

ENERTRAG SOUTH AFRICA (PTY) LTD

CAMDEN I SOLAR UP TO 132 KV GRID CONNECTION NEAR ERMELO MPUMALANGA

ENVIRONMENTAL MANAGEMENT PROGRAMME

11 MAY 2023

CONFIDENTIAL





CAMDEN I SOLAR UP
TO 132 KV GRID
CONNECTION NEAR
ERMELO
MPUMALANGA
ENVIRONMENTAL
MANAGEMENT PROGRAMME

ENERTRAG SOUTH AFRICA (PTY) LTD

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This Environmental Management Programme (Report) for the Proposed the proposed Camden I SEF up to 132kV Grid Connection Project by WSP Group Africa (Pty) Ltd (WSP) on behalf and at the request of Enertrag South Africa (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
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

- A** EAP CV
- B** A3 MAPS
- C** GENERIC EMPR FOR THE DEVELOPMENT FOR OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE
- D** GENERIC EMPR FOR THE DEVELOPMENT OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

1 INTRODUCTION

1.1 BACKGROUND

ENERTRAG South Africa (Pty) Ltd (ESA) (the Developer) is proposing the development of a Camden Renewable Energy Complex comprising various projects within the vicinity of the Camden Power Station in Mpumalanga. The Complex consists of eight distinct projects referred to as:

- Camden I Wind Energy Facility (WEF) (up to 200MW): Subject to a Scoping and Environmental Impact Reporting (S&EIR) process);
- Camden I Wind Grid Connection (up to 132kV): Subject to a Basic Assessment (BA) process;
- Camden Grid Connection and Collector substation (up to 400kV): Subject to a S&EIR process;
- Camden I Solar Energy Facility (SEF) (up to 100MW): Subject to a S&EIR process);
- **Camden I Solar Grid Connection (up to 132kV): Subject to a BA process; (this report & application)**
- Camden II WEF (up to 200MW): Subject to a S&EIR process;
- Camden II WEF up to 132kV Grid Connection: Subject to a BA process; and
- Camden Green Hydrogen and Ammonia Facility and associated infrastructure: Subject to a S&EIR process.

The Complex (except for the Green Hydrogen and Ammonia project) is being developed in the context of the Department of Mineral Resources and Energy's (DMRE Integrated Resource Plan, and the Renewable Energy Independent Power Producer Procurement Programme (REIPPP).

The proposed Camden I SEF will be connected to the nearby Camden Collector substation (which in turn will connect to the Camden Power Station), through an up to 132kV powerline (either single or double circuit) between the grid connection substation portion (immediately adjacent the Camden I Solar PV on-site IPP substation portion) and that of the Camden Collector substation.

The focus of this Environmental Management Program Report (EMPr) is the proposed Camden I SEF 132kV Grid Connection.

The proposed project entails the construction of an up to 132kV Grid connection overhead powerline including associated infrastructure, from the Camden I Solar PV Facility to the nearby Camden Collector substation (which in turn will connect to the Camden Power Station). The powerline will be approximately 5km in length, depending on the authorized location of the collector substation.

The onsite grid connection substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The area for the onsite substation will be up to 1.5ha. The up to 132kV powerline and substation will have a 500m corridor (250m either side of the centre line, and 250m around the entire perimeter of the proposed substation sites), to allow for micro-siting and avoidance of sensitive features where possible. This corridor, as opposed to the line routing, is proposed for authorisation. This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e., the termination works).

The proposed project will comprise the following key components, detailed further in **Table 1-1** below:

- The grid connection substation (adjacent the IPP substation), consisting of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, lighting and fencing;
- Construction of an up to 132kV power line (either single or double circuit) between the grid connection substation portion and that of the Camden Collector substation; and
- Termination works, comprising the necessary up to 132kV voltage electrical components required for connection at and into the Collector Substation.
- Existing or new access and service roads (utilising existing roads where possible, with new roads developed where there are no existing roads to be utilised).

Table 1-1: Key components of the proposed project

OVERHEAD POWERLINE

Powerline capacity	Up to 132kV (note this includes 132kV exactly for the avoidance of doubt)
Powerline corridors width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 500 m (i.e. 250 m on either side of centre line). As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Powerline servitude width	40m
Powerline pylons:	Monopole or Lattice pylons, or a combination of both where required and as informed by detailed design
Construction clearance required (per pylon)	To allow for crane and large component access and installation, clearing required for each tower depends on local terrain, but up to 1500m ² , or where existing OHL crossings are made or powerlines are constructed adjacent each other, up to 2500m ² .
Powerline pylon height:	Up to a maximum of 40 m
Minimum conductor clearance	8.1 m
Pylon spacing	Up to 250m apart, depending on complexity and slope of terrain
Pylon designs	<p>Various pylon design types are considered (and will be determined during the detailed design engineering phase), and may include any of the following:</p> <ul style="list-style-type: none"> – Up to 132kV (single or double circuit) – Intermediate self-supporting monopole – Inline or angle-strain self-supporting monopole – Suspension self-supporting monopole – Triple pole structure – Cross rope suspension; – Guyed “V” Structure – Steel lattice structure; or – Similar pylon design at 132kV specification <p>The above designs may require anchors with guy-wires or be anchorless. For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 140m² (12m by 12m), with depths reaching up to 4m typically in a rectangular ‘pad’ shape.</p>
Substation (and Collector Substation connection components)	
Substation Footprint	1.5ha
Substation Capacity	33/132kV

OVERHEAD POWERLINE

Corridor width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 250m around the entire perimeter of the proposed substation sites. As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Associated infrastructure	<p>The substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc, including the following:</p> <p>Standard substation electrical equipment, including but not limited to transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, 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.</p> <p>The control building, telecommunication infrastructure, oil dam(s)</p> <p>Workshop and office area within the substation footprint</p> <p>Fencing around the substation</p> <p>Lighting and security infrastructure</p> <p>All the access road infrastructure to and within the substation</p> <p>Further ancillary infrastructure including but not limited to lighting, lightning protection, fencing, buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms).</p>
Termination works	All works and components required for connection at and into the Collector Substation comprising the necessary up to 132kV voltage electrical components, including amongst others standard substation electrical equipment as may be needed (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.
Roads Infrastructure	
Road servitude and access roads	Approximately 6 meters wide, however where required for turning circle/bypass areas, access or internal roads will be up to 20m wide to allow for larger component transport. During operation, vegetation maintenance by partial clearing/maintenance in grid servitude for operation, safety and maintenance reasons.

WSP Group Africa (Pty) Ltd (WSP) has been appointed by ESA 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).

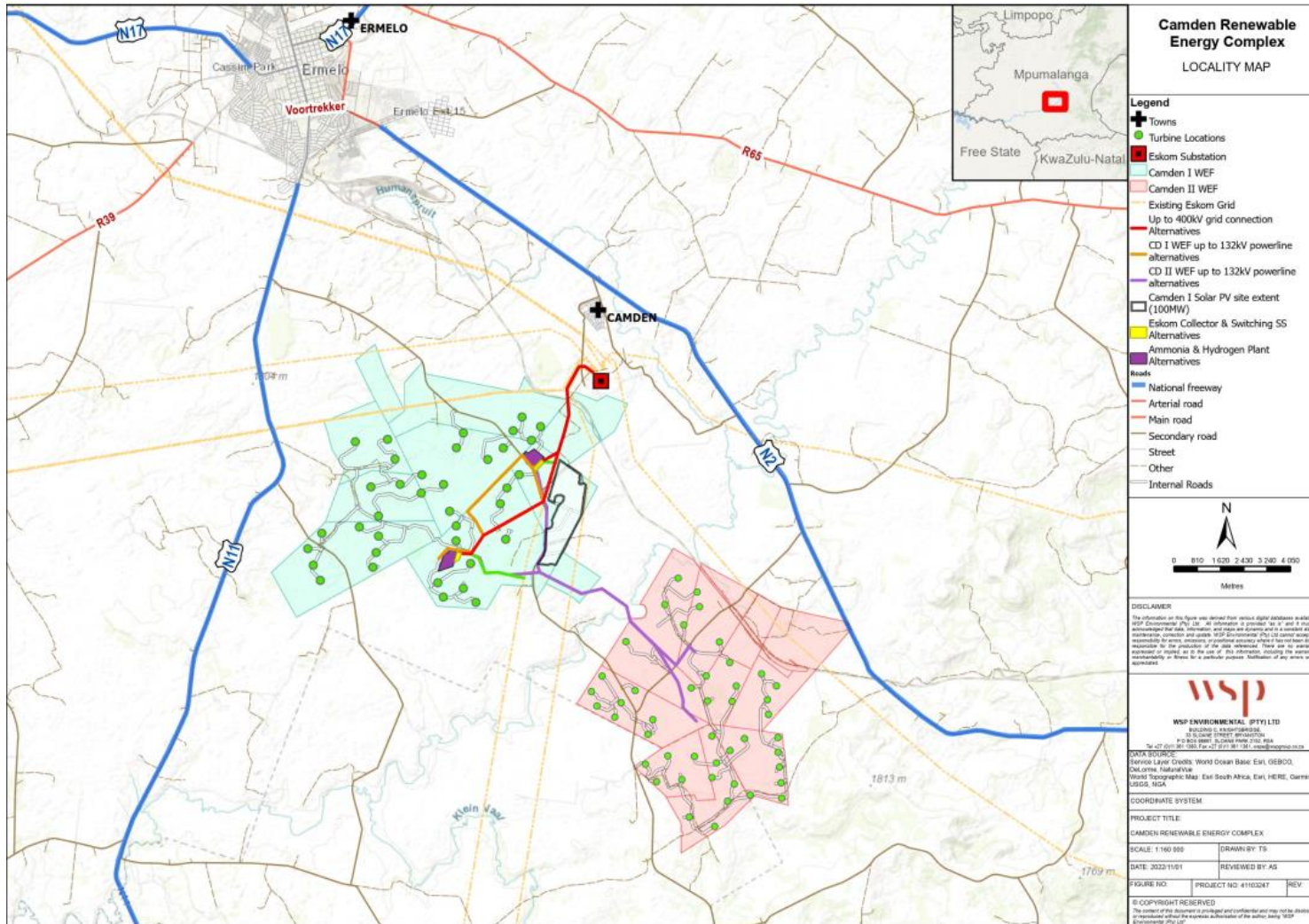


Figure 1-1: Location of the proposed Camden I SEF Complex and up to 132kV Grid Connection Transmission line

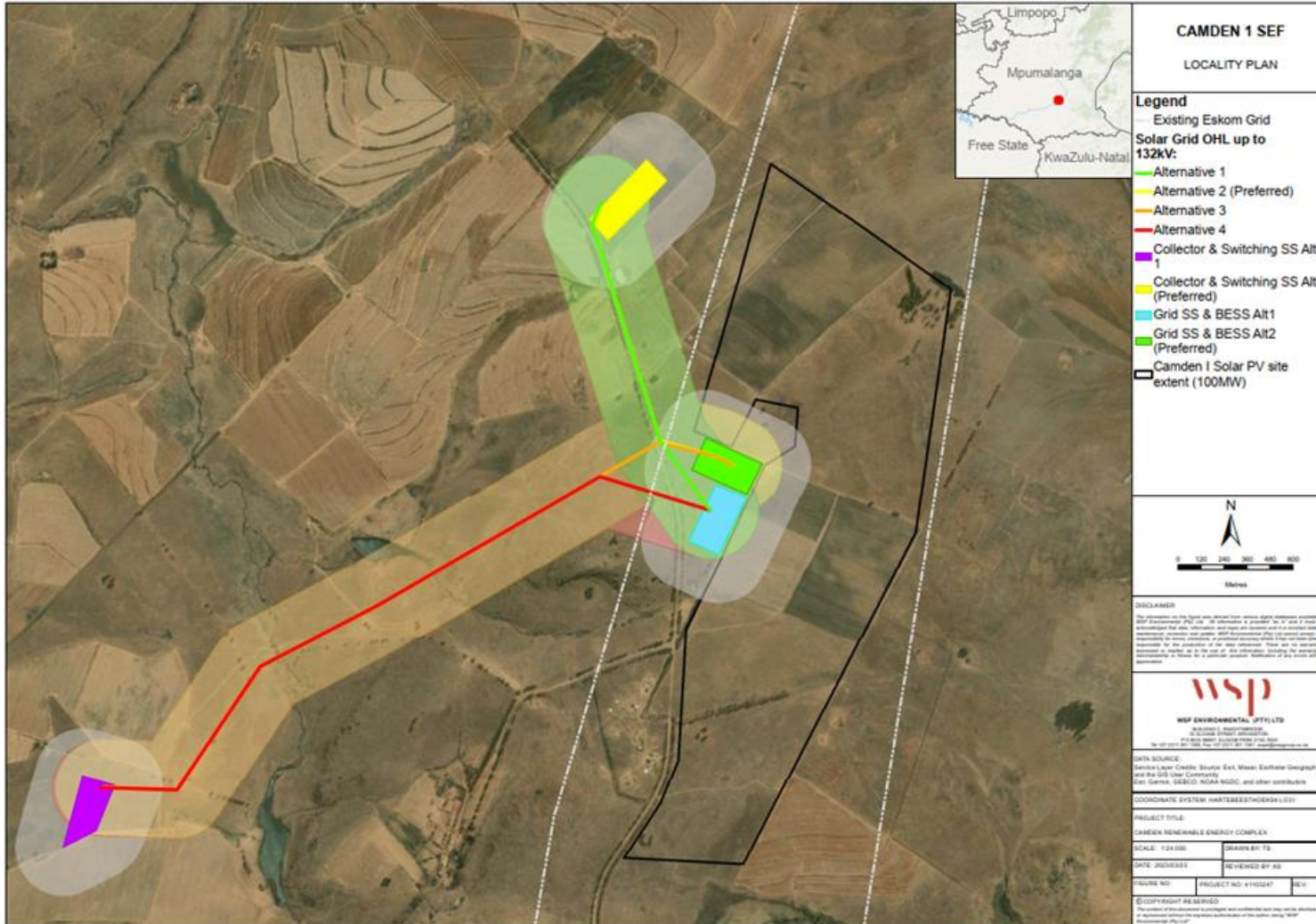


Figure 1-2: Locality map for the proposed Camden I SEF up to 132kV OHPL project, showing the respective grid route corridors and assessment zones around the substation infrastructure

1.2 DETAILS OF THE APPLICANT

Enertrag South Africa (Pty) Ltd (hereafter referred as “Enertrag”) is the project proponent (Applicant) with regards to this application for the construction and operation of the proposed Camden I solar 132 kV Grid Connection project. **Table 1-2** provides the relevant details of the project proponent.

Table 1-2: Details of Project Proponent

PROPONENT: ENERTRAG SOUTH AFRICA (PTY) LTD

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Email:	Gideon.raath@enertrag.com

1.3 TERMS OF REFERENCE AND DETAILS OF EAP

WSP was 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 1-3 details the relevant contact details of the EAP.

Table 1-3: Details of the EAP

EAP WSP GROUP AFRICA (PTY) LTD

Contact Person:	Ashlea Strong
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Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392
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Email:	Ashlea.Strong@wsp.com
EAP 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
EAPASA Registration Number:	EAPASA (2019/1005)

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

Table 1-4: 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 1.5
(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 B
(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 6
	ii) Pre-construction activities;	
	iii) Construction activities	
	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 6
(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 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 7
(h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7
(i)	An indication of the persons who will be responsible for the implementation of the impact management actions;	Section 6 Section 7
(j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6 Section 7
(k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 7.16.3
(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 ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 6
(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 area and the site location alternatives considered for the project are discussed in the Project Alternatives (Section 1.8). The descriptions encompass the activities to be undertaken during the construction and operational phases as well as the consideration for site accessibility, water demand, supply, storage, and site waste management. This section also considers the need and desirability of the project in accordance with Appendix 1 of GNR 326.

1.5.1 LOCATION OF THE PROPOSED PROJECT

The proposed up to 132kV OHPL, 33/132kV Substation and associated infrastructure will be developed in an area south-west of Ermelo, in Mpumalanga, and falls within ward 11 of the Msukaligwa Local Municipality and the Gert Sibande District Municipality. The proposed project including the associated alternatives, is indicated in **Figure 1-3** and **Table 1-5**. Refer to **Figure 1-3** and **Section 1.8** for the coordinates of the alternative substations.

The proposed project (substation and transmission line) is located over two properties. The details of the properties including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 1-6**.

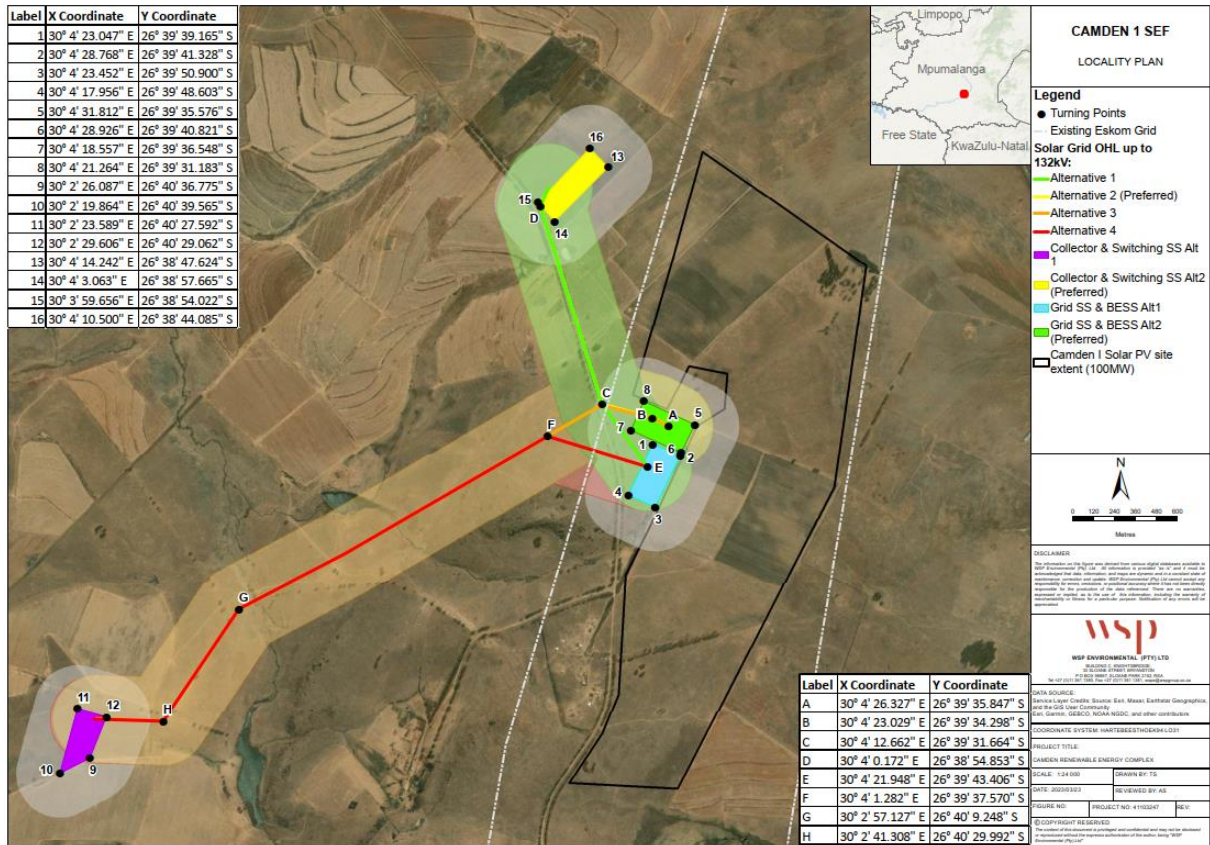


Figure 1-3: Camden I SEF showing 132 kV Powerline Alternatives and coordinates, including assessment corridors proposed for authorisation

Table 1-5: Co-ordinates of the OHPL routes

POINT	BEND POINT CO-ORDINATES	
132kV OHPL: Alternative 1		
E	30° 4' 21.948" E	26° 39' 43.406" S
C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
I	30° 4' 1.87" E	26° 38' 51.28" S
132kV OHPL: Alternative 2 (Preferred)		
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
I	30° 4' 1.87" E	26° 38' 51.28" S
132kV OHPL: Alternative 3		
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S

POINT	BEND POINT CO-ORDINATES	
H	30° 2' 41.308" E	26° 40' 29.992" S
J	30° 2' 27.51" E	26° 40' 29.37" S
132kV OHPL: Alternative 4		
E	30° 4' 21.948" E	26° 39' 43.406" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S
H	30° 2' 41.308" E	26° 40' 29.992" S
J	30° 2'27.51"E	26°40'29.37"S

Table 1-6: Farm portions on which the proposed powerline is located

FARM NAME & NUMBER	21 DIGIT SG CODE	MUNICIPALITY / PROVINCE	PROVINCE
Portion 1 of Welgelen Farm 322: – Powerline Alternative 1; – Powerline Alternative 2 (Preferred) – Powerline Alternative 3 – Powerline Alternative 4 – IPP substation 1 – IPP substation 2 (preferred) – Collector Substation Alternative 2 (Preferred)	TOIT0000000032200001	Msukaligwa Local Municipality/ Gert Sibande District Municipality/ Mpumalanga Province	Mpumalanga Province
Portion 2 of Welgelen Farm 322: – Powerline Alternative 3; – Powerline Alternative 4 – Collector Substation Alternative 1;	TOIT0000000032200002	Msukaligwa Local Municipality/ Gert Sibande District Municipality/ Mpumalanga Province	Mpumalanga Province

1.6 PROJECT INFRASTRUCTURE

The proposed project entails the construction of an up to 132kV grid connection overhead powerline including associated infrastructure, from the Camden I Solar PV Facility to the nearby Camden Collector substation (which in turn will connect to the Camden Power Station). The powerline will be approximately 5km in length, depending on the authorized location of the collector substation (hereafter know as 'ECSS').

The onsite grid connection substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The area for the onsite substation will be up to 1.5ha. The up to 132kV powerline and substation will have a 500m corridor (250m either side of the centre line, and 250m around the entire perimeter of the proposed substation sites), to allow for micro-siting and avoidance of sensitive features where possible. This corridor, as opposed to the line routing, is proposed for authorisation. This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e., the termination works). The proposed project entails the construction of an up to 132kV Grid connection overhead powerline from the Camden. A technical summary of the up to 132kV grid connection and its associated infrastructure is included in **Table 1-7**.

Table 1-7: Details of the proposed Camden I SEF up to 132kV Grid Connection Transmission Line

OVERHEAD POWERLINE

Powerline capacity	Up to 132kV (note this includes 132kV exactly for the avoidance of doubt)
Powerline corridors width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 500 m (i.e. 250 m on either side of centre line). As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Powerline servitude width	40m
Powerline pylons:	Monopole or Lattice pylons, or a combination of both where required and as informed by detailed design
Construction clearance required (per pylon)	To allow for crane and large component access and installation, clearing required for each tower depends on local terrain, but up to 1500m ² , or where existing OHL crossings are made or powerlines are constructed adjacent each other, up to 2500m ² .
Powerline pylon height:	Up to a maximum of 40 m
Minimum conductor clearance	8.1 m
Pylon spacing	Up to 250m apart, depending on complexity and slope of terrain

OVERHEAD POWERLINE

<p>Pylon designs</p>	<p>Various pylon design types are considered (and will be determined during the detailed design engineering phase), and may include any of the following:</p> <p>Up to 132kV (single or double circuit)</p> <p>Intermediate self-supporting monopole</p> <p>Inline or angle-strain self-supporting monopole</p> <p>Suspension self-supporting monopole</p> <p>Triple pole structure</p> <p>Cross rope suspension;</p> <p>Guyed “V” Structure</p> <p>Steel lattice structure; or</p> <p>Similar pylon design at 132kV specification</p> <p>The above designs may require anchors with guy-wires or be anchorless. For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 140m² (12m by 12m), with depths reaching up to 4m typically in a rectangular ‘pad’ shape.</p>
<p>Substation (and Collector Substation connection components)</p>	
<p>Substation Footprint</p>	<p>1.5ha</p>
<p>Substation Capacity</p>	<p>33/132kV</p>
<p>Corridor width</p>	<p>A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 250m around the entire perimeter of the proposed substation sites. As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.</p>
<p>Associated infrastructure</p>	<p>The substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc, including the following:</p> <p>Standard substation electrical equipment, including but not limited to transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, 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.</p> <p>The control building, telecommunication infrastructure, oil dam(s)</p> <p>Workshop and office area within the substation footprint</p> <p>Fencing around the substation</p> <p>Lighting and security infrastructure</p> <p>All the access road infrastructure to and within the substation</p> <p>Further ancillary infrastructure including but not limited to lighting, lightning protection, fencing, buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms).</p>

OVERHEAD POWERLINE

Termination works	All works and components required for connection at and into the Collector Substation comprising the necessary up to 132kV voltage electrical components, including amongst others standard substation electrical equipment as may be needed (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.
Roads Infrastructure	
Road servitude and access roads	Approximately 6 meters wide, however where required for turning circle/bypass areas, access or internal roads will be up to 20m wide to allow for larger component transport. During operation, vegetation maintenance by partial clearing/maintenance in grid servitude for operation, safety and maintenance reasons.

1.6.1 OVERHEAD POWERLINE

It is proposed that Camden I SEF will connect to the nearby Camden Collector substation (which in turn will connect to the Camden Power Station), through an up to 132 kV OHPL (either single or double circuit) between the grid connection substation portion (immediately adjacent the Camden I Solar PV on-site IPP substation portion) and that of the Camden Collector substation. The OHPL will be approximately 5 km in length, depending on the authorized location of the collector substation. The onsite grid connection substation will consist of high voltage substation yard to allow for multiple (up to) 132 kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The area for the onsite substation will be up to 1.5 ha. The OHPL and substation (including terminating substation works) will have a 250 m corridor (250m on either side of the centre line and 250m around the entire perimeter of the substation and termination works). This application includes the necessary up to 132 kV voltage electrical components required for connection at the Collector Substation (i.e., the termination works).



Figure 1-4: Conventional lattice powerline tower compared with a steel monopole structure

1.6.2 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 Eskom's national grid.

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. 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. **Figure 1-5** All the high voltage lines, plus the transformers and related equipment, form the transmission system also known as the national grid.

1.6.3 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.

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 1-5** provides an illustration of a typical substation layout.

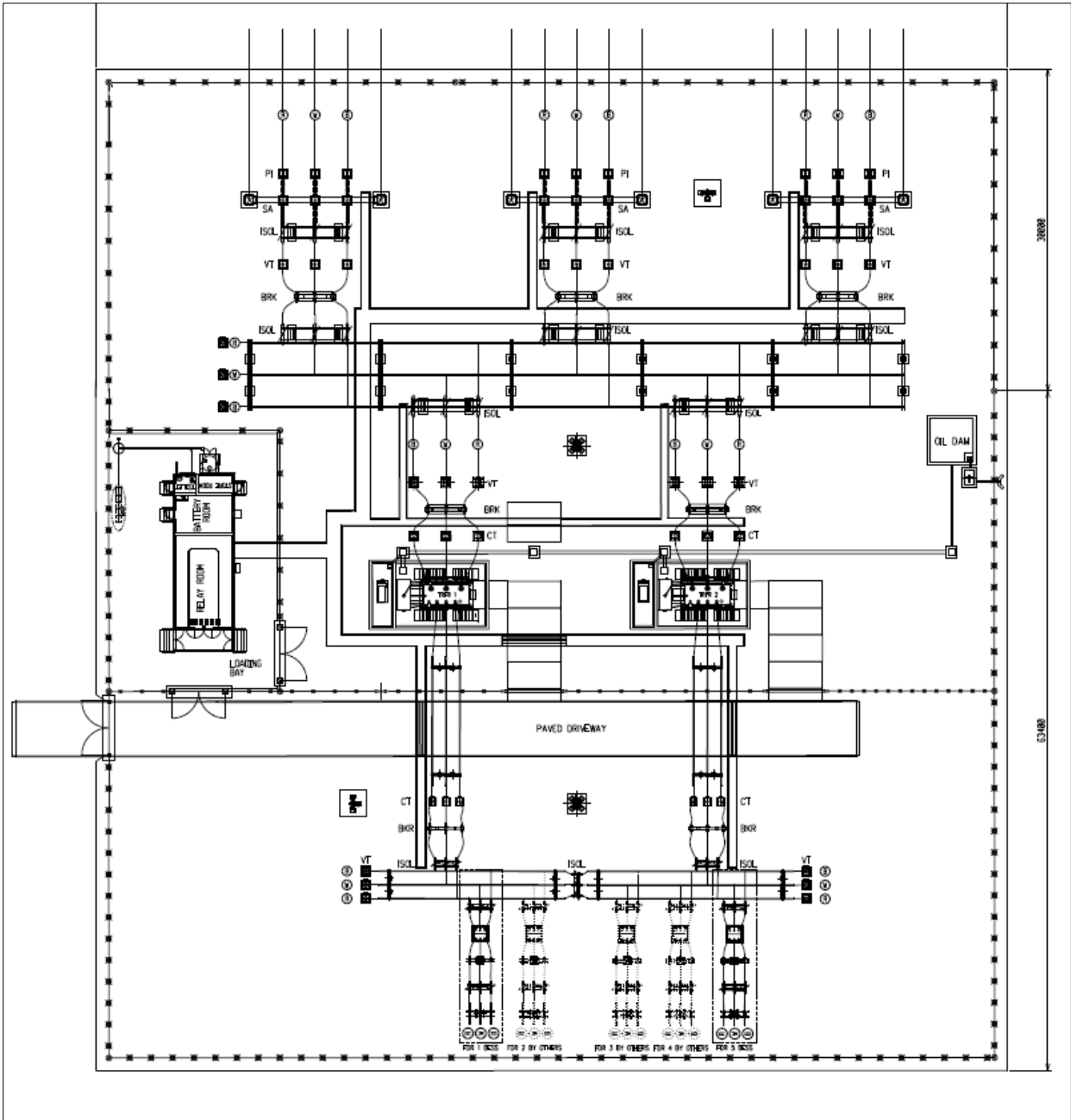


Figure 1-5: Typical Substation Layout (illustrative only)

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.

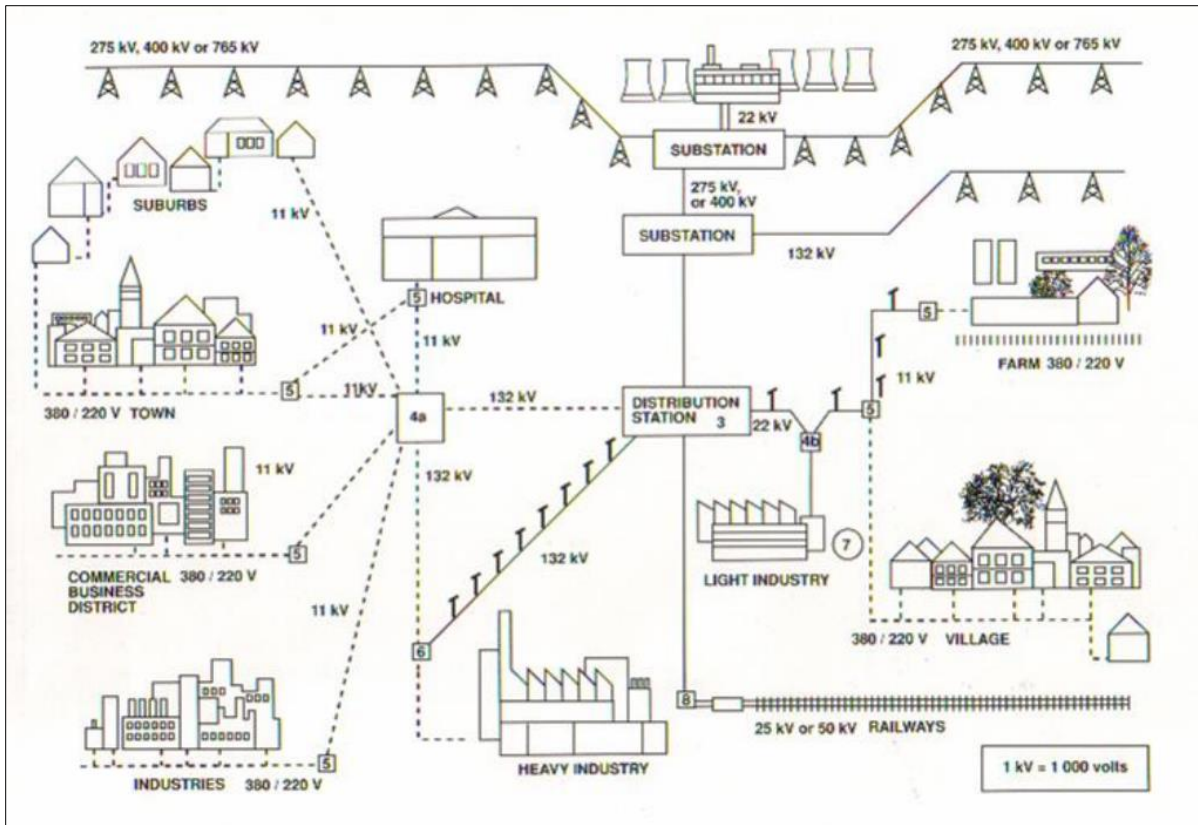


Figure 1-6: Typical Distribution System

1.6.4 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 and construction of access roads/tracks (where required);
 - Step 4: Construction of tower structure foundations;
 - Step 5: Assembly and erection of infrastructure on site;
 - Step 6: Stringing of conductors; and
 - Step 6: Rehabilitation of disturbed areas and protection of erosion sensitive areas.
- Operation Phase
 - Step 7: Continued maintenance during operation.

1.6.5 CONSTRUCTION PHASE

CONSTRUCTION SCHEDULE

Construction of the Overhead Powerline (OHPL) and associated infrastructure is anticipated to take 6-24 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. It is expected that the components will generally be transported to site with normal heavy load vehicles. Large mobile plant including mechanical/hydraulic augers, mobile cranes, bucket trucks/cherry pickers will be used during installation of the OHPL. Mobile plant required for the installation of the OHPL will be determined by the contractor.

LABOUR REQUIREMENTS

During site preparation and installation of Project related infrastructure the selected Contractor, working on behalf of Camden I SEF, 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, subject to a skills assessment and confirmation of staffing availability.

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 drilling of holes (typically 2 to 3m in depth), planting of monopoles (compaction only, no concrete casting) and stringing of the conductors. It is not envisaged that any large excavations and stabilized backfill will be required. However, this will be verified on site once the geotechnical assessment has been undertaken at each monopole position (part of construction works). A number of tower options could be utilised with a maximum height of 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 in collaboration with Eskom will be responsible for functional testing and commissioning of the OHPL. This consists of connecting the line from the common collector substation to the Camden MTS.

ONSITE SUBSTATION

A new onsite substation will be established within the extent of the authorized Camden I SEF. The Camden I SEF substation EA is undertaken as part of a different process; however, the Eskom Switching Substation is part of this application. The Eskom Switching Substation will be constructed on area of 5 ha. In addition, all works required to connect into the Camden I Common Collector Substation (i.e., terminating works) forms part of this application.

DEMOBILISATION

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

1.6.6 OPERATIONAL PHASE

Eskom will be responsible for managing the operations of the OHPL and associated infrastructure in line with their internal management systems. Eskom is considered to have the requisite expertise to operate and maintain

the transmission line. Eskom 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 and associated 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 and associated infrastructure will involve the following activities, discussed below.

SERVITUDE MANAGEMENT AND ACCESS ROAD MAINTENANCE

Servitude and access road maintenance is aimed at eliminating hazards, ensuring safety standards are met and facilitating continued maintenance 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 transmission line. 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

Eskom 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:

- Eskom’s 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.

1.6.7 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.

1.7 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**).

The energy security benefits associated with the proposed Camden I SEF 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.

The land on which the OHPL will be constructed is located within the extent of the Camden I SEF site and the proposed Camden common collector substation. 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 in accordance with this EMPr.

1.8 PROJECT ALTERNATIVES

In terms of the EIA Regulations, feasible alternatives are required to be considered. All identified, feasible alternatives are required to be evaluated in terms of social, biophysical, economic, and technical factors. A key challenge of the BA Process is the consideration of alternatives. Most guidelines use terms such as ‘reasonable’, ‘practicable’, ‘feasible’ or ‘viable’ to define the range of alternatives that should be considered.

Effectively there are two types of alternatives:

- Incrementally different (modifications) alternatives to the project; and
- Fundamentally (totally) different alternatives to the project.

“**Alternatives**”, in relation to a proposed activity, means different ways of meeting the general purpose and requirements of the activity, which may include alternatives to –

- a) the property on which or location where it is proposed to undertake the activity;
- b) the type of activity to be undertaken;
- c) the design or layout of the activity;
- d) the technology to be used in the activity;
- e) the operational aspects of the activity; and
- f) the option of not implementing the activity (i.e. no-go).

The relevant alternatives to the proposed Project are discussed below.

1.8.1 ACTIVITY ALTERNATIVE

Four (4) route alternatives have been assessed for the transmission lines and two (2) structural alternatives have been assessed (i.e., on site substation alternatives). Alternative activities for the current Project are not reasonable or feasible as the purpose of this project is to transmit electrical energy generated by the proposed Camden I SEF to the Camden collector substation for distribution via the national electrical grid network.

1.8.2 LOCATION ALTERNATIVES

The purpose of the OHPL is to connect the Proposed Camden I SEF to the national grid. Therefore, the OHPL is required to be located between the grid on-site IPP substation for the solar facility and that of the Camden Collector substation. No alternative location for the proposed Project is deemed viable.

Table 1-8: Substation Alternative co-ordinates

POINT	LATITUDE	LONGITUDE
Alternative 1: Eskom Collector and Switching Substation		
		
S1-1	26°40'36.82"S	30° 2'26.07"E
S1-2	26°40'39.57"S	30° 2'19.87"E
S1-3	26°40'27.62"S	30° 2'23.60"E
S1-4	26°40'29.07"S	30° 2'29.60"E
Alternative 2 – Preferred: Eskom Collector & Switching Substation		
		
S2-1	26°38'47.65"S	30° 4'14.23"E
S2-2	26°38'57.66"S	30° 4'3.07"E
S2-3	26°38'54.03"S	30° 3'59.66"E
S2-4	26°38'44.10"S	30° 4'10.51"E
Alternative 1: Grid Substation & BESS		

POINT	LATITUDE	LONGITUDE

S3-1	26°39'39.20"S	30° 4'23.08"E
S3-2	26°39'41.33"S	30° 4'28.76"E
S3-3	26°39'50.91"S	30° 4'23.44"E
S3-4	26°39'48.61"S	30° 4'17.98"E

Alternative 2- Preferred: Grid Substation & BESS

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S4-1	26°39'35.64"S	30° 4'31.79"E
S4-2	26°39'40.82"S	30° 4'28.93"E
S4-3	26°39'36.55"S	30° 4'18.57"E
S4-4	26°39'31.19"S	30° 4'21.27"E

1.8.3 LAYOUT ALTERNATIVES

As mentioned before, four (4) alternatives have been developed for the proposed project, the alternatives are discussed below:

ALTERNATIVE 1

Alternative 1 transmission line will be constructed from the Camden I SEF alternative 1 substation through an OHPL 132 kV transmission line in a northerly direction into the Alternative 2 (Preferred) common collector

substation which is situated approximately 1.7 km north of the Camden I SEF Alternative 1 substation. Alternative 1, up to 132kV transmission line is approximately 1.8 km in length. The powerline will be constructed parallel to a regional dirt road that runs through the study area. This route will be constructed on an area that is largely grassland as shown in **Figure 1-5**. The centre point of Camden I SEF up to 132kV grid connection transmission line Alternative 1 transmission line route is located at 26°39'16.61"S, 30° 4'7.54"E. **Table 1-9** below provides the transmission line route as well as bend points coordinates.

Table 1-9: Alternative 1 route coordinates

TABLE	LATITUDE	LONGITUDE
E	30° 4' 21.948" E	26° 39' 43.406" S
C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
I	30° 4'1.87" E	26°38'51.28" S

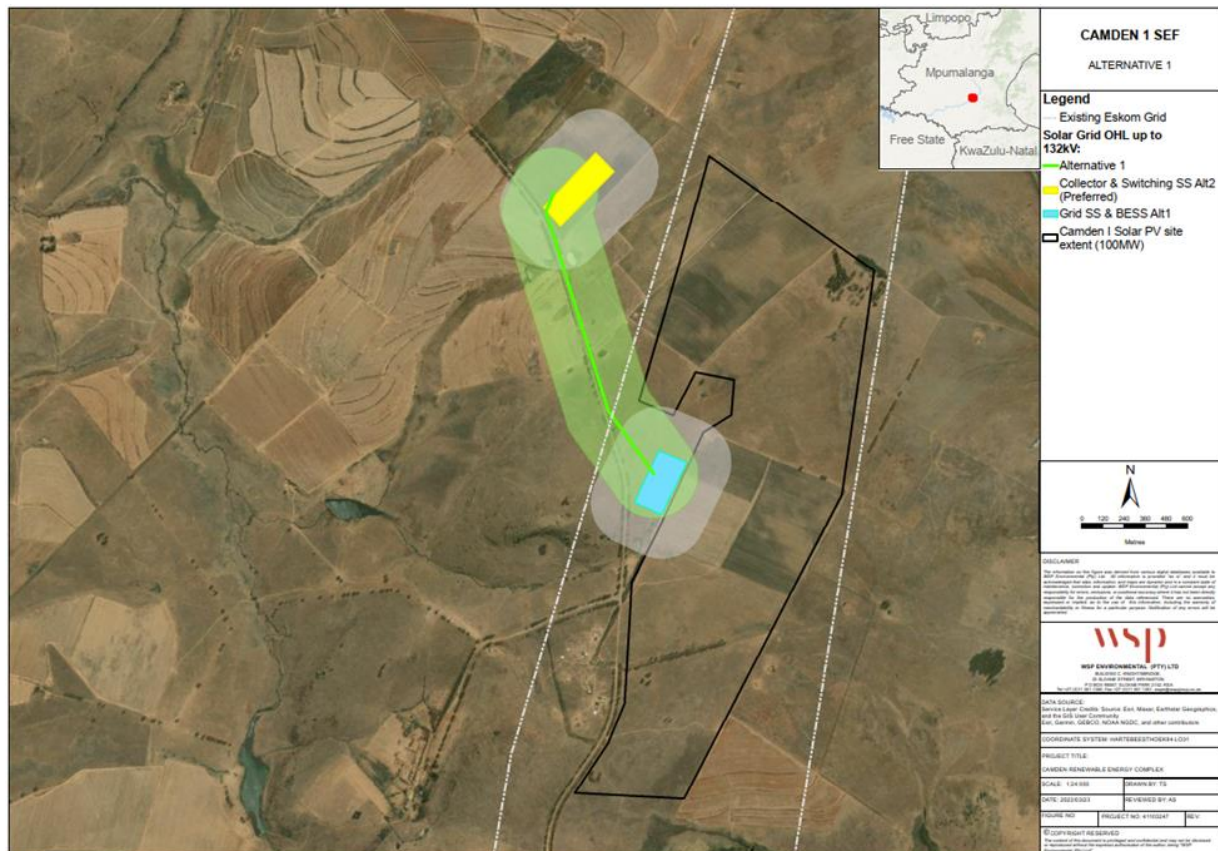


Figure 1-7: Alternative 1 grid assessment corridor for the project indicated in green

1.8.4 ALTERNATIVE 2 (PREFERRED OPTION)

Alternative 2 (Preferred option) transmission line runs from the Camden I SEF Alternative 2 substation (preferred substation) through an overhead 132kV powerline in a northerly direction into the preferred option of the common collector substation. The transmission line will be approximately 2.1 km in length and will run parallel to a regional dirt road that runs through the study area. The centre point of Camden I SEF up to 132kV grid connection

transmission line Alternative 2 transmission line route is located at 26°39'16.61"S, 30° 4'7.62"E. **Figure 1-8**, and **Table 1-10** below provides the powerline route as well as bend points coordinates.

Table 1-10: Alternative 2 (Preferred) Transmission route coordinates

TABLE	LATITUDE	LONGITUDE
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
I	30° 4'1.87" E	26°38'51.28" S

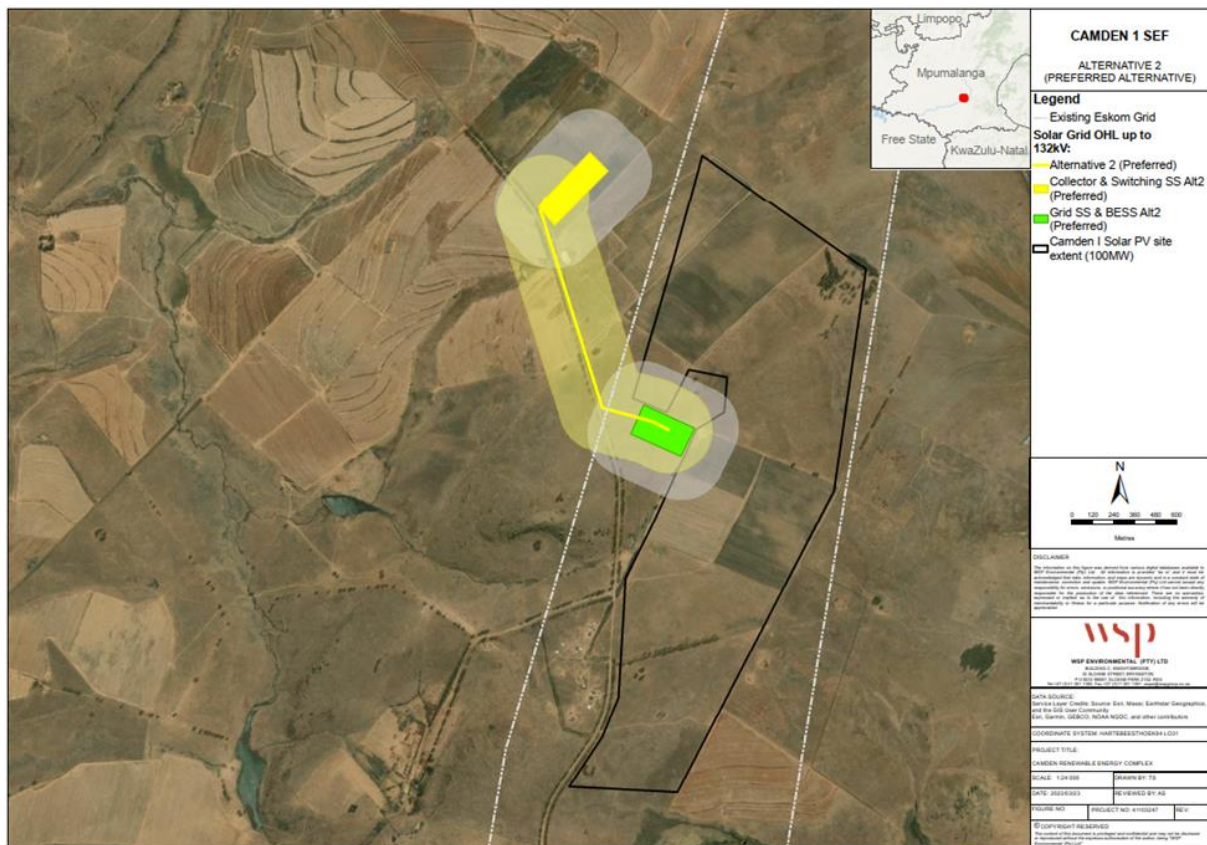


Figure 1-8: Alternative 2 (preferred alternative) grid assessment corridor for the project indicated in yellow

1.8.5 ALTRNATIVE 3

Alternative 3 transmission line will be constructed from the Camden I SEF Alternative 2 (Preferred) substation through an overhead 132kV transmission line to the Alternative 1 common collector substation. The transmission route will cross two tributaries of the Vaal River and secondary roads and two farm roads.

The centre point of Camden I SEF alternative 3 powerline route is located at 26°39'57.15"S, 30° 3'22.97"E. **Figure 1-9** and **Table 1-11** illustrates the co-ordinates of all the bend points along the proposed powerline route.

Table 1-11: Alternative 3 route coordinates

LABLE	LATITUDE	LONGITUDE
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S
H	30° 2' 41.308" E	26° 40' 29.992" S
J	30° 2' 27.51" E	26° 40' 29.37" S

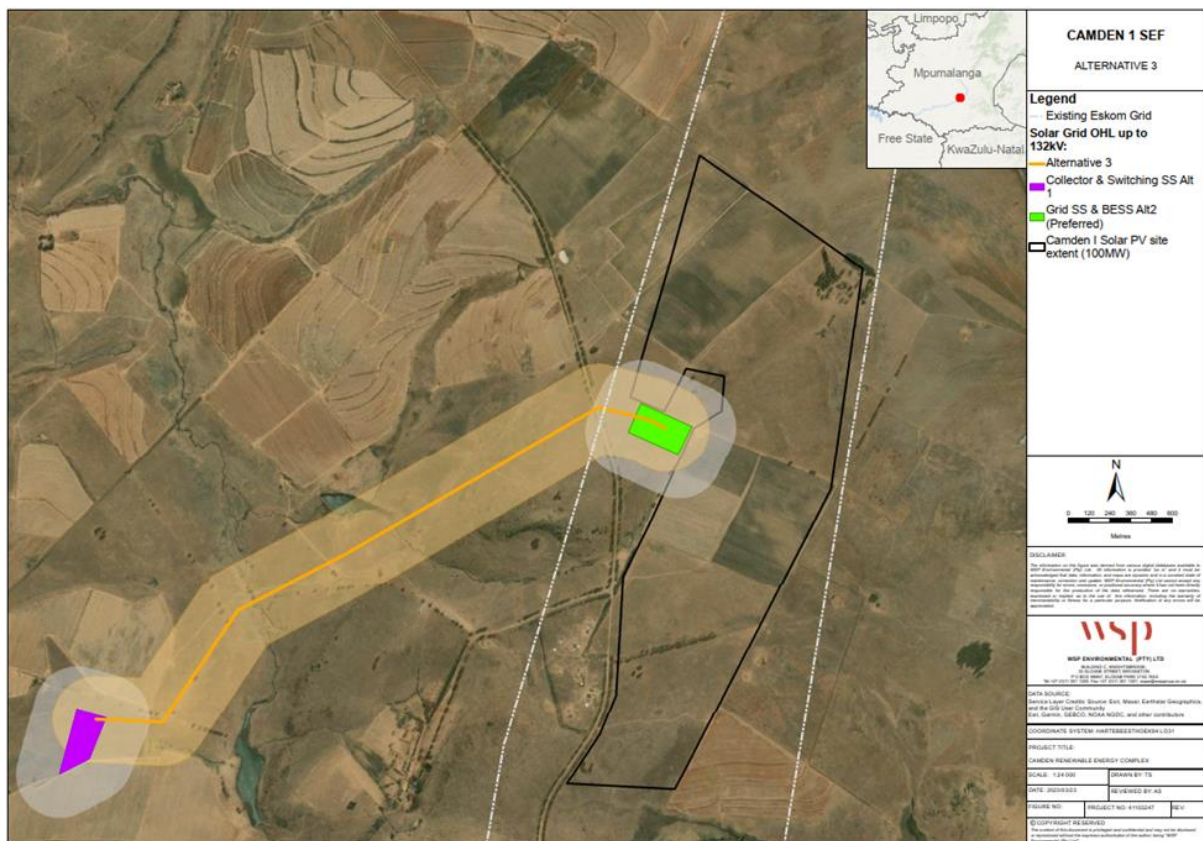


Figure 1-9: Alternative 3 grid assessment corridor for the project indicated in orange

1.8.6 ALTERNATIVE 4

Alternative 4 transmission line will run from the Camden I SEF Alternative 1 substation through a 132kV OHPL to the Alternative 1 common collector substation. The transmission route will cross two tributaries of the Vaal River and secondary roads and two farm roads. The centre point of Camden I SEF alternative 4 powerline route is located at 26°39'57.13"S, 30° 3'22.98"E. **Figure 1-10** and **Table 1-12** illustrates the co-ordinates of all the bend points along the proposed powerline route.

Table 1-12: Alternative 4 route coordinates

LABLE	LATITUDE	LONGITUDE
E	30° 4' 21.948" E	26° 39' 43.406" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S
H	30° 2' 41.308" E	26° 40' 29.992" S
J	30° 2' 27.51" E	26° 40' 29.37" S

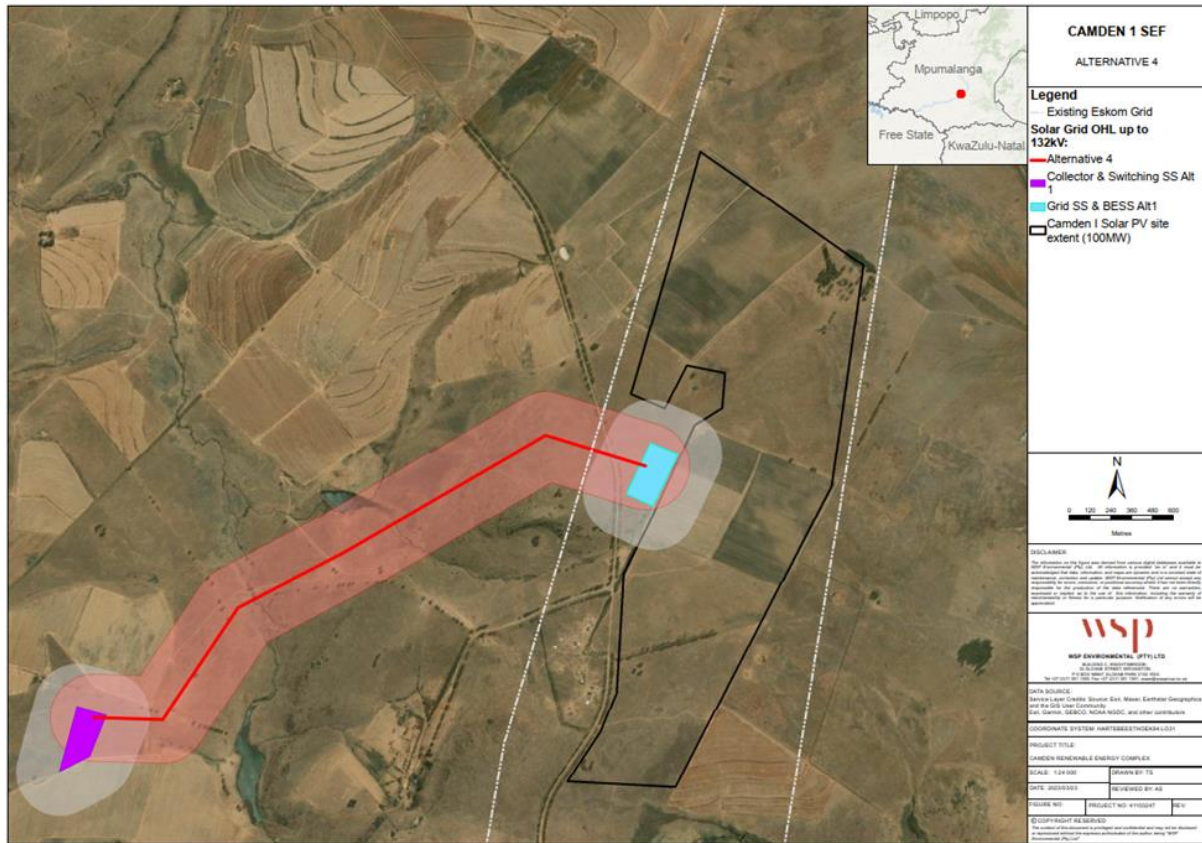


Figure 1-10: Alternative 4 grid assessment corridor for the project indicated in red

Table 1-13: OHPL Routes Alternative Aspects

ASPECT	ALTERNATIVE 2 (PREFERRED OPTION)			
	ALTERNATIVE 1	ALTERNATIVE 3	ALTERNATIVE 4	
Length	1.8 km	2.1km	3.93km	3.087km
Starting point	26°39'43.41"S 30° 4'21.95"E	26°39'35.85"S 30° 4'26.33"E	26°40'29.38"S 30° 2'27.54"E	26°40'29.38"S 30° 2'27.55"E
Centre point	26°39'16.61"S 30° 4'7.54"E	26°39'16.61"S 30° 4'7.62"E	26°39'57.15"S 30° 3'22.97"E	
End point	26°38'51.28"S 30° 4'1.87"E	26°38'52.67"S 30° 4'1.21"E	26°39'35.84"S, 30° 4'26.32"E	30° 4' 21.948" E 26° 39' 43.406" S
Number of bend points	2	3	4	3
Number of road crossings	1	1	4	4
Number of water crossing	0	0	2	2
General	Majority of the Land use is grass land (used for livestock grazing) with some cultivations to the common collector substation. The route runs along a farm road, this route will result to clearing of trees running along the farm road	Majority of the Land use is grass land (used for livestock grazing) with some cultivations to the common collector substation. The route runs along a farm road, this route will result to clearing of trees running along the farm road.	The Land use where this route is planned is largely cultivated land and a few wetland areas. This route will result in closing two tributaries of the Vaal River and crossing of farm roads in three points.	The Land use where this route is planned is largely cultivated land and a few wetland areas. This route will result in closing two tributaries of the Vaal River and crossing of farm roads in three points.
Farm portions	The proposed powerline route will be developed within Portion 1 of the Farm Welgelegen 322.	The proposed powerline route will be developed within Portion 1 of the Farm Welgelegen 322.	The proposed powerline route will cross the Remaining Extent and Portion 1 and 2 of the Farm Welgelegen 322.	The proposed powerline route will cross the Remaining Extent and Portion 1 and 2 of the Farm Welgelegen 322.

1.8.7 TECHNOLOGY ALTERNATIVES

There are two (2) methods of power transmission, these being overhead lines and underground cables. Underground cables are considerably more difficult and expensive to install and maintain, relative to overhead lines. Considering the proposed terrain of the proposed OHPL, which traverses several watercourses including the tributaries of the Vaal River, underground cables would require extensive trenching which would result in greater environmental impacts. Underground distribution lines are therefore not considered feasible for the proposed Project.

Therefore, only one (1) technology has been assessed, namely distribution of electricity via a 132 kV OHPL as this is considered the most appropriate technology and is in line with Eskom design requirements.

MONOPOLE-TYPE PYLONS

The type of pylon to be used depends on the topography and the alignment of the powerline corridors. In general, monopole-type pylons are used for transmission lines with shorter spans.

132KV INTERMEDIATE SELF-SUPPORTING DOUBLE CIRCUIT MONOPOLE (PREFERRED)

Self-supporting galvanised steel Monopole Intermediate or Suspension structure with no stays/anchors. The monopole is designed to support a double electrical circuit with a twin conductor arrangement. The monopole height varies between 26m and 32m.

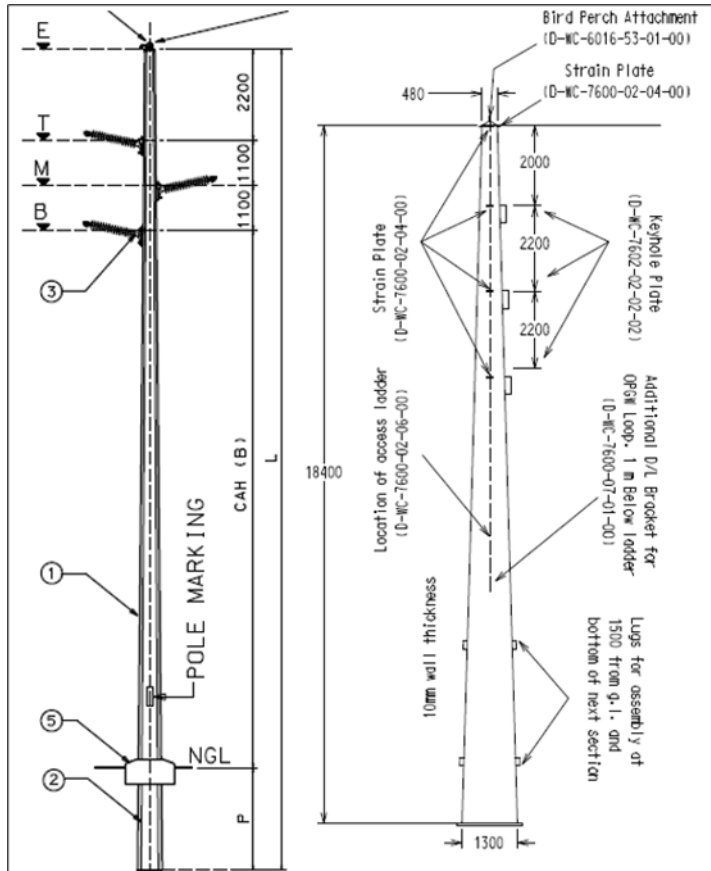


Figure 1-11: 132kV intermediate self-supporting double circuit monopole

132KV INLINE OR ANGLE STRAIN SELF-SUPPORTING DOUBLE CIRCUIT MONOPOLE

Self-supporting galvanised steel Monopole inline or Angle Strain structure with no stays/anchors. This structure will be used as the strain structure and will be positioned at the angle points along the line or as an inline position where a strain point is required due to the ground elevation. The monopole height varies between 26m and 32m.

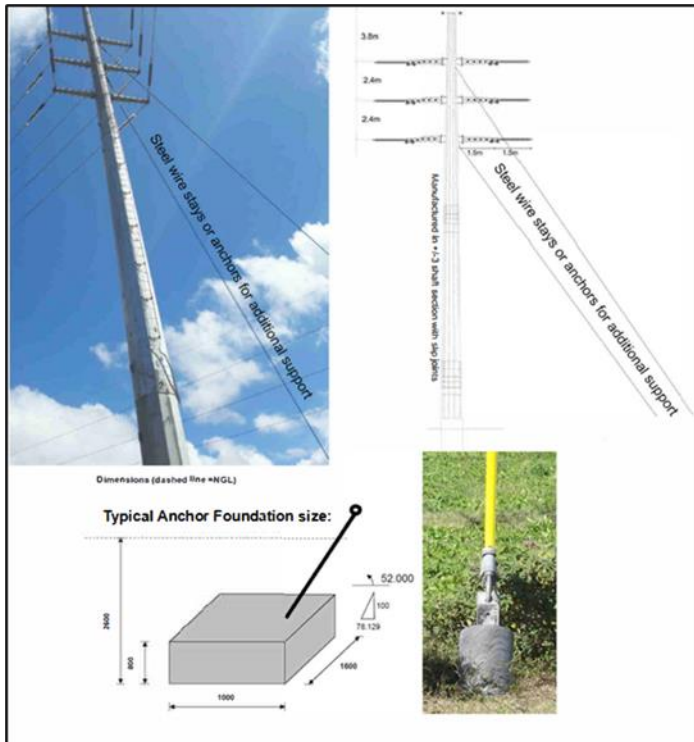


Figure 1-12: 132kV inline or angle strain self-supporting double circuit monopole

132KV SUSPENSION SELF-SUPPORTING SINGLE CIRCUIT MONOPOLE WITH SINGLE CONDUCTOR

Self-supporting galvanised steel Monopole Suspension structure with no stays/anchors. The monopole is designed to support a single electrical circuit with a single conductor arrangement. The monopole height varies between 22m and 26m.

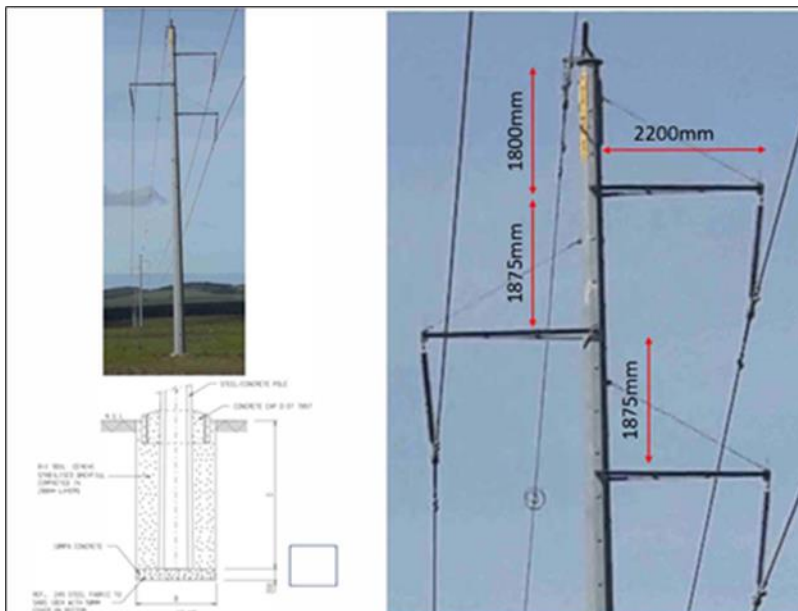


Figure 1-13: 132kV suspension self-supporting single circuit monopole with single conductor

132KV INLINE OR ANGLE STRAIN SELF-SUPPORTING SINGLE CIRCUIT MONOPOLE WITH SINGLE CONDUCTOR

Self-supporting galvanised steel Monopole Inline or Angle Strain structure with no stays/anchors. The monopole is designed to support a single electrical circuit with a single conductor arrangement. The monopole height varies

between 24m and 26m. The foundation will consist of a typical pad foundation with bolts inside the concrete foundation.

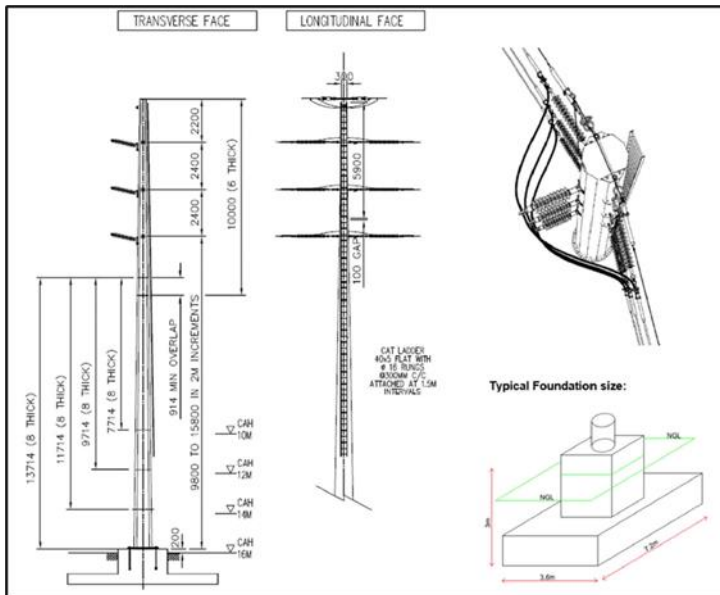


Figure 1-14: 132kV inline or angle strain self-supporting single circuit monopole with single conductor

STEEL LATTICE TOWERS

Steel lattice-type pylons are typically used where long spans (>500m) across valleys and rivers are required, however may be employed elsewhere depending on terrain specific requirements as informed by detailed design.

132KV/275KV POWERLINE DOUBLE CIRCUIT SUSPENSION TOWERS

Consist of a steel framework of individual structural components that are bolted or welded together. Can be designed to carry either one or two electrical circuits, referred to as single-circuit and double-circuit structures. The lattice pylons height varies between 25m and 40m.



Figure 1-15: 132kV/275kV powerline double circuit suspension towers

FOUNDATION

The type of foundation required for each pylon is dependent on the geo-technical conditions. Foundations may be drilled, mechanically excavated, or dug by hand. All foundations are backfilled and stabilised through compaction and capped with concrete at ground level. Below are two examples of monopole foundations for different soil conditions.

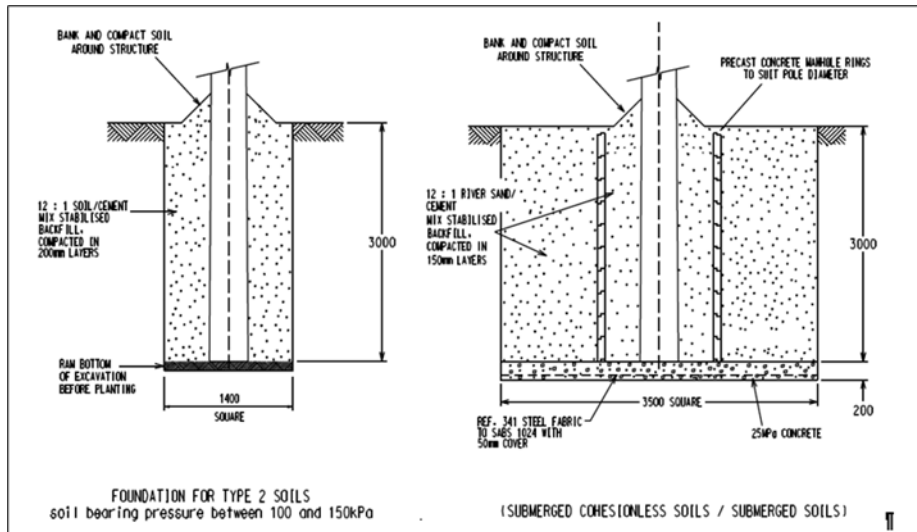


Figure 1-16: type of foundation required for each pylon

1.8.8 OPERATIONAL ACTIVITIES

Eskom will be responsible for the operation of the OHPL and the up to 132kV portion of the onsite substation once it has been constructed and commissioned. Eskom will be responsible to implement the operational EMPr along with mitigations proposed as a result of this BAR. For this reason, no further consideration has been given to operational alternatives.

1.8.9 NO-GO ALTERNATIVE

The no-go option will mean the status quo remains. Both the potential positive and negative impacts from the proposed OHPL will not occur. In addition, the associated up to 100MW of Solar PV facility will be unable to connect to the national grid and therefore the production of this facility will not be available to the nation.

The no-go option would represent a lost opportunity for South Africa to improve energy security and supplement its current energy needs with renewable energy given that energy security benefits associated with the proposed Camden Renewable Complex are dependent upon it being able to connect to the national grid via the establishment of grid connection infrastructure. Considering South Africa's current energy security challenges and its position as one of the highest per capita producers of carbon emissions in the world, this would represent a significant socio-economic cost. Accordingly, the no-go option is not deemed viable.

1.9 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.

— Biodiversity:

- CBA
- ESA
- Critically endangered and endangered species
- Critical habitat

- **Avifauna:**
 - High value habitat unit
 - Presence of sensitive species
- **Freshwater:**
 - Aquatic CBAs
 - Wetland features
 - Freshwater ecosystem priority areas
- **Heritage:**
 - Heritage resource in study area
- **Palaeontology:**
 - Features with very high paleontological sensitivity

The above sensitivities are discussed in the sub-sections below. The combined environmental sensitivities of the proposed powerline Project footprint are shown in **Figure 1-17** below.

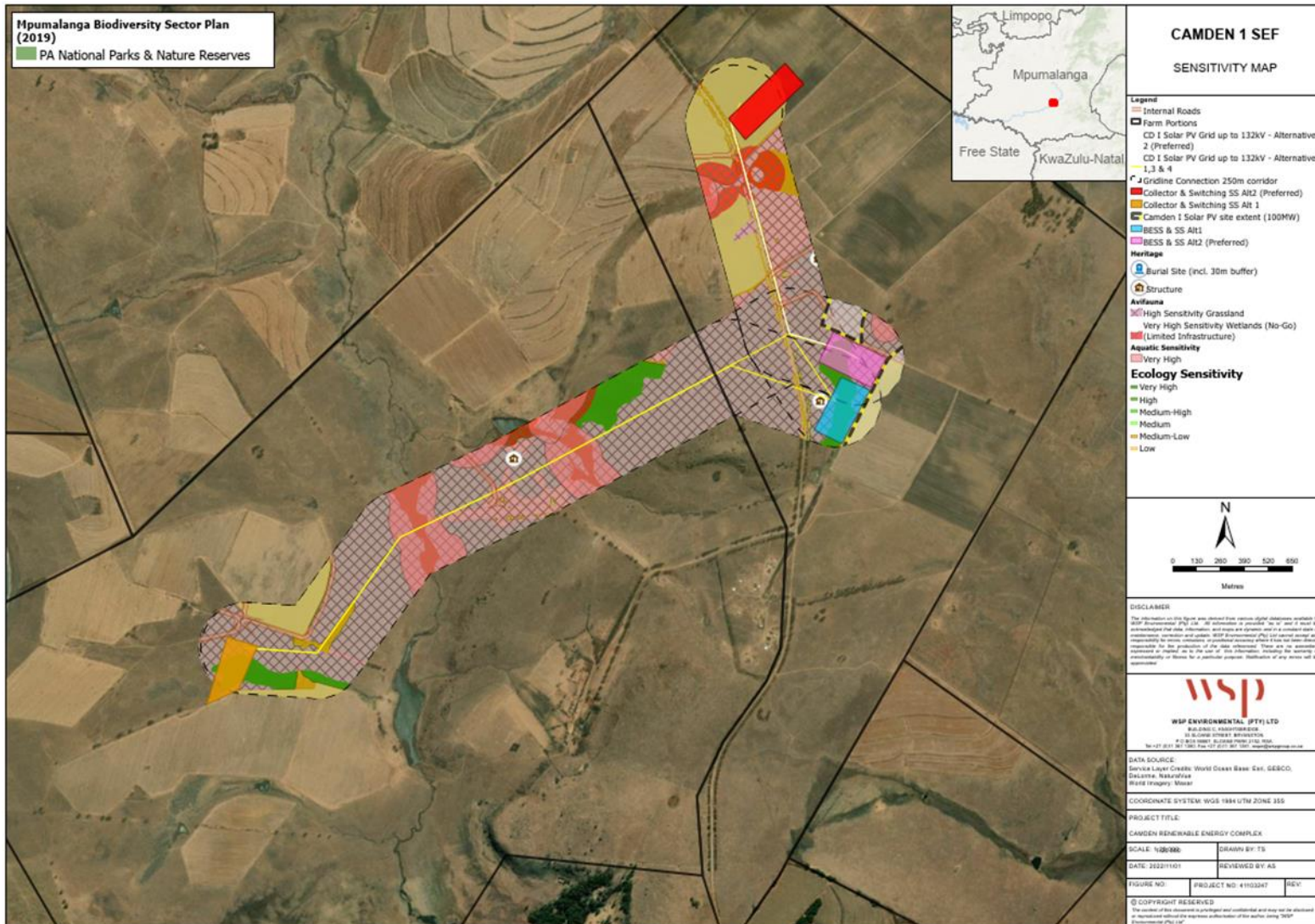


Figure 1-17: Combined Sensitivity Map

1.9.1 AGRICULTURAL POTENTIAL AND SOILS

The screening tool classifies agricultural sensitivity according to only two independent criteria – the land capability rating and whether the land is cultivated or not. All cultivated land is classified as at least high sensitivity, based on the logic that if it is under cultivation, it is indeed suitable for cultivation, 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. 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. The higher land capability values (≥ 8 to 15) are likely to be suitable as arable land for the production of cultivated crops, while lower values are only likely to be suitable as non-arable, grazing land, or at the lowest extreme, not even suitable for grazing.

A map of the proposed powerline and substations alternatives, overlaid on the screening tool sensitivity, is given in **Figure 1-18**, however, 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 do not interfere with crop production.

The agricultural sensitivity of the substation footprint is relevant because that land will be permanently removed from agricultural production. The classified land capability of both substation sites is 8 which translates to a medium agricultural sensitivity.

At the relevant scale for substation sites, historical land use is actually a more reliable indication of soil cropping potential than land capability. The suitable versus the unsuitable soils have been identified over time through trial and error. In an agricultural environment like the one being assessed, all the suitable soils are generally cropped, and uncropped soils can therefore fairly reliably be considered to be unsuitable for crop production. The field-verified and updated indication of which lands should be classified as croplands. In terms of crop suitability, both substation sites should be also classified as MEDIUM agricultural sensitivity because they are uncropped and therefore unsuitable for crop production.

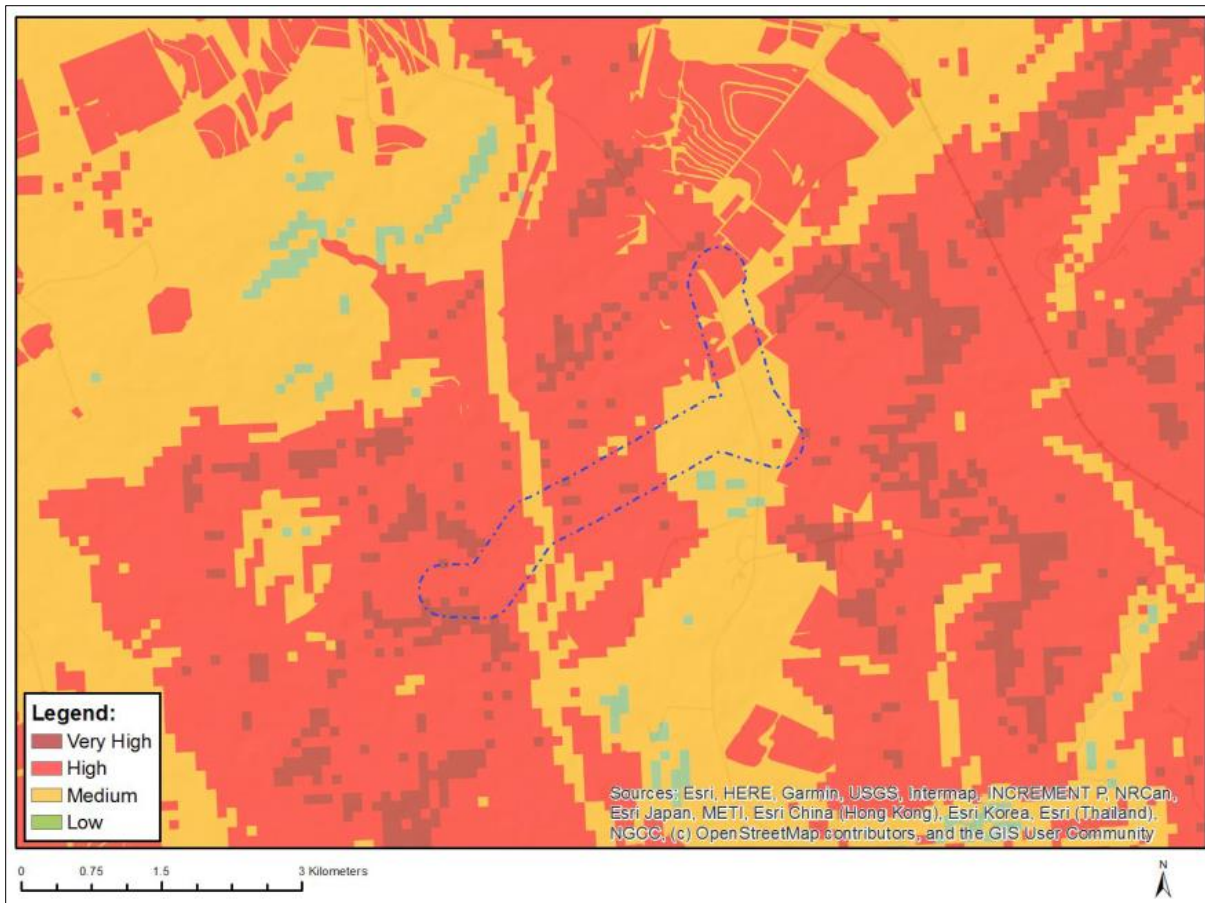


Figure 1-18: DEA Screening Tool extract: Agricultural species theme

1.9.2 TERRESTRIAL ANIMAL SPECIES

The Department of Environmental Affairs online screening tool indicates that the animal species theme that are within two sensitivity classes, namely MEDIUM and HIGH (**Figure 1-19**). The level of the sensitivity classification would suggest that no threatened species are dependent on the site for survival.

The field assessment undertaken by the specialist verifies that the animal sensitivity is Moderate but there are significant areas that have been cultivated that do not warrant this classification.

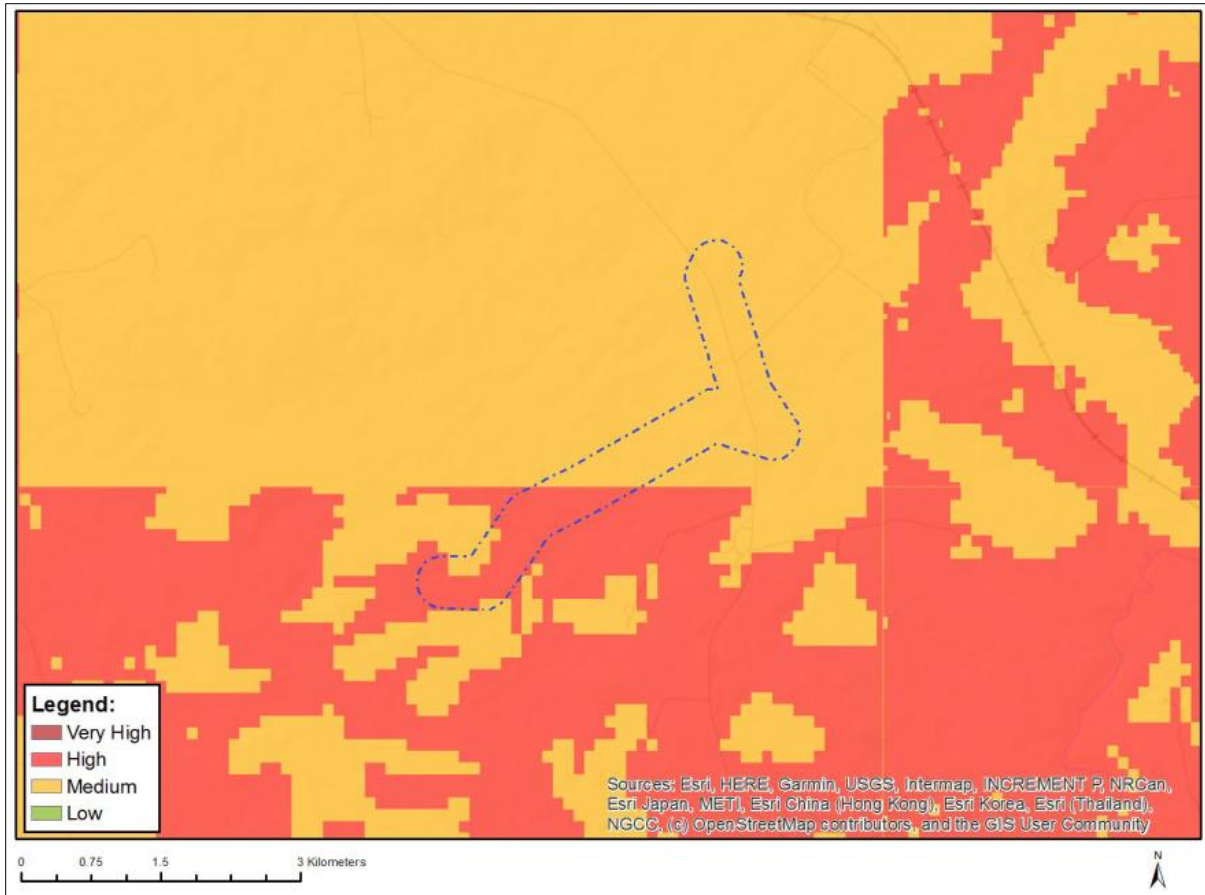


Figure 1-19: DEA Screening Tool extract: Animal species theme

1.9.3 TERRESTRIAL PLANT SPECIES

The plant species theme indicates that the site is within two sensitivity classes, namely MEDIUM and LOW (**Figure 1-20**). No additional information is provided, but the level of the sensitivity classification would suggest that no threatened species are dependent on the site for survival.

These results were confirmed during the field assessment which indicated that there are no plant species occurring on site or likely to occur there that are protected according to the National Environmental Management: Biodiversity Act.

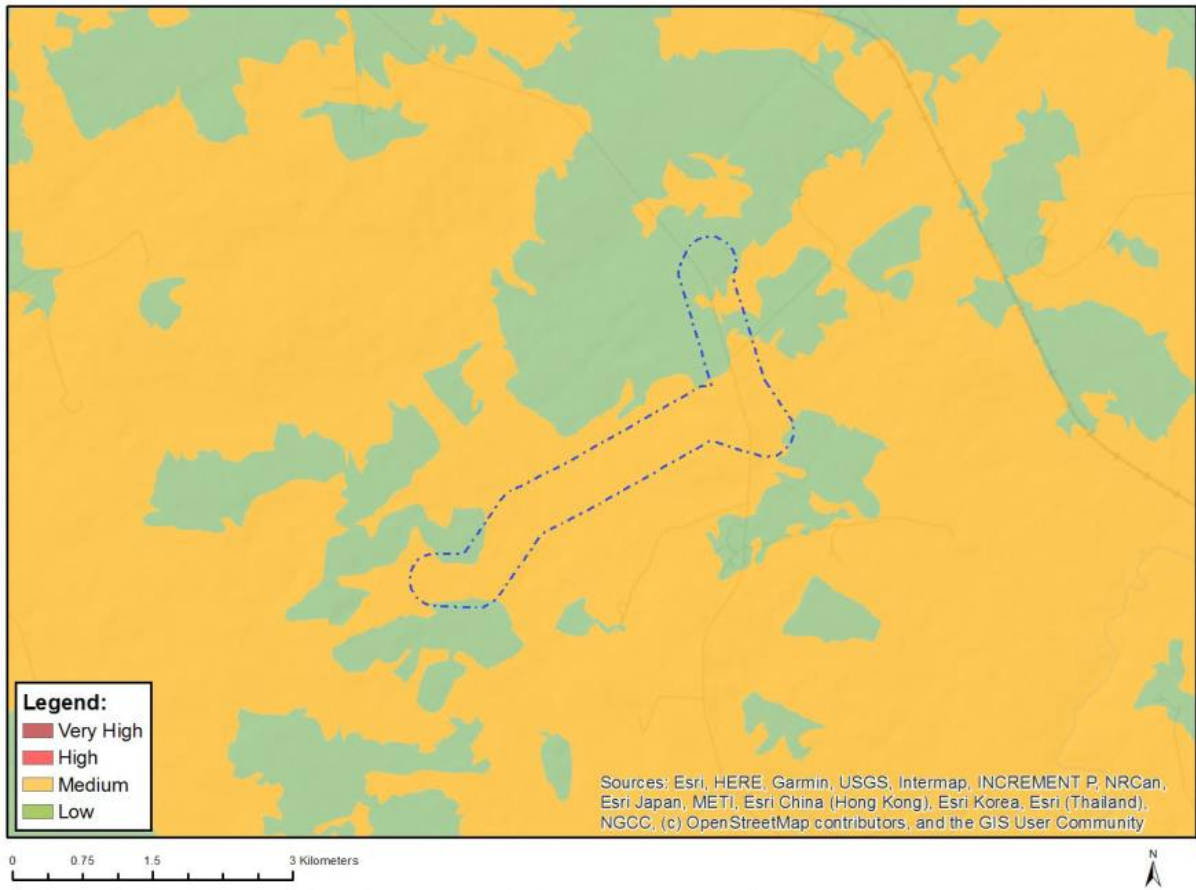


Figure 1-20: DEA Screening Tool extract: plant species theme

1.9.4 TERRESTRIAL BIODIVERSITY THEME

The terrestrial biodiversity theme indicates that the site is within two sensitivity classes, namely **VERY HIGH** (**Figure 1-21**) as the site may include CBAs national, South African Protected Areas, and Threatened Ecosystems. The theme indicates almost the entire study area as being in the Very High sensitivity category, however, the impact assessment undertaken by the specialist indicated a Moderate impact after mitigation measures. This is due to the loss of vegetation that would be permanent, however, the extent of the impact is negligible.



Figure 1-21: DEA Screening Tool extract: terrestrial biodiversity theme

1.9.5 FRESHWATER

Based on the DEFF Screening Tool, the site contains areas of VERY HIGH sensitivity due to the presence of CBAs and rivers. The remaining area within the development footprint is deemed to be of low sensitivity (**Figure 1-22**).

The outcomes of the impact assessment undertaken by the specialist indicated that the construction, operation of the proposed infrastructure does have the potential to impact the identified wetland and riparian systems, with impact ratings between **Low** and **Medium**. However, with mitigative measures in place the risks associated with the proposed infrastructure are **Low**.

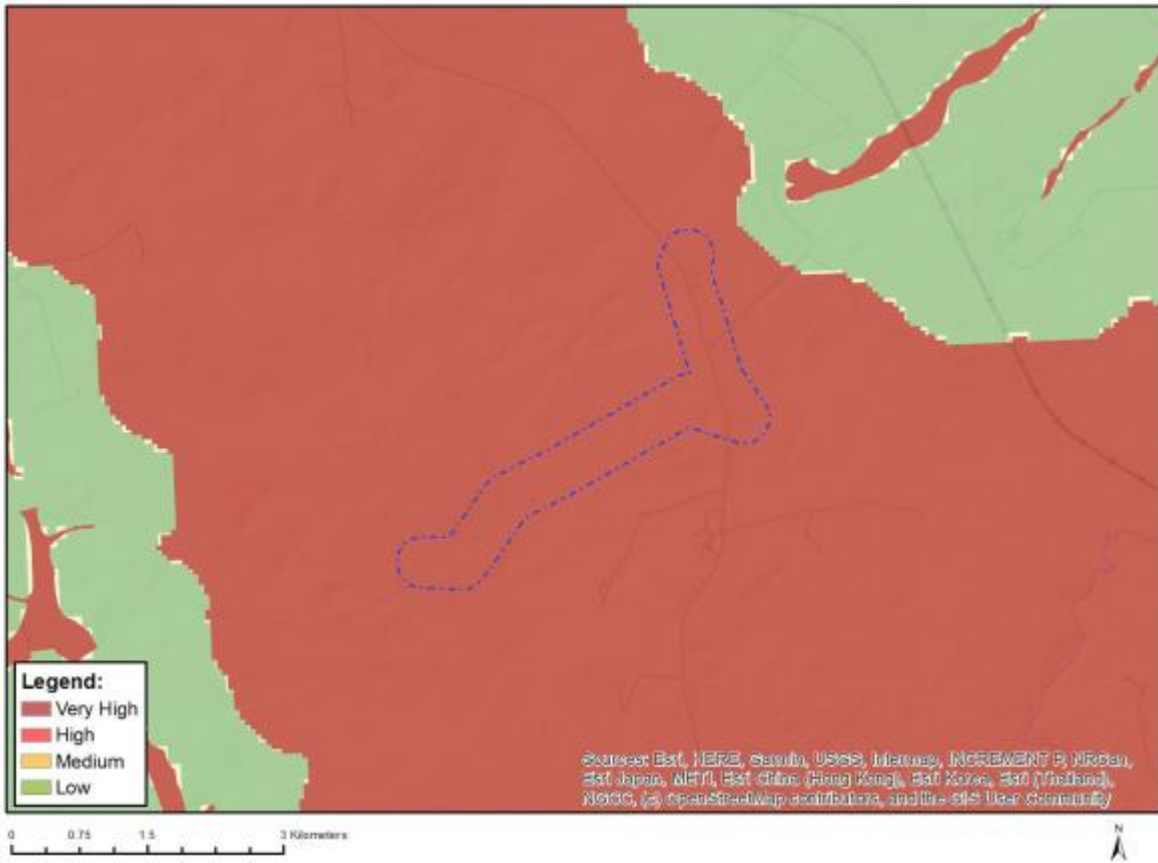


Figure 1-22: DEFF Screening Tool outcome for the aquatic biodiversity theme

1.9.6 HERITAGE

Based on the DEFF Screening Tool, the site contains areas of LOW sensitivity (**Figure 1-23**). This was confirmed during the field survey and no archaeological sites of significance were noted and finds were limited to ruins and burial sites in the wider area. Only Grid Alternative 4 will impact on a recorded feature (CA005) and CA012 and this can be avoided with micro siting of pylons of the powerline. All four grid alternatives are acceptable from a heritage point of view.

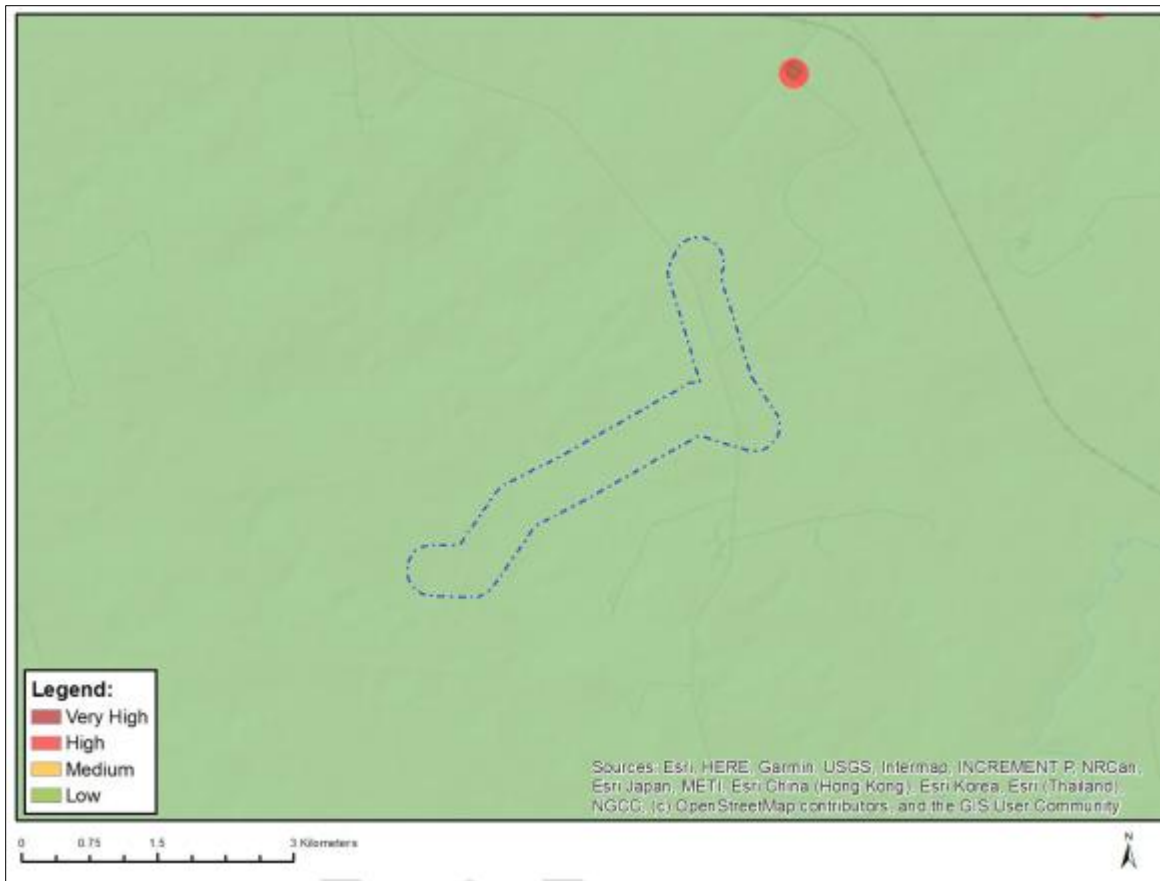


Figure 1-23: DEFF Screening Tool outcome for the heritage theme

1.9.7 PALAEOLOGY

Based on the DEFF Screening Tool, the site contains areas of MEDIUM to VERY HIGH sensitivity (**Figure 1-24**). However, the specialist during the field assessment, that there are no fossils of the *Glossopteris* flora even though fossils have been recorded from rocks of a similar age and type in South Africa. A chance find protocol was provided in the palaeontological report in the event of chance findings.

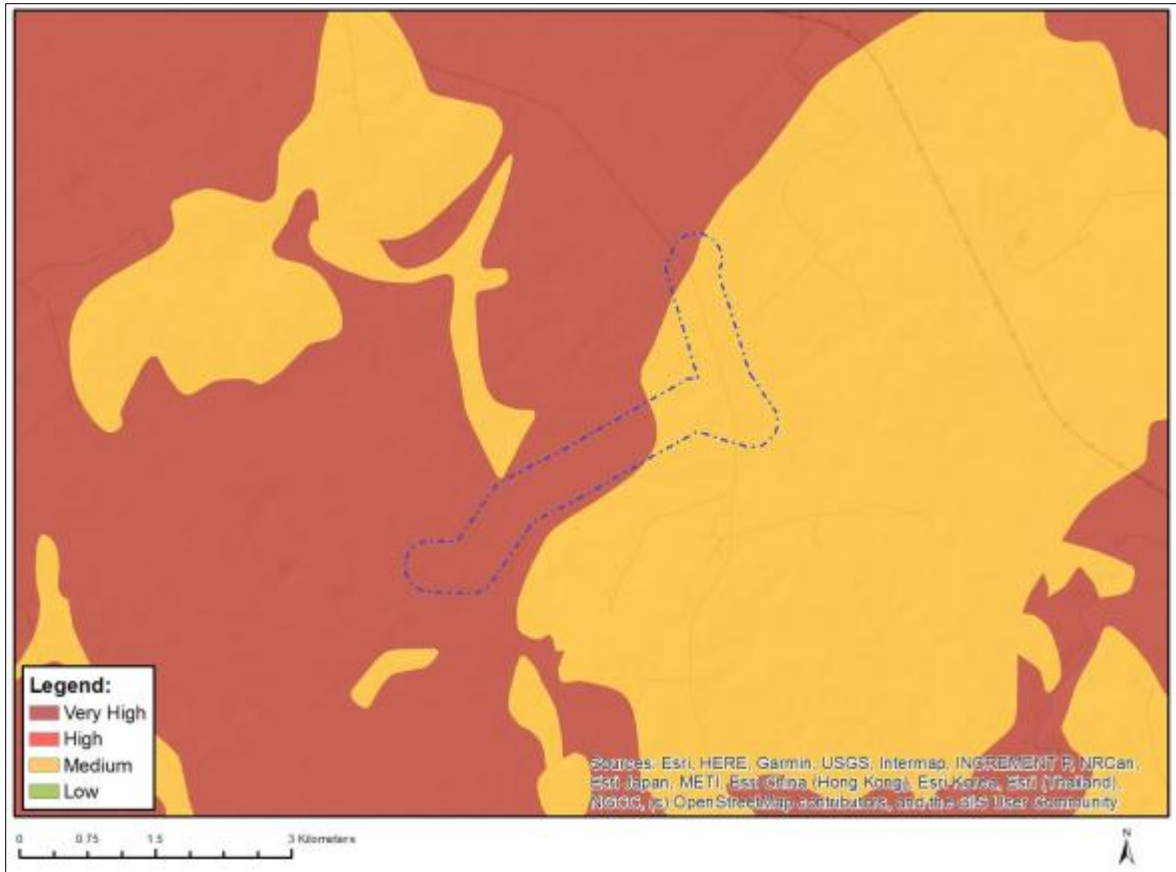


Figure 1-24: DEFF Screening Tool outcome for the palaeontological theme

1.10 IMPACT ASSESSMENT SUMMARY

A summary of the identified impacts and corresponding significance ratings for the proposed powerline is provided in **Table 1-14** below.

Table 1-14: Impact Summary Table

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
Air Quality	Generation of Dust and PM	Construction	Moderate	(-)	Low	(-)
Noise	Noise Emissions	Construction	Low	(-)	Low	(-)
Soil Erosion & Contamination	Soil Erosion	Construction	Moderate	(-)	Low	(-)
	Soil Contamination	Construction	Moderate	(-)	Low	(-)
	Soil Contamination	Operation	Low	(-)	Low	(-)
Aquatic	Loss of high sensitivity systems, i.e. wetlands	Construction	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Damage or loss of riparian and or riverine systems and disturbance of these waterbodies in the construction phase	Construction	Moderate	(-)	Low	(-)
	Water Quality	Construction	Moderate	(-)	Low	(-)
	Impact on habitat change and fragmentation related to hydrological regimes	Construction	Moderate	(-)	Low	(-)
	Impact on aquatic systems through possible increase in surface water run-off on the form and function which could also lead to erosion and or sedimentation if no adequate stormwater management is provided for	Operation	Moderate	(-)	Low	(-)
Terrestrial Biodiversity	Clearing of natural habitat for construction	Construction	Moderate	(-)	Moderate	(-)
	Establishment and spread of declared weeds and alien invader plants	Construction	Low	(-)	Very Low	(-)
	Continued disturbance to natural habitats due to general operational activities and maintenance	Operation	Low	(-)	Low	(-)
	Establishment and spread of declared weeds and alien invader plants	Operation	Moderate	(-)	Very Low	(-)
	Continued runoff and erosion	Operation	Low	(-)	Low	(-)
	Disturbance of natural habitat during infrastructure removal	Decommissioning	Low	(-)	Low	(-)
	Establishment and spread of declared weeds and alien invader plants	Decommissioning	Moderate	(-)	Low	(-)
Terrestrial Plant Species	Clearing of natural habitat for construction	Construction	Moderate	(-)	Very Low	(-)
Terrestrial Animal Species	Clearing of natural habitat for construction	Construction	Moderate	(-)	Low	(-)
	Direct mortality of fauna due to presence of traffic and heavy machinery	Construction	Low	(-)	Very Low	(-)
	Direct mortality of fauna due to presence of traffic and heavy machinery	Operation	Low	(-)	Very Low	(-)
Avifauna	Displacement due to disturbance associated with the construction	Construction	Moderate	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Displacement due to habitat transformation associated with the construction	Construction	Moderate	(-)	Low	(-)
	Electrocution of priority species on the on-site substation infrastructure	Operation	Low	(-)	Low	(-)
	Displacement of priority species due to disturbance associated with decommissioning of the on-site substation and 132kV overhead power line	Operation	Moderate	(-)	Low	(-)
	Displacement of priority species due to disturbance associated with decommissioning of the on-site substation and up to 132kv overhead power line	Decommissioning	Moderate	(-)	Low	(-)
Visual	Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction	Construction	Low	(-)	Low	(-)
	Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings	Construction	Low	(-)	Low	(-)
	Temporary stockpiling of soil during construction may alter the flat landscape. wind blowing over these disturbed areas could result in dust which would have a visual impact	Construction	Low	(-)	Low	(-)
	Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers	Construction	Low	(-)	Low	(-)
	Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment	Construction	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Potential visual pollution resulting from littering on the construction site	Construction	Low	(-)	Low	(-)
	The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts	Operation	Low	(-)	Low	(-)
	The proposed development will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts	Operation	Low	(-)	Low	(-)
	Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers	Operation	Low	(-)	Low	(-)
	The night-time visual environment could be altered as a result of operational and security lighting at the proposed substation	Operation	Low	(-)	Low	(-)
	Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts	Decommissioning	Low	(-)	Low	(-)
	Decommissioning activities may be perceived as an unwelcome visual intrusion	Decommissioning	Low	(-)	Low	(-)
	Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers	Decommissioning	Low	(-)	Low	(-)
	Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment	Decommissioning	Low	(-)	Low	(-)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	Temporary stockpiling of soil during decommissioning may alter the flat landscape. wind blowing over these disturbed areas could result in dust which would have a visual impact	Decommissioning	Low	(-)	Low	(-)
Waste	Improper Waste Management	Construction	Moderate	(-)	Low	(-)
Traffic	Increased Local Traffic	Construction	Low	(-)	Low	(-)
Heritage	Damage to Heritage Resources	Construction	Low	(-)	Very Low	(-)
Palaeontology	Loss of Fossils	Construction	Low	(-)	Very Low	(-)
	Damage to heritage resources	Construction	Low	(-)	Very Low (+ve)	(+)
Socio-economic	Creation of employment and business opportunities during the construction phase	Construction	Low	(+)	Low	(+)
	Potential impacts on family structures and social networks associated with the presence of construction workers	Construction	Low	(-)	Low	(-)
	Potential risk to safety of farmers and farm workers, livestock and damage to farm infrastructure associated with the presence of construction workers on site	Construction	Moderate	(-)	Low	(-)
	Potential loss of livestock and grazing and damage to farm infrastructure associated with increased incidence of grass fires	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 on productive farmland due to construction related activities and movement of traffic on the site	Construction	Moderate	(-)	Low	(-)
	Development of infrastructure to improve energy security and reduce reliance on coal	Operation	Moderate	(+)	Moderate	(+)

ASPECT	IMPACT DESCRIPTION	PHASE	WITHOUT MITIGATION		WITH MITIGATION	
			SIGNIFICANCE	STATUS	SIGNIFICANCE	STATUS
	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	(+)
	Visual impact associated with the proposed grid infrastructure and the potential impact on the area's sense of place.	Operation	Low	(-)	Low	(-)
	Potential risk to safety to farming operations and livestock associated with the presence of maintenance workers on the site	Construction	Low	(-)	Low	(-)
Health and Safety	Employee Health & Safety	Construction	Moderate	(-)	Low	(-)
	Employee Health & Safety	Operation	Moderate	(-)	Low	(-)

1.11 APPLICABLE DOCUMENTATION

The following documents are to be read in conjunction with [this Draft EMPr](#):

- [Draft](#) BA for the Proposed Camden I SEF up to 132kV grid connection transmission line;
- Generic EMPr for the proposed development (substation and OHPL)
- Environmental Authorisation (EA) issued by the DFFE in terms of the NEMA (once issued).

2 ENVIRONMENTAL GOVERNANCE FRAMEWORK

2.1 NATIONAL LEGAL AND REGULATORY FRAMEWORK

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** and **Table 2-2** below.

Table 2-1: Applicable Legislation

APPLICABLE LEGISLATION	DESCRIPTION OF LEGISLATION
The Constitution of South Africa (No. 108 of 1996)	Section 24(b) of the Constitution provides that “ <i>everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation [and] promote conservation.</i> ” The Constitution cannot manage environmental resources as a stand-alone law, hence additional legislation has been promulgated in order 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)	In terms of Section 24(2) of the National Environmental Management Act (No. 107 of 1998) (NEMA), the Minister may identify activities which may not commence without prior authorisation. On 7 April 2017, the Minister amended GNR 327 (Listing Notice 1), 325 (Listing Notice 2) and 324 (Listing Notice 3) listing activities that may not commence prior to authorisation. The regulations outlining the procedures required for authorisation are published in GNR 326 EIA Regulations (2014, as amended). Listing Notice 1 and Listing Notice 3 identify 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 a Scoping and EIA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listed Activities 11, 12, 19, 24, 27, 28, 30, 48 and 56 of GNR 327 and Listed Activities 4, 12, 14, 15, 18 and 23 of GNR 324 are considered applicable to the proposed project and therefore, a BA process must be followed to obtain an EA.
Listing Notice 1: GNR 327 (as amended)	Activity 11(i): <i>The development of facilities or infrastructure for the transmission and distribution of electricity—</i> <i>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or</i> <i>excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —</i> <i>(a) temporarily required to allow for maintenance of existing infrastructure;</i> <i>(b) 2 kilometres or shorter in length;</i> <i>(c) within an existing transmission line servitude; and</i> <i>(d) will be removed within 18 months of the commencement of development.</i> Applicability:

APPLICABLE LEGISLATION**DESCRIPTION OF LEGISLATION**

	<p>The proposed powerline and substation are located outside urban areas. The project entails the construction of an up to 132kV overhead powerline (OHPL) and associated grid connection substation, including termination works to connect the Camden I Solar PV Facility (SEF) to the Camden Common Collector substation.</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 construction of the Electrical Grid Infrastructure will result in construction activities occurring within 32 meters of a watercourse. The powerline will traverse watercourses.</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 construction of the Electrical Grid Infrastructure, including associated infrastructure, will result in construction activities which require the excavation, infilling or removal of soil exceeding 10m³ from delineated watercourses along the powerline alignment. The powerline will traverse watercourses.</p>
	<p>Activity 24(ii): <i>The development of a road—</i> <i>(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres;</i></p> <p>Applicability: An access road will be required along the length of the powerline alignment. The road will be a maximum of 20m wide without reserve and will exceed 1km in length whilst being located outside an urban area.</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: The powerlines and access roads are considered a linear activity and therefore this activity is not triggered by the proposed construction of the transmission lines or roads. However, the construction of the 132 kV grid connection substations will require the clearance of indigenous vegetation of more than 1ha but less than 20 ha..</p>

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	<p>Activity 28 (ii): <i>Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:</i> <i>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare</i></p> <p>Applicability: The substations are considered a commercial and/or industrial development, and will be located on farm portions outside an urban area, used for agricultural purposes on or after 01 April 1998. The total area to be developed for the substations will exceed 1 hectare within agricultural use land.</p>
	<p>Activity 30: <i>Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).</i></p> <p>Applicability: The Grid Connection infrastructure, including associated infrastructure, is located within, and will require vegetation clearance or disturbance of, Eastern Highveld Grassland and Chrissiesmeer Panveld. Both ecosystems are confirmed to be listed in the National List of Ecosystems that are Threatened and in Need of Protection (as indicated in GNR 1002 of 9 December 2011). Due to the fact that these ecosystems are listed as threatened it is assumed that various threatened or protected species may be found within the development area. The restricted activity of “cutting, chopping off, uprooting, damaging or destroying, any specimen” has been identified in terms of NEM:BA and is therefore applicable to the vegetation clearance that will be required to construct the development. In light of this, Activity 30 is considered applicable</p>
	<p>Activity 48(i)(a)(c): <i>The expansion of—</i> <i>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or</i> <i>where such expansion occurs—</i> <i>(a) within a watercourse;</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 construction of access roads along the powerline alignment will require the expansion of existing access roads, culverts or similar drainage crossing infrastructure collectively exceeding 100m² or more within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.</p>
	<p>Activity 56(ii): <i>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—</i> <i>(ii) where no reserve exists, where the existing road is wider than 8 metres;</i></p> <p>Applicability: The construction of access roads along the powerline alignment will require the widening of existing access roads where no reserve exists and where such road is wider than 8 metres. The project is located within a rural area.</p>

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Listing Notice 3: GNR 324 (as amended)

Activity 4(f)(i)(bb)(cc)(ee)(gg):

The development of a road wider than 4 metres with a reserve less than 13,5 metres.

f. Mpumalanga

i. Outside urban areas:

(bb) National Protected Area Expansion Strategy Focus areas;

(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;

(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core areas of a biosphere reserve, excluding disturbed areas, where such areas comprise indigenous vegetation;

Applicability:

The proposed Camden I SEF Up to 132kV grid connection transmission line will be constructed on undisturbed areas. An access road up to 20m wide will be required along the powerline alignment and substation sites.

The Electrical Grid Infrastructure is located in the Mpumalanga Province outside urban areas, and wholly on Portion 1 & 2 of Farm No. 322 (Welgelegen), which are a declared Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940 (No. 9 of 1940)(aa & gg). It should be noted that abovementioned Private Nature Reserve is not being managed as a nature reserve and a separate process is underway to have it withdrawn or deproclaimed (partially or wholly) as part of ongoing province-wide reserve verification efforts by the provincial authorities.

Furthermore, the development activity contemplated will require vegetation clearance or disturbance of, Eastern Highveld Grassland and Chrissiesmeer Panveld, both ecosystems of which are listed in the National List of Ecosystems that are Threatened and in need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)(cc).

In addition, and on the basis of the DFFE Screening Tool output identifying the study area within the "Protected Areas Expansion Strategy" (Low Priority - Mpumalanga Protected Area Expansion Strategy), the development activity occurs within NPAES focus area thereby triggering this activity (bb).

Similarly, the development activity contemplated will be located within, and will require vegetation clearance or disturbance within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA)(ee).

Activity 12 (f) (i)(ii)(iii):

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.

f. Mpumalanga:

i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;

ii. Within critical biodiversity areas identified in bioregional plans;

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iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning or proclamation in terms of NEMPAA.

Applicability:

The construction of the up to 132 kV Powerline and grid connection substations will require the clearance of indigenous vegetation.

Such clearance will be in excess of 300m² and be partly located within Eastern Highveld Grassland and Chrissiesmeer Panveld, both ecosystems of which are listed in the National List of Ecosystems that are Threatened and in need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)(i).

Similarly, vegetation clearance required for the Facility will be located within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA), in excess of 300m²(ii).

The Electrical Grid Infrastructure is located in the Mpumalanga Province outside urban areas, and wholly on Portion 1 & 2 of Farm No. 322 (Welgelegen), which are a declared Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940 (No. 9 of 1940)(iii). It should be noted that abovementioned Private Nature Reserve is not being managed as a nature reserve and a separate process is underway to have it withdrawn or deproclaimed (partially or wholly) as part of ongoing province-wide reserve verification efforts by the provincial authorities.

Activity 14(ii)(a)and(c);(f)(i)(aa)(bb)(dd)(ff)(hh)

The development of—

(ii) infrastructure or structures with a physical footprint of 10 square metres or more;

where such development occurs—

(a) within a watercourse; or

(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;

Mpumalanga:

i. Outside urban areas:

aa) A protected area identified in terms of NEMPAA, excluding conservancies;

(bb) National Protected Area Expansion Strategy Focus areas;

(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;

(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

(hh) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation;;

Applicability:

The construction of the Electrical Grid Infrastructure will result in construction activities occurring within 32 meters of a watercourse. The powerline will traverse watercourses.

In addition, the Facility is located in the Mpumalanga Province outside urban areas, partly within a National Protected Area Expansion Strategy Focus area (bb) and wholly on Portion 1 & 2 of Farm No. 322 (Welgelegen), which are a declared Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940 (No. 9 of 1940)(aa & hh). It should be noted that abovementioned Private Nature Reserve is not being managed as a nature reserve and a separate process is underway

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	<p>to have it withdrawn or deproclaimed (partially or wholly) as part of ongoing province-wide reserve verification efforts by the provincial authorities.</p> <p>Furthermore, the physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various components of the Facility will either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site, which infrastructure will be located within Eastern Highveld Grassland and Chrissiesmeer Panveld, both ecosystems of which are listed in the National List of Ecosystems that are Threatened and in need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)(dd).</p> <p>Finally, the physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various components of the Facility will either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site, located within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA)(ff).</p>
	<p>Activity 15 (d)(ii):</p> <p><i>The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010.</i></p> <p><i>d. Mpumalanga</i></p> <p><i>ii. A protected area identified in terms of NEMPAA, excluding conservancies.</i></p> <p>Applicability:</p> <p>The Facility is considered a commercial and/or industrial development, and will require the transformation of a footprint of approximately 19ha (within two farm portions outside an urban area, zoned for agriculture, while being wholly located on Portion 1 & 2 of Farm No. 322 (Welgelegen), which is a declared Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940 (No. 9 of 1940)(ii). It should be noted that abovementioned Private Nature Reserve is not being managed as a nature reserve and a separate process is underway to have it withdrawn or deproclaimed (partially or wholly) as part of ongoing province-wide reserve verification efforts by the provincial authorities.</p>
	<p>Activity 18(f)(i)(aa)(bb)(cc)(ee)(gg):</p> <p><i>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</i></p> <p><i>f. Mpumalanga</i></p> <p><i>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation;</i></p> <p>Applicability:</p>

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	<p>The construction of the access road along the powerline alignment will require the widening of up to 14m of existing access roads where no reserve exists and lengthening exceeding 1km in length. The project is located within a rural area.</p> <p>Such widening and lengthening will be occur partly within a National Protected Area Expansion Strategy Focus area (bb) and wholly on Portion 1 & 2 of Farm No. 322 (Welgelegen), which are a declared Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940 (No. 9 of 1940)(aa & gg). It should be noted that abovementioned Private Nature Reserve is not being managed as a nature reserve and a separate process is underway to have it withdrawn or deproclaimed (partially or wholly) as part of ongoing province-wide reserve verification efforts by the provincial authorities.</p> <p>Furthermore, such widening and lengthening will occur within Eastern Highveld Grassland and Chrissiesmeer Panveld both ecosystems of which are listed in the National List of Ecosystems that are Threatened and in need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)(cc).</p> <p>Finally, such widening and lengthening will be located within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA)(ee).</p>
	<p>Activity 23(ii)(a)(c)(f)(i)(aa)(bb)(cc)(ee)(gg):</p> <p><i>The expansion of—</i></p> <p><i>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more;</i></p> <p><i>where such expansion 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>i. Outside urban areas:</i></p> <p><i>(aa) A protected area identified in terms of NEMPAA, excluding conservancies;</i></p> <p><i>(bb) National Protected Area Expansion Strategy Focus areas;</i></p> <p><i>(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;</i></p> <p><i>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</i></p> <p><i>(gg) Areas within 10 kilometres from national parks or world heritage sites or 5 kilometres from any other protected area identified in terms of NEMPAA or from the core area of a biosphere reserve, where such areas comprise indigenous vegetation;</i></p> <p>Applicability:</p> <p>The construction of the access road along the powerline alignment will require the expansion of existing access roads, culverts or similar drainage crossing infrastructure collectively exceeding 100m² or more within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.</p> <p>In addition, the Facility is located in the Mpumalanga Province outside urban areas, and partly within a National Protected Area Expansion Strategy Focus area (bb) and wholly on Portion 1 & 2 of Farm No. 322 (Welgelegen), which are a declared Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940</p>

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	<p>(No. 9 of 1940)(aa & gg). It should be noted that abovementioned Private Nature Reserve is not being managed as a nature reserve and a separate process is underway to have it withdrawn or deproclaimed (partially or wholly) as part of ongoing province-wide reserve verification efforts by the provincial authorities.</p> <p>Furthermore, the physical footprint of the infrastructure contemplated above will be located within Eastern Highveld Grassland and Chrissiesmeer Panveld, both ecosystems of which are listed in the National List of Ecosystems that are Threatened and in need of Protection (GNR 1002 of 9 December 2011), and subsequently listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)(cc).</p> <p>Finally, the physical footprint of the infrastructure contemplated above will be located within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA)(ee).</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 proposed project(refer to Section 3.2 of the BA examining each theme):</p> <ul style="list-style-type: none"> - Agriculture Theme - Animal Species Theme - Aquatic Biodiversity Theme - Archaeological and Cultural Heritage Theme - Avian Theme - Civil Aviation (Solar PV) Theme - Defence Theme - Landscape (Solar) Theme - Palaeontology Theme - Plant Species Theme - RFI Theme - Terrestrial Biodiversity Theme
<p>National Environmental Management Biodiversity 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> <p>The biodiversity assessment identifies CBAs 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>In addition, and on the basis of the DFFE Screening Tool output identifying the study area within the "Protected Areas Expansion Strategy" (Low Priority</p>

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	<p>Mpumalanga Protected Area Expansion Strategy), the development activity occurs within NPAES focus area thereby triggering this activity (bb).</p> <p>Based on the preliminary desktop assessment and the terrestrial ecology report, a significant part of the Project Area falls within CBA (Irreplaceable and Optimal) and other regions mapped as Ecological Support Area (ESA).</p> <p>According to the description for the 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 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>Section 50(5) of NEMPAA states that “no development, construction or farming may be permitted in a nature reserve or world heritage site without the prior written approval of the management authority.” As discussed in Activity 4 of Listing Notice 3 above, the designation of the of the portion of the site as protected in the MBSP is an error.</p> <p>The Facility is located in the Mpumalanga Province outside urban areas, partly within a National Protected Area Expansion Strategy Focus area and within Portion 1 & 2 of Farm No. 322 (Welgelegen), which are declared as Private Nature Reserve (Langcarel Private Nature Reserve) under the Game Ordinance, 1949 (No. 23 of 1949) and the Native Flora Protection Ordinance, 1940 (No. 9 of 1940). This reserve is noted as having farming activity present, and is currently managed and actively utilised for agriculture. The landowner further was not aware of any protected area on these properties and intends to utilise any suitable legal avenues available to continue operation of the properties for the current land use of agriculture, in conjunction with the planned Renewable Energy complex (including electrical grid infrastructure as contemplated here) land use subject to this application.</p> <p>The protected area and has undergone similar levels of degradation as surrounding areas due primarily to overgrazing, but also partially due to alien invasive plants. In addition, no conservation management activities were evident on site during the ecological field assessment. This pattern of over-utilization affects all grasslands on site, resulting in them being in moderate to poor condition. The habitat has been used for livestock production and is impacted by this land-use. The biodiversity specialist concluded that, on the basis of the current land use and levels of modification, the private nature reserve does not align with the objective and purpose of the protected area status.</p> <p>It is important to note that the de-proclamation/withdrawal of the Protected Area is being addressed by the MTPA as part of ongoing province-wide reserve verification efforts by the provincial authorities. The MTPA has submitted a letter to the Department (letter dated, 20 June 2022) of the intent to issue a notice to withdraw the declaration of the Langcarel Private Nature Reserve in terms of the Mpumalanga Nature Conservation Act (Act No. 10 of 1998).</p> <p>Consent letters to the withdrawal/de-proclamation have been received from the Landowner/s for those farm portions that that are directly affected by the proposed</p>

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	<p>project and have been submitted to the Competent Authority as part of this application. These letters give consent of the respective Langcarel Private Nature Reserve properties to be withdrawn and/or de-proclaimed as a nature reserve by the relevant Mpumalanga MEC. These letters have also been provided to the MTPA towards the de-proclamation/withdrawal process.</p>
National Water Act (No. 36 of 1998)	<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> <ul style="list-style-type: none"> a) <i>Taking water from a water resource;</i> c) <i>Impeding or diverting the flow of water in a watercourse;</i> g) <i>Disposing of waste in a manner which may detrimentally impact on a water resource;</i> i) <i>Altering the bed, banks, course or characteristics of a watercourse;</i> <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>
National Heritage Resources Act (No. 25 of 1999)	<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— <ul style="list-style-type: none"> (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.

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	<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 Camden I SEF, 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>The Heritage and Palaeontological Report (Appendix F-4 and Appendix F-5 respectively of the BA report) has been carried out by a suitably qualified specialist, revealing that feature CA005 and CA012 are located close to the proposed Grid infrastructure and is described below. No other recorded features are located closer than 250 meters from the proposed infrastructure and will not be directly impacted on.</p> <p>According to the SAHRA, Paleontological sensitivity map the study area is in the non-fossiliferous Jurassic dolerite (grey) but some of the grid connections are on the Vryheid Formation (red; very highly sensitive). Dolerite is an intrusive igneous rock and does not preserve fossils, in fact, dykes can destroy any fossils that were in the rocks through which they have intruded. The Palaeontological Impact Assessment (Appendix F-5 of the BA Report) concluded that the impact on palaeontological resources is low and the project should be authorised from a paleontological point of view. A Fossil Chance Find Protocol has been added to the EMPr.</p>
<p>National Environmental Management Waste Act (No. 59 of 2008)</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): 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.</p> <p>However, the contents of this Report will include reasonable measures for the prevention of pollution and good international industry practice (GIIP).</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> <p>A Section 53 approval will be required due to the fact that the project is located on various mining right areas.</p> <p>An application in terms of Section 53 of the MPRDA was submitted on 13 May 2022. An acknowledgement letter was issued by the DMRE on 20 September 2022 and the reference number allocated to this application is 11098SU – awaiting a decision from the DMRE.</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</p>

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	<p>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 National Environmental Management Act 107 of 1998 (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 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</p>

APPLICABLE LEGISLATION**DESCRIPTION OF LEGISLATION**

	<p>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 low sensitivity for the proposed Camden I SEF, and no major or other types of civil aviation aerodromes.</p> <p>ATNS and 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. An Application for the Approval of Obstacles has been submitted to ATNS and the required permits will be obtained prior to the development of the project.</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. The Act provides the legal framework which supports the development of renewable energy facilities for the greater environmental and social good.</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;

APPLICABLE LEGISLATION**DESCRIPTION OF LEGISLATION**

	<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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Table 2-2: Applicable Policies

APPLICABLE PLAN	DESCRIPTION OF PLAN
Mpumalanga Growth and Development Path	<p>The primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) (2011) is to foster economic growth that creates employment, reduces 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 employment creation across the economy, with alternative energy production identified as one of the key opportunities in the Mpumalanga Economic sectors.</p>
Mpumalanga Spatial Development Framework (MSDF), 2019	<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 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	<p>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. It is however noted that the Msukaligwa Municipality (within which the project falls under) is not directly impacted by the 2025 MIDP and its proposed priority hubs.</p>

2.2 PROVINCIAL AND MUNICIPAL LEGAL AND REGULATORY FRAMEWORK

Table 2-3: Provincial and Municipal Legislation and Plans

APPLICABLE PLAN	DESCRIPTION OF PLAN
Mpumalanga Growth and Development Path	<p>The primary objective of the Mpumalanga Economic Growth and Development Path (MEGDP) (2011) is to foster economic growth that creates employment, reduces 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 employment creation across the economy, with alternative energy production identified as one of the key opportunities in the Mpumalanga Economic sectors.</p>
Mpumalanga Spatial Development Framework (MSDF), 2019	<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 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	<p>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. It is however noted that the Msukaligwa Municipality (within which the project falls under) is not directly impacted by the 2025 MIDP and its proposed priority hubs.</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 <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>
Msukaligwa Local Municipality IDP	<p>The Msukaligwa Local Municipality Revised IDP (2020/2021) has identified the following key Municipal priorities:</p> <ul style="list-style-type: none"> — Revenue collection. — Access to basic services by communities. — Job creation and economic development. — Infrastructure maintenance and upgrading. — Community participation in the affairs of the municipality. — Fight against fraud and corruption. — Capable and responsive organizational structure. — Capabilities of the municipal ICT. — Integrated human settlements <p>One of the main strategic objectives for the access to basic services priority is to provide sustainable and reliable services to communities. Most of the basic services are rendered within the municipality. However, some rural areas are still faced with some challenges in the provision water, sanitation and electricity. The Municipality, through the IDP, aims to facilitate the provision of electricity, with a number of key projects planned to be implemented over the period of five (5) years linked to the Municipal IDP.</p>
Msukaligwa Spatial Development Framework	<p>The Msukaligwa SDF is informed by a number of spatial objectives, including:</p> <ul style="list-style-type: none"> — Providing a spatial structure that facilitates access to services for all communities. — Protecting strategic water sources and sensitive eco-systems. — Providing space for the diversification of the local economy. — Eliminating past spatial settlement patterns. <p>The provision of space of the diversification of the local economy is of specific relevance to the proposed development.</p> <p>The SDF highlights the key role and spatial extent of mining in the Msukaligwa Municipality, including reference to the Camden coal-fired power station located in proximity to the proposed development. Over the longer term the rehabilitation of mining areas and a range of alternative peri-urban uses should be considered for the impacted areas in view of the decrease reliance on coal. Commercial Agriculture also represents a key economic activity in the Municipality.</p>

2.3 INTERNATIONAL STANDARDS AND GUIDELINES

2.3.1 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 (8) PSs are outlined in **Table 2-5**.

Table 2-5: Objectives and Applicability of the IFC Performance Standards

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%;">1.1</td> <td style="width: 40%;">Policy</td> <td rowspan="9" style="width: 55%; vertical-align: top;">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 draft 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.</td> </tr> <tr> <td>1.2</td> <td>Identification of Risks and Impacts</td> </tr> <tr> <td>1.3</td> <td>Management Programmes</td> </tr> <tr> <td>1.4</td> <td>Organisational Capacity and Competency</td> </tr> <tr> <td>1.5</td> <td>Emergency Preparedness and Response</td> </tr> <tr> <td>1.6</td> <td>Monitoring and Review</td> </tr> <tr> <td>1.7</td> <td>Stakeholder Engagement</td> </tr> <tr> <td>1.8</td> <td>External Communication and Grievance Mechanism</td> </tr> <tr> <td>1.9</td> <td>Ongoing Reporting to Affected Communities</td> </tr> </table>	1.1	Policy	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 draft 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.	1.2	Identification of Risks and Impacts	1.3	Management Programmes	1.4	Organisational Capacity and Competency	1.5	Emergency Preparedness and Response	1.6	Monitoring and Review	1.7	Stakeholder Engagement	1.8	External Communication and Grievance Mechanism	1.9	Ongoing Reporting to Affected Communities	
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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	<ul style="list-style-type: none"> – 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. 																				

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

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 Draft BA 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>This EMPr incorporates the requirements for compliance with local and international Labour and Working legislation and good practice on the part of the contractors.</p>
	2.2	<ul style="list-style-type: none"> – Protecting the Workforce – Child Labour – Forced Labour 	
	2.3	<ul style="list-style-type: none"> – Occupational health and Safety 	
	2.4	<ul style="list-style-type: none"> – Workers Engaged by Third Parties 	
	2.5	<ul style="list-style-type: none"> – Supply Chain 	

Performance Standard 3: Resource Efficiency and Pollution Prevention

Overview	<p>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 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.</p>		
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 Section 7 of this report.</p> <p>There are no material resource efficiency issues associated with the Project. Refer to the EMPr for general resource efficiency measures.</p>
	3.2	<ul style="list-style-type: none"> – Pollution Prevention – Air Emissions – Stormwater – Waste Management – Hazardous Materials Management – Pesticide use and Management 	<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, as supporting infrastructure to the Camden I SEF, the OHPL and substation 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 will be addressed in the EMPr.</p> <p>The Project will not result in the release of industrial effluents. Potential pollution associated with sanitary wastewater is low and mitigation measures are be included in this EMPr.</p>

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

			<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 will be included in 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. This EMPr takes these anticipated hazardous materials into account and recommend relevant mitigation and management measures.</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 – Hazardous Materials Management and Safety – Ecosystem Services – Community Exposure to Disease – Emergency Preparedness and Response 	<p>The requirements included in PS 4 will be addressed in the BA process and the development of this 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 qualitatively evaluated in the BA process and the clients’ standard safety and security measures, as well as potential additional measures recommended by WSP is detailed in the EMPr.</p>
	4.2	<ul style="list-style-type: none"> – Security Personnel 	
Performance Standard 5: Land Acquisition and Involuntary Resettlement			
Overview	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.		
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	5.1	<ul style="list-style-type: none"> – Displacement – Physical Displacement 	PS5 is not applicable to the proposed Camden I SEF Grid Connection as no physical or economic displacement or livelihood restoration will be required.

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

		<ul style="list-style-type: none"> – Economic Displacement – Private Sector Responsibilities under Government Managed Resettlement 	<p>The proposed powerline route is located on 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>
<p>Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources</p>			
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	6.1	<ul style="list-style-type: none"> – Protection and Conservation of Biodiversity 	<p>The Project Area falls within CBAs (Irreplaceable and Optimal) with some regions mapped as an ESA. A Biodiversity Impact Assessment as well as an Avifaunal Impact Assessment and Freshwater Ecology Impact Assessment have been included in the proposed scope.</p> <p>The methodologies for the specialist assessments include a combination of literature review, in-field surveys and sensitivity mapping. This substantively complies with the PS 6 general requirements for scoping and baseline assessment for determination of biodiversity and ecosystem services issues. The determination of habitat sensitivity was undertaken within the legal and best practice reference framework for South Africa.</p> <p>The prevalence of invasive alien species was determined, and mitigation and management measures are included in this EMPr.</p>
<p>Performance Standard 7: Indigenous People</p>			
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>		
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. 		
Aspects	7.1	<ul style="list-style-type: none"> – General 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>

REFERENCE REQUIREMENTS

PROJECT SPECIFIC APPLICABILITY

	7.2	<ul style="list-style-type: none"> – Circumstances Requiring Free, Prior, and Informed Consent – 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	<ul style="list-style-type: none"> – Mitigation and Development Benefits 	
	7.4	<ul style="list-style-type: none"> – Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues 	
Performance Standard 8: Cultural Heritage			
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	<ul style="list-style-type: none"> – Protection of Cultural Heritage in Project Design and Execution 	<p>A Heritage assessment (Appendix F-4 of the BA Report) has been carried out by a suitably qualified specialist and the findings are discussed in Section 6.3.2 of this report.</p> <p>A Chance Find Procedure is included in this EMPr.</p>

2.3.2 WORLD BANK GROUP ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES

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 BAR.

2.3.3 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 118 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 BA 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	
<p>Overview</p> <p>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 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> <p>gory A: Projects with potential significant adverse ronmental and social risks and/or impacts that are rse, irreversible or unprecedented;</p> <p>gory B: Projects with potential limited adverse ronmental and social risks and/or impacts that are in number, generally site-specific, largely rsible and readily addressed through mitigation sures; and</p>	<p>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 and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.</p>

REQUIREMENT**PROJECT SPECIFIC APPLICABILITY**

	gory C: Projects with minimal or no adverse environmental and social risks and/or impacts.	
Principle 2: Environmental and Social Assessment		
Overview	<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>This document is the draft 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 (2014, as amended). In addition, a site-specific EMPr has been compiled which is to be read in conjunction with the generic powerline and substation EMPRs.</p>
Principle 3: Applicable Environmental and Social Standards		
Overview	<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>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>As South Africa has been identified as a non-designated country, the reference framework for environmental and social assessment is based on the IFC Performance Standards (PS) and applicable Industry Specific Environmental, Health, and Safety (EHS) Guidelines. In addition, this BA process has been undertaken in accordance with NEMA (the host country's relevant legislation).</p>
Principle 4: Environmental and Social Management System and Equator Principles Action Plan		
Overview	<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>A project specific ESMS which will align with the Equator Principles, the IFC Performance Standards and applicable World Bank/IFC Environmental, Health and Safety (EHS) and Sector specific Guidelines and applicable GIIP will be</p>

REQUIREMENT

PROJECT SPECIFIC APPLICABILITY

	<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>developed for the project. The proposed project, from inception, development, construction, operation, and any decommissioning will be required to fully comply with the requirements of the ESMS.</p> <p>The 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 be incorporated into the 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. 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>The BA process includes an extensive stakeholder engagement process which complies with the South African EIA Regulations (2014, as amended). The process includes consultations with local communities, nearby businesses and a range of government sector stakeholders (state owned enterprises, national, provincial and local departments). The consultation process will be tailored to the risks and impacts of the Project; the Project's phase of development; the language preferences of the Affected Communities; their decision-making processes; and the needs of disadvantaged and vulnerable groups.</p> <p>No Indigenous People will be affected.</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 Section 3.6 of the BA.</p>
<p>Principle 6: Grievance Mechanism</p>		
<p>Overview</p>	<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>	<p>The EMPr includes a Grievance Mechanism Process for Public Complaints and Issues. This procedure effectively allows for external communications with members of the public to be undertaken in a transparent and structured manner. This procedure will be revised and updated as part of the EMPr amendment process in the event that the project is developed in the future and incorporated into the Project specific ESMS.</p>
<p>Principle 7: Independent Review</p>		
<p>Overview</p>	<p>For all Category A and, as appropriate, Category B Projects, an Independent Environmental and</p>	<p>This principle will only become applicable in the event that the project is developed in the future.</p>

REQUIREMENT**PROJECT SPECIFIC APPLICABILITY**

	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.	
Principle 9: Independent Monitoring and Reporting		
Overview	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.	This principle will only become applicable in the event that the project is developed in the future.

2.4 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS

2.4.1 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 nature¹.” The generic EMPrs (for both OHPL and Substations) are attached as **Appendix C** and **Appendix D** respectively.

¹ 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 Camden I SEF 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 project owner or operator, and/or appointed EPC contractor/principle 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 fugitive emissions;
- 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 project owner or operator, hereafter referred to as “The Project Company”, together with the appointed Engineering and Procurement Contractor (EPC), 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 DFFE 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 DFFE 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 DFFE within 30 days that construction activity will commence;
- Notifying the DFFE in writing within 24 hours if any condition in the EA cannot be or is not adhered to; and
- Notifying the DFFE 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 contractor 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 – 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
Environmental Officer (EO) (EPC Contractor)	<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;

RESPONSIBLE PERSON RESPONSIBILITIES

	<ul style="list-style-type: none"> — 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; — Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the DFFE; — 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. <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. The costs of the ECO shall be borne by the Project Company (proof of 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;

RESPONSIBLE PERSON RESPONSIBILITIES

	<ul style="list-style-type: none"> – 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"> – Prepare Method Statements as per the EMPr, and ensure all activities are conducted as per the approved Method Statements. – Completion of the appropriate training requirements as specified in the training program. – Implementation and maintenance of environmental management controls as set out in the project’s environmental management documentation. – 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 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 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;
- Tool box 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 six-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

Six-Monthly (during construction) 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 Labour 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
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 C and for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity is attached as Appendix D.

4.3 MONITORING

The internal EO will monitor the day-to-day site activities on an ongoing basis (during construction) 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 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 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 (Section 8) 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 (Section 7.15.5).

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 CONTROL MEASURES

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 C** and **Appendix D**). 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 EMPR

Management Outcome:	Predefined as part of Generic EMPr					
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Predefined as part of Generic EMPr	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 EMPr (Part B: Section 1)

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)
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
Fencing and Gate installation	5.5	5.5

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)**

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 C 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 D.

6 SITE SPECIFIC CONTROL MEASURES

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 project owner and/or operator. 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 project. 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 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.

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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Project Initiation of Construction Activities	Construction activities to remain within demarcated project footprint	Contractor	Construction
	Site clearing and topsoil removal must be limited to the footprint of the infrastructure requirements	Project Manager	
	Clearly mark health and/or safety hazards onsite		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Locate firefighting measures onsite, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	Firefighting equipment must be securely placed and inspected monthly		
	Undertake fuel and chemical management for storage, handling and spillages in accordance Section 6.3.		
	Manage surface and groundwater impacts as per Water Management section.		

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

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Vehicle and Equipment Maintenance	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;	EO	Construction
	Minor maintenance can be undertaken onsite within a designated area on a hard standing.	Contractor	Operation
	Utilise drip trays under all stationary vehicles and equipment.	Operator	De-commissioning
	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.		
Operation of Equipment, Machinery and Vehicles	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		
	Where possible, 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

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	Contractor Operator	Construction Operation
	Indicate the location of the fuel and chemical storage area on the layout plans		

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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)		
	Develop and implement a procedure for the management of all hydrocarbon spillages		
	Maintain oil traps or interceptors on a regular basis and maintain records		
	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.		
	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.		
	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
	Strategically place the correct types of fire extinguishers onsite and near the hazardous material store. Train key personnel on basic firefighting skills	Operator	Operation
	Frequently inspect and maintain containment facilities and retain records onsite		De-commissioning

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.
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6.4.3 MITIGATION AND MANAGEMENT MEASURES

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Prohibit littering and burning of waste onsite.	Contractor	Operation

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
General Waste Management	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.	Operator	De-commissioning
	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.		
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 Operator	Construction Operation De-commissioning
	The Waste Management Procedure must include a procedure for handling spillages.		
	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.		
	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		

6.5 SOIL AND LAND MANAGEMENT

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
- Stormwater Management Plan.

6.5.3 MITIGATION AND MANAGEMENT MEASURES

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	Construction
	Limit removal of vegetation to demarcated areas only	Contractor Operator	
	Rehabilitate disturbed areas around the poles as soon as practicable following disturbance thereof.		
Increased potential for soil erosion due to vegetation clearance, soil disturbance and high traffic movement on site	Limit earthworks and vehicle movement to demarcated paths and areas.	EO	Construction, Operational
	Limit the duration of construction activities where possible, especially those involving earthwork / excavations.	Contractor Operator	
	Access roads associated with the development should have gradients or similar surface treatment to limit erosion, and road drainage systems should be accounted for.		
	Removal of vegetation must be avoided where possible and exposed surfaces and should be re-vegetated or stabilised as soon as is practically possible.		
	A storm water management plan should be designed for the site and adhered-to.		
	Implement silt fences or similar where rain or inclement weather washes loose soil into nearby watercourses		
	Gabions , Reno Mattresses or similar should be used where evidence of erosion is present.		
	Upon completion of construction, the laydown areas and construction camp sites are to be rehabilitated.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	The site should be monitored for signs of erosion continually and an erosion management plan should be put in place.		
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 Operator	Construction, Operational Decommissioning
Stockpile Management	Adequately maintain stockpiled material to prevent becoming the source air pollution (windblown dust)	EO	Construction
	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		
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 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.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Where soil compaction outside of the designated development areas occurs, this needs to be rehabilitated to restore soil permeability and 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. 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.	EO Contractor Operator	Construction Operation Decommissioning
	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 on site must be rehabilitated, with mitigation measures adopted in high risk areas (i.e. gabions, gabion mattresses or similar)		
	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		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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 Operator	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.

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);
- Water Use Authorisations (as required);
- Environmental awareness programme/toolbox talks; and
- Stormwater management plan (to be developed).

6.6.3 MITIGATION AND MANAGEMENT MEASURES

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
<p>Alterations of flow regimes of watercourses, in close proximity to the site, or that is proposed to be traversed.</p>	<p>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.</p>	<p>Contractor Operator</p>	<p>Planning and Design Construction</p>
	<p>. Ideally water required during the construction phase must be sourced from an external source (i.e. outside of the wetland contributing area). Where natural sources are to be utilised, these must have a valid Water Use Authorisation (as required).</p>	<p>Surface Water and Aquatic Specialists</p>	<p>Operation Decommissioning</p>
	<p>It is recommended that, where possible, laydown areas and construction camps are to be developed outside the riparian zone or 100m from a watercourse, whichever is greatest.</p>		
	<p>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.</p>		
	<p>Vegetation clearing, soil stripping and major earthmoving activities must be phased to minimise the extent of bare soils surfaces exposed at any one time. If possible, construction activities should be undertaken during the dry season.</p>		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Surface Water Management	<p>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:</p> <ul style="list-style-type: none"> – 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 <p>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</p>	Project Manager Contractor Operator	Planning Construction Operation
Groundwater Management	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.	EO Contractor Operator	Construction Operation
Potable Water Management	<p>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.</p> <p>Onsite staff must be made aware and encouraged to use water sparingly such that there is no water wastage.</p>	Operator	
Water quality of wetlands	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 or 100m from a watercourse, whichever is greatest.	EO Contractor	Construction Operation

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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 or 100m from a watercourse, whichever is greatest.	Operator	
	Procedures for containment of leaks/spills as well as associated emergency response plans should be developed.		
	Machinery and equipment must be inspected regularly for faults and possible leaks. If required, servicing of these should occur outside the riparian zone or 100m from a watercourse, whichever is greatest.		
	Potential contaminants used and stored at the proposed project site should be stored and prepared on bunded surfaces to contain spills and leaks.		
	Adequate ablution facilities should be developed and located outside the riparian zone or 100m from a watercourse, whichever is greatest.		
Loss of Wetland and Riparian Functionality	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 or 100m from a watercourse, whichever is greatest.	EO Contractor Operator	Construction
	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		
	Stringing should make use of a running block and span where possible, limiting intrusion into the freshwater habitat systems.		
	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.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	The identified wetlands and riparian areas are to be designated as “highly sensitive”.		
	Should the need for additional access routes arise, these should be perpendicular to the watercourse and developed with appropriately sized culverts.		
	Planning the location of poles should factor in the wetlands and riparian areas as far as possible		
	In the event that poles or access roads need to be placed within the wetland or riparian systems, an application for a Water Use Authorisation (WUA) 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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Loss of indigenous natural vegetation due to clearing	Restrict impact to development footprint only and limit disturbance in surrounding areas	EOContractor	Pre-construction Construction
	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be included into the EMPr during final approval.		
	Prior to commencement of construction, compile an Alien Plant Management Plan, to be included into the EMPr during final approval		
Establishment and spread of declared weeds and alien invader plants	Restrict impact to development footprint only and limit disturbance in surrounding areas.	EO Contractor	Pre-construction Construction
	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be included into the EMPr during final approval.		
	Prior to commencement of construction, compile an Alien Plant Management Plan, to be included into the EMPr during final approval		
Continued disturbance to natural habitats due to general operational activities and maintenance	Restrict impact to development footprint only and limit disturbance in surrounding areas	EO Contractor	Pre-construction Construction
	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be included into the EMPr during final approval.		
	Prior to commencement of construction, compile an Alien Plant Management Plan, to be included into the EMPr during final approval		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Continued establishment and spread of alien invasive plant species due to the presence of migration corridors and disturbance vectors	Prior to commencement of construction, compile and implement an alien management plan, which highlights control priorities and areas and provides a programme for long-term control.	EO Contractor	Pre-construction Construction Operation Decommissioning
	Undertake regular monitoring to detect alien invasions early so that they can be controlled.		
	Implement control measures as per the specifications of the alien management plan.		
	Rehabilitate disturbed areas in accordance with the specifications of a Rehabilitation Plan.		
Increased runoff and erosion due to clearing of vegetation, construction of hard surfaces and compaction of surfaces, leading to changes in downslope areas	Prior to commencement of construction, compile and implement a stormwater management plan including monitoring specifications.	EO Contractor	Pre-construction Operation
	Monitor surfaces for erosion, repair and/or upgrade, where necessary.		
Decommissioning activities may cause disturbance of natural habitat. This may result in permanent local loss of habitat.	Prior to decommissioning commencing, compile a Rehabilitation Plan in compliance with the regulatory requirements at the time of decommissioning.	EO Contractor	Decommissioning
Plant species	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).		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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 Operation
	No driving of vehicles off-road outside of construction areas.	Operator	Decommissioning
	Apply mitigation measures recommended in the Terrestrial Biodiversity Assessment to minimize loss of natural vegetation.		
	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.		
	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 timely 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 400kV 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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Displacement of powerline sensitive species due to disturbance and habitat transformation in the construction phase	Conduct an inspection (avifaunal walk-through) to identify SCC that may be breeding within the infrastructure footprints. If a 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. This could include measures such as delaying some of the activities until after the breeding season, or other measures deemed suitable and practical at the time.	EO Contractor Avifaunal specialist	Pre-Construction Construction
	Bird Flight Diverters must be fitted to the entire powerline according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). These devices must be installed as soon as the conductors and earthwires are strung.		
	Construction activity should be restricted to the immediate footprint of the infrastructure.		
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of powerline sensitive species.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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 absolutely necessary.		
	The mitigation measures proposed by the biodiversity specialist must be strictly enforced.		
	A site-specific CEMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMPr and should apply good environmental practice during construction. The CEMPr must specifically include the following:	EO Contractor Avifaunal specialist	Planning and Design Construction
	1. No off-road driving;		
2. Maximum use of existing roads, where possible;			
3. Measures to control noise and dust according to latest best practice;			
4. Restricted access to the rest of the property;			
5. Strict application of all recommendations in the biodiversity specialist report pertaining to the limitation of the footprint.	Avifaunal specialist	Decommissioning	
Conduct an avifaunal inspection of the OHL prior to its decommissioning to identify nests on the poles/towers.			

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<p>A site-specific Decommissioning EMPr (DEMPr) must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the DEMPr and should apply good environmental practice during decommissioning. The DEMPr must specifically include the following:</p> <ol style="list-style-type: none"> 1. No off-road driving; 2. Maximum use of existing roads during the decommissioning phase and the construction of new roads should be kept to a minimum as far as practical; 3. Measures to control noise and dust according to latest best practice; 4. Restricted access to the rest of the property; 5. Strict application of all recommendations in the botanical specialist report pertaining to the limitation of the footprint. 	EO Contractor Avifaunal specialist	Decommissioning
Mortality due to electrocution on the electrical infrastructure within the proposed on-site collector substation	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. This is an acceptable approach because SCC are unlikely to frequent the switching station infrastructure.	EO Contractor	Planning and Design Construction Operation
	If a steel monopole pole design is used, the approved vulture friendly pole/tower design D-DT-7649 in accordance with the Eskom Distribution Technical Bulletin titled Refurbishment of 66/88kV line kite type frames with D-DT-7649 type top configuration - Reference Number 240-170000467 relating to bird friendly structures, must be used.	EO	Planning and Design
	If lattice type structures are used, it is imperative that a minimum vertical clearance of 1.8m is maintained between the jumper cables and/or insulator live ends, and the horizontal earthed components. Additional mitigation in the form of insulating sleeves on jumper cables present on strain poles and terminal poles is also recommended (if suitable insulation material is readily available).	Contractor	Planning and Design

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Bird Flight Diverters must be fitted to the entire OHL according to the applicable Eskom Engineering Instruction (Eskom Unique Identifier 240 – 93563150: The utilisation of Bird Flight Diverters on Eskom Overhead Lines). These devices must be installed as soon as the conductors and earthwires are strung.	Contractor	Construction
Displacement of powerline sensitive species due to disturbance linked to dismantling activities in the decommissioning phase	Conduct an avifaunal inspection of the powerline prior to its decommissioning to identify nests on the poles/towers.	EO	Decommissioning
	Measures to control noise and dust should be applied according to current best practice in the industry.	Contractor	
	Decommissioning 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.		
	Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.		

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 PM2.5 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

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE	
Dust	Before the commencement of any site works and during the operation, as much vegetation as possible must be retained, including patches and strips to minimise dust.	EO Contractor	Construction	
	Activities with high dust-causing potential, such as topsoil stripping, must not be carried out in sensitive areas during adverse wind conditions. When necessary, topsoil must be stripped in discrete sections, allowing buffer strips (windbreaks) between clearings.			De-commissioning
	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: <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, where needed. 			

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<p>Material stockpiles are capable of generating large amounts of dust. In particular, fine materials stored in stockpiles can be subject to dust pick-up. Materials being loaded onto conveyor belts or into trucks are also potential sources of dust emissions. Dust emissions from material stockpiles can be minimised through the use of the following procedures:</p> <ul style="list-style-type: none"> — Locate stockpiles in sheltered areas. Otherwise, stockpiles must be temporarily covered — Where stockpiles are located in open areas, limit the height and slope of the stockpiles to reduce wind pick up, orient stockpiles lengthwise into the wind so they offer the minimum cross-sectional area to prevailing winds, install wind barriers on three sides of the stockpile — Limit activity to the downwind side of the stockpile — Limit drop heights from loading facilities and use closed conveyors where possible <p>Transfer points must also be minimised.</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; and — Use watering sprays on materials to be loaded and during loading. <p>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.</p> <p>Vehicles bearing open loads of potentially wind-borne materials must be covered or wet down in order to minimise dust entrainment</p>		
Volatile Organic Compounds and Other Emissions	<p>All equipment, machinery and vehicles must be fitted with appropriate emission control equipment, are maintained frequently and serviced to the manufacturers' specifications</p> <p>Ensure incident and complaint registers are established and maintained</p> <p>Prohibit burning of waste or vegetation onsite</p>	EO Contractor Operator	Construction Operation De-commissioning

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.
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6.10.3 MITIGATION AND MANAGEMENT MEASURES

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
General Noise Management	Provide a complaints' register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure.	EO Contractor	Construction Operation
	Regular maintenance of equipment to reduce the generation of additional unwanted noise.	Operator	

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Acoustic impact on residential receptors during construction and de-commissioning	<p>Plan construction activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance. Information regarding construction activities must be provided to nearby homesteads affected by the construction noise. Such information includes:</p> <ul style="list-style-type: none"> — Proposed working times; — Anticipated duration of activities; — Explanations on activities to take place and reasons for activities; and — Contact details of a responsible person on site should complaints arise. 	EO Contractor	Construction De-commissioning
	When working near (within 500 m) a potential sensitive receptor, limit the number of simultaneous activities to a minimum as far as possible		
	Avoid or minimizing project transportation through community areas		
	Use noise control devices, such as temporary noise barriers and deflectors for impact and blasting activities, and exhaust muffling devices for combustion engines		
	Select equipment with the lowest possible sound power levels		
	Ensure equipment is well-maintained to avoid additional noise generation		
Blasting	<p>Should blasting activities be required, adequate blast management techniques must be employed. These include:</p> <ul style="list-style-type: none"> — Informing nearby residents as to when blasting will occur on a certain day at a given time; — Displaying highly visible blast notices along the roadside within a certain vicinity of the site in order to notify any passing receptors; and — Not blasting after day-time hours. 	EO Contractor	Construction

6.11 SITE OF CULTURAL, HERITAGE OR PALAEOANTHROPOLOGICAL SIGNIFICANCE

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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Chance Finds	If any archaeological and/or historical sites, features or artefacts are discovered, a qualified archaeologist be called in to investigate the occurrence and the find must be reported to the South African Heritage Resources Agency (SAHRA).	EO ECO	Construction
	<p>Chance Find Procedure:</p> <p>If during construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.</p> <p>It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.</p> <p>The senior on-site Manager will inform the ECO of the chance find and its immediate impact on construction activities. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA</p>	Contractor Project Manager Archaeologist	
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 ECO	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.	Contractor 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.		

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:

- Health, safety, environmental and community incident and complaints management system register;
 - Incident classification and reporting management procedure (to be developed); and
 - Monitoring and audit reports.
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6.12.3 MITIGATION AND MANAGEMENT MEASURES

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction	Carefully plan to minimise the construction period and avoid construction delays.	EO Contractor	Construction
	Make use of existing gravel access roads where possible.		
	Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Ensure that 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. 		
Visual intrusion, particularly in more natural undisturbed settings	Carefully plan to minimise the construction period and avoid construction delays.	EO	Construction
	Make use of existing gravel access roads where possible.	Contractor	
	Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.		
	Ensure that 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. 		
Temporary stockpiling of soil during construction may alter the flat landscape. wind blowing over these disturbed areas could result in dust which would have a visual impact	Ensure that 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. 	EO Contractor	Construction
Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers	Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.	EO	Construction
	Ensure that 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. 	Contractor	
	Carefully plan to minimise the construction period and avoid construction delays.		Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment	Vegetation clearing should take place in a phased manner.	EO Contractor	
	Make use of existing gravel access roads where possible.		
	Limit the number of vehicles and trucks travelling to and from the proposed sites, where possible.		
	Ensure that 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. 		
Potential visual pollution resulting from littering on the construction site	Maintain a neat construction site by removing litter, rubble and waste materials regularly.	EO Contractor	Construction
The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts	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	EO Contractor	Operational
The proposed development will alter the visual character of the surrounding area and expose potentially sensitive visual receptor locations to visual impacts	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.	EO Contractor	Operational
Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers	Where possible, limit the number of maintenance vehicles using access roads.	EO	Operational
	Ensure that dust suppression techniques are implemented on all gravel access roads.	Contractor	
	As far as possible, limit the amount of security and operational lighting present on the substation site whilst adhering to safety standards.		
	As far as possible, limit the amount of security and operational lighting present on the substation site.		Operational

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
The night-time visual environment could be altered as a result of operational and security lighting at the proposed substation	Light fittings for security at night should reflect the light toward the ground and prevent light spill.	EO Contractor	
	Lighting fixtures should make use of minimum lumen or wattage.		
	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		
Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts	All infrastructure that is not required for post-decommissioning use should be removed.	EO	Decommissioning
	Carefully plan to minimize the decommissioning period and avoid delays.	Contractor	
	Maintain a neat decommissioning site by removing rubble and waste materials regularly.		
Decommissioning activities may be perceived as an unwelcome visual intrusion	All infrastructure that is not required for post-decommissioning use should be removed.	EO	Decommissioning
	Carefully plan to minimize the decommissioning period and avoid delays.	Contractor	
	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.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers	Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase.	EO Contractor	Decommissioning
Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment	All cleared areas should be rehabilitated as soon as possible. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.	EO Contractor	Decommissioning
Temporary stockpiling of soil during decommissioning may alter the flat landscape. wind blowing over these disturbed areas could result in dust which would have a visual impact	Position storage / stockpile areas in unobtrusive positions in the landscape, where possible. All cleared areas should be rehabilitated as soon as possible. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.	EO Contractor	Decommissioning

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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Health and Safety	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of the conditions contained herein	SHE Officer Contractor Operator	Construction Operation
	Safety conditions are to be monitored during construction. Continuous monitoring will be undertaken by the SHE Officer will audit monthly.	SHE Officer	Construction
	Develop and implement an occupational health and safety plan	SHE Officer Operator	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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Provide and wear appropriate PPE onsite	SHE Officer	Construction
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents	Contractor Operator	Operation
	Provide onsite personnel with sufficient potable water for drinking		
Public Safety	Restrict public access	Contractor Operator	Construction Operation

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

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Creation of local employment, training, and business opportunities	<p>Employment:</p> <ul style="list-style-type: none"> – Stakeholder engagement processes should be put in place to make sure that all interested and affected party have buy in in the process which will be designed and followed for employment and local procurement opportunities. – 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 contractors 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. <p>Business:</p> <ul style="list-style-type: none"> – 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. 	EO Contractor	Construction
Impact of construction workers on local communities	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.	EO	Construction

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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.	Contractor	
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.			
The proponent and the contractor should implement an HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.			
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.			
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.			
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	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. The agreement should be signed before the construction phase commences.	EO Contractor	Construction
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.			
All farm gates must be closed after passing through.			

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.		
	The proponent should consider the option of establishing a MF (see above) that includes local farmers and develop a Code of Conduct for construction workers. This committee should be established prior to commencement of the construction phase. The Code of Conduct should be signed by the proponent and the contractors before the contractors move onto site.		
	<p>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 (see below):</p> <ul style="list-style-type: none"> — 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. 		
	It is recommended that no construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
Potential loss of livestock and grazing and damage to farm infrastructure associated with increased incidence of grass fires	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. The agreement should be signed before the construction phase commences.	EO Contractor	Construction
	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.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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.		
	No construction staff, with the exception of security staff, to be accommodated on site overnight.		
	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	The proponent should consider the establishment of a Monitoring Forum (MF) to monitor the construction phase and the implementation of the recommended mitigation measures. The MF should be established before the construction phase commences, and should include key stakeholders, including representatives from local farmers and the contractor(s). The MF should also address issues associated with damage to roads and other construction related impacts.	EO Contractor	Construction
	Ongoing communication with landowners and road users during construction period.		
	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.		
	Implementation of a road maintenance programme throughout the construction phase to ensure that the affected roads maintained in a good condition and repaired once the construction phase is completed.		

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	<p>Repair of all affected road portions at the end of construction period where required.</p> <p>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.</p> <p>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.</p>		
Potential impact on productive farmland due to construction related activities and movement of traffic on the site	<p>The loss of high-quality agricultural land should be avoided and or minimised by careful planning in the final layout of the proposed grid facilities.</p> <p>Affected landowners should be consulted about the timing of construction related activities in advance.</p> <p>The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised.</p> <p>An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.</p> <p>All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase.</p> <p>The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up by the Environmental Consultants appointed to manage the EIA.</p> <p>The implementation of the Rehabilitation Programme should be monitored by the ECO.</p>	EO Contractor	Construction
Improve energy security and support the renewable energy sector	<p>Maximise the number of employment opportunities for local community members.</p> <p>Implement training and skills development programs for members from the local community.</p> <p>Maximise opportunities for local content and procurement.</p>	Contractor	Operational

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Creation of employment and business opportunities	<p>Employment:</p> <ul style="list-style-type: none"> — Stakeholder engagement processes should be put in place to make sure that all interested and affected party have buy in in the process which will be designed and followed for employment and local procurement opportunities. — 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 contractors 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. 	Contractor	Operational
	<p>Business:</p> <ul style="list-style-type: none"> — 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>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.</p>		
Generate income for affected landowners	<ul style="list-style-type: none"> — Implement agreements with affected landowners. 	Contractor	Operational

IMPACT / ACTIVITY	MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Visual impact and impact on sense of place	Recommendations of the VIA should be implemented.	Contractor	Operational
Impact on farming operations during maintenance	Affected property owners should be notified in advance of the timing and duration of maintenance activities.	Contractor	Operational
	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 farm.		
	No maintenance workers should be allowed to stay over-night on the affected properties.		

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

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
Traffic Management	<p>Where permitted by the relevant authority, 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:</p> 	Project Manager Contractor EO	Construction Decommissioning
	The additional loading due to the project is not very high but is likely to accelerate the deterioration of the existing surfacing.		

IMPACT ACTIVITY	/ MITIGATION AND MANAGEMENT MEASURE	RESPONSIBLE PERSON	APPLICABLE DEVELOPMENT PHASE
	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.		
	Transport of abnormal loads should be limited to non-peak hours where possible		
	All heavy vehicles must ensure that their headlights are on to increase their visibility to other vehicles and pedestrians		
	All drivers must comply with the relevant traffic laws and regulations		
Increase in Traffic due to construction	All unsurfaced roads must be regularly sprayed with water to prevent dust generation	EO Contractor	Construction
	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		

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 EMPrs 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 Camden I SEF 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 affected by the development 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.

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 site, action plans for their control must be developed, depending on the size of the infestations, budgets, manpower considerations and time. Separate plans of control actions must be developed for each location and/or each species. 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 non-target 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 entire site 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, or as determined in an applicable invasive alien management plan
Review & evaluation of control success rate	Decline in documented alien abundance over time	Bi-annual or as determined in an applicable invasive alien management plan
Operational Phase		
Document alien species distribution and abundance over time at the site	Alien plant distribution map	Annually, or as determined in an applicable invasive alien management plan
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	Annually, or as determined in an applicable invasive alien management plan
Document rehabilitation measures implemented and success achieved in problem areas	Decline in vulnerable bare areas over time	Annually, or as determined in an applicable invasive alien management plan

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 EMP 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.

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.

- A buffer zone must be established in areas where construction will not take place to ensure that construction activities do not extend into these areas.
- 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.

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.
- Timing of planting activities is planned with the onset of the growing season as far as possible.
- 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.
- As far as possible, timing of search and rescue activities must be planned with the onset of the growing season.
- Affected individuals must be translocated to a similar habitat outside of the development footprint and marked for monitoring purposes. For each individual plant that is rescued, the plant must be photographed before removal, tagged with a unique number or code and a latitude longitude position recorded using a hand-held GPS device.
- The rescued plants must be planted into a container to be housed within a temporary nursery on site or immediately planted into the target habitat.
- Rescued plants, if re-planted back in the wild, must be placed as close as possible to where they were originally removed. Re-planting into the wild must cause as little disturbance as possible to existing natural ecosystems. The position of the rescued individual/s must be recorded to aid in future monitoring of that plant.
- During construction, the EO 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 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.

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.

7.4 OPEN SPACE MANAGEMENT PLAN

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

- A buffer zone must be established in areas where construction will not take place to ensure that construction activities do not extend into these areas.
- 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 ECO 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 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.

7.6 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.

7.7 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.

7.7.1 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.

<ul style="list-style-type: none"> – Emergency Response representative(s)
<ul style="list-style-type: none"> – 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. – 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.

7.7.2 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 EO / 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.

7.7.3 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 EMP.

7.7.4 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:

- Monthly 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;
- Six-monthly 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. On a bi-annual basis, 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.

7.8 COVID-19

This Plan serves to outline generic measures to adopt and implement to reduce the risk of Covid-19 transmission and will be reviewed and updated as necessary based on changes in terms of applicable legislation and regulations

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 assigned.

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

7.9 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.
-

7.9.1 EROSION CONTROL PRINCIPLE

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 programmers 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.
 - Reinstated as much of the eroded area to its pre-disturbed geometry.
 - Install protective works (gabions, reno-mattresses or similar) 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.

7.10 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 Camden I SEF up to 132kV grid connection 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.

7.10.1 HAZARDOUS SUBSTANCES 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 ESHS team.

ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY

The following requirements are additional to any applicable requirements established in other LTWP 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.
- No chemicals must be stored or vehicle maintenance undertaken within 100m of wetlands or drainage lines.
- 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.

7.10.2 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.

7.10.3 INSPECTION AND MONITORING

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

7.10.4 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 (Document Number: EX-PR-004).

Examples of Toolbox Talks include:

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

7.11 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.

7.11.1 RESPONSIBILITIES

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



Figure 7-1: Reporting Structure with regards to Grievances

7.11.2 PROCEDURES

INTERNAL GRIEVANCE MECHANISM

The following process relates directly to the corporate human resources policy and seeks to resolve matters that have arisen within the corporate structure. This applies directly to staff that are located at corporate offices or on site and applies to any phase of the project, that is, during construction and operations. **Figure 7-2** illustrates the prescribed process for internal grievances.

All anonymous grievances received from the grievance box will be recorded and be dealt with according to the procedures set out in this document.

The following best practice guidelines when engaging with internal stakeholders:

- IFC Performance Standards;
- IFC Performance standard 2 – Labour and Working conditions;
- King III;
- Emerging governance trends incorporated in the report, Alternate Dispute Resolution;
- South African Legislation;
- Employment Equity Act No. 55 of 1998;
- Labour Relations Act No. 66 of 1995; and
- Occupational Health and Safety Act No. 85 1993.



Figure 7-2: Process for Internal Grievances

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.

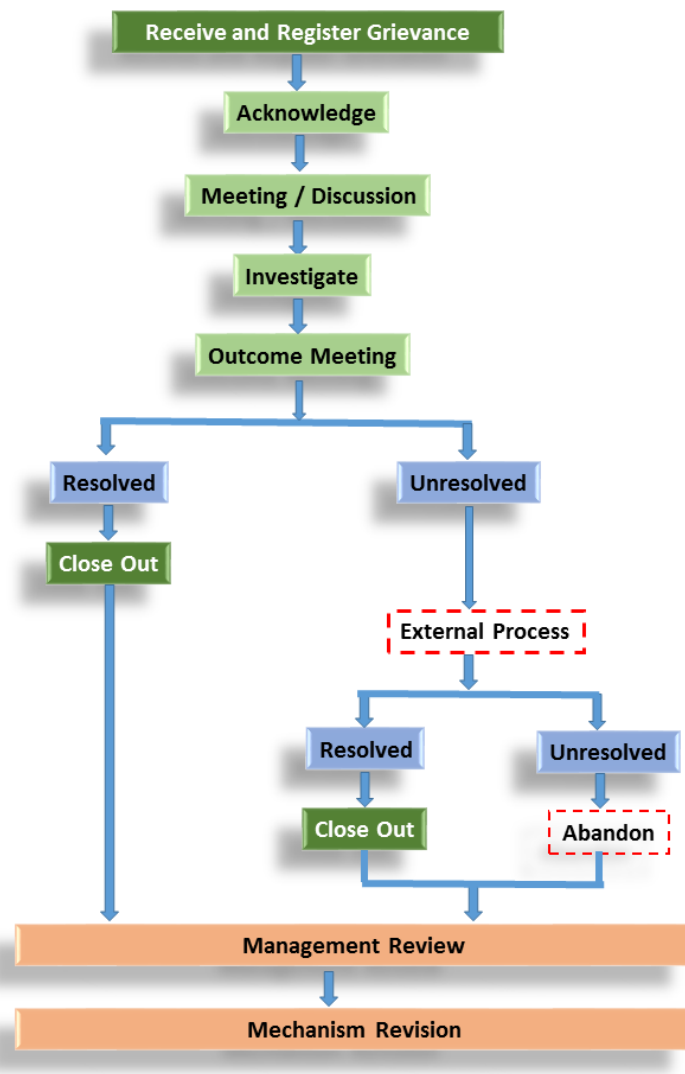


Figure 7-3: Process for External Grievances

GENERAL PROCEDURE FOR RECEIVING AND RESOLVING GRIEVANCES

- Local landowners, affected community representatives 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 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.

7.11.3 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.

7.11.4 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.

7.12 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 project area. Heritage resources are protected in terms of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

7.12.1 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 Camden I SEF up to 132kV grid connection 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, EO 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.

7.12.2 PALAEOLOGICAL MONITORING PROGRAMME

The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence:

- 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.
- Photographs of similar fossils must be provided to the contractors 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.
- 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.
-

7.12.3 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 EO 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.
-

7.12.4 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.

7.13 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 project.

7.13.1 PRINCIPLES FOR MANAGEMENT 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) (e.g. snake gaiters and safety boots) 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. 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.
- 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 Control Officer (ECO).
- 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 (Document Number: EX-PR-004).

Examples of Toolbox Talks include:

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

7.14 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.

7.14.1 SOIL HORIZONS

TOPSOIL

Topsoil is the top-most soil layer (0-25 cm) 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.

7.14.2 PRINCIPLES FOR 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.

7.15 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.

7.15.1 RELEVANT ASPECT 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.
-

7.15.2 LEGISLATIVE REQUIREMENT

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).

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

7.15.3 WASTE MANAGEMENT PRINCIPLE

An integrated approach to waste management on site is needed. Such an approach is illustrated in **Figure 7-4**.

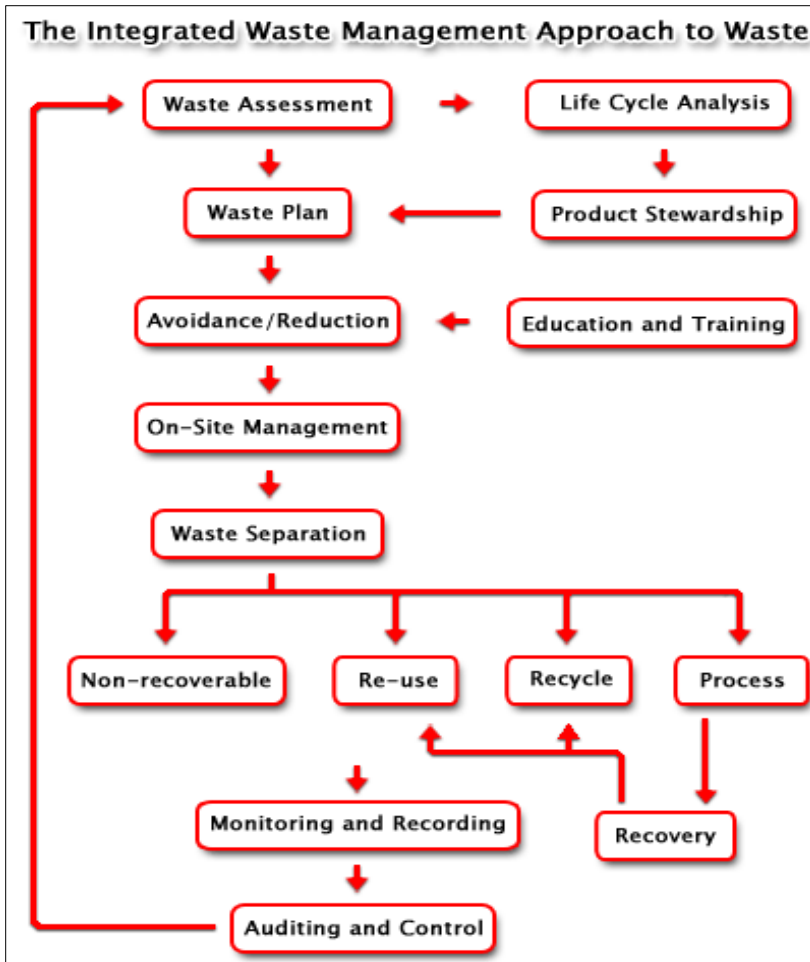


Figure 7-4: Integrated Waste Management Approach to Waste (Source: <http://www.enviroserv.co.za/pages/content.asp?SectionId=496>)

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.
- Once a waste inventory has been established, targets for recovery of waste (minimisation, re-use, recycling) must be set.

WASTE COLLECTION, HANDLING AND STORAGE

- Portable toilets must be monitored and maintained daily.
- Below ground storage of septic tanks, if installed, must withstand the external forces of the surrounding environment. The area above the tank must be demarcated to prevent any vehicles or heavy machinery from driving around the area.
- 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.
- Vegetation removed from the site must be chipped, removed from the site and disposed of at an appropriate waste disposal facility or used as mulch on site.
- A dedicated waste management team must be appointed by the principal contractor's EO, whom will be responsible for ensuring the continuous sorting of waste and maintenance of the area. The waste management team must be trained in all areas of waste management and monitored by the EO.
- 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 daily. Bunds must be inspected for leaks or cracks in the foundation and walls.
- 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.

7.15.4 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.
- All waste must be stored in appropriate temporary storage containers (separated between different operational wastes, and contaminated or wet waste) at each operational area prior to being taken to the waste storage area for final sorting (if required). Waste storage shall be in accordance with all best-practice guidelines and under no circumstances may waste be burnt on site.
- Vegetation removed from the site must be chipped, removed from the site and disposed of at an appropriate waste disposal facility or used as mulch on site.
- 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.

7.15.5 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.

Should the above-mentioned environmental guidelines and mitigation measures be adopted, it is anticipated that the negative environmental impacts of the proposed Camden I SEF 132kV grid connection project will be mitigated adequately. The Project Company 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:

WSP Group Africa (Pty) Ltd

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Tel: +27 11 361-1392

E-mail: ashlea.strong@wsp.com

APPENDIX

A EAP CV





ASHLEA STRONG, MEM, EAP

*Principal Consultant (Planning & Advisory Services),
Environment & Energy*



Years with the firm

8

Years of experience

18

Professional qualifications

EAPASA

Areas of expertise

Auditing

ESIR

Energy

Environmental Control

Infrastructure

Mining

Training

Waste Management

CAREER SUMMARY

Ashlea is a Principal Consultant with 18 years' experience in the environmental field. She currently provides technical and strategic expertise on a diverse range of projects 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 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.

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

PROFESSIONAL MEMBERSHIPS

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

PROFESSIONAL EXPERIENCE

Energy Sector

- 100MW Solar Photovoltaic (PV) Plant (2021). Project Director. This project involved the compilation of a Basic Assessment and Environmental Management Plan for a 100MW Solar PV Plant near Springs in Gauteng, South Africa. Client: Calodex (Pty) Ltd.
- Erica 400kV Loop-in-Loop-out (LILO) Powerline (2020). Compilation of an environmental screening assessment for the Erica 400kV LILO Powerline in Cape Town, Western Cape, South Africa. Client: Eskom Holdings SOC Limited.
- Maralla East and West Wind Energy Facilities (2019). Project Manager. Compilation of two Part 2 Amendment Processes for the changes in technical scope of the Wind Energy Facilities near Sutherland in the Northern and Western Cape, South Africa. Client: BioTherm Energies (Pty) Ltd.
- Ruigtevallei 132kV Powerline (2019): Project Manager. Compilation of a Part 2 Amendment Process for the deviation of the Ruigtevallei – Dreunberg 132 kV powerline near Gariiep in the Free State, South Africa. Client: Eskom Holdings SOC Limited.



ASHLEA STRONG, MEM, EAP

Principal Consultant (Environmental Services), Environment & Energy

- Nakonde and Mpika Wind Energy Projects (2018): Project Manager. Compilation of two Environmental Project Briefs for the establishment of meteorological masts at the Proposed Nakonde and Mpika Wind Project Sites in Zambia. Client: Globeleq
- Rietkloof Wind Energy Facility Project (2018): Project Director. Compilation of a Basic Assessment and Environmental Management Programme for a 140MW Wind Energy Facility, Matjiesfontein, Western Cape. Client: G7 Renewable Energies
- Mozambique – Zambia Interconnector Powerline (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. Client: Southern African Power Pool (SAPP).
- Ankerlig – Koeberg 132kV powerline walkdown (2017): Project Manager. This project involved the compilation of a Construction and Operation Environmental Management Plans for the Ankerlig – Koeberg 132kV powerline. Client: Eskom Holdings SOC Limited.
- Gwanda 100MW Solar Project (2018): Project Manager. This project involved the high-level review of the Environmental Impact Assessment for a 100MW Photovoltaic (PV) Solar Project near the town of Gwanda, Matebeleland South Province of Zimbabwe against relevant legislation and international standards. Client: WSP | Parsons Brinckerhoff.
- Southern Energy Coal Fired Power Station (2016): Project Manager. This project involved the high-level review of the Environmental Impact Assessment for the Southern Energy Coal Fired Power Station near Hwange in Zimbabwe against relevant legislation and standards. Client: WSP | Parsons Brinckerhoff.
- Proposed Solar and Wind Projects located in the Northern and Western Cape Provinces (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 near Aggenys and Sutherland respectively. Client: BioTherm Energy (Pty) Ltd.
- 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 in the Northern Cape Province. Client: Central Energy Fund (CEF).
- 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. Client: Eskom Transmission.
- 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. Client: Eskom Holdings SOC Limited.
- 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 for the proposed Mulilo Coal Fired Power Station and associated infrastructure as well as associated power lines and substations in the Musina area of the Limpopo Province. Client: Parsons Brinckerhoff Africa and Mulilo Power.

- Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure, Western Cape, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the proposed Pebble Bed Modular Reactor Demonstration Plant and Associated Infrastructure in the Western Cape Province. Client: Eskom Generation.
- Proposed Bantamsklip – Kappa 765 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 for four 260km 765kV powerlines between the Bantamsklip Nuclear Power Station Site and the proposed new Kappa Substation in the Karoo, Western Cape Province. Client: Eskom Transmissions.
- 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 for a number of 400kV powerlines between the Bantamsklip Nuclear Power Station Site and a number of substations, including Bacchus, Kappa and Muldersvlei, in the Western Cape Province. Client: Eskom Transmission.
- 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 for the Westgate – Tarlton – Kromdraai 132 kV Sub-Transmission line and associated infrastructure in the Gauteng Province. Client: Eskom Distribution – Central region.
- Environmental Scoping Study for the proposed new distribution line and substation for Eskom, Dundonald, Mpumalanga (also involved in the Public Participation Process), 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.
- The proposed new 132 kV sub-transmission line between the Dinaledi and GaRankuwa substations for Eskom, GaRankuwa, North West, South Africa (2008): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for a 132kV powerline between the Dinaledi and GaRankuwa substations in the GaRankuwa area of the North West Province. Client: Eskom Distribution.
- 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 Transmission
- 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 for a 132kV powerline as well as a new substation in the Tarlton area of Gauteng. Client: Eskom Distribution – Central Region.
- Basic Assessment for the proposed Watershed – Mmabatho 88kV Power line. North West, South Africa (2008): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for a new 88kV powerline near Mmabatho in the North West Province. Client: Eskom Distribution – Central Region.

- Proposed Watershed – Mmabatho 88kV Power line. North West, South Africa (2007): Project Manager. This project involved the compilation of an Environmental Impact Assessment and Environmental Management Plan for the Watershed – Mmabatho 88kV Power line in the North West Province. Client: Eskom Distribution – Central Region.
- 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 for the proposed Combined Cycle Gas Turbine Plant and Associated Infrastructure near Majuba in the Mpumalanga Province. Client: Eskom Holdings SOC Limited.
- 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 for the proposed Capacity Increase of the Atlantis OCGT Plant and Associated Infrastructure in the Western Cape Province. Client: Eskom Generation.
- 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 for the proposed Concentrated Solar Thermal Plant near Upington in the Northern Cape Province. Client: 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 for the proposed Underground Coal Gasification plant near the Majuba Power Station in the Mpumalanga Province. Client: Eskom Holdings SOC Limited.
- 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 for the proposed new Coal-fired Power Station in the Lephalale Area in the Limpopo Province. Client: 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 for the proposed Open Cycle. Gas Turbine Power Station at Atlantis in the Western Cape Province. Client: Eskom Generation.

Infrastructure Sector

- Emalahleni Water Treatment Plant Amendment Project (EWRP) (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 for the EWRP near Emalahleni in Mpumalanga, South Africa. Client: Anglo American
- Hendrina Leachate Dam (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. Client: Eskom Holdings SOC Limited.
- Rehabilitation of the R34 between Vryburg and Schweizer-Reneke, North West, South Africa (2016): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for the upgrading of the R34 between Vryburg and Schweizer-Reneke. Client: SANRAL
- Proposed Expansion of the Cremation Facilities at the Envirocin Pet Crematorium, Gauteng, South Africa (2013): Project Manager. This project involves the compilation of a basic assessment for the expansion of the cremation facilities at

the Envirocin Pet Crematorium in Kyasands, Gauteng Province. Client: Envirocin Incineration Systems CC.

- 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, for the proposed establishment of a KRAFT paper mill in Frankfort in the Free State Province. Client: Industrial Development Corporation of SA (Pty) Ltd.
- Rehabilitation of the N14 between Delerayville and Sannieshof, North West, South Africa (2011): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for the upgrading of the N14 between Sannieshof and Delerayville 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. Client: SANRAL.
- Proposed new Waterfall Cemetery, Limpopo, South Africa (2011): Project Manager. This project involved the compilation of a Basic Assessment and Environmental Management Plan for the new Waterfall Cemetery, Limpopo Province. Client: Makhado Municipality.
- Route determination of the proposed Metro Boulevard, Gauteng, South Africa (2008): Project Manager. This project involved the undertaking of an Environmental Impact Assessment for the route determination of the proposed Metro Boulevard in the Weltevreden Park Area of the Gauteng Province. Client: Johannesburg Roads Agency.
- 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 in the Western Cape Province. Client: Eskom Generation.

Mining Sector

- Establishment of the Proposed Rietvlei Opencast Coal Mine, 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, for the establishment of an opencast coal mine north of Middelburg. Client: Rietvlei Mining Company.
- Decommissioning of Redundant Infrastructure at the Vaal River Operations, North West 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 at AngloGold Ashanti's Vaal River Operations. Client: AngloGold Ashanti.
- 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 at AngloGold Ashanti's West Wits Operations. Client: AngloGold Ashanti (Pty) Ltd.
- Inyanda Mine Pegasus South Expansion, 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 for the Inyanda Mine Pegasus South Expansion project, north of Middelburg in the Mpumalanga Province. Client: Exxaro Coal (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 proposed by the Sishen Mine in the Northern Cape. Client: Sishen Iron Ore (Pty) Ltd.
- Prospecting Permit Applications in the Kuruman area of the Northern Cape, South Africa (2011): Project Manager. This project involved the compilation of Environmental Management plans as part of six applications for Prospecting Permits in the Kuruman area of the Northern Cape. Client: Sound Mining Solutions.
- 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 in the Limpopo Province. Client: Limpopo Department of Roads and Transport.
- 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 required for the Medupi Coal Fired Power Station in the Limpopo Province. Client: 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 for borrow pits required for the Ingula Pumped Storage Scheme in the Kwa-Zulu Natal Province. Client: 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 for a 23 Hectare Borrow Pit required for the Steelpoort Pumped Storage Scheme in the Mpumalanga Province. Client: Eskom Generation.
- 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 on the farm Quaggaskop 215 outside Vanrhynsdorp in Western Cape Province. Client: Minexpo.

Waste Management Projects

- Sasol Waste Management Environmental Management Programme (2019). Compilation of an operational Environmental Management Programme for the Sasol Waste Ash Facility, Charlie 1 Disposal Facility and the Waste Recycling Facility. Client: Sasol Secunda Operations.
- 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. Client: 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. Client: Eskom Holdings SOC Limited.
- 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. Client: Hendrina Power Station.

- 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. Client: Coega Development Corporation.

Specialist Projects

- Strategic Environmental Assessment for the Development. Master Plan Greater Port Harcourt, Rivers State, Nigeria, Africa (2008): Senior Environmental Consultant. This project entailed the compilation of a Strategic Environmental Assessment for the City of Port Harcourt as part of the development of the Master Plan for the Greater Port Harcourt Area. Client: Port Harcourt Government
- Development of an Environmental Policy, Gauteng, South Africa (2006): Environmental Consultant. This project entailed the development and compilation of an environmental policy for the Ekurhuleni Metropolitan Municipality. Client: Ekurhuleni Metropolitan Municipality.
- Environmental Input into the National Transport Master Plan, South Africa (2007): Environmental Consultant. This project included the provision of strategic environmental input in to the Draft National Transport Plan. Client: Department of Transport.
- Development of the Development Corridors, Ekurhuleni, Gauteng, South Africa (2006): Environmental Consultant. This project included the provision of strategic environmental input in to the Ekurhuleni Metropolitan Municipalities Development Corridor Study. Client: Ekurhuleni Metropolitan Municipality.

Auditing

- Compliance Audits at South 32 (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. Client: South 32.
- Compliance Audits at Middelburg Water Reclamation Plant (MWRP) (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. Client: South 32.
- BioTherm Round 4 Lenders Technical Advisor (2018 - 2021). Project Manager – Environmental. Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards. Client: Nedbank.
- Water Use Licence Audits (2019): Lead Auditor: External compliance audits of the water use licences for the Delmas and Argent Powerlines in Mpumalanga. Client: Eskom Holdings SOC Limited.
- Sasol Alrode and Pretoria West Depot Audits (2016 - 2020): Lead Auditor. Environmental compliance audits for environmental authorisations and environmental management plans for the Sasol Alrode and Pretoria West Depots. Client: Sasol Oil (Pty) Ltd
- Sasol Regulation 34 Audits (2019): Lead Auditor. Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations. Client: Sasol Oil (Pty) Ltd
- Regulation 34 Audits at Mogalakwena Mine (2019). Project Manager. Environmental compliance audits of the EMPR and various environmental



ASHLEA STRONG, MEM, EAP

Principal Consultant (Environmental Services), Environment & Energy

- authorisations at the Mogalakwena Mine in the Limpopo Province. Client: Anglo American Platinum.
- Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations (2019): Lead Auditor. Environmental compliance audits for 49 authorisations for the Sasol Secunda. Client: Sasol Secunda Operations
 - 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. Client: Palabora Company
 - Sasol Mining Water Use Licence Compliance, South Africa (2018): Project Manager. Environmental compliance audit of six WULs held by mining operations in Secunda. Client: Sasol Mining
 - Waste Management License Audits for the Sasol Waste Ash Site, Secunda, Mpumalanga, South Africa (2014 - 2019): Lead Auditor. These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities at the Secunda Site in Mpumalanga Province. Client: Sasol Chemical Industries: Secunda Synfuels Operations
 - Legal Assessment at South 32 (2019): Project Manager and Lead Auditor. This project involved the assessment of legal compliance against the mine's legal register for the Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga. Client: South 32
 - 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 in Kempton Park, Gauteng Province. The monitoring included InvestChem's compliance to various commitments contained in their environmental management programmes and conditions within their environmental authorisations (records of decision). Client: Investchem (Pty) Ltd.
 - Compliance Audits at Sasol Alrode and Pretoria West Depots (2015-2019). Project Manager and Lead Auditor. Annual Environmental compliance auditing of the Environmental authorisations at the Alrode and Pretoria West Depots in Gauteng. Client: Sasol Oil (Pty) Ltd
 - Water Use Licence for the Letabo Power Station (2018): Project Manager. Environmental compliance audit of the WUL held by Eskom Letabo Power Station, Free State, South Africa. Client: Eskom Holdings
 - Compliance Audits at Kriel Colliery (2018): Project Manager. This project involved the environmental compliance audits of the Water Use Licenses held by Kriel Colliery in Mpumalanga. Client: Seriti Coal
 - Legal Assessment at South 32 (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 at South 32 in Mpumalanga. Client: South 32
 - EMPR Performance Assessment Report at South 32 (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 at South 32 in Mpumalanga. Client: South 32
 - 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 for the Bokpoort

CSP Facility near Groblershoop in the Northern Cape Province. Client: ACWA Power Solafraica Bokpoort CSP Power Plant (Pty) Ltd.

- 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). Client: Anglo Thermal Coal.
- 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. Client: AfriSam Southern Africa (Pty) Ltd.
- 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). Client: Anglo American Thermal Coal.

Environmental Control Projects

- N14 rehabilitation between Sannieshof and Delareyville, North West, 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. Client: SANRAL.
- Delmas and Bontleg Waste Water Treatment Works, Mpumalanga, South Africa (2009): Environmental Control Officer. This project involved a once off compliance audit of the above-mentioned Waste Water Treatment Works. Client: Victor Khanye 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. Client: Mkhondo Local Municipality.
- 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. Client: ERWAT.
- 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. Client: City of Tshwane.

Training

- N14 rehabilitation between Sannieshof and Delareyville, North West, 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. Client: SANRAL.
- 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. Client: Mintek



ASHLEA STRONG, MEM, EAP

Principal Consultant (Environmental Services), Environment & Energy

- 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. Client: Transwerk Germiston.

APPENDIX

B

A3 MAPS



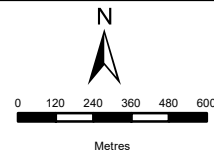


CAMDEN 1 SEF

LOCALITY PLAN

Legend

- Existing Eskom Grid
- Solar Grid OHL up to 132kV:**
- Alternative 1
- Alternative 2 (Preferred)
- Alternative 3
- Alternative 4
- Grid SS & BESS Alt1
- Grid SS & BESS Alt2 (Preferred)
- Collector & Switching SS Alt2 (Preferred)
- Collector & Switching SS Alt 1
- Camden I Solar PV site extent (100MW)



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DATA SOURCE:
 Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community
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COORDINATE SYSTEM: HARTBEESTHOEK94 LO31

PROJECT TITLE:
 CAMDEN RENEWABLE ENERGY COMPLEX

SCALE: 1:24 000 **DRAWN BY:** TS

DATE: 2022/05/18 **REVIEWED BY:** AS

FIGURE NO: **PROJECT NO:** 41103247 **REV:**

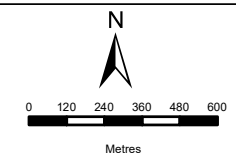
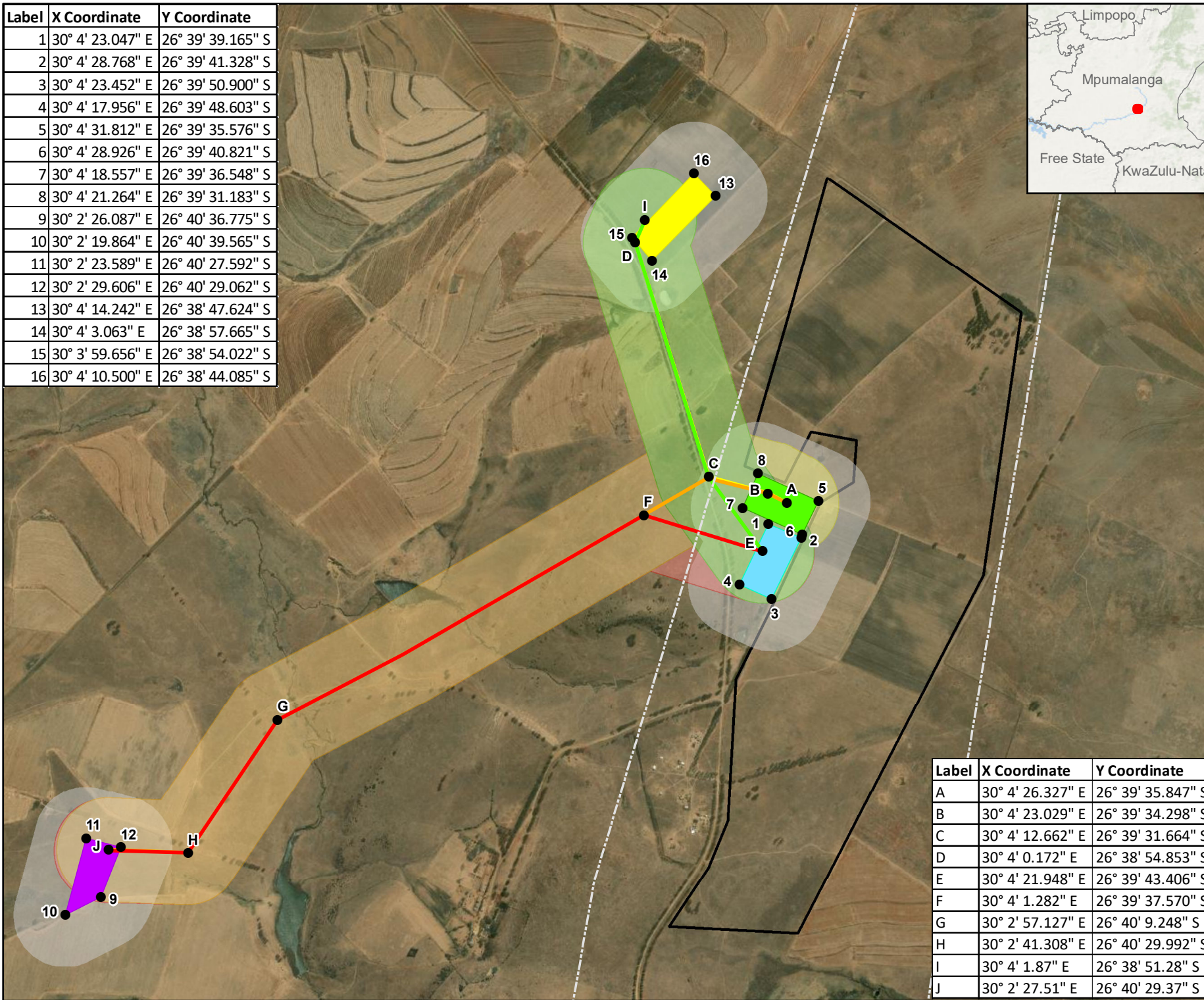
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Label	X Coordinate	Y Coordinate
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3	30° 4' 23.452" E	26° 39' 50.900" S
4	30° 4' 17.956" E	26° 39' 48.603" S
5	30° 4' 31.812" E	26° 39' 35.576" S
6	30° 4' 28.926" E	26° 39' 40.821" S
7	30° 4' 18.557" E	26° 39' 36.548" S
8	30° 4' 21.264" E	26° 39' 31.183" S
9	30° 2' 26.087" E	26° 40' 36.775" S
10	30° 2' 19.864" E	26° 40' 39.565" S
11	30° 2' 23.589" E	26° 40' 27.592" S
12	30° 2' 29.606" E	26° 40' 29.062" S
13	30° 4' 14.242" E	26° 38' 47.624" S
14	30° 4' 3.063" E	26° 38' 57.665" S
15	30° 3' 59.656" E	26° 38' 54.022" S
16	30° 4' 10.500" E	26° 38' 44.085" S



CAMDEN 1 SEF ELECTRICAL GRID CONNECTION

- Legend**
- Turning Points
 - Existing Eskom Grid
 - Solar Grid OHL up to 132kV:**
 - Alternative 1
 - Alternative 2 (Preferred)
 - Alternative 3
 - Alternative 4
 - Collector & Switching SS Alt 1
 - Collector & Switching SS Alt2 (Preferred)
 - Grid SS & BESS Alt1
 - Grid SS & BESS Alt2 (Preferred)
 - Camden I Solar PV site extent (100MW)



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DATA SOURCE: Service Layer Credits: Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community Esri, Garmin, GEBCO, NOAA NGDC, and other contributors		
COORDINATE SYSTEM: HARTEBEESTHOEK94 LO31		
PROJECT TITLE: CAMDEN RENEWABLE ENERGY COMPLEX		
SCALE: 1:24 000	DRAWN BY: TS	
DATE: 2023/05/09	REVIEWED BY: AS	
FIGURE NO:	PROJECT NO: 41103247	REV:
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Label	X Coordinate	Y Coordinate
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
E	30° 4' 21.948" E	26° 39' 43.406" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S
H	30° 2' 41.308" E	26° 40' 29.992" S
I	30° 4' 1.87" E	26° 38' 51.28" S
J	30° 2' 27.51" E	26° 40' 29.37" S

Mpumalanga Biodiversity Sector Plan (2019)

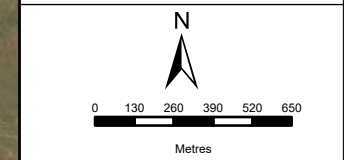
- PA National Parks & Nature Reserves
- 250 m Assessment Corridor



CAMDEN 1 SEF

GRID CONNECTION

- Legend**
- Internal Roads
 - Farm Portions
 - CD 1 Solar PV Grid up to 132kV - Alternative 2 (Preferred)
 - CD 1 Solar PV Grid up to 132kV - Alternative 1, 3 & 4
 - Gridline Connection 250m corridor
 - 250 m Assessment Corridor
 - Collector & Switching SS Alt2 (Preferred)
 - Collector & Switching SS Alt 1
 - BESS & SS Alt1
 - BESS & SS Alt2 (Preferred)
- Heritage**
- Burial Site (incl. 30m buffer)
 - Structure
- Avifauna**
- High Sensitivity Grassland
 - Very High Sensitivity Wetlands (No-Go) (Limited Infrastructure)
- Aquatic Sensitivity**
- Very High
- Ecology Sensitivity**
- Very High
 - High
 - Medium-High
 - Medium
 - Medium-Low
 - Low



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DATA SOURCE:
 Service Layer Credits: World Imagery; Earthstar Geographics
 World Ocean Base; Esri, GEBCO, DeLorme, NaturalVue

COORDINATE SYSTEM: WGS 1984 UTM ZONE 35S

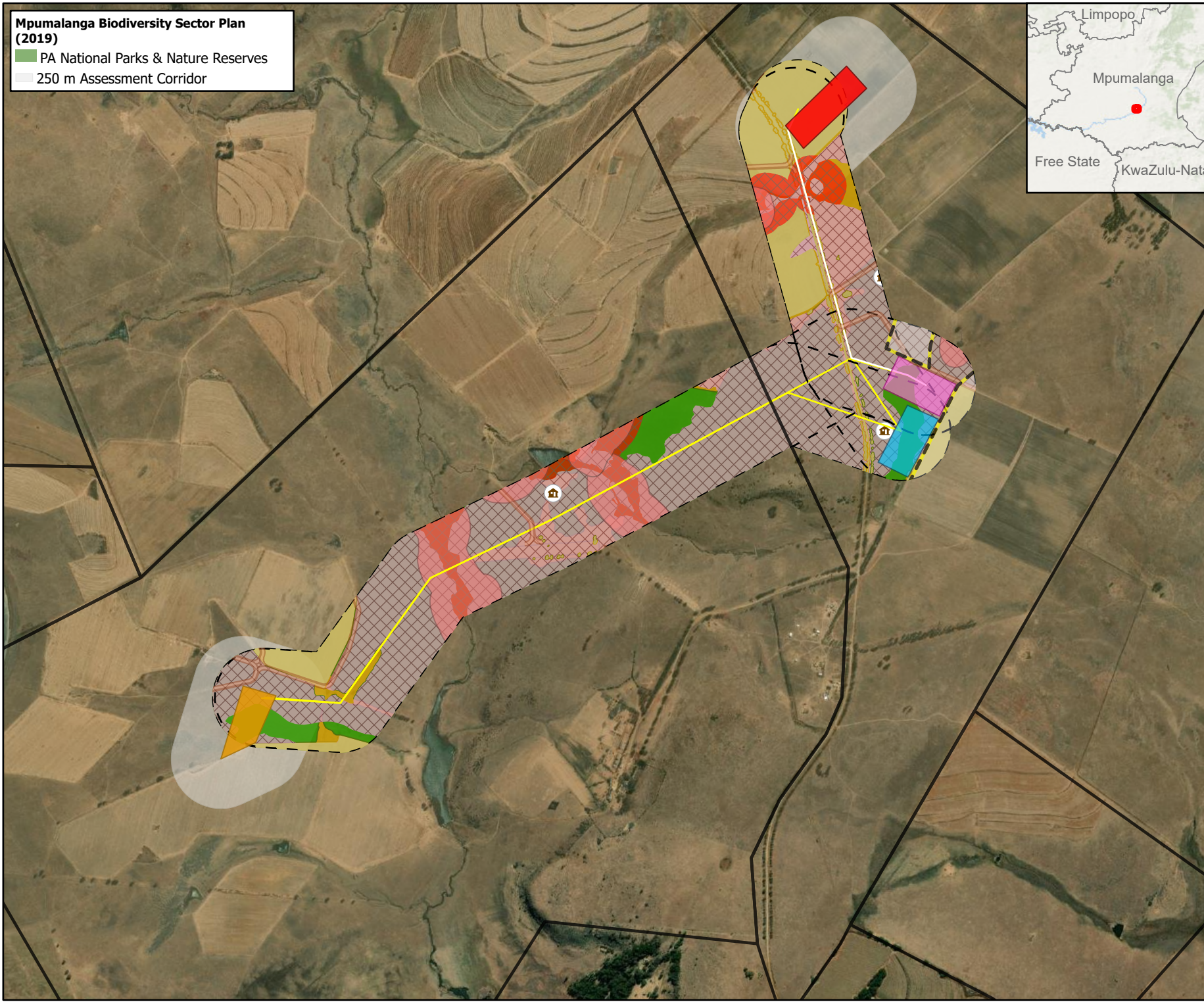
PROJECT TITLE:
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SCALE: 1:25,000 **DRAWN BY:** TS

DATE: 2023/03/24 **REVIEWED BY:** AS

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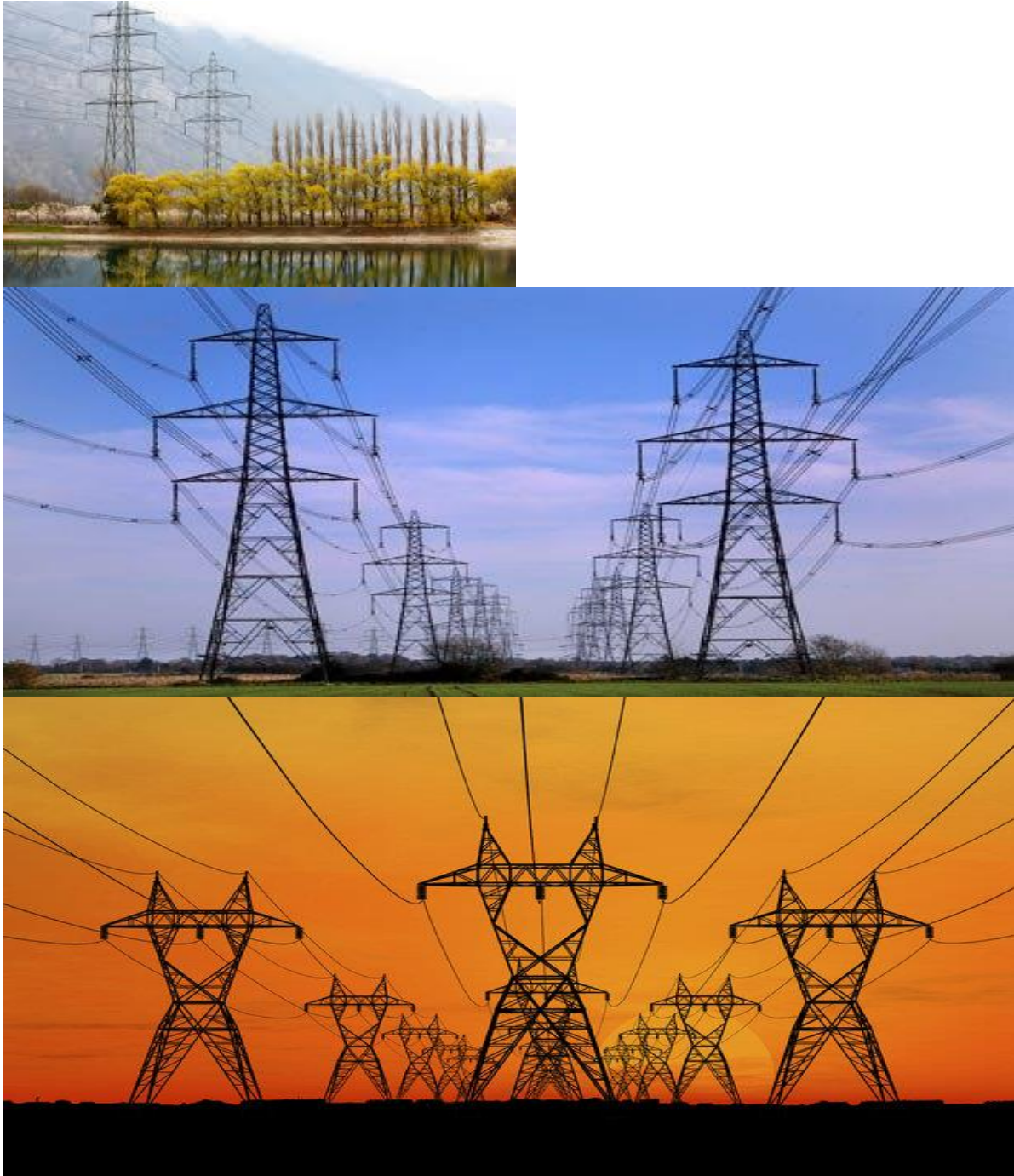
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APPENDIX

C GENERIC EMPR FOR THE DEVELOPMENT FOR OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

APPENDIX 1
GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE
DEVELOPMENT AND EXPANSION FOR OVERHEAD ELECTRICITY
TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE



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 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
developer Environmental Officer (dEO)	<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;
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</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.
<p>contractor Environmental Officer (cEO)</p>	<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:

1. development procedures;
2. materials and equipment to be used;
3. getting the equipment to and from site;
4. how the equipment/ material will be moved while on site;
5. how and where material will be stored;
6. the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
7. timing and location of activities;
8. compliance/ non-compliance with the EMPr; and
9. 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

<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</p>						

<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 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>Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area;</p> <p>An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities;</p> <p>The access roads to tower positions must be signposted after access has been negotiated and before the commencement of 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</p>						

<p>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</p>						

<p>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

Impact management outcome: Minimise disturbance to fauna.						
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 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 swop 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:

Enertrag SA is the project proponent (Applicant) with regards to the application for the construction of the Camden up to 132kV OHPL.

PROPONENT:	ENERTRAG SOUTH AFRICA (PTY) LTD
Contact Person:	Mercia Grimbeek
Postal Address	Suite 104, Albion Springs, 183 Main Road, Rondebosch, Cape Town, South Africa 7700
Telephone:	071 752 8033
Email:	gideon.raath@enertrag.com

Refer to Section 1.2 of the EMP

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 powerline. 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
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
EAP Qualifications	— Masters in Environmental Management, University of the Free State — B Tech, Nature Conservation, Technikon SA — National Diploma in Nature Conservation, Technikon SA
EAPASA Registration	EAPASA (2019/1005)

Number:	
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Refer to Section 1.3 of the EMPr

7.1.3 Project name:

CAMDEN UP TO 132KV GRID CONNECTION AND COMMON COLLECTOR SUBSTATION

7.1.4 Description of the project:

Refer to Section 3 of the EMPr

The proposed project entails the construction of an up to 132kV Grid connection overhead powerline (OHPL) from the Camden I Solar Facility to the nearby Camden Collector substation (which in turn will connect to the Camden Power Station). The powerline will be approximately km in length, depending on the authorized location of the collector substation. The onsite grid connection substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The up to 132kV powerline and substation will have a 500m corridor (250m either side of the centre line, and 250m around the entire perimeter of the proposed substation sites), to allow for micro-siting and avoidance of sensitive features where possible. This corridor, as opposed to the line routing, is proposed for authorisation. This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e. the termination works).. This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e. the termination works).

This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e. the termination works).

The proposed project will comprise the following key components, detailed further in the table below:

- The grid connection substation (adjacent the IPP substation), consisting of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, lighting and fencing;
- Construction of an up to 132kV power line (either single or double circuit) between the grid connection substation portion and that of the Camden Collector substation; and
- Termination works, comprising the necessary up to 132kV voltage electrical components required for connection at and into the Collector Substation.
- Existing or new access and service roads (utilising existing roads where possible, with new roads developed where there are no existing roads to be utilised).

Overhead Powerline

Powerline capacity	Up to 132kV (note this includes 132kV exactly for the avoidance of doubt)
Powerline corridors width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 500 m (i.e. 250 m on either side of centre line). As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Powerline servitude width	40m
Powerline pylons:	Monopole or Lattice pylons, or a combination of both where required and as informed by detailed design
Construction clearance required (per pylon)	To allow for crane and large component access and installation, clearing required for each tower depends on local terrain, but up to 1500m ² , or where existing OHL crossings are made or powerlines are constructed adjacent each other, up to 2500m ² .
Powerline pylon height:	Up to a maximum of 40 m
Minimum conductor clearance	8.1 m
Pylon spacing	Up to 250m apart, depending on complexity and slope of terrain
Pylon designs	<p>Various pylon design types are considered (and will be determined during the detailed design engineering phase), and may include any of the following:</p> <p>Up to 132kV (single or double circuit)</p> <ul style="list-style-type: none"> • Intermediate self-supporting monopole • Inline or angle-strain self-supporting monopole • Suspension self-supporting monopole • Triple pole structure • Cross rope suspension; • Guyed "V" Structure • Steel lattice structure; or • Similar pylon design at 132kV specification <p>The above designs may require anchors with guy-wires or be anchorless. For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 140m² (12m by 12m), with depths reaching up to 4m typically in a rectangular 'pad' shape.</p>
Substation (and Collector Substation connection components)	
Substation Footprint	1.5ha

Substation Capacity	33/132kV
Corridor width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 250m around the entire perimeter of the proposed substation sites. As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Associated infrastructure	<p>The substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc, including the following:</p> <ul style="list-style-type: none"> • Standard substation electrical equipment, including but not limited to transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, 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. • The control building, telecommunication infrastructure, oil dam(s) • Workshop and office area within the substation footprint • Fencing around the substation • Lighting and security infrastructure • All the access road infrastructure to and within the substation • Further ancillary infrastructure including but not limited to lighting, lightning protection, fencing, buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms).
Termination works	All works and components required for connection at and into the Collector Substation comprising the necessary up to 132kV voltage electrical components, including amongst others standard substation electrical equipment as may be needed (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.
Roads Infrastructure	

Road servitude and access roads

Approximately 6 meters wide, however where required for turning circle/bypass areas, access or internal roads will be up to 20m wide to allow for larger component transport. During operation, vegetation maintenance by partial clearing/maintenance in grid servitude for operation, safety and maintenance reasons.

7.1.5 Project location:

The proposed Project will be developed in an area south-west of Ermelo, in Mpumalanga. The proposed Project falls within the Msukaligwa Local Municipality of the Gert Sibande District Municipality. Refer to

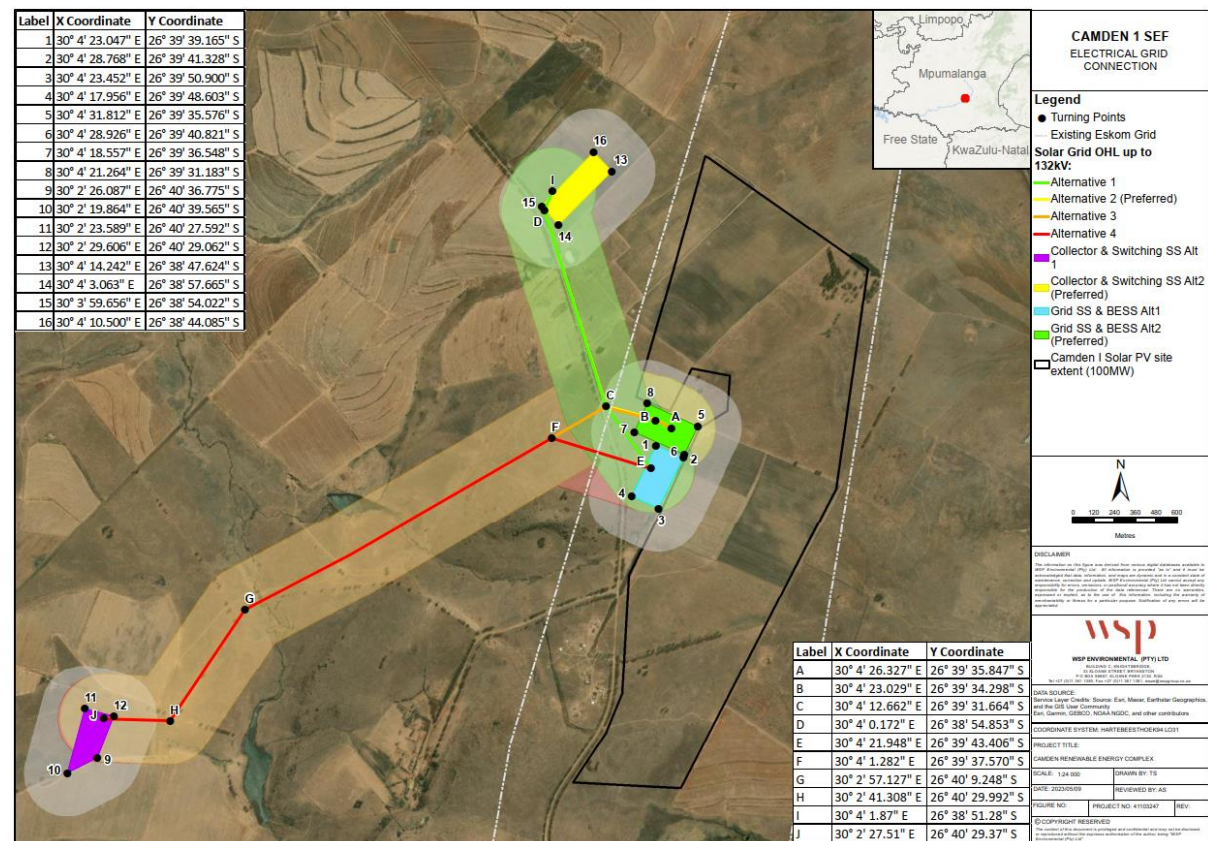


Figure 2 and **Figure 2**.

Coordinates for the proposed 132kV OHPL Alternatives and substation are below:

POINT	CENTRE POINT CO-ORDINATES	
132kV OHPL: Alternative 1		
E	30° 4' 21.948" E	26° 39' 43.406" S

C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
I	30° 4' 1.87" E	26° 38' 51.28" S
132kV OHPL: Alternative 2 (Preferred)		
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
D	30° 4' 0.172" E	26° 38' 54.853" S
I	30° 4' 1.87" E	26° 38' 51.28" S
132kV OHPL: Alternative 3		
A	30° 4' 26.327" E	26° 39' 35.847" S
B	30° 4' 23.029" E	26° 39' 34.298" S
C	30° 4' 12.662" E	26° 39' 31.664" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S
H	30° 2' 41.308" E	26° 40' 29.992" S
J	30° 2' 27.51" E	26° 40' 29.37" S
132kV OHPL: Alternative 4		
E	30° 4' 21.948" E	26° 39' 43.406" S
F	30° 4' 1.282" E	26° 39' 37.570" S
G	30° 2' 57.127" E	26° 40' 9.248" S
H	30° 2' 41.308" E	26° 40' 29.992" S
J	30° 2' 27.51" E	26° 40' 29.37" S

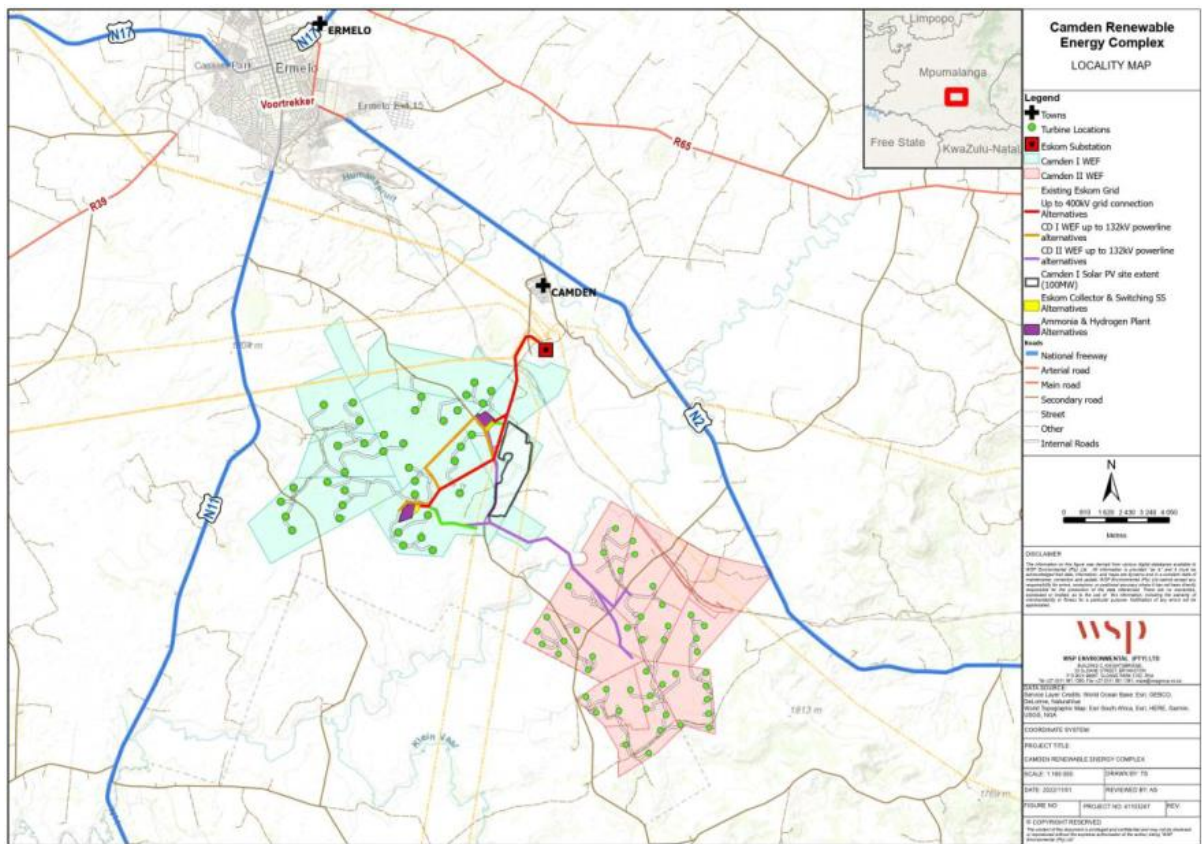


Figure 1: Locality map for the proposed Camden Renewable Energy Complex, near Camden in the Mpumalanga Province

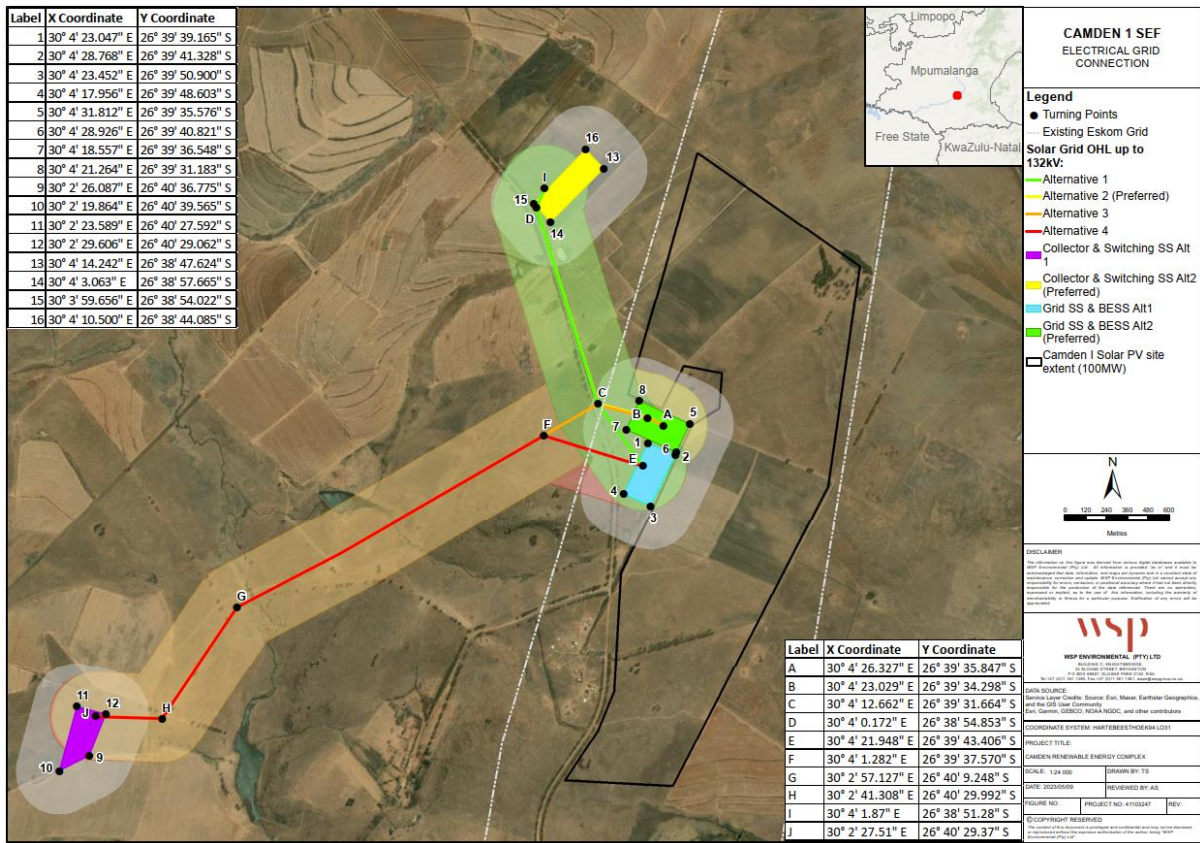


Figure 2: Aerial view of the proposed alternatives for the 132kV OHPL and substations, showing the respective grid route corridors and assessment zones around the substation infrastructure

7.16 Preliminary technical specification of the overhead transmission and distribution:

Refer to Section 3 of the EMPr

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. raptor nest, threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features in the surrounding landscape. The overhead transmission and distribution profile shall 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 shall be used.

Refer to Section 3.4 of the EMPr

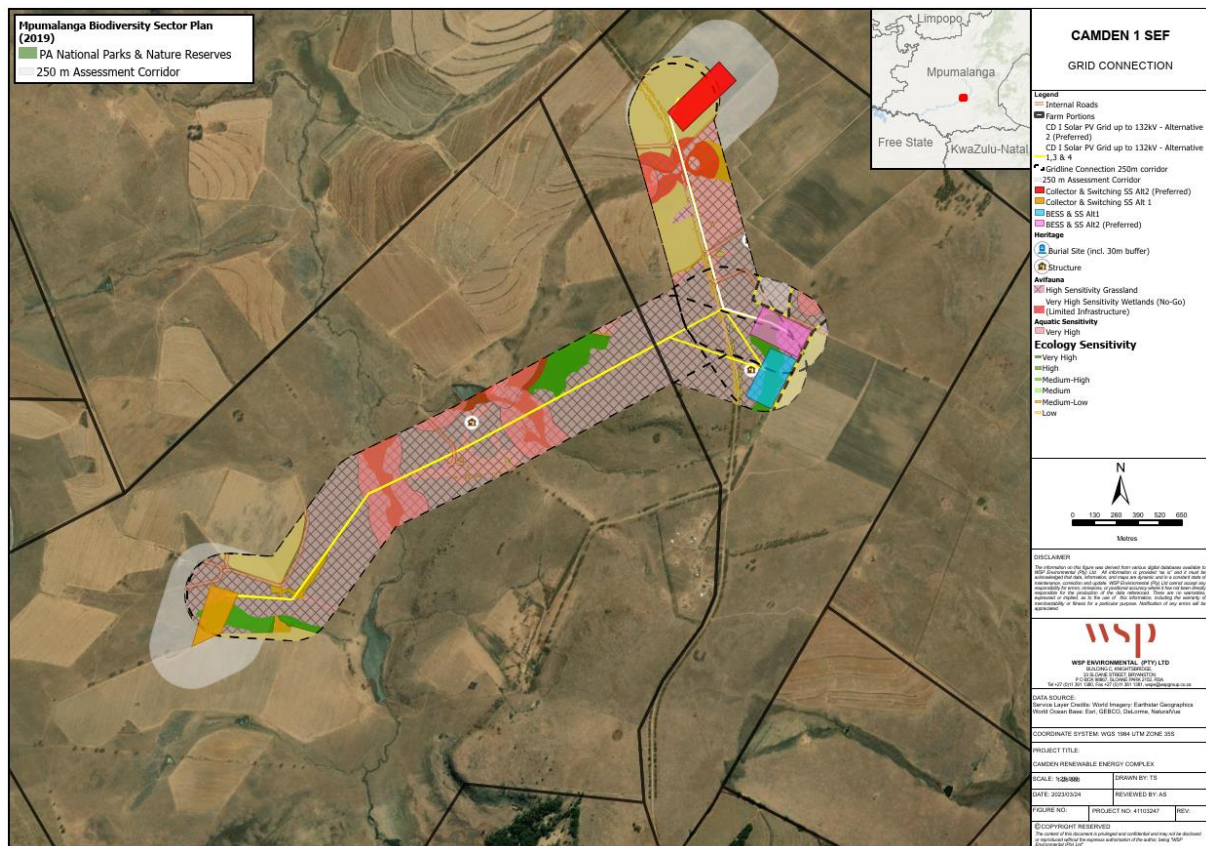


Figure 3: Combined Sensitivity Map

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.

TO BE SIGNED IN FINAL REPORT

Signature Proponent/applicant/ holder of EA

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.

The specific environmental sensitivities are indicated in Figure 3 .

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

D GENERIC EMPR FOR THE DEVELOPMENT OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY

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

1. 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).

2. 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.

3. 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.

4. 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.

5. 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	Definitions, acronyms, roles & responsibilities

Part	Section	Heading	Content
		guidance and information and is not legally binding	and documentation and reporting.
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	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

Part	Section	Heading	Content
			<p>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 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</p>

Part	Section	Heading	Content
			<p>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 already included in <u>Part B: section 1</u>.</p>
Appendix 1			<p>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.</p>

6. 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.

7. 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.

8. 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 EMP' template in Section 1 and understands that the impact management outcomes and impact management actions are legally binding.

(a) 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 EMP for the development and the EMP becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

1. 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:

- (i) Construction procedures;
- (ii) Plant, materials and equipment to be used;
- (iii) Transporting the equipment to and from site;
- (iv) How the plant/ material/ equipment will be moved while on site;
- (v) How and where the plant/ material/ equipment will be stored;
- (vi) The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- (vii) Timing and location of activities;
- (viii) Compliance/ non-compliance; and
- (ix) 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

2. 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

3. 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></p> <ul style="list-style-type: none"> - 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.
Developer Site Supervisor (DSS)	<u>Role</u>

Responsible Person(s)	Role and Responsibilities
	<p>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 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.
<p>Environmental Control Officer (ECO)</p>	<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</p>

Responsible Person(s)	Role and Responsibilities
	<p>ECO must also, as specified by the EA, report to the relevant CA as and when required.</p> <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;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - 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.
developer Environmental Officer (dEO)	<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> <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;

Responsible Person(s)	Role and Responsibilities
	<ul style="list-style-type: none"> - 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;
Contractor	<p><u>Role</u></p> <p>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></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</p>

Responsible Person(s)	Role and Responsibilities
	<p>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 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.

4. 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.

4.1 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.

4.2 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.

4.3 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.

4.4 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.

4.5 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.

4.6 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.

4.7 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.

4.8 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.

4.9 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:

1. 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:

1. Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
2. All bunding and fencing;
3. Road conditions and road verges;
4. Condition of all farm fences;
5. Topsoil storage areas;
6. All areas to be cordoned off during construction;
7. Waste management sites;
8. Ablution facilities (inside and out);
9. Any non-conformances deemed to be "significant";
10. All completed corrective actions for non-compliances;
11. All required signage;
12. Photographic recordings of incidents;

13. All areas before, during and post rehabilitation; and
14. Include relevant photographs in the Final Environmental Audit Report.

4.10 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:

1. Record the name and contact details of the complainant;
2. Record the time and date of the complaint;
3. Contain a detailed description of the complaint;
4. Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
5. 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.

4.11 Claims for damages

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECOs shall:

1. Record the full detail of the complaint as described in **(section 4.10)** above;
2. The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
3. 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
4. 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.

4.12 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:

1. Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
2. Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;

3. Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
4. Ensure that contact with affected parties is courteous at all times;

4.13 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.

4.14 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

5. 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
<ul style="list-style-type: none"> - All staff must receive environmental awareness training prior to commencement of the activities; - The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; - Refresher environmental awareness training is available as and when required; - 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; - The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: <ul style="list-style-type: none"> a) Safety notifications; and b) No littering. - Environmental awareness training must include as a minimum the following: <ul style="list-style-type: none"> a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response 						

<p>procedures;</p> <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> - 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. 						
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5.2 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
<ul style="list-style-type: none"> - 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> <ul style="list-style-type: none"> - 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; - Sites must be located where possible on previously disturbed areas; - The camp must be fenced in accordance with Section 5.5: Fencing and gate installation; and - The use of existing accommodation for contractor staff, where possible, is encouraged. 						
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5.3 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
<ul style="list-style-type: none"> - Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; - Erect, demarcate and maintain a temporary barrier with 						

<p>clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and</p> <ul style="list-style-type: none"> – Unauthorised access and development related activity inside access restricted areas is prohibited. 						
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5.4 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
<ul style="list-style-type: none"> – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with 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; – Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; – 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; – Access roads in flattish areas must follow fence lines and tree 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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5.5 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
<ul style="list-style-type: none"> – Use existing gates provided to gain access to all parts of the area authorised for development, where possible; – Existing and new gates to be recorded and documented in accordance with section 4.9: photographic record; – All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; – 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; – 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; – Where gates are installed in jackal proof fencing, a suitable 						

<p>reinforced concrete sill must be provided beneath the gate;</p> <ul style="list-style-type: none"> - Original tension must be maintained in the fence wires; - All gates installed in electrified fencing must be re-electrified; - All demarcation fencing and barriers must be maintained in good working order for the duration of the development activities; - Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; - Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. - All fencing must be developed of high quality material bearing the SABS mark; - The use of razor wire as fencing must be avoided; - 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; - On completion of the development phase all temporary fences are to be removed; - The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely. 						
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5.6 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

<ul style="list-style-type: none"> - 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; - The Contractor must ensure the following: <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. - Ensure water conservation is being practiced by: <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. 						
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5.7 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
<ul style="list-style-type: none"> - 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, 						

<p>at a location approved by the project manager;</p> <ul style="list-style-type: none"> - 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 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. 						
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5.8 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
<ul style="list-style-type: none"> - 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 						

<p>collection site must be identified and provided;</p> <ul style="list-style-type: none"> - 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 disposal site; - Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						
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5.9 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
<ul style="list-style-type: none"> - 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; - In the event of a spill, prompt action must be taken to clear the polluted or affected areas; - Where possible, no development equipment must traverse any seasonal or permanent wetland 						

<ul style="list-style-type: none"> - No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; - Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; - There must not be any impact on the long term morphological dynamics of watercourses or estuaries; - Existing crossing points must be favored over the creation of new crossings (including temporary access) - When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken: <ul style="list-style-type: none"> a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse 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; 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 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. 					
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5.10 Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<p>General:</p> <ul style="list-style-type: none"> - Indigenous vegetation which does not interfere with the development must be left undisturbed; - Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; - 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; - 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; - 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; - Trees felled due to construction must be documented and form part of the Environmental Audit Report; - Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; - 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 						

<p>registered pest control operator, supervision of a registered pest control operator or is appropriately trained;</p> <ul style="list-style-type: none"> - A daily register must be kept of all relevant details of herbicide usage; - No herbicides must be used in estuaries; - 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>Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.</p>						
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5.11 Protection of fauna

<p>Impact management outcome: Disturbance to fauna is minimised.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; - The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; - 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; - Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; 						

<ul style="list-style-type: none"> - 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. 						
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5.12 Protection of heritage resources

<p>Impact management outcome: Impact to heritage resources is minimised.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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 fossils, artefacts and material of heritage importance; - 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.						
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5.13 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
<ul style="list-style-type: none"> - 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.; - All unattended open excavations must be adequately fenced or demarcated; - Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly 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. 						

5.14 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

	person	implementation	implementation	person		compliance
<ul style="list-style-type: none"> - Mobile chemical toilets are installed onsite if no other ablution facilities are available; - 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; - Where mobile chemical toilets are required, the following must be ensured: <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; - A copy of the waste disposal certificates must be maintained. 						

5.15 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
<ul style="list-style-type: none"> - 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. 						

5.16 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
<ul style="list-style-type: none"> - Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; - The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; - All staff must be made aware of emergency procedures as part of environmental awareness training; 						

<ul style="list-style-type: none"> - The relevant local authority must be made aware of a fire as soon as it starts; - In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see Hazardous Substances section 5.17). 						
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5.17 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
<ul style="list-style-type: none"> - The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; - All hazardous substances must be stored in suitable containers as defined in the Method Statement; - Containers must be clearly marked to indicate contents, quantities and safety requirements; - All storage areas must be bunded. The bunded area must be of sufficient capacity to contain a spill / leak from the stored containers; - Bunded areas to be suitably lined with a SABS approved liner; - An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; - All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); 						

<ul style="list-style-type: none"> - All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; - 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; - The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; - 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); - The floor of the bund must be sloped, draining to an oil separator; - 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; - All empty externally dirty drums must be stored on a drip tray or within a bunded area; - No unauthorised access into the hazardous substances storage areas must be permitted; - No smoking must be allowed within the vicinity of the hazardous storage areas; - Adequate fire-fighting equipment must be made available at all hazardous storage areas; - Where refueling away from the dedicated refueling station is 					
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<p>required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used;</p> <ul style="list-style-type: none"> - 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; - The responsible operator must have the required training to make use of the spill kit in emergency situations; - An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; - 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. 						
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5.18 Workshop, equipment maintenance and storage

<p>Impact management outcome: Soil, surface water and groundwater contamination is minimised.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; - 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 						

<p>fire as soon as it starts;</p> <ul style="list-style-type: none"> - Leaking equipment must be repaired immediately or be removed from site to facilitate repair; - Workshop areas must be monitored for oil and fuel spills; - Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; - 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; - Water drainage from the workshop must be contained and managed in accordance Section 5.7: Storm and waste water management. 						
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5.19 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
<ul style="list-style-type: none"> - Concrete mixing must be carried out on an impermeable surface; - Batching plants areas must be fitted with a containment facility for the collection of cement laden water. - Dirty water from the batching plant must be contained to prevent soil and groundwater contamination - Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; 						

<ul style="list-style-type: none"> - A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; - Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; - Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; - Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to Section 5.20: Dust emissions) - 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; - Temporary fencing must be erected around batching plants in accordance with Section 5.5: Fencing and gate installation. 						
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5.20 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
<ul style="list-style-type: none"> - Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO; - Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must 						

<p>be re- vegetated or stabilised as soon as is practically possible;</p> <ul style="list-style-type: none"> - Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; - 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; - Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; - Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; - Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; - 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; - For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust. 						
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5.21 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
<ul style="list-style-type: none"> - 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. 						

5.22 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
<ul style="list-style-type: none"> - 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.						
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5.23 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
<ul style="list-style-type: none"> - Designate smoking areas where the fire hazard could be regarded as insignificant; - Firefighting equipment must be available on all vehicles located on site; - The local Fire Protection Agency (FPA) must be informed of construction activities; - Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; - Two way swop of contact details between ECO and FPA. 						

5.24 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
<ul style="list-style-type: none"> - 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 						

<p>minimise impacts to watercourses, watercourses and water bodies;</p> <ul style="list-style-type: none"> - All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods; - 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. 						
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5.25 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
<ul style="list-style-type: none"> - 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 						

<p>adhered to and implemented strictly;</p> <ul style="list-style-type: none"> - 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 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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5.26 Excavation of foundation, cable trenching and drainage systems

<p>Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.</p>						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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. 						

5.27 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 person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> – 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. 						

5.28 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
<ul style="list-style-type: none"> – Management of dust must be conducted in accordance with Section 5.20: Dust emissions; – Management of equipment used for installation must be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; – Management hazardous substances and any associated spills must be conducted in accordance with Section 5.17: Hazardous substances; and – Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.29 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
<ul style="list-style-type: none"> – During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts – 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. 						

5.30 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
<ul style="list-style-type: none"> – Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with Section 6.8: Solid waste and hazardous Management; – Management of equipment used for installation shall be conducted in accordance with Section 5.18: Workshop, equipment maintenance and storage; – Management hazardous substances and any associated spills shall be conducted in accordance with Section 5.17: Hazardous substances. 						

5.31 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
<ul style="list-style-type: none"> Residual solid waste must be recycled or disposed of in accordance with Section 5.8: Solid waste and hazardous management. 						

5.32 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
<ul style="list-style-type: none"> Develop and implement communication strategies to facilitate public participation; Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; Sustain continuous communication and liaison with 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. 						

5.33 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 person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<ul style="list-style-type: none"> - 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; - 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; - 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. 						

5.34 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
<ul style="list-style-type: none"> - 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. 						

5.35 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

<ul style="list-style-type: none"> - 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 of Agricultural Resources Act, No 43 of 1983; - 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; - 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; - Rehabilitation of access roads outside of farmland; - Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; - Stockpiled topsoil must be used for rehabilitation (refer to Section 5.24: Stockpiling and stockpiled areas); - Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; - Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; - Subsoil must be ripped before topsoil is placed; - The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; - Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; 						
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<ul style="list-style-type: none"> - 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; - Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. - 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: <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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6 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

7.1 Sub-section 1: contact details and description of the project

7.1.1 Details of the applicant:

Enertrag SA is the project proponent (Applicant) with regards to the application for the construction of the Camden Common Collector Substation thereafter it will be handed over to Eskom for operation.

PROPONENT:	ENERTRAG SOUTH AFRICA (PTY) LTD
Contact Person:	Mercia Grimbeek
Postal Address	Suite 104, Albion Springs, 183 Main Road, Rondebosch, Cape Town, South Africa 7700
Telephone:	071 752 8033
Email:	gideon.raath@enertrag.com

Refer to Section 1.2 of the EMPr

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 powerline. 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
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
EAP 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
EAPASA Registration Number:	EAPASA (2019/1005)

Refer to Section 1.3 of the EMPr

7.1.3 Project name:

CAMDEN UP TO 132KV GRID CONNECTION AND ASSOCIATED INFRASTRUCTURE

7.1.4 Description of the project:

Refer to Section 3 of the EMPr

The proposed project entails the construction of an up to 132kV Grid connection overhead powerline (OHPL) from the Camden I Solar Facility to the nearby Camden Collector substation (which in turn will connect to the Camden Power Station). The powerline will be approximately km in length, depending on the authorized location of the collector substation. The onsite grid connection substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc. The up to 132kV powerline and substation will have a 500m corridor (250m either side of the centre line, and 250m around the entire perimeter of the proposed substation sites), to allow for micro-siting and avoidance of sensitive features where possible. This corridor, as opposed to the line routing, is proposed for authorisation. This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e. the termination works).. This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e. the termination works).

This application includes the necessary up to 132kV voltage electrical components required for connection at the Collector Substation (i.e. the termination works).

The proposed project will comprise the following key components, detailed further in the table below:

- The grid connection substation (adjacent the IPP substation), consisting of a high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, lighting and fencing;
- Construction of an up to 132kV power line (either single or double circuit) between the grid connection substation portion and that of the Camden Collector substation; and

- Termination works, comprising the necessary up to 132kV voltage electrical components required for connection at and into the Collector Substation.
- Existing or new access and service roads (utilising existing roads where possible, with new roads developed where there are no existing roads to be utilised).

Overhead Powerline	
Powerline capacity	Up to 132kV (note this includes 132kV exactly for the avoidance of doubt)
Powerline corridors width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 500 m (i.e. 250 m on either side of centre line). As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Powerline servitude width	40m
Powerline pylons:	Monopole or Lattice pylons, or a combination of both where required and as informed by detailed design
Construction clearance required (per pylon)	To allow for crane and large component access and installation, clearing required for each tower depends on local terrain, but up to 1500m ² , or where existing OHL crossings are made or powerlines are constructed adjacent each other, up to 2500m ² .
Powerline pylon height:	Up to a maximum of 40 m
Minimum conductor clearance	8.1 m
Pylon spacing	Up to 250m apart, depending on complexity and slope of terrain
Pylon designs	<p>Various pylon design types are considered (and will be determined during the detailed design engineering phase), and may include any of the following:</p> <p>Up to 132kV (single or double circuit)</p> <ul style="list-style-type: none"> • Intermediate self-supporting monopole • Inline or angle-strain self-supporting monopole • Suspension self-supporting monopole • Triple pole structure • Cross rope suspension; • Guyed "V" Structure • Steel lattice structure; or • Similar pylon design at 132kV specification <p>The above designs may require anchors with guy-wires or be</p>

	anchorless. For up to 132kV structures, concrete foundation sizes may vary depending on design type up to 140m ² (12m by 12m), with depths reaching up to 4m typically in a rectangular 'pad' shape.
Substation (and Collector Substation connection components)	
Substation Footprint	1.5ha
Substation Capacity	33/132kV
Corridor width	A grid connection corridor has been identified for the assessment and placement of the grid connection infrastructure, comprising 250m around the entire perimeter of the proposed substation sites. As detailed above, the entire corridor is proposed for development provided the infrastructure remains within the assessed corridor.
Associated infrastructure	<p>The substation will consist of high voltage substation yard to allow for multiple (up to) 132kV feeder bays and transformers, control building, telecommunication infrastructure, access roads, etc, including the following:</p> <ul style="list-style-type: none"> • Standard substation electrical equipment, including but not limited to transformers, busbars, office area, operation and control room, workshop, and storage area, feeder bays, transformers, 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. • The control building, telecommunication infrastructure, oil dam(s) • Workshop and office area within the substation footprint • Fencing around the substation • Lighting and security infrastructure • All the access road infrastructure to and within the substation • Further ancillary infrastructure including but not limited to lighting, lightning protection, fencing, buildings required for operation (ablutions, office, workshop and control room, security fencing and gating, parking area, concrete batching plant (if required), waste storage/disposal and storerooms).
Termination works	All works and components required for connection at and into the Collector Substation comprising the necessary up to 132kV voltage electrical components, including amongst others standard substation electrical equipment as may be needed (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.
Roads Infrastructure	
Road servitude and access roads	Approximately 6 meters wide, however where required for turning circle/bypass areas, access or internal roads will be up to 20m wide to allow for larger component transport. During operation, vegetation maintenance by partial clearing/maintenance in grid servitude for operation, safety and maintenance reasons.

7.1.5 Project location:

The proposed Project will be developed in an area south-west of Ermelo, in Mpumalanga. The proposed Project falls within the Msukaligwa Local Municipality of the Gert Sibande District Municipality. Refer to Error! Reference source not found. and Error! Reference source not found.. The coordinates of the substations are below.

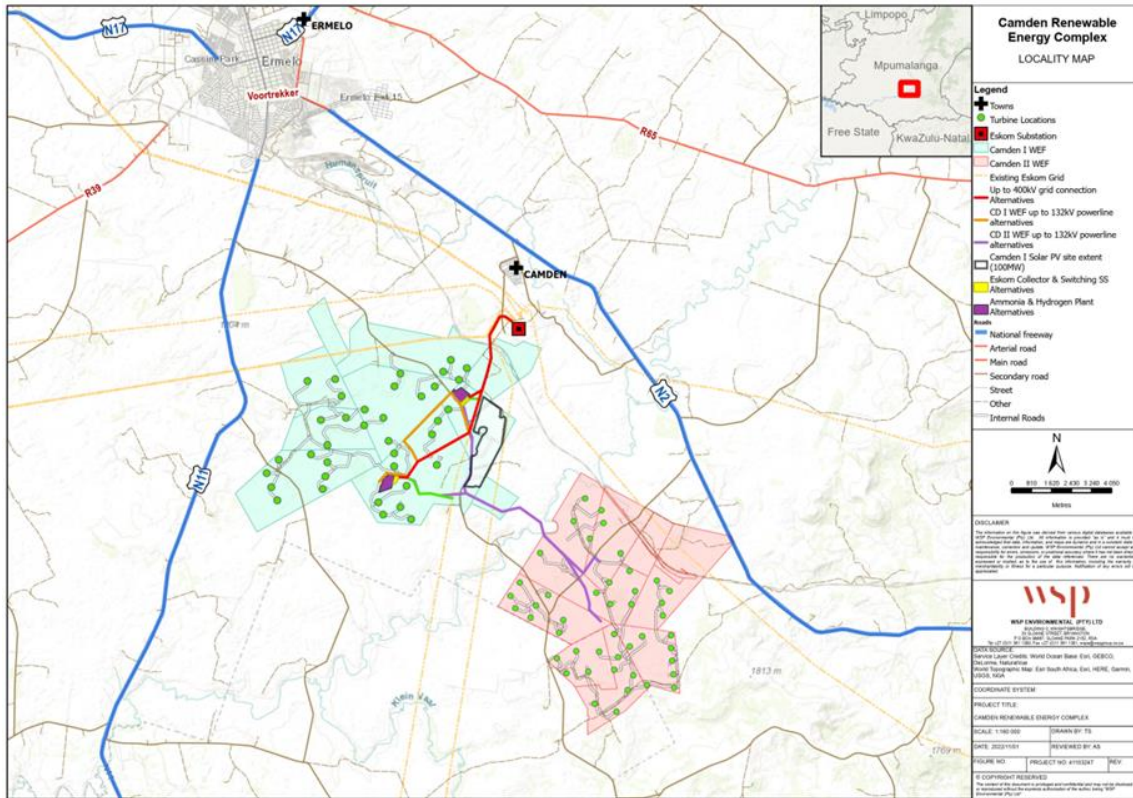


Figure 1: Locality of the Proposed Camden Renewable Energy Complex, near Camden in the Mpumalanga Province

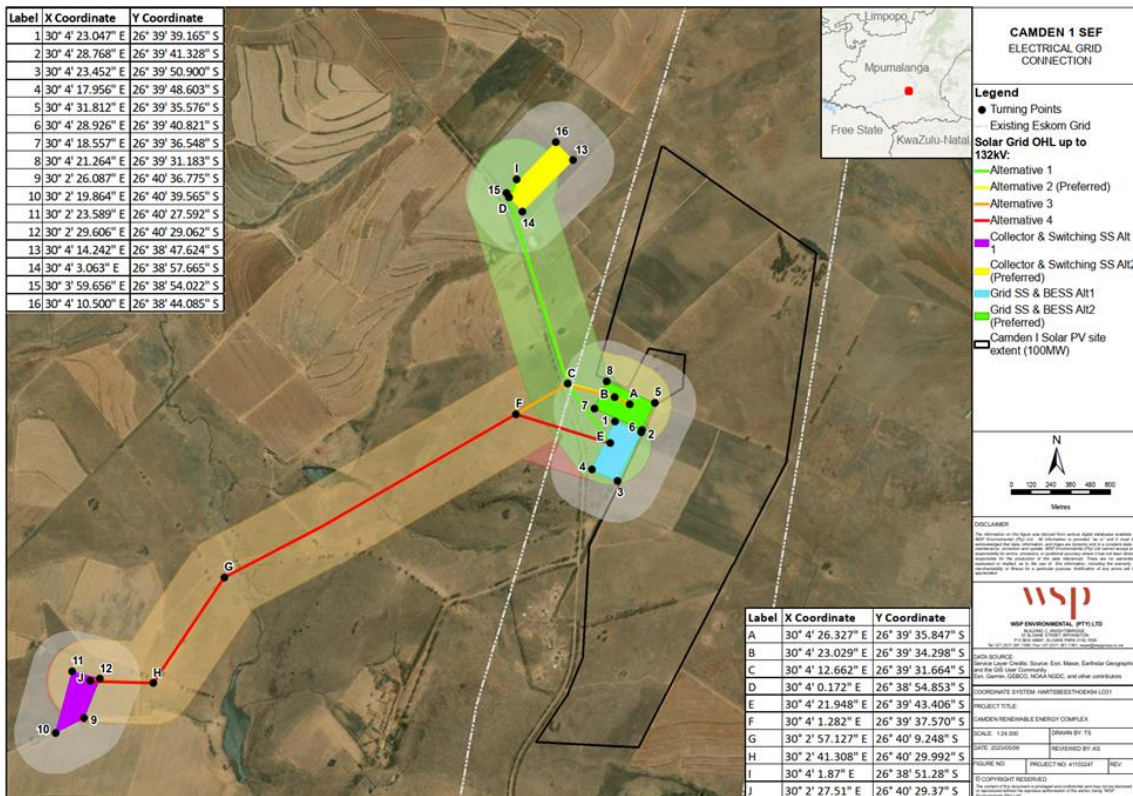


Figure 2: Proposed Project Infrastructure

7.2 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.

Refer to Section 3.4 of the EMPr

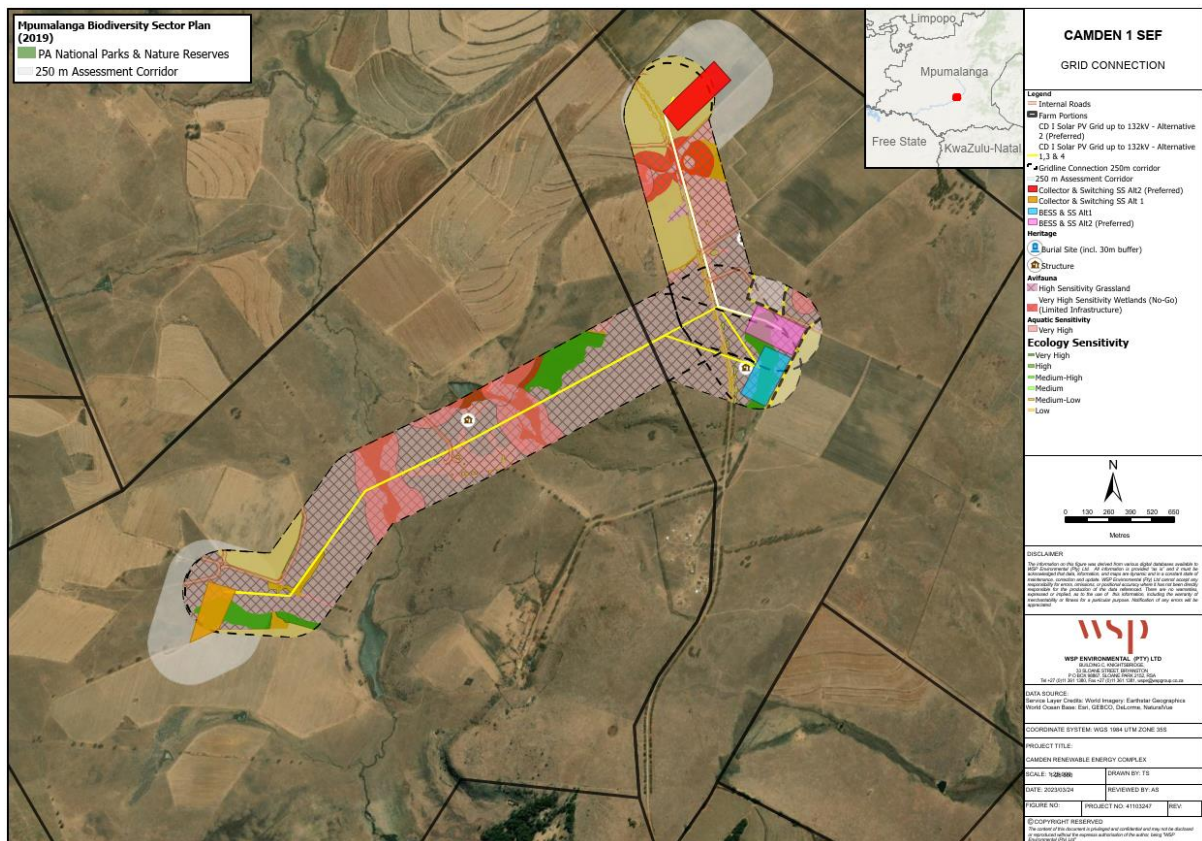


Figure 3: Combined Sensitivity Map

7.3 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.

Signature Proponent/applicant/ holder of EA

Date:

TO BE SIGNED IN FINAL REPORT

7.4 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

8 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.

The specific environmental sensitivities are indicated in **Figure 3**.

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.