and/or unattended fires; A staff attendance register of all staff to have received environmental awareness training must be available. Course material must be available and presented in appropriate languages that all staff can understand.</p>						
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Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location						

<p>of key infrastructure and services (where applicable), including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;</p> <p>Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through;</p> <p>Sites must be located where possible on previously disturbed areas;</p> <p>The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and</p> <p>The use of existing accommodation for contractor staff, where possible, is encouraged.</p>						
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Access restricted areas

<p>Impact management outcome: Access to restricted areas prevented.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development;</p> <p>Erect, demarcate and maintain a temporary</p>						

<p>barrier with clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and Unauthorised access and development related activity inside access restricted areas is prohibited.</p>						
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Access roads

<p>Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition All contractors must be made aware of all these access routes. Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;</p>						

<p>Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads;</p> <p>In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor;</p> <p>Access roads in flattish areas must follow fence lines and tree belts to avoid fragmentation of vegetated areas or croplands</p> <p>Access roads must only be developed on pre-planned and approved roads.</p>						
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Fencing and Gate installation

<p>Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Use existing gates provided to gain access to all parts of the area authorised for development, where possible;</p> <p>Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record;</p> <p>All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner;</p> <p>At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner;</p>						

<p>Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground;</p> <p>Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate;</p> <p>Original tension must be maintained in the fence wires;</p> <p>All gates installed in electrified fencing must be re-electrified;</p> <p>All demarcation fencing and barriers must be maintained in good working order for the duration of overhead transmission and distribution electricity infrastructure development activities;</p> <p>Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where appropriate and would not cause harm to the sensitive flora;</p> <p>Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner.</p> <p>All fencing must be developed of high quality material bearing the SABS mark;</p> <p>The use of razor wire as fencing must be avoided;</p> <p>Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times;</p> <p>On completion of the development phase all temporary fences are to be removed;</p> <p>The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.</p>						
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Water Supply Management

Impact management outcome: Undertake responsible water usage.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis;</p> <p>The Contractor must ensure the following:</p> <ul style="list-style-type: none"> a. The vehicle abstracting water from a river does not enter or cross it and does not operate from within the river; b. No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and c. All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. <p>Ensure water conservation is being practiced by:</p> <ul style="list-style-type: none"> a. Minimising water use during cleaning of equipment; b. Undertaking regular audits of water systems; and c. Including a discussion on water usage and conservation during environmental awareness training. d. The use of grey water is encouraged. 						

Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager;</p> <p>All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility;</p> <p>Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's approval and support by the ECO;</p> <p>Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.</p>						

Solid and hazardous waste management

Impact management outcome: Waste is appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All measures regarding waste management must be undertaken using an integrated waste management approach;</p> <p>Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided;</p> <p>A suitably positioned and clearly demarcated waste collection site must be identified and provided;</p> <p>The waste collection site must be maintained in a clean and orderly manner;</p> <p>Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal;</p> <p>Staff must be trained in waste segregation;</p> <p>Bins must be emptied regularly;</p> <p>General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company;</p> <p>Hazardous waste must be disposed of at a registered waste disposal site;</p> <p>Certificates of safe disposal for general, hazardous and recycled waste must be maintained.</p>						

Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities;</p> <p>In the event of a spill, prompt action must be taken to clear the polluted or affected areas;</p> <p>Where possible, no development equipment must traverse any seasonal or permanent wetland</p> <p>No return flow into the estuaries must be allowed and no disturbance of the Estuarine Functional Zone should occur;</p> <p>Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available;</p> <p>There must not be any impact on the long term morphological dynamics of watercourses or estuaries;</p> <p>Existing crossing points must be favored over the creation of new crossings (including temporary access)</p> <p>When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken:</p> <p>a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse</p> <p>b) During the execution of the works, appropriate</p>						

<p>measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained;</p> <p>c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and</p> <p>d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.</p>						
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Vegetation clearing

<p>Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <p>Indigenous vegetation which does not interfere with the development must be left undisturbed;</p> <p>Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species;</p> <p>Search, rescue and replanting of all protected and endangered species likely to be damaged during project development must be identified by the relevant specialist and completed prior to any development or clearing;</p> <p>Permits for removal must be obtained from the Department of</p>						

<p>Agriculture, Forestry and Fisheries prior to the cutting or clearing of the affected species, and they must be filed;</p> <p>The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals;</p> <p>Trees felled due to construction must be documented and form part of the Environmental Audit Report;</p> <p>Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris;</p> <p>Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained;</p> <p>A daily register must be kept of all relevant details of herbicide usage;</p> <p>No herbicides must be used in estuaries;</p> <p>All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas.</p> <p>Servitude:</p> <p>Vegetation that does not grow high enough to cause interference with overhead transmission and distribution infrastructures, or cause a fire hazard to any plantation, must not be cut or trimmed unless it is growing in the road access area, and then only at the discretion of the Project Manager;</p> <p>Where clearing for access purposes is essential, the maximum width to be cleared within the servitude must be in accordance to distance as agreed between the land owner and the EA holder</p> <p>Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures,</p>						
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<p>guidelines and recommendations) and disposed of at a recognised waste disposal facility;</p> <p>Vegetation must be trimmed where it is likely to intrude on the minimum vegetation clearance distance (MVCD) or will intrude on this distance before the next scheduled clearance. MVCD is determined from SANS 10280;</p> <p>Debris resulting from clearing and pruning must be disposed of at a recognised waste disposal facility, unless the landowners wish to retain the cut vegetation;</p> <p>In the case of the development of new overhead transmission and distribution infrastructures, a one metre "trace-line" must be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along the "trace-line". Alternative methods of stringing which limit impact to the environment must always be considered.</p>						
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Protection of fauna

<p>Impact management outcome: Minimise disturbance to fauna.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present;</p> <p>The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme;</p> <p>Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken</p>						

<p>where nestlings or fledglings are present; Nesting sites on existing parallel lines must be documented; Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; No deliberate or intentional killing of fauna is allowed; In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits.</p>						
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Protection of heritage resources

<p>Impact management outcome: Minimise impact to heritage resources.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas; Carry out general monitoring of excavations for potential</p>						

<p>fossils, artefacts and material of heritage importance;</p> <p>All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.</p>						
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Safety of the public

<p>Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.;</p> <p>All unattended open excavations must be adequately fenced or demarcated;</p> <p>Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly constructed towers and protective scaffolding;</p> <p>Ensure structures vulnerable to high winds are secured;</p> <p>Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.</p>						

Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Mobile chemical toilets are installed onsite if no other ablution facilities are available;</p> <p>The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances;</p> <p>Where mobile chemical toilets are required, the following must be ensured:</p> <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; <p>A copy of the waste disposal certificates must be maintained.</p>						

Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Undertake environmentally-friendly pest control in the camp area;</p> <p>Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS;</p> <p>The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area;</p> <p>Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable;</p> <p>Free condoms must be made available to all staff on site at central points;</p> <p>Medical support must be made available;</p> <p>Provide access to Voluntary HIV Testing and Counselling Services.</p>						

Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;</p> <p>The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;</p> <p>All staff must be made aware of emergency procedures as part of environmental awareness training;</p> <p>The relevant local authority must be made aware of a fire as soon as it starts;</p> <p>In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17).</p>						

Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;</p> <p>All hazardous substances must be stored in suitable containers</p>						

<p>as defined in the Method Statement;</p> <p>Containers must be clearly marked to indicate contents, quantities and safety requirements;</p> <p>All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers;</p> <p>Bunded areas to be suitably lined with a SABS approved liner;</p> <p>An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;</p> <p>All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);</p> <p>All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet;</p> <p>Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available;</p> <p>The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers;</p> <p>The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall);</p> <p>The floor of the bund must be sloped, draining to an oil separator;</p> <p>Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where</p>						
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<p>dispensing equipment is used, a drip tray must be used to ensure small spills are contained;</p> <p>All empty externally dirty drums must be stored on a drip tray or within a bunded area;</p> <p>No unauthorised access into the hazardous substances storage areas must be permitted;</p> <p>No smoking must be allowed within the vicinity of the hazardous storage areas;</p> <p>Adequate fire-fighting equipment must be made available at all hazardous storage areas;</p> <p>Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used;</p> <p>An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times;</p> <p>The responsible operator must have the required training to make use of the spill kit in emergency situations;</p> <p>An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken;</p> <p>In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management.</p>						
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Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;</p> <p>During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts;</p> <p>Leaking equipment must be repaired immediately or be removed from site to facilitate repair;</p> <p>Workshop areas must be monitored for oil and fuel spills;</p> <p>Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;</p> <p>The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed;</p> <p>Water drainage from the workshop must be contained and managed in accordance Section 5.7: storm and waste water management.</p>						

Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Concrete mixing must be carried out on an impermeable surface;</p> <p>Batching plants areas must be fitted with a containment facility for the collection of cement laden water.</p> <p>Dirty water from the batching plant must be contained to prevent soil and groundwater contamination</p> <p>Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;</p> <p>A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;</p> <p>Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility;</p> <p>Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;</p> <p>Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions)</p> <p>Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility;</p> <p>Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation.</p>						

Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;</p> <p>Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible;</p> <p>Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;</p> <p>During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level;</p> <p>Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;</p> <p>Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;</p> <p>Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas;</p> <p>Straw stabilisation must be applied at a rate of one bale/10 m²</p>						

and harrowed into the top 100 mm of top material, for all completed earthworks; For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.						
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Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Any blasting activity must be conducted by a suitably licensed blasting contractor; and Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.						

Noise

Impact Management outcome: Unnecessary noise is prevented by ensuring that noise from construction activities is mitigated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained;						

<p>Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers;</p> <p>Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.</p>						
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Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Designate smoking areas where the fire hazard could be regarded as insignificant;</p> <p>Firefighting equipment must be available on all vehicles located on site;</p> <p>The local Fire Protection Agency (FPA) must be informed of construction activities;</p> <p>Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;</p> <p>Two way swap of contact details between ECO and FPA.</p>						

Stockpiling and stockpile areas

Impact management outcome: Erosion and sedimentation as a result of stockpiling are reduced.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies;</p> <p>All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;</p> <p>Topsoil stockpiles must not exceed 2 m in height;</p> <p>During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.);</p> <p>Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.</p>						

Finalising tower positions

Impact management outcome: No environmental degradation occurs as a result of the survey and pegging operations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>No vegetation clearing must occur during survey and pegging operations;</p> <p>No new access roads must be developed to facilitate access for survey and pegging purposes;</p> <p>Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas;</p> <p>The surveyor is to demarcate (peg) access roads/tracks in consultation with ECO. No deviations will be allowed without the prior written consent from the ECO.</p>						

Excavation and Installation of foundations

Impact management outcome: No environmental degradation occurs as a result of excavation or installation of foundations.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a recognised disposal site, if not used for backfilling purposes;</p> <p>Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes;</p> <p>Management of equipment for excavation purposes must be</p>						

<p>undertaken in accordance with Section 5.18: Workshop equipment maintenance and storage; and Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances. Batching of cement to be undertaken in accordance with Section 5.19 : Batching plants; Residual cement must be disposed of in accordance with Section 5.8: Solid and hazardous waste management.</p>						
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Assembly and erecting towers

Impact management outcome: No environmental degradation occurs as a result of assembly and erecting of towers.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Prior to erection, assembled towers and tower sections must be stored on elevated surface (suggest wooden blocks) to minimise damage to the underlying vegetation; In sensitive areas, tower assembly must take place off-site or away from sensitive positions; The crane used for tower assembly must be operated in a manner which minimises impact to the environment; The number of crane trips to each site must be minimised; Wheeled cranes must be utilised in preference to tracked cranes; Consideration must be given to erecting towers by helicopter or by hand where it is warranted to limit the extent of environmental impact; Access to tower positions to be undertaken in accordance</p>						

<p>with access requirements in specified in Section 8.4: Access Roads;</p> <p>Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing;</p> <p>No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor;</p> <p>Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites;</p> <p>Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil;</p> <p>Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes;</p> <p>Fly rock from blasting activity must be minimised and any pieces greater than 150 mm falling beyond the Working Area, must be collected and removed;</p> <p>Only existing disturbed areas are utilised as spoil areas;</p> <p>Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum;</p> <p>Surface water runoff is appropriately channeled through or around spoil areas;</p> <p>During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then put spoil on top of that;</p> <p>The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation;</p> <p>The retained topsoil must be spread evenly over areas to be</p>						
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rehabilitated and suitably compacted to effect re-vegetation of such areas to prevent erosion as soon as construction activities on the site is complete. Spreading of topsoil must not be undertaken at the beginning of the dry season.						
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Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Where possible, previously disturbed areas must be used for the siting of winch and tensioner stations. In all other instances, the siting of the winch and tensioner must avoid Access restricted areas and other sensitive areas;</p> <p>The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks;</p> <p>Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances;</p> <p>In the case of the development of overhead transmission and distribution infrastructure, a one metre "trace-line" may be cut through the vegetation for stringing purposes only and no vehicle access must be cleared along "trace-lines". Vegetation clearing must be undertaken by hand, using chainsaws and hand held implements, with vegetation being cut off at ground level. No tracked or wheeled mechanised equipment must be used;</p> <p>Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using</p>						

<p>a helicopter;</p> <p>Where the stringing operation crosses a public or private road or railway line, the necessary scaffolding/ protection measures must be installed to facilitate access. If, for any reason, such access has to be closed for any period(s) during development, the persons affected must be given reasonable notice, in writing;</p> <p>No services (electrical distribution lines, telephone lines, roads, railways lines, pipelines fences etc.) must be damaged because of stringing operations. Where disruption to services is unavoidable, persons affected must be given reasonable notice, in writing;</p> <p>Where stringing operations cross cultivated land, damage to crops is restricted to the minimum required to conduct stringing operations, and reasonable notice (10 work days minimum), in writing, must be provided to the landowner;</p> <p>Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries.</p>						
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Socio-economic

Impact management outcome: Socio-economic development is enhanced.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Develop and implement communication strategies to facilitate public participation;</p> <p>Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;</p> <p>Sustain continuous communication and liaison with</p>						

<p>neighboring owners and residents Create work and training opportunities for local stakeholders; and Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers.</p>						
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Temporary closure of site

<p>Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: management of hazardous substances and 5.18 workshop, equipment maintenance and storage; Hazardous storage areas must be well ventilated; Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; Emergency and contact details displayed must be displayed; Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; Structures vulnerable to high winds must be secured;</p>						

<p>Wind and dust mitigation must be implemented; Cement and materials stores must have been secured; Toilets must have been emptied and secured; Refuse bins must have been emptied and secured; Drip trays must have been emptied and secured.</p>						
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Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed to a registered waste site and certificates of disposal provided;</p> <p>All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983</p> <p>All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983;</p> <p>Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition;</p> <p>Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners;</p> <p>Rehabilitation of tower sites and access roads outside of farmland;</p>						

<p>Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;</p> <p>Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas);</p> <p>Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;</p> <p>Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;</p> <p>Subsoil must be ripped before topsoil is placed;</p> <p>The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;</p> <p>Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ;</p> <p>Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;</p> <p>Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil.</p> <p>Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is carefully selected to ensure the following:</p> <ul style="list-style-type: none"> a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area 						
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ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of regulation 26(h) of the EIA Regulations.

PART B: SECTION 2

7 SITE SPECIFIC INFORMATION AND DECLARATION

Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Mukondeleli Wind Energy Facility (RF) (Pty) Ltd is the project proponent (Applicant) with regards to the application for the construction and operation of the Mukondeleli 132kV Grid Connection (including powerline, substations and BESS).

PROPONENT: MUKONDELELI WIND (RF) PTY LTD

Contact Person:	Mercia Grimbeek
Postal Address	Suite 104, The Albion Springs Office Park, 183 Main Road, Rondebosch, Cape Town
Telephone:	071 752 8033
Email:	Kyle.Swartz@enertrag.com

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA processes for the proposed construction of the Mukondeleli 132kV Grid Connection and BESS. The CV of the EAP is available in Appendix A. The EAP declaration of interest and undertaking is included in Appendix B.

EAP WSP GROUP AFRICA (PTY) LTD

Company Registration:	1999/008928/07
Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com

7.1.3 Project name:

Proposed Mukondeleli 132kV OHPL and Substations

7.1.4 Description of the project:

The proposed project entails the construction of 1 x up to 132kV OHPL from the Alternative 1 substation (preferred Mukondeleli WEF onsite substation) to the private off taker substation at Sasol Secunda. The proposed project will comprise the following key components:

- Construction of 1 x up to 132kV OHPL (either single or double circuit) between the Mukondeleli WEF onsite substation (Alternative 1 preferred substation) to the private offtaker substation at Sasol Secunda. The powerline will have a 250m assessment corridor to allow for micro-siting.
- Establishment of the substation (with a footprint of approximately 2 ha) at the preferred Mukondeleli substation area.
- Standard substation electrical equipment, i.e., transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be needed.
- Battery Energy Storage System (BESS) and Sasol Substation will have a combined footprint of up to 4 ha. The BESS storage capacity will be up to 300MW/1 200 megawatt-hour (MWh) with up to four hours of storage. It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, Lithium Nickel Manganese Cobalt oxides or Vanadium Redox flow technologies will be considered as the preferred battery technology however the specific technology will only be determined following Engineering, Procurement, and Construction (EPC) procurement. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers. The BESS components will arrive on site pre-assembled;
- The control building, telecommunication infrastructure, oil dam(s) etc,
- All the access road infrastructure to and within the substation
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).

Components of the Transmission Line

A brief overview of the physical/technical requirements of the project is as follows:

- 1 x up to 132kV OHPL (either single or double circuit) between the Alternative 1 substation (preferred Mukondeleli WEF onsite substation) and private offtaker substation at Sasol Secunda;
- Straight line distance between Alternative 1 substation (preferred Mukondeleli WEF substation) and private offtaker substation at Sasol Secunda is approximately 7.78 km;
- The assessment corridor for 1x up to 132kVA OHPL is 250 m.
- The maximum height for an up to 132kV OHPL structure is approximately 40m.
- Minimum conductor clearance is between 8.1 and 12.6m.
- Span length between pylon structures is typically up to 250m apart, depending on complexity and slope of terrain.
- The design of 132kV structure is currently unknown, the following options will be used to determine preferred design:
 - Intermediate self-supporting monopole
 - Inline or angle-strain self-supporting monopole
 - Suspension self-supporting monopole
 - Triple pole structure
 - Steel lattice structure

- The up to 132 kV structures will have a concrete foundation and the sizes may vary depending on design type up to 80m² (10m by 8m), with depths reaching up to 3.5m typically in a rectangular ‘pad’ shape. The actual number of structures required will vary according to the final route alignment determined.

Clearance Requirements for Transmission Lines

For safety reasons, transmission lines require certain minimum clearance distances. These are as follows:

- The minimum vertical clearance distance between the ground and the transmission line is 6.7m.
- The minimum vertical clearance to any fixed structure that does not form part of the OHPL is 9.4m - 11m.
- The minimum distance between a 132kV OHPL and an existing road is 60m – 120m (depending on the type of road).
- Any farming activity can be practiced under the conductors provided that safe working clearances and building restrictions are adhered to.
- Minimum servitude to other parallel lines.

Proposed Associated Infrastructure

The proposed Grid Connection project will require the following with respect to the permanent infrastructure:

- Where the OHPL crosses a fence between neighbouring landowners and there is no suitable gate in place, a suitable gate will be erected in consultation with the landowner. These gates are necessary in order to ensure access to the line for maintenance and repair purposes.
- Existing road infrastructure will be used as far as possible to provide access for construction vehicles during the construction of the line. Thereafter, the roads are used for inspection and maintenance purposes. Where appropriate roads may be upgraded to access transmission lines and substations. Where no roads exist, access roads may be created for maintenance and inspection purposes.
- Fibre Optic cable could be strung on the earth cable if required for telecommunication
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).

Proposed Switching Substations

Two alternative substation locations have been proposed for the Mukondeleli WEF (Preferred Alternative 1 and Alternative 2). It must be indicated that both substation alternatives are planned to be constructed on approximately 10 ha. Based on the plan, an IPP substation and a Switching substation will be constructed for each of the alternatives. The substations will be constructed next to each other on areas of 2ha each. Electricity generated from the Mukondeleli WEF will be distributed through the IPP substation to the Switching substation, from the Switching substation electricity will be distributed by the proposed up to 132kV grid connection transmission line into the ECSS before being distributed to the national grid via a up to 400kV grid connection transmission line through Mukondeleli Power station.

The substation will consist of a high voltage substation yard to allow for multiple up to 132kV feeder bays and transformers, control building telecommunication, and other substation components as required. Supporting infrastructure such as Control room, parking, oil spillage containment dam, fence, and other infrastructure will be constructed as part of the Eskom section substation.

There is a potential that the electricity generated will only feed into Sasol and not to the national electricity grid , in which instance the substations will be privately owned and managed and not transferred to Eskom

7.1.5 Project location:

The proposed Project is located in the Govan Mbeki Local Municipality under the jurisdiction of the Gert Sibande District Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa.

The project area covers 11 farm portions as shown the Table below.

PORTION NUMBER	FARM NUMBER	FARM NAMES	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
2	317	van Tondershoek	TOIS00000000031700002
4	291	Bojesspruit	TOIS00000000029100004
8	291	Bosjesspruit	TOIS00000000029100008
9	291	Bosjesspruit	TOIS00000000029100009
10	291	Bosjesspruit	TOIS00000000029100010
12	317	van Tondershoek	TOIS00000000031700012
3	285	Twistdraai	TOIS0000 00000285 00003
5	285	Twistdraai	TOIS0000 00000285 00005
6	285	Twistdraai	TOIS0000 00000285 00006
0	318	Brandspruit	TOIS00000000031800000
3	318	Brandspruit	TOIS0000 00000318 00003

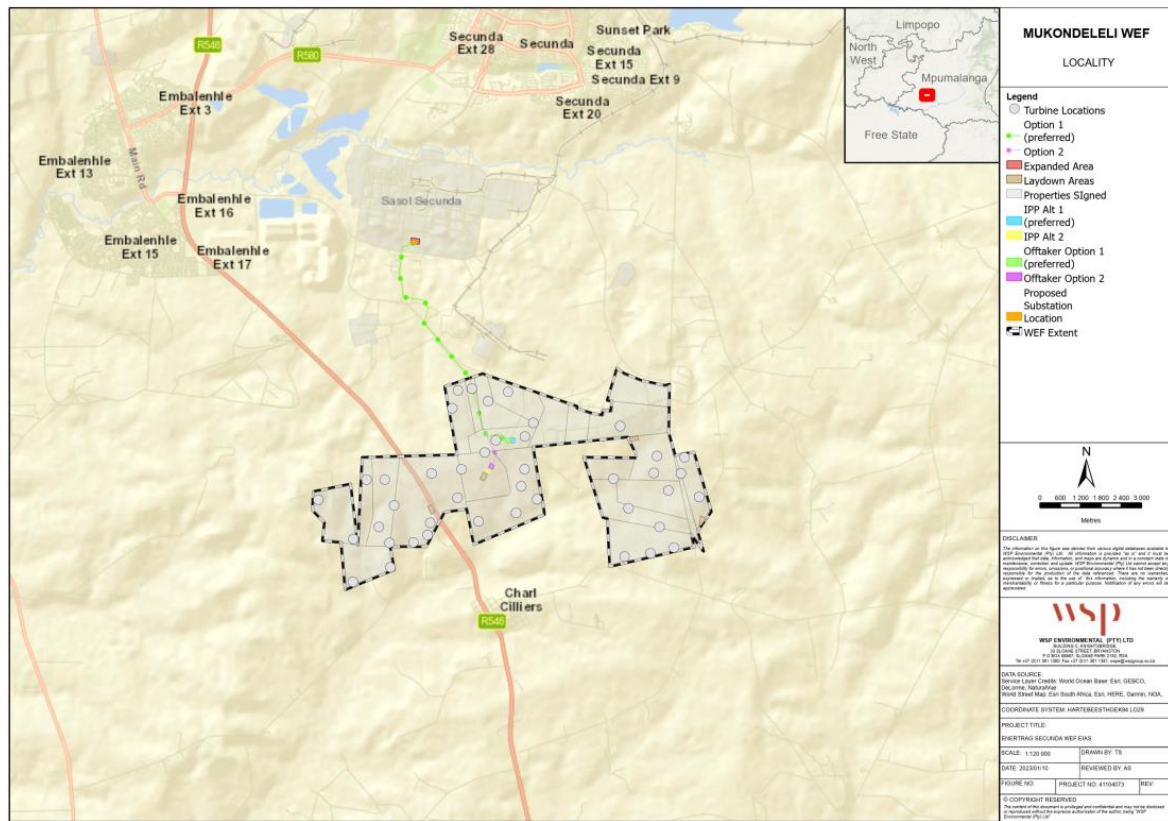


Figure 1: Locality map for the proposed Mukondeleli WEF

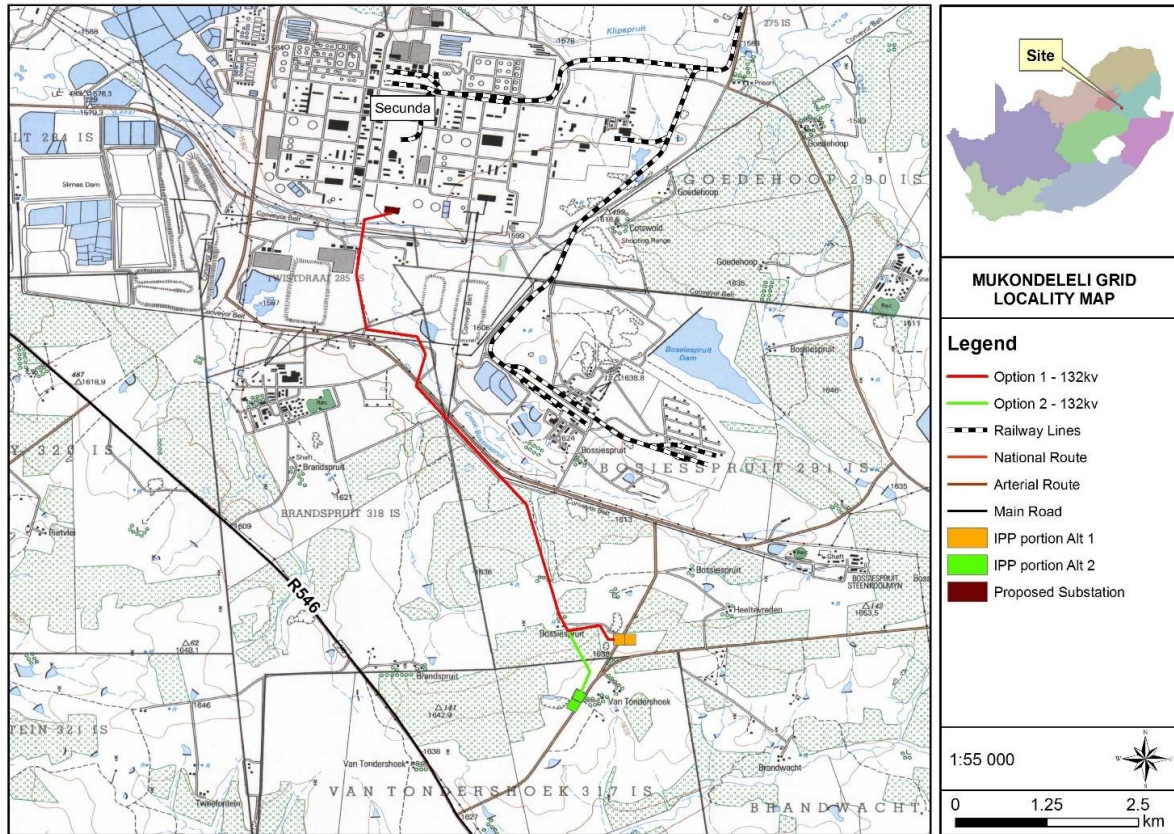
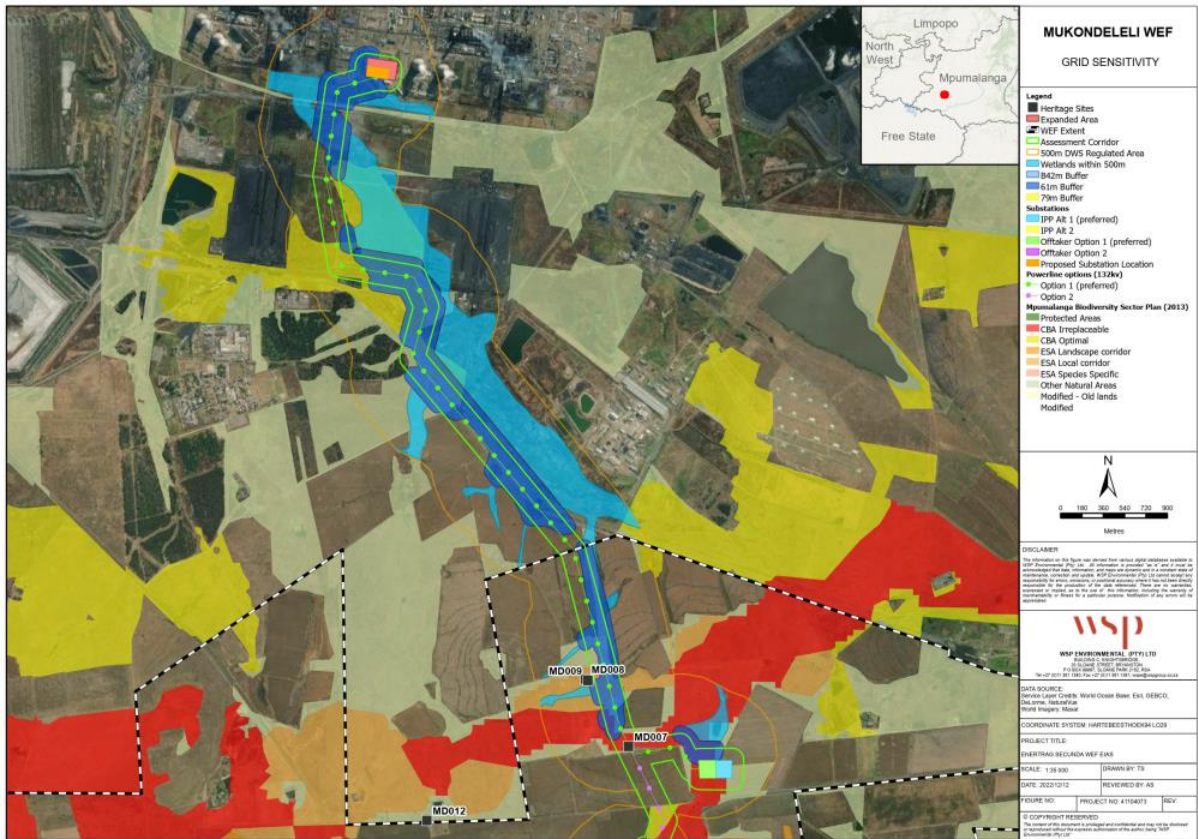


Figure 2: Proposed Mukondeleli WEF and associated main components


Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.



Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

DocuSigned by:


Signature Proponent/applicant/ holder of EA
Mercia Grimbeek

14/3/2023

Date:

Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

There are sensitivities identified, in terms of Terrestrial and Aquatic biodiversity, with regards to the substation locations (both alternative sites).

In addition to the applicable mitigation measures included generic EMPr template, the following additional measures, with regards to vegetation clearing have been recommended in the Table below.

These mitigations were provided by the following Specialist, including and extract of the Specialists' details and expertise. The below is an extract of the Specialist's details and expertise. The Specialist's CV are contained in Appendix F-2 and F-6 of the BAR).

Specialist	Qualification and accreditation
Terrestrial Biodiversity: Dr Noel van Rooyen and Prof. Gretel van Rooyen (Ekotrust CC)	Botanical Scientist : Pr.Sci.Nat; Reg no. 401430/83 Academic qualifications include BSc (Agric), BSc (Honours), MSc (1978) and DSc degrees (1984) in Plant Ecology at the University of Pretoria, South Africa
Aquatic Biodiversity: Lorainmari den Boogert	MSc. Geohydrology (UFS) MSc. Plant Science (UP) Pr.Sci.Nat (400003/13) Botany and Ecology
.	

Impact management outcome: Prevent the unnecessary destruction of, and fragmentation, of the vegetation community.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Aquatic: <ul style="list-style-type: none"> - Pylons should be placed outside delineated watercourses and their associated buffer zones. - Prevent access of heavy vehicles and machinery in the wetlands or riparian areas - Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction. - Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be 						

<p>fenced off to prevent vehicular, pedestrian and livestock access.</p> <ul style="list-style-type: none"> - Where development is located upslope from wetlands, a temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. - Where development is located upslope from wetlands, effective stormwater management including sediment barriers should be a priority during both construction and operational phase. This should be monitored as part of the EMP. - Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area. - Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction 						
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<p>camp and work areas.</p> <ul style="list-style-type: none"> - Monitoring should be done to ensure that sediment pollution is timeously dressed - Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. - Undertake an Alien Plant Control Plan which specifies actions and measurable targets 						
<p>Terrestrial:</p> <ul style="list-style-type: none"> - A preconstruction walk-through of the development footprint for the purpose of micrositing could ensure that no SCC are present at these sites. - Footprints of the pylons, roads and substation locations should be clearly demarcated. - Watercourses, wetlands, rocky outcrops/sheets should be avoided (Habitats 1 & 7). 						

<ul style="list-style-type: none"> - Observe buffer zones along drainage lines (see report of aquatic specialist). - All vehicles are to remain on demarcated roads and no driving through the veld should be allowed. - The ECO is to provide supervision on vegetation clearing activities and other activities that may cause damage to the environment, especially when construction commences and most vegetation clearing is taking place. - Designs capacity must be kept to a minimum feasibility in Very High Sensitive Ecological areas, with set-aside areas created in support of conservation - No plants may be translocated or otherwise uprooted or disturbed without express permission from the ECO. - Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. 						
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<ul style="list-style-type: none"> - Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type. - Several Search and Rescue operations must occur in the proposed infrastructure footprint to ensure that species are relocated to proximal natural areas. - Placement of infrastructure should be done in such a way as to minimise the impact on protected species. - The construction crew should undergo environmental training (induction) to make them aware of the importance of protected species. 						
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APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

APPENDIX

E SUBSTATION GENERIC EMPR



GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE
TRANSMISSION AND DISTRIBUTION OF ELECTRICITY



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

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INTRODUCTION

Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including but not limited to the applicant and the competent authority (CA).

Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and all listed and specified activities necessary for the realisation of such infrastructure.

Objective

The objective of this generic EMPr is to prescribe and pre-approve generally accepted impact management outcomes and impact management actions, which can commonly and repeatedly be used for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.

Scope

The scope of this generic EMPr applies to the development or expansion of substation infrastructure for the transmission and distribution of electricity requiring EA in terms of NEMA. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realization of such infrastructure.

Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information	Definitions, acronyms, roles & responsibilities and documentation and reporting.

Part	Section	Heading	Content
		and is not legally binding	
B	1	Pre-approved generic EMPr template	<p>Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity, which are presented in the form of a template that has been pre-approved.</p> <p>The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity.</p> <p>Where an impact management outcome is not relevant, the words “not applicable” can be inserted in the template under the “responsible persons” column.</p> <p>Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template is not required to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA.</p> <p>To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.</p>
	2	Site specific information	<p>Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr template contained in <u>Part B: Section 1</u>, and understands that the impact management outcomes and impact management actions are legally binding. The preliminary infrastructure layout must be</p>

Part	Section	Heading	Content
			<p>finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and impact management actions have been either pre-approved or approved in terms of <u>Part C</u>.</p> <p>This section must be submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of <u>Part B: section 2</u> not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.</p>
C		Site specific sensitivities/ attributes	<p>If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (<u>Part B: section 1</u>)</p> <p>This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if <u>Part C</u> is applicable to the site, it is required to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding.</p> <p>This section applies only to additional impact management outcomes and impact</p>

Part	Section	Heading	Content
			management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in <u>Part B: section 1</u> .
Appendix 1			Contains the method statements to be prepared prior to commencement of the activity. The method statements are not required to be submitted to the competent authority.

Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

For implementation

- a 'responsible person',
- a method for implementation,
- a timeframe for implementation

For monitoring

- a responsible person
- frequency
- evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template once signed and dated is legally binding. The holder of the EA will remain responsible for its implementation.

Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

Amendment of the impact management outcomes: in line with the process contemplated in Regulation 37 of the EIA Regulations; and

Amendment of the impact management actions: in line with the process contemplated in Regulation 36 of the EIA Regulations.

Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the property or farm in which the proposed substation infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features and within 50 m from the development footprint.

Sub-section 3 is the declaration that the applicant (s)/proponent (s) or holder of the EA in the case of a change of ownership must complete which confirms that the applicant/EA holder will comply with the pre-approved 'generic EMPr' template in Section 1 and understands that the impact management outcomes and impact management actions are legally binding.

Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"hazardous substance" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover as a minimum applicable details with regard to:

- Construction procedures;
- Plant, materials and equipment to be used;
- Transporting the equipment to and from site;
- How the plant/ material/ equipment will be moved while on site;
- How and where the plant/ material/ equipment will be stored;
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance/ non-compliance; and

— Any other information deemed necessary by the Project Manager.

“slope” means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

“solid waste” means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

“spoil” means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

“topsoil” means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

“works” means the works to be executed in terms of the Contract

ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered Interested and affected parties

ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: Guide to roles and responsibilities for implementation of an EMPr

Responsible Person(s)	Role and Responsibilities
Developer's Project Manager (DPM)	<p><u>Role</u> The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent.</p> <p><u>Responsibilities</u> Be fully conversant with the conditions of the EA; Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); Issuing of site instructions to the Contractor for corrective actions required; Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and Ensure that periodic environmental performance audits are undertaken on the project implementation.</p>
Developer Site Supervisor (DSS)	<p><u>Role</u> The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all</p>

Responsible Person(s)	Role and Responsibilities
	<p>contractors with the conditions and requirements stipulated in the EMPr.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> Ensure that all contractors identify a contractor's Environmental Officer (cEO); Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; Issuing of site instructions to the Contractor for corrective actions required; Will issue all non-compliances to contractors; and Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<p><u>Role</u></p> <p>The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr.</p> <p>The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.</p>

Responsible Person(s)	Role and Responsibilities
	<p><u>Responsibilities</u></p> <p>The responsibilities of the ECO will include the following:</p> <ul style="list-style-type: none"> Be aware of the findings and conclusions of all EA related to the development; Be familiar with the recommendations and mitigation measures of this EMPr; Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; Educate the construction team about the management measures contained in the EMPr and environmental licenses; Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; Assisting in the resolution of conflicts; Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor;

Responsible Person(s)	Role and Responsibilities
	<p>In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance;</p> <p>Maintenance, update and review of the EMPr;</p> <p>Communication of all modifications to the EMPr to the relevant stakeholders.</p>
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor’s Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <p>Be fully conversant with the EMPr;</p> <p>Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;</p> <p>Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ;</p> <p>Confine the development site to the demarcated area;</p> <p>Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO);</p> <p>Assist the contractors in addressing environmental challenges on site;</p> <p>Assist in incident management:</p> <p>Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared;</p> <p>Assist the contractor in investigating environmental incidents and compile investigation reports;</p> <p>Follow-up on pre-warnings, defects, non-conformance reports;</p> <p>Measure and communicate environmental performance to the Contractor;</p> <p>Conduct environmental awareness training on site together with ECO and cEO;</p> <p>Ensure that the necessary legal permits and / or licenses are in place and up to date;</p>

Responsible Person(s)	Role and Responsibilities
	Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	<p><u>Role</u> The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> project delivery and quality control for the development services as per appointment; employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u> Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the</p>

Responsible Person(s)	Role and Responsibilities
	<p>following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> Be on site throughout the duration of the project and be dedicated to the project; Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; Attend the Environmental Site Meeting; Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; Report back formally on the completion of corrective actions; Assist the ECO in maintaining all the site documentation; Prepare the site inspection reports and corrective action reports for submission to the ECO; Assist the ECO with the preparing of the monthly report; and Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all substation infrastructure projects as a minimum requirement.

Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

1. Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
2. Batch plants;
3. Workshop or plant servicing;
4. Handling, transport and storage of Hazardous Chemical Substance's;
5. Vegetation management – Protected, clearing, aliens, felling;
6. Access management – Roads, gates, crossings etc.;
7. Fire plan;
8. Waste management – transport, storage, segregation, classification, disposal (all waste streams);
9. Social interaction – complaints management, compensation claims, access to properties etc.;
10. Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
11. Emergency preparedness – Spills, training, other environmental emergencies;
12. Dust and noise management methodologies;
13. Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
14. Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

- 1 The date and time of the incident;
- 2 Description of the incident;
- 3 The name of the Contractor responsible;
- 4 The incident must be listed as significant or minor;
- 5 If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- 6 Remedial or corrective action taken to mitigate the incident; and
- 7 Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.

The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression

of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

- Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
- All bunding and fencing;
- Road conditions and road verges;
- Condition of all farm fences;
- Topsoil storage areas;
- All areas to be cordoned off during construction;
- Waste management sites;
- Ablution facilities (inside and out);
- Any non-conformances deemed to be "significant";
- All completed corrective actions for non-compliances;
- All required signage;
- Photographic recordings of incidents;
- All areas before, during and post rehabilitation; and
- Include relevant photographs in the Final Environmental Audit Report.

Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;
- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
- Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in **(section 4.11)** below.

Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

- Record the full detail of the complaint as described in **(section 4.10)** above;
- The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
- Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
- A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

- Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
- Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
- Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
- Ensure that contact with affected parties is courteous at all times;

Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The ECOs must prepare a monthly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of substation infrastructure for the transmission and distribution of electricity. There is a list of aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the contractor and the holder of the EA. This template, once signed and dated, is legally binding. The holder of the EA will remain responsible for its implementation.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All staff must receive environmental awareness training prior to commencement of the activities;</p> <p>The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course;</p> <p>Refresher environmental awareness training is available as and when required;</p> <p>All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr;</p> <p>The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum:</p> <p>a) Safety notifications; and</p> <p>b) No littering.</p> <p>Environmental awareness training must include as a minimum the following:</p> <p>a) Description of significant environmental impacts, actual or potential, related to their work activities;</p> <p>b) Mitigation measures to be implemented when carrying out specific activities;</p> <p>c) Emergency preparedness and response procedures;</p>						

<p>d) Emergency procedures; e) Procedures to be followed when working near or within sensitive areas; f) Wastewater management procedures; g) Water usage and conservation; h) Solid waste management procedures; i) Sanitation procedures; j) Fire prevention; and k) Disease prevention.</p> <p>A record of all environmental awareness training courses undertaken as part of the EMPr must be available; Educate workers on the dangers of open and/or unattended fires; A staff attendance register of all staff to have received environmental awareness training must be available. Course material must be available and presented in appropriate languages that all staff can understand.</p>						
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Site Establishment development

<p>Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including</p>						

<p>but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;</p> <p>Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through;</p> <p>Sites must be located where possible on previously disturbed areas;</p> <p>The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and</p> <p>The use of existing accommodation for contractor staff, where possible, is encouraged.</p>						
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Access restricted areas

<p>Impact management outcome: Access to restricted areas prevented.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development;</p> <p>Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any</p>						

access restricted area, colour coding could be used if appropriate; and Unauthorised access and development related activity inside access restricted areas is prohibited.						
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Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities;</p> <p>All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition</p> <p>All contractors must be made aware of all these access routes.</p> <p>Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense;</p> <p>Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads;</p> <p>In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with section 4.9: photographic record; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor;</p> <p>Access roads in flattish areas must follow fence lines and tree</p>						

belts to avoid fragmentation of vegetated areas or croplands Access roads must only be developed on a pre-planned and approved roads.						
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Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Use existing gates provided to gain access to all parts of the area authorised for development, where possible;</p> <p>Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record;</p> <p>All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner;</p> <p>At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner;</p> <p>Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground;</p> <p>Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate;</p> <p>Original tension must be maintained in the fence wires;</p> <p>All gates installed in electrified fencing must be re-electrified;</p> <p>All demarcation fencing and barriers must be maintained in</p>						

<p>good working order for the duration of the development activities;</p> <p>Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable;</p> <p>Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner.</p> <p>All fencing must be developed of high quality material bearing the SABS mark;</p> <p>The use of razor wire as fencing must be avoided;</p> <p>Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times;</p> <p>On completion of the development phase all temporary fences are to be removed;</p> <p>The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.</p>						
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Water Supply Management

<p>Impact management outcome: Undertake responsible water usage.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis;</p> <p>The Contractor must ensure the following:</p> <p>The vehicle abstracting water from a river does not enter or</p>						

<p>cross it and does not operate from within the river; No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. Ensure water conservation is being practiced by: Minimising water use during cleaning of equipment; Undertaking regular audits of water systems; and Including a discussion on water usage and conservation during environmental awareness training. The use of grey water is encouraged.</p>						
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Storm and waste water management

<p>Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's</p>						

<p>approval and support by the ECO; Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.</p>						
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Solid and hazardous waste management

<p>Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All measures regarding waste management must be undertaken using an integrated waste management approach; Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; A suitably positioned and clearly demarcated waste collection site must be identified and provided; The waste collection site must be maintained in a clean and orderly manner; Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; Staff must be trained in waste segregation; Bins must be emptied regularly; General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; Hazardous waste must be disposed of at a registered waste</p>						

disposal site; Certificates of safe disposal for general, hazardous and recycled waste must be maintained.						
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Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities;</p> <p>In the event of a spill, prompt action must be taken to clear the polluted or affected areas;</p> <p>Where possible, no development equipment must traverse any seasonal or permanent wetland</p> <p>No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur;</p> <p>Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available;</p> <p>There must not be any impact on the long term morphological dynamics of watercourses or estuaries;</p> <p>Existing crossing points must be favored over the creation of new crossings (including temporary access)</p> <p>When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken:</p>						

<p>a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse</p> <p>b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained;</p> <p>c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and</p> <p>d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.</p>						
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Vegetation clearing

<p>Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <p>Indigenous vegetation which does not interfere with the development must be left undisturbed;</p> <p>Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species;</p> <p>Search, rescue and replanting of all protected and endangered species likely to be damaged during project</p>						

<p>development must be identified by the relevant specialist and completed prior to any development or clearing;</p> <p>Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed;</p> <p>The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals;</p> <p>Trees felled due to construction must be documented and form part of the Environmental Audit Report;</p> <p>Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris;</p> <p>Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained;</p> <p>A daily register must be kept of all relevant details of herbicide usage;</p> <p>No herbicides must be used in estuaries;</p> <p>All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to Section 5.3: Access restricted areas.</p> <p>Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.</p>						
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Protection of fauna

<p>Impact management outcome: Disturbance to fauna is minimised.</p>		
<p>Impact Management Actions</p>	<p>Implementation</p>	<p>Monitoring</p>

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present;</p> <p>The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme;</p> <p>Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present;</p> <p>Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds;</p> <p>No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas;</p> <p>No deliberate or intentional killing of fauna is allowed;</p> <p style="padding-left: 40px;">In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and</p> <p>No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits.</p>						

Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in Section 5.3: Access restricted areas;</p> <p>Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance;</p> <p>All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.</p>						

Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.;</p> <p>All unattended open excavations must be adequately fenced or demarcated;</p> <p>Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly</p>						

constructed towers and protective scaffolding; Ensure structures vulnerable to high winds are secured; Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.						
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Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Mobile chemical toilets are installed onsite if no other ablution facilities are available;</p> <p>The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of abluitions must be permitted under any circumstances;</p> <p>Where mobile chemical toilets are required, the following must be ensured:</p> <ul style="list-style-type: none"> a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers 						

<p>holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; A copy of the waste disposal certificates must be maintained.</p>						
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Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Undertake environmentally-friendly pest control in the camp area; Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; Free condoms must be made available to all staff on site at central points; Medical support must be made available; Provide access to Voluntary HIV Testing and Counselling Services.</p>						

Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project;</p> <p>The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation;</p> <p>All staff must be made aware of emergency procedures as part of environmental awareness training;</p> <p>The relevant local authority must be made aware of a fire as soon as it starts;</p> <p>In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17).</p>						

Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible;</p> <p>All hazardous substances must be stored in suitable containers as defined in the Method Statement;</p> <p>Containers must be clearly marked to indicate contents, quantities and safety requirements;</p> <p>All storage areas must be bunded. The bunded area must be</p>						

<p>of sufficient capacity to contain a spill / leak from the stored containers;</p> <p>Bunded areas to be suitably lined with a SABS approved liner;</p> <p>An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis;</p> <p>All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS);</p> <p>All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet;</p> <p>Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available;</p> <p>The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowzers;</p> <p>The tanks/ bowzers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowzers (110% statutory requirement plus an allowance for rainfall);</p> <p>The floor of the bund must be sloped, draining to an oil separator;</p> <p>Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained;</p> <p>All empty externally dirty drums must be stored on a drip tray or within a bunded area;</p>						
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<p>No unauthorised access into the hazardous substances storage areas must be permitted;</p> <p>No smoking must be allowed within the vicinity of the hazardous storage areas;</p> <p>Adequate fire-fighting equipment must be made available at all hazardous storage areas;</p> <p>Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used;</p> <p>An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times;</p> <p>The responsible operator must have the required training to make use of the spill kit in emergency situations;</p> <p>An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken;</p> <p>In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to Section 5.7 for procedures concerning storm and waste water management and 5.8 for solid and hazardous waste management.</p>						
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Workshop, equipment maintenance and storage

<p>Impact management outcome: Soil, surface water and groundwater contamination is minimised.</p>						
<p>Impact Management Actions</p>	<p>Implementation</p>			<p>Monitoring</p>		
	<p>Responsible person</p>	<p>Method of implementation</p>	<p>Timeframe for implementation</p>	<p>Responsible person</p>	<p>Frequency</p>	<p>Evidence of compliance</p>

<p>Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area;</p> <p>During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts;</p> <p>Leaking equipment must be repaired immediately or be removed from site to facilitate repair;</p> <p>Workshop areas must be monitored for oil and fuel spills;</p> <p>Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available;</p> <p>The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed;</p> <p>Water drainage from the workshop must be contained and managed in accordance Section 5.7: Storm and waste water management.</p>						
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Batching plants

<p>Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Concrete mixing must be carried out on an impermeable surface;</p> <p>Batching plants areas must be fitted with a containment facility for the collection of cement laden water.</p>						

<p>Dirty water from the batching plant must be contained to prevent soil and groundwater contamination</p> <p>Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains;</p> <p>A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted;</p> <p>Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility;</p> <p>Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site;</p> <p>Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions)</p> <p>Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility;</p> <p>Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation.</p>						
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Dust emissions

<p>Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;</p>						

<p>Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible;</p> <p>Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present;</p> <p>During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level;</p> <p>Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind;</p> <p>Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO;</p> <p>Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas;</p> <p>Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks;</p> <p>For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.</p>						
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Blasting

<p>Impact management outcome: Impact to the environment is minimised through a safe blasting practice.</p>		
<p>Impact Management Actions</p>	<p>Implementation</p>	<p>Monitoring</p>

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Any blasting activity must be conducted by a suitably licensed blasting contractor; and Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.						

Noise

Impact Management outcome: Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.						

Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Designate smoking areas where the fire hazard could be regarded as insignificant;</p> <p>Firefighting equipment must be available on all vehicles located on site;</p> <p>The local Fire Protection Agency (FPA) must be informed of construction activities;</p> <p>Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site;</p> <p>Two way swop of contact details between ECO and FPA.</p>						

Stockpiling and stockpile areas

Impact management outcome: Reduce erosion and sedimentation as a result of stockpiling.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies;</p> <p>All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;</p>						

<p>Topsoil stockpiles must not exceed 2 m in height; During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.</p>						
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Civil works

<p>Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation; All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised</p>						

landfill site; and Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes.						
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Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; Management of equipment for excavation purposes must be undertaken in accordance with Section 5.18: Workshop, equipment maintenance and storage ; and Hazardous substances spills from equipment must be managed in accordance with Section 5.17: Hazardous substances .						

Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
Batching of cement to be undertaken in accordance with Section 5.19: Batching plants ; and Residual solid waste must be disposed of in accordance with Section 5.8: Solid waste and hazardous management .						

Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Management of dust must be conducted in accordance with Section 5.20: Dust emissions;</p> <p>Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage;</p> <p>Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and</p> <p>Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management.</p>						

Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

	person	implementation	implementation	person		compliance
<p>During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts</p> <p>Emergency repairs due to breakages of equipment must be managed in accordance with Section 5. 18: Workshop, equipment maintenance and storage and Section 5.16: Emergency procedures.</p>						

Cabling and Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: Solid waste and hazardous Management;</p> <p>Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage;</p> <p>Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances.</p>						

Testing and Commissioning (all equipment testing, earthing system, system integration)

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

	person	implementation	implementation	person		compliance
Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management.						

Socio-economic

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Develop and implement communication strategies to facilitate public participation;</p> <p>Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process;</p> <p>Sustain continuous communication and liaison with neighboring owners and residents</p> <p>Create work and training opportunities for local stakeholders; and</p> <p>Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers.</p>						

Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
<p>Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage;</p> <p>Hazardous storage areas must be well ventilated;</p> <p>Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service;</p> <p>Emergency and contact details displayed must be displayed;</p> <p>Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel;</p> <p>Night hazards such as reflectors, lighting, traffic signage etc. must have been checked;</p> <p>Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.;</p> <p>Structures vulnerable to high winds must be secured;</p> <p>Wind and dust mitigation must be implemented;</p> <p>Cement and materials stores must have been secured;</p> <p>Toilets must have been emptied and secured;</p> <p>Refuse bins must have been emptied and secured;</p> <p>Drip trays must have been emptied and secured.</p>						

Dismantling of old equipment

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<p>All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; Oil containing equipment must be stored to prevent leaking or be stored on drip trays; All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment; The Contractor must also be equipped to contain and clean up any pollution causing spills; and Disposal of unusable material must be at a licensed waste disposal site.</p>						
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Landscaping and rehabilitation

<p>Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation</p>						

<p>of Agricultural Resources Act, No 43 of 1983;</p> <p>Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition;</p> <p>Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners;</p> <p>Rehabilitation of access roads outside of farmland;</p> <p>Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition;</p> <p>Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas);</p> <p>Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion;</p> <p>Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed;</p> <p>Subsoil must be ripped before topsoil is placed;</p> <p>The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment;</p> <p>Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled;</p> <p>Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly;</p> <p>Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil.</p> <p>Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is</p>						
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carefully selected to ensure the following: a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area						
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ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of Regulation 26(h) of the EIA Regulations.

-----PART B: SECTION 2

SITE SPECIFIC INFORMATION AND DECLARATION

Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Mukondeleli Wind Energy Facility (RF) (Pty) Ltd is the project proponent (Applicant) with regards to the application for the construction and operation of the Mukondeleli 132kV Grid Connection (including powerline, substations and BESS).

PROPONENT: MUKONDELELI WIND (RF) PTY LTD

Contact Person:	Mercia Grimbeek
Postal Address	Suite 104, The Albion Springs Office Park, 183 Main Road, Rondebosch, Cape Town
Telephone:	071 752 8033
Email:	Kyle.Swartz@enertrag.com

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA processes for the proposed construction of the Mukondeleli 132kV Grid Connection and BESS. The CV of the EAP is available in Appendix A. The EAP declaration of interest and undertaking is included in Appendix B.

EAP WSP GROUP AFRICA (PTY) LTD

Company Registration:	1999/008928/07
Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg

EAP WSP GROUP AFRICA (PTY) LTD

Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com

7.1.3 Project name:

Proposed Mukondeleli 132kV OHPL and Substations

7.1.4 Description of the project:

The proposed project entails the construction of 1 x up to 132kV OHPL from the Alternative 1 substation (preferred Mukondeleli WEF onsite substation) to the private off taker substation at Sasol Secunda. The proposed project will comprise the following key components:

- Construction of 1 x up to 132kV OHPL (either single or double circuit) between the Mukondeleli WEF onsite substation (Alternative 1 preferred substation) to the private offtaker substation at Sasol Secunda. The powerline will have a 250m assessment corridor to allow for micro-siting.
- Establishment of the substation (with a footprint of approximately 2 ha) at the preferred Mukondeleli substation area.
- Standard substation electrical equipment, i.e., transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, busbars, stringer strain beams, insulators, isolators, conductors, circuit breakers, lightning arrestors, relays, capacitor banks, batteries, wave trappers, switchyard, metering and indication instruments, equipment for carrier current, surge protection and outgoing feeders, as may be needed.
- Battery Energy Storage System (BESS) and Sasol Substation will have a combined footprint of up to 4 ha. The BESS storage capacity will be up to 300MW/1 200 megawatt-hour (MWh) with up to four hours of storage. It is proposed that Lithium Battery Technologies, such as Lithium Iron Phosphate, Lithium Nickel Manganese Cobalt oxides or Vanadium Redox flow technologies will be considered as the preferred battery technology however the specific technology will only be determined following Engineering, Procurement, and Construction (EPC) procurement. The main components of the BESS include the batteries, power conversion system and transformer which will all be stored in various rows of containers. The BESS components will arrive on site pre-assembled;
- The control building, telecommunication infrastructure, oil dam(s) etc,
- All the access road infrastructure to and within the substation
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).

Components of the Transmission Line

A brief overview of the physical/technical requirements of the project is as follows:

- 1 x up to 132kV OHPL (either single or double circuit) between the Alternative 1 substation (preferred Mukondeleli WEF onsite substation) and private offtaker substation at Sasol Secunda;
- Straight line distance between Alternative 1 substation (preferred Mukondeleli WEF substation) and private offtaker substation at Sasol Secunda is approximately 7.78 km;
- The assessment corridor for 1x up to 132kVA OHPL is 250 m.
- The maximum height for an up to 132kV OHPL structure is approximately 40m.
- Minimum conductor clearance is between 8.1 and 12.6m.

- Span length between pylon structures is typically up to 250m apart, depending on complexity and slope of terrain.
- The design of 132kV structure is currently unknown, the following options will be used to determine preferred design:
 - Intermediate self-supporting monopole
 - Inline or angle-strain self-supporting monopole
 - Suspension self-supporting monopole
 - Triple pole structure
 - Steel lattice structure
- The up to 132 kV structures will have a concrete foundation and the sizes may vary depending on design type up to 80m² (10m by 8m), with depths reaching up to 3.5m typically in a rectangular ‘pad’ shape. The actual number of structures required will vary according to the final route alignment determined.

Clearance Requirements for Transmission Lines

For safety reasons, transmission lines require certain minimum clearance distances. These are as follows:

- The minimum vertical clearance distance between the ground and the transmission line is 6.7m.
- The minimum vertical clearance to any fixed structure that does not form part of the OHPL is 9.4m - 11m.
- The minimum distance between a 132kV OHPL and an existing road is 60m – 120m (depending on the type of road).
- Any farming activity can be practiced under the conductors provided that safe working clearances and building restrictions are adhered to.
- Minimum servitude to other parallel lines.

Proposed Associated Infrastructure

The proposed Grid Connection project will require the following with respect to the permanent infrastructure:

- Where the OHPL crosses a fence between neighbouring landowners and there is no suitable gate in place, a suitable gate will be erected in consultation with the landowner. These gates are necessary in order to ensure access to the line for maintenance and repair purposes.
- Existing road infrastructure will be used as far as possible to provide access for construction vehicles during the construction of the line. Thereafter, the roads are used for inspection and maintenance purposes. Where appropriate roads may be upgraded to access transmission lines and substations. Where no roads exist, access roads may be created for maintenance and inspection purposes.
- Fibre Optic cable could be strung on the earth cable if required for telecommunication
- Associated infrastructure including but not limited to lighting, fencing, and buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area and storerooms).

Proposed Switching Substations

Two alternative substation locations have been proposed for the Mukondeleli WEF (Preferred Alternative 1 and Alternative 2). It must be indicated that both substation alternatives are planned to be constructed on approximately 10 ha. Based on the plan, an IPP substation and a Switching substation will be constructed for each of the alternatives. The substations will be constructed next to each other on areas of 2ha each. Electricity generated from the Mukondeleli WEF will be distributed through the IPP substation to the Switching substation, from the Switching substation electricity will be distributed by the proposed up to 132kV grid connection transmission line into the ECSS before being distributed to the national grid via a up to 400kV grid connection transmission line through Mukondeleli Power station.

The substation will consist of a high voltage substation yard to allow for multiple up to 132kV feeder bays and transformers, control building telecommunication, and other substation components as required. Supporting infrastructure such as Control room, parking, oil spillage containment dam, fence, and other infrastructure will be constructed as part of the Eskom section substation.

There is a potential that the electricity generated will only feed into Sasol and not to the national electricity grid , in which instance the substations will be privately owned and managed and not transferred to Eskom

7.1.5 Project location:

The proposed Project is located in the Govan Mbeki Local Municipality under the jurisdiction of the Gert Sibande District Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa.

The project area covers 11 farm portions as shown the Table below.

PORTION NUMBER	FARM NUMBER	FARM NAMES	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
2	317	van Tondershoek	T0IS00000000031700002
4	291	Bojesspruit	T0IS00000000029100004
8	291	Bosjesspruit	T0IS00000000029100008
9	291	Bosjesspruit	T0IS00000000029100009
10	291	Bosjesspruit	T0IS00000000029100010
12	317	van Tondershoek	T0IS00000000031700012
3	285	Twistdraai	T0IS0000 00000285 00003
5	285	Twistdraai	T0IS0000 00000285 00005
6	285	Twistdraai	T0IS0000 00000285 00006
0	318	Brandspruit	T0IS00000000031800000
3	318	Brandspruit	T0IS0000 00000318 00003

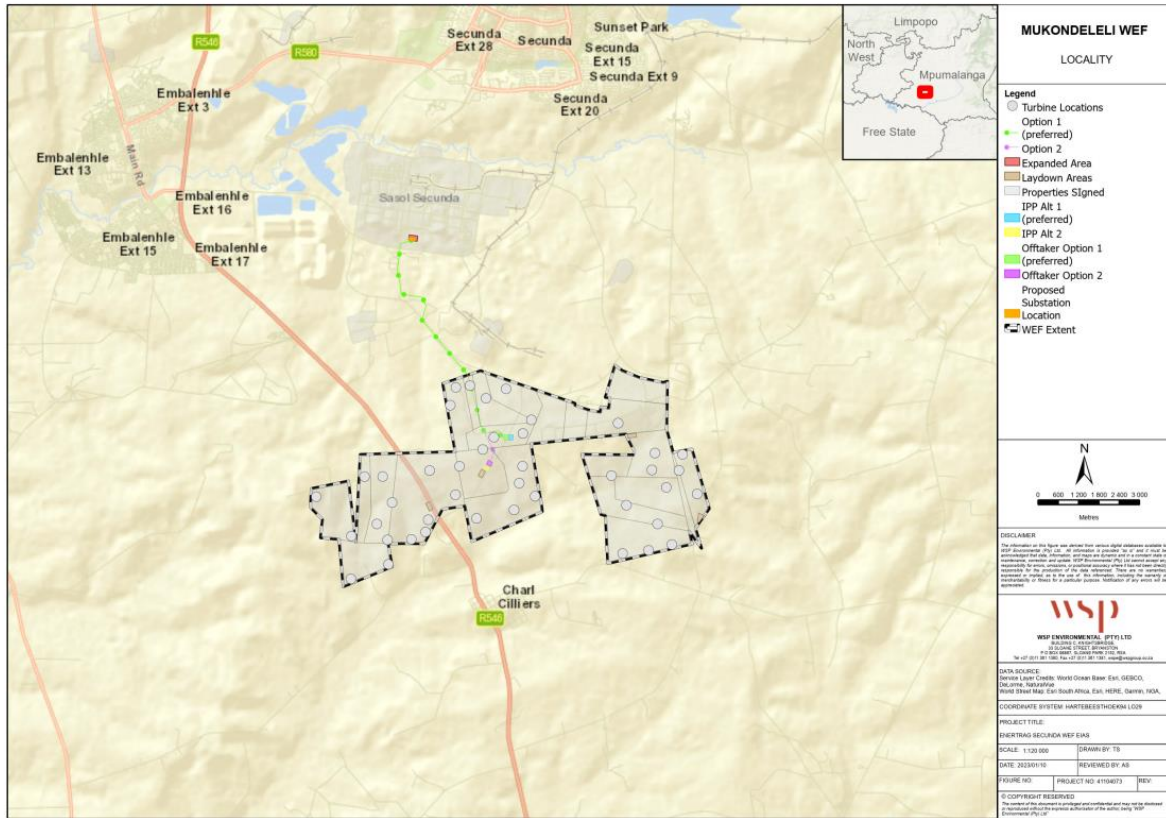


Figure 1: Locality map for the proposed Mukondeleli WEF

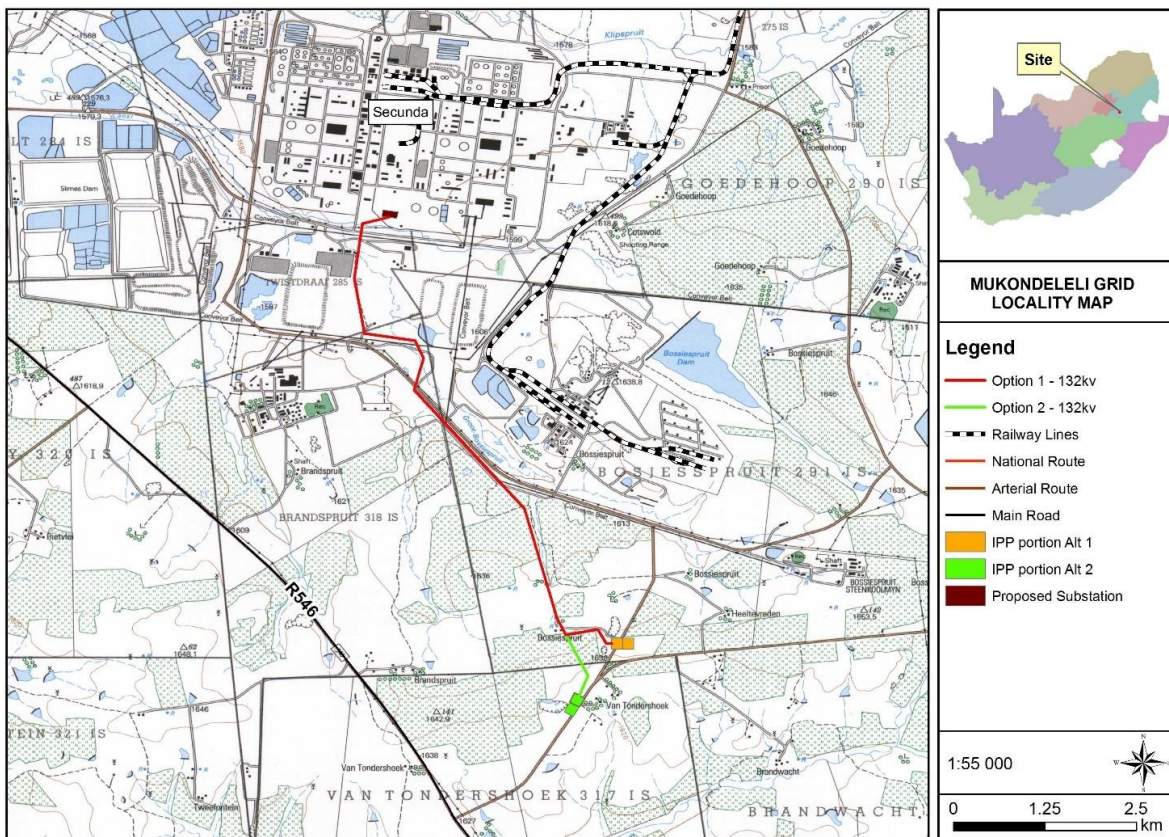
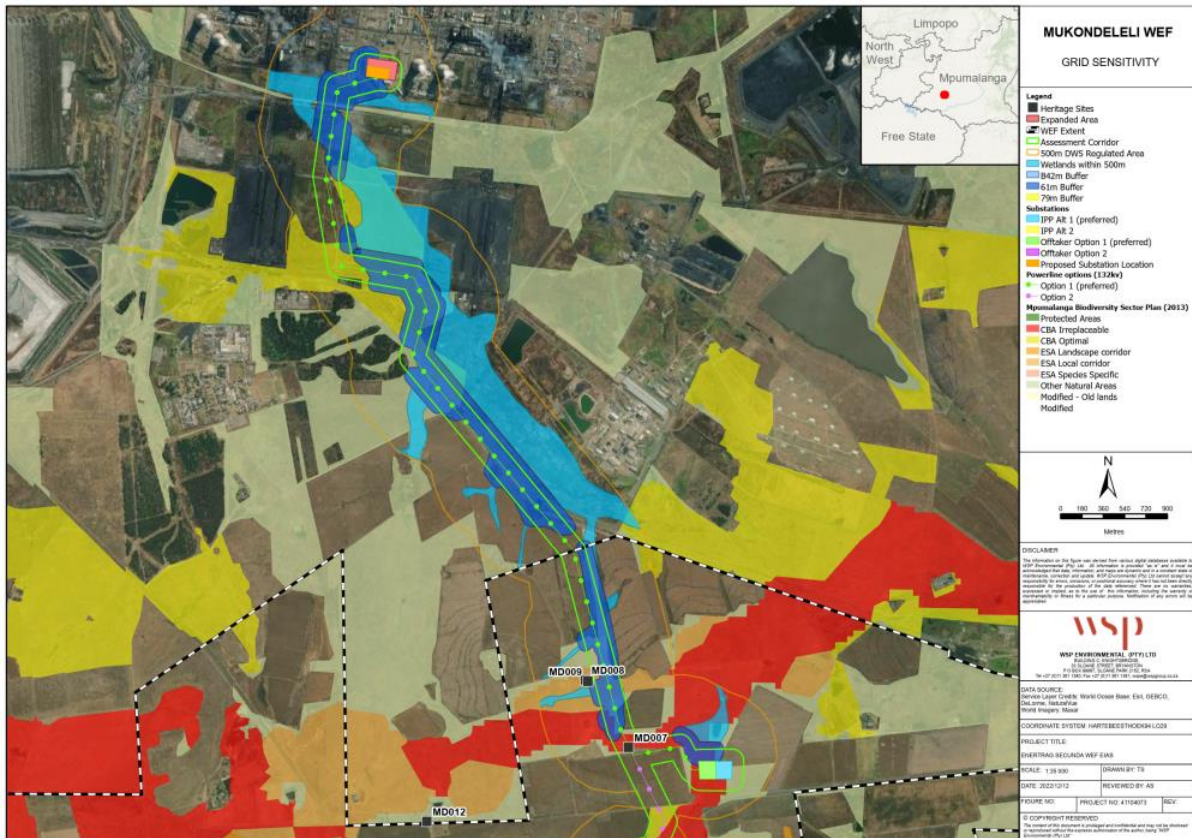


Figure 2: Proposed Mukondeleli WEF and associated main components

Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: <https://screening.environment.gov.za/screeningtool>. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.



Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

DocuSigned by:


AAB2340FC01041E...
Signature Proponent/applicant/ holder of EA
Mercia Grimbeek

14/3/2023

Date:

Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and impact management actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

There are sensitivities identified, in terms of Terrestrial and Aquatic biodiversity, with regards to the substation locations (both alternative sites).

In addition to the applicable mitigation measures included generic EMPr template, the following additional measures, with regards to vegetation clearing have been recommended in the Table below.

These mitigations were provided by the following Specialist, including and extract of the Specialists' details and expertise. The below is an extract of the Specialist's details and expertise. The Specialist's CV are contained in Appendix F-2 and F-6 of the BAR).

Specialist	Qualification and accreditation
Terrestrial Biodiversity: Dr Noel van Rooyen and Prof. Gretel van Rooyen (Ekotrust CC)	Botanical Scientist : Pr.Sci.Nat; Reg no. 401430/83 Academic qualifications include BSc (Agric), BSc (Honours), MSc (1978) and DSc degrees (1984) in Plant Ecology at the University of Pretoria, South Africa
Aquatic Biodiversity: Lorainmari den Boogert	MSc. Geohydrology (UFS) MSc. Plant Science (UP) Pr.Sci.Nat (400003/13) Botany and Ecology
.	

Impact management outcome: Prevent the unnecessary destruction of, and fragmentation, of the vegetation community.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>Aquatic:</p> <ul style="list-style-type: none"> - Pylons should be placed outside delineated watercourses and their associated buffer zones. - Prevent access of heavy vehicles and machinery in the wetlands or riparian areas - Rehabilitation plans must be submitted and approved for rehabilitation of damage during the construction phase and that plan must be implemented immediately upon completion of construction. - Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be 						

<p>fenced off to prevent vehicular, pedestrian and livestock access.</p> <ul style="list-style-type: none"> - Where development is located upslope from wetlands, a temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse. - Where development is located upslope from wetlands, effective stormwater management including sediment barriers should be a priority during both construction and operational phase. This should be monitored as part of the EMP. - Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area. - Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas. 						
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<ul style="list-style-type: none"> - Monitoring should be done to ensure that sediment pollution is timeously dressed - Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish. - Undertake an Alien Plant Control Plan which specifies actions and measurable targets 						
<p>Terrestrial:</p> <ul style="list-style-type: none"> - A preconstruction walk-through of the development footprint for the purpose of micrositing could ensure that no SCC are present at these sites. - Footprints of the pylons, roads and substation locations should be clearly demarcated. - Watercourses, wetlands, rocky outcrops/sheets should be avoided (Habitats 1 & 7). - Observe buffer zones along drainage lines (see report of aquatic specialist). 						

<ul style="list-style-type: none"> - All vehicles are to remain on demarcated roads and no driving through the veld should be allowed. - The ECO is to provide supervision on vegetation clearing activities and other activities that may cause damage to the environment, especially when construction commences and most vegetation clearing is taking place. - Designs capacity must be kept to a minimum feasibility in Very High Sensitive Ecological areas, with set-aside areas created in support of conservation - No plants may be translocated or otherwise uprooted or disturbed without express permission from the ECO. - Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. - Areas that are denuded during construction need to be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by alien 						
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<p>invasive plant species. Topsoil must also be utilised, and any disturbed area must be re-vegetated with plant and grass species which are indigenous to this vegetation type.</p> <ul style="list-style-type: none"> - Several Search and Rescue operations must occur in the proposed infrastructure footprint to ensure that species are relocated to proximal natural areas. - Placement of infrastructure should be done in such a way as to minimise the impact on protected species. - The construction crew should undergo environmental training (induction) to make them aware of the importance of protected species. 						
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APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.