



SENDAWO BESS (RF) (Pty) Ltd

**PROPOSED SENDAWO OVERHEAD
POWERLINE AND ASSOCIATED
BATTERY ENERGY STORAGE SYSTEM
FACILITY AND SUBSTATION, NORTH
WEST PROVINCE**

Draft Environmental Management Programme





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CONTENTS

GLOSSARY

1	INTRODUCTION	1
1.1	BACKGROUND INFORMATION	1
1.2	DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER	4
1.3	PURPOSE OF THE EMPR	4
1.4	STRUCTURE OF THE EMPR	6
2	PROJECT DESCRIPTION	8
2.1	LOCATION OF THE PROPOSED PROJECT	8
2.2	BESS TECHNOLOGY	20
2.3	ACTIVITY DESCRIPTION	26
2.4	PROPOSED PROJECT DEVELOPMENT ACTIVITIES	30
3	ENVIRONMENTAL SENSITIVITY	32
3.1	SITE SENSITIVITY	32
3.2	IMPACT ASSESSMENT OUTCOMES	37
3.3	APPLICABLE DOCUMENTATION	50
4	GOVERNANCE FRAMEWORK	51
4.1	NATIONAL LEGAL AND REGULATORY FRAMEWORK	51
4.2	INTERNATIONAL STANDARDS AND GUIDELINES	58
4.3	OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS	70
5	MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS	72
5.1	ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES	72
5.2	ENVIRONMENTAL AWARENESS PLAN	75

5.3	MONITORING	78
5.4	NON-CONFORMANCE AND CORRECTIVE ACTION	78
5.5	DOCUMENTATION AND REPORTING	79
5.6	PUBLIC COMPLAINTS	80
6	GENERIC ENVIRONMENTAL CONTROLS	81
7	SITE SPECIFIC ENVIRONMENTAL CONTROLS	84
7.1	VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT	87
7.2	FUEL AND CHEMICAL MANAGEMENT	89
7.3	WASTE MANAGEMENT	91
7.4	HEALTH AND SAFETY	95
7.5	WATER MANAGEMENT	103
7.6	AIR QUALITY	106
7.7	NOISE	108
7.8	SOIL, LAND USE AND AGRICULTURE	110
7.9	TERRESTRIAL BIODIVERSITY	112
7.10	PLANT SPECIES	114
7.11	ANIMAL SPECIES	117
7.12	AQUATIC BIODIVERSITY	120
7.13	AVIFAUNA	123
7.14	ARCHAEOLOGICAL AND CULTURAL HERITAGE	125
7.15	PALAEONTOLOGY	127
7.16	TRAFFIC	128
7.17	VISUAL	131
7.18	SOCIO-ECONOMIC	133
8	MANAGEMENT PLANS	136
8.1	EMERGENCY RESPONSE PLAN	136
8.2	WASTE MANAGEMENT PLAN	138
8.3	HAZARDOUS SUBSTANCES MANAGEMENT PLAN	140

8.4	FIRE MANAGEMENT PLAN	144
8.5	ALIEN INVASIVE PLANT MANAGEMENT PLAN	145
8.6	PLANT RESCUE AND PROTECTION PLAN	145
8.7	RE-VEGETATION AND HABITAT REHABILITATION PLAN	147
8.8	STORMWATER MANAGEMENT PLAN	148
8.9	EROSION MANAGEMENT PLAN	149
8.10	TRAFFIC AND TRANSPORT MANAGEMENT PLAN	150
8.11	FAUNA MANAGEMENT PLAN	152
8.12	AVIFAUNAL MANAGEMENT PLAN	153
8.13	SOIL MANAGEMENT PLAN	154
8.14	HERITAGE AND PALAEOANTHROPOLOGICAL MANAGEMENT PLAN	156
8.15	GRIEVANCE MECHANISM	157
8.16	HIV/AIDS MANAGEMENT PLAN	161
9	CONCLUSION	162

TABLES

Table 1-1 – Details of the EAP	4
Table 1-2 – Legislation Requirements as detailed in Appendix 4 of GNR 326	6
Table 2-1 – Sendawo Overhead Powerline and Associated BESS Facility and Substation Affected Farm Portions	8
Table 2-2 – Coordinate Points of the Cadastral Land Parcel that will site the Overhead Powerline, and associated BESS Facility and Substation	9
Table 2-3 – Sendawo Overhead Powerline Co-ordinates	12
Table 2-4 - Sendawo BESS Facility Co-ordinates	16
Table 2-5 – Sendawo Substation Co-ordinates	17
Table 2-6 – Sendawo Laydown Area Co-ordinates	19
Table 2-7 – Project Footprints	30
Table 2-8 – Construction activities	30
Table 3-1 – Environmental Sensitivities identified by specialists	32

Table 3-2 - Assessment Protocols and Site Sensitivity Verifications	36
Table 3-3 – Impact Summary	37
Table 4-1 – Applicable National Legislation	51
Table 4-2 – Objectives and Applicability of the IFC Performance Standards	60
Table 4-3 - Requirements and Applicability of the Equator Principles	67
Table 5-1 – Roles and Responsibilities	72
Table 6-1 – Format of a general environmental control illustrating aspects which are predefined versus those which still need to be completed by the contractor	81
Table 6-2 - Activities and management measures as per generic EMPr (Part B: Section 1)	82
Table 7-1 – Structure of EMPr	84
Table 7-2 – Contractor laydown area and site access: EMPr Mitigation and Management Measures	85
Table 7-3 – Vehicle, Equipment and Machinery Management: EMPr Mitigation and Management Measures	87
Table 7-4 – Fuel and Chemical Management: EMPr Mitigation and Management Measures	89
Table 7-5 – Waste Management: EMPr Mitigation and Management Measures	91
Table 7-6 – Health and Safety: EMPr Mitigation and Management Measures	95
Table 7-7 – Water Management: EMPr Mitigation and Management Measures	103
Table 7-8 – Air quality: EMPr Mitigation and Management Measures	106
Table 7-9 – Noise: EMPr Mitigation and Management Measures	108
Table 7-10 – Soil, Land Use and Agriculture: EMPr Mitigation and Management Measures	110
Table 7-11 – Terrestrial Biodiversity: EMPr Mitigation and Management Measures	112
Table 7-12 – Plant Species: EMPr Mitigation and Management Measures	114
Table 7-13 – Animal Species: EMPr Mitigation and Management Measures	117
Table 7-14 – Aquatic: EMPr Mitigation and Management Measures	120
Table 7-15 – Avifauna: EMPr Mitigation and Management Measures	123
Table 7-16 – Archaeological and Cultural Heritage: EMPr Mitigation and Management Measures	125
Table 7-17 – Palaeontology: EMPr Mitigation and Management Measures	127
Table 7-18 – Traffic: EMPr Mitigation and Management Measures	128

Table 7-19 – Visual: EMPr Mitigation and Management Measures	131
Table 7-20 – Socio-Economic: EMPr Mitigation and Management Measures	133
Table 8-1 - Waste Management Options	140

FIGURES

Figure 1-1 – Locality and layout map of the Proposed Project	3
Figure 2-1 – Images of Typical BESS Systems	22
Figure 2-2 – Typical Battery Modules in a BESS with the Separated Sections	23
Figure 2-3 - Typical Battery Modules in a BESS with the Power Conversion Systems in the Batteries	23
Figure 2-4 - A VRFB unit	24
Figure 2-5 – VRFB stack	25
Figure 2-6 - Cross section of a VRFB unit indicating the stacks and electrolyte tanks	25
Figure 2-7 - Conceptual VRFB Facility Layout	26
Figure 2-8 - Comparison between a lattice pylon structure and steel monopole pylon structure	27
Figure 3-1 – Environmental Sensitivity Map of the Proposed Project	34
Figure 3-2 - Palaeontological sensitivity of the development area from the SAHRIS PalaeoMap	35
Figure 8-1: Waste Hierarchy	139

APPENDICES

APPENDIX A

EAP CV

APPENDIX B

EAP DECLARATION OF INTEREST AND OATH UNDERTAKING

APPENDIX C

MAPS

APPENDIX D



OVERHEAD POWERLINE GENERIC EMPR
APPENDIX E
SUBSTATION GENERIC EMPR

GLOSSARY

Abbreviation	Definition
AIS	Alien and Invasive Species
ATNS	Air Traffic and Navigation Services
BA	Basic Assessment
BAR	Basic Assessment Report
BESS	Battery Energy Storage System
BMS	Battery Management System
CA	Competent authority
CARA	Conservation of Agricultural Resources Act (No. 43 of 1983)
CBA	Critical Biodiversity Area
DC	Direct current
DFFE	Department of Forestry, Fisheries and Environment
DEDECT	Department of Economic Development, Environment, Conservation and Tourism
DWS	Department of Water & Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act 73 of 1989
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
EO	Environmental Officer
EP	Equator Principles
EPC	Engineering, Procurement and Construction
EPFI	Equator Principles Financial Institutions
ERA	Electricity Regulation Act (No. 4 of 2006)

Abbreviation	Definition
ERP	Emergency Response Plan
ESA	Early Stone Age
ESIPPPP	Energy Storage Independent Power Producer's Procurement Programme
FI	Financial institutions
GA	General Authorisation
GHG	Greenhouse gas
GIIP	Good international industry practice
GNR	Government Notice Regulation
ha	Hectares
HV	High Voltage
IBA	Important Bird & Biodiversity Area
ICAO	International Civil Aviation Organisation
IEP	National Integrated Energy Plan
IFC	International Finance Corporation
IRP	Integrated Resource Plan
kV	Kilovolt
kW	Kilowatt
LSA	Late Stone Ages
LUPA	Land Use Planning Act (Act 3 of 2014)
MSA	Middle Stone Ages
MV	Megavolt
MW	Megawatt
MWh	Megawatt hour
MSDS	Material Safety Data Sheet
NDP	National Development Plan
NEMA	National Environmental Management Act (Act 107 of 1998)
NEMAQA	National Environmental Management: Air Quality Act 39 of 2004

Abbreviation	Definition
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEMPAA	National Environmental Management Protected Areas Act (No. 57 of 2003)
NHRA	National Heritage Resource Act (Act No. 25 of 1999)
NPAES	National Protected Area Expansion Strategy 2010
NWA	National Water Act, 1998 (Act No. 36 of 1998)
O&M	Operational and maintenance
OHPL	Overhead Powerline
OHS Act	Occupational Health and Safety Act (No. 85 of 1993)
PPA	Power Purchase Agreement
PS	Performance Standards
PSDF	Provincial Spatial Development Framework, 2014
PV	Photovoltaic
RF	Ring Fenced
RFI	Radio Frequency Interference
RfP	Request for Proposal
SABS	South African Bureau of Standards
SACAA	South African Civil Aviation Authority
SAHRA	South African Heritage Resources Agency
SAHRA	South African Heritage Resources Agency
SALA	Subdivision of Agricultural Land Act
SANBI	South African National Biodiversity Institute
SANRAL	South African National Roads Agency
SANS	South African National Standards
SARPs	Standards and Recommended Practices
SAWS	South African Weather Service
SCC	Species of Conservation Concern
SDF	Spatial Development Frameworks

Abbreviation	Definition
SDG	Sustainable Development Goals
SEF	Solar Energy Facilitates
SER	Stakeholder Engagement Report
SG	Surveyor General
SHERQ	Safety Health Environment Risk & Quality
SPLUMA	Spatial Planning and Land Use Management Act (Act 16 of 2013)
SWMP	Stormwater Management Plan
TOPs	Threatened or Protected Species
UNDP	United Nations' Development Programmes
WBG	World Bank Group
WMP	Waste Management Plan
WSP	WSP Group Africa (Pty) Ltd

1 INTRODUCTION

WSP Group Africa (Pty) Ltd (WSP) has been appointed by BioTherm Energy (Pty) Ltd trading as BTE Renewables (hereafter referred to as “BioTherm”) to undertake an Environmental Impact Assessment (EIA) to meet the requirements under the National Environmental Management Act (Act 107 of 1998) (NEMA) for the proposed Sendawo 132 kV Overhead Powerline and Associated up to 153 MW Battery Energy Storage System (BESS) Facility and Substation (hereafter referred to as the Proposed Project), situated in the Naledi Local Municipality and the Dr Ruth Segomotsi District Municipality (**Figure 1-1**).

On 16 February 2018, the Department of Environmental Affairs (DEA), now the Department of Forestry, Fisheries and the Environment (DFFE), gazetted the Renewable Energy Development Zones (REDZ) and Strategic Transmission Corridors and procedures for the assessment of large-scale wind and solar photovoltaic energy development activities (Government Notice (GN) 114) and grid infrastructure (GN 113). **The Proposed Project falls within the Northern Strategic Transmission Corridor as well as the Vryburg REDZ.**

In order for the Proposed Project to proceed, it will require an Environmental Authorisation (EA) from the Department of Forestry, Fisheries and Environment (DFFE). This Environmental Management Programme (EMPr) is for the Proposed Project and was compiled as part of the BA process and must be read in conjunction with the Draft BA Report in support of the EA application. This EMPr is specific to the pre-negotiated route outlined in the Draft BA Report.

1.1 BACKGROUND INFORMATION

BioTherm Energy, under its Special Purpose vehicle (SPV); Sendawo BESS (RF) (Pty) Ltd (hereafter referred to as “Sendawo BESS”), proposes to construct and operate a 132kV OHPL and associated up to 153 MW BESS Facility and Substation located approximately 6km South of Vryburg in the North West Province. The Proposed Project will allow for the previously authorised Sendawo Solar Energy Facilities (SEF) to be connected to the Eskom grid, whilst the BESS Facility will provide peak shifting power with a capacity of up to 153 MW and output of up to 612 MWh to be evacuated to the Eskom grid.

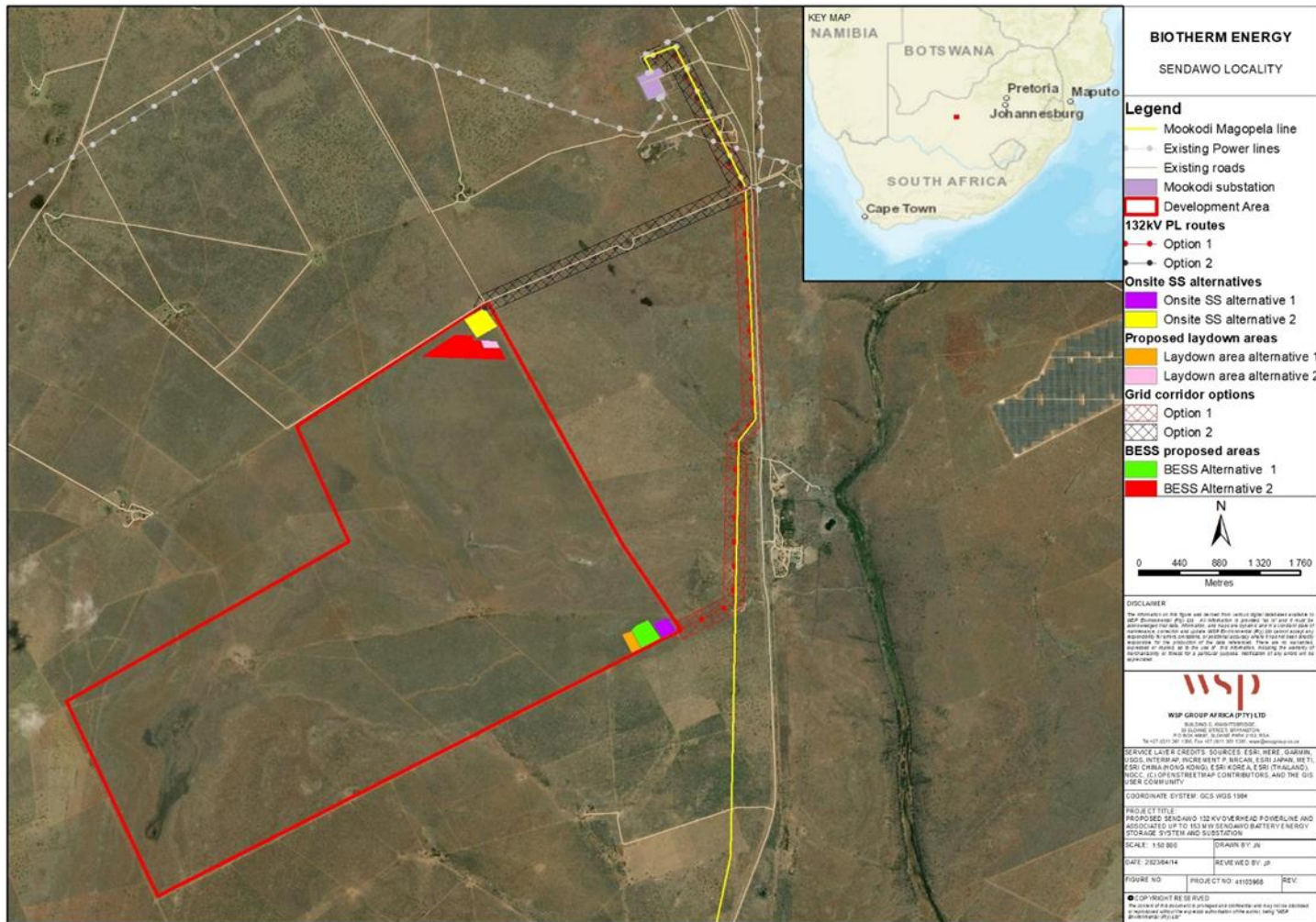
The transmission line will be a 132kV steel single or double structure with kingbird conductor. The powerline towers will either be steel lattice or monopole structures. It is anticipated that towers will be located approximately 200m to 250m apart, with a 100m corridor on either side of the centerline.

The proposed BESS Facility will utilize either of the two BESS technology options; Liquid Cooled Lithium-ion batteries; or Vanadium Redox Flow batteries (VRFB), required for applications set out in the Energy Storage Independent Power Producer's Procurement Programme (ESIPPPP) Request for Proposal (RfP), as issued by the Independent Power Producer (IPP) office. The batteries will be charged via the Eskom grid and energy will be discharged back to the grid according to a Power Purchase Agreement (PPA) with Eskom.

On 16 February 2018, the Department of Environmental Affairs (DEA), now the Department of Forestry, Fisheries and the Environment (DFFE), gazetted the Renewable Energy Development Zones (REDZ) and Strategic Transmission Corridors and procedures for the assessment of large-scale wind and solar photovoltaic energy development activities (Government Notice (GN) 114) and



grid infrastructure (GN 113). **The Proposed Project falls within the Northern Strategic Transmission Corridor as well as the Vryburg REDZ.**



1.2 DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP was appointed in the role of Independent Environmental Assessment Practitioner (EAP) to undertake the BA process for the proposed project. The CV of the EAP is available in **Appendix A**. The EAP declaration of interest and undertaking is included in **Appendix B. Table 1-1** details the relevant contact details of the EAP.

Table 1-1 – Details of the EAP

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)

1.3 PURPOSE OF THE EMPR

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 the construction, operational and decommissioning phases of the Proposed 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.

A hard copy of the EMPr must always be in the site office and made available to officials at request.

1.3.1 EMPr OBJECTIVES

The 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; Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment;
- Train onsite personnel with regard to their environmental obligations; and
- Facilitate appropriate and proactive responses to unforeseen events or changes in project implementation that was not considered in the BA 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.

1.3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, the project proponent 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.

1.4 STRUCTURE OF THE EMPR

For the purposes of demonstrating legal compliance, **Table 1-2** cross-references the sections within the EMPr with the requirements as per Appendix 4 of GNR 326 of 2017.

Table 1-2 – Legislation Requirements as detailed in Appendix 4 of GNR 326

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(a)	details of-	
	(i) the EAP who prepared the EMPr; and	Section 1.2
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 1.2 Appendix A
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 2.3
(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;	Section 3 Appendix C
(d)	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-	Section 3.2, Section 6 and Section 7
	(i) planning and design;	
	(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;	
(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to -	Section 7

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
	<p>(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;</p> <p>(ii) comply with any prescribed environmental management standards or practices;</p> <p>(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and</p> <p>(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable</p>	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 5
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 5, Section 6 and Section 7
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 7
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 5
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	Section 5, Section 6 and Section 7
(m)	<p>an environmental awareness plan describing the manner in which-</p> <p>(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and</p> <p>(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and</p>	Section 5.2
(n)	any specific information that may be required by the competent authority	N/A

2 PROJECT DESCRIPTION

This section provides a description of the location of the project site location and a summary of the project details. The descriptions encompass the activities to be done during the construction, operational and decommissioning (should it be decided that the facility will be decommissioned) phases, as well as the consideration for the needs and desirability of the project in accordance with Appendix 3 of GNR 982, as amended.

2.1 LOCATION OF THE PROPOSED PROJECT

The proposed Overhead Powerline route will traverse a length of approximately 7.2 km. The proposed BESS, laydown and substation will be developed within a project area of approximately 10 hectares (ha) at the previously authorised Sendawo 1, 2 and 3, 75MW (each) PV Facility (collectively referred to as the Sendawo SEF for the purpose of this report), approximately 6 km south of Vryburg, North West Province. The site will be accessed via the N18, utilising existing access roads from the Eskom Mookodi Substation to the proposed Overhead Powerline, BESS and Substation.

The details of the property associated with the Proposed Project (pre-negotiated route), including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 2-1**. The co-ordinates of the cadastral land parcels are included in **Table 2-2**. The coordinates of the final pre-negotiated route, substation, BESS and laydown areas are provided in **Table 2-3**,

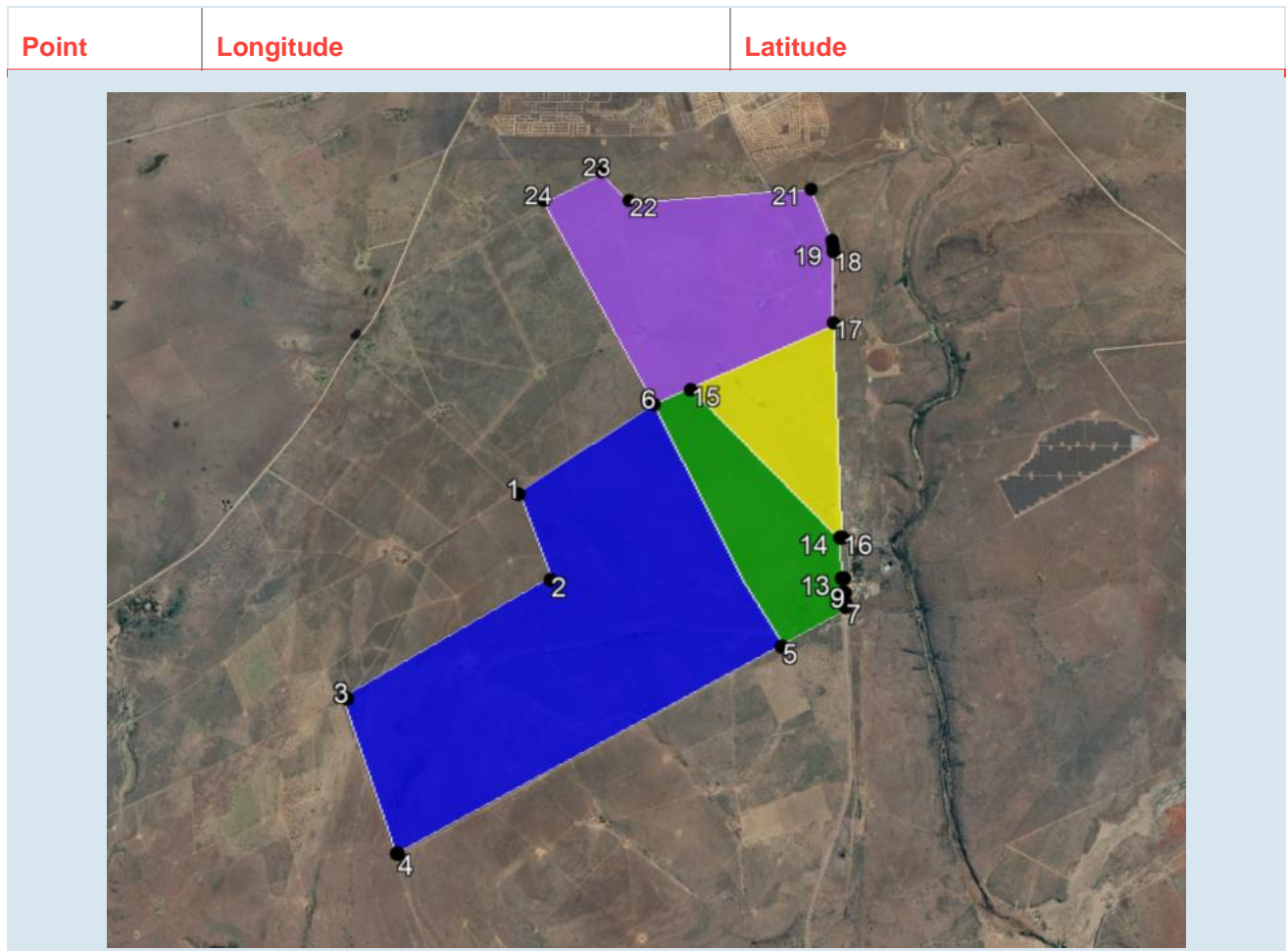
Table 2-4, **Table 2-5** and


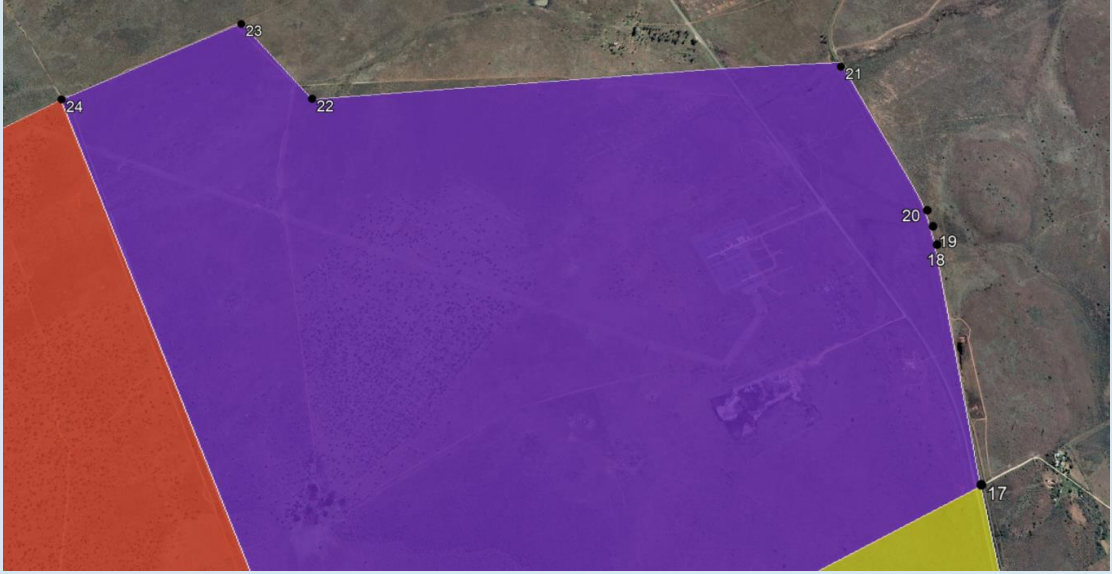
Table 2-6.

Table 2-1 – Sendawo Overhead Powerline and Associated BESS Facility and Substation Affected Farm Portions

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
Portion 1 of Farm Edinburgh 735	T0HN00000000073500001
Portion 0 of Farm Rosendal 673	T0IN000000000067300000
Portion 4 of Farm Waterloo 730	T0IN000000000073000004
Remainder of Farm Waterloo 730	T0IN000000000073000003

Table 2-2 – Coordinate Points of the Cadastral Land Parcel that will site the Overhead Powerline, and associated BESS Facility and Substation

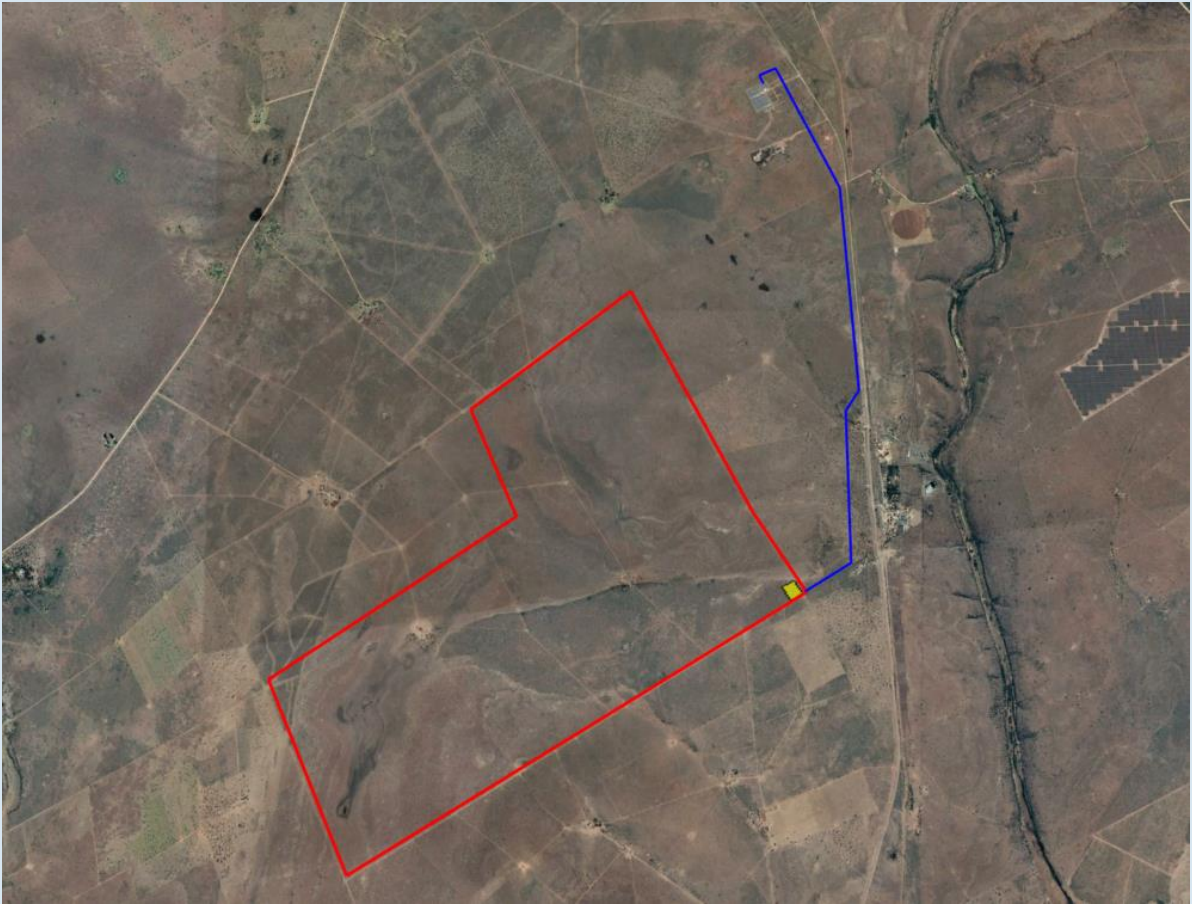



Point	Longitude	Latitude
		
		
Portion 1 of Farm Edinburgh 735 (Dark Blue)		
1	24°42'32.23"E	27° 2'39.67"S
2	24°42'50.92"E	27° 3'20.85"S

Point	Longitude	Latitude
3	24°41'13.29"E	27° 4'16.28"S
4	24°41'44.01"E	27° 5'24.31"S
5	24°44'47.77"E	27° 3'51.40"S
6	24°43'40.24"E	27° 1'54.58"S
Portion 0 of Farm Waterloo 730 (Green)		
5	24°44'47.77"E	27° 3'51.40"S
6	24°43'40.24"E	27° 1'54.58"S
7	24°45'19.68"E	27° 3'32.81"S
8	24°45'19.63"E	27° 3'31.09"S
9	24°45'18.47"E	27° 3'31.14"S
10	24°45'18.17"E	27° 3'26.13"S
11	24°45'19.33"E	27° 3'26.16"S
12	24°45'18.98"E	27° 3'19.32"S
13	24°45'17.87"E	27° 3'19.32"S
14	24°45'17.11"E	27° 2'59.86"S
15	24°43'59.17"E	27° 1'46.99"S
Remainder of Farm Waterloo 730 (Yellow)		
14	24°45'17.11"E	27° 2'59.86"S
15	24°43'59.17"E	27° 1'46.99"S
16	24°45'18.19"E	27° 2'59.85"S
17	24°45'14.17"E	27° 1'11.93"S
Portion 0 of Farm Rosendal 673 (Purple)		
6	24°43'40.24"E	27° 1'54.58"S
15	24°43'59.17"E	27° 1'46.99"S
17	24°45'14.17"E	27° 1'11.93"S
18	24°45'14.13"E	27° 0'34.06"S
19	24°45'14.02"E	27° 0'30.82"S

Point	Longitude	Latitude
20	24°45'13.52"E	27° 0'27.93"S
21	24°45'2.14"E	26°59'59.93"S
22	24°43'23.10"E	27° 0'6.72"S
23	24°43'7.66"E	26°59'50.95"S
24	24°42'36.63"E	27° 0'6.91"S

Table 2-3 – Sendawo Overhead Powerline Co-ordinates

Point	Longitude	Latitude
		

Point	Longitude	Latitude
		
Overhead Powerline Development Area		
Overhead Powerline Alternative 1 (Blue) (Preferred OHPL route)		
Start 1	24°44'48.89"E	27° 3'48.68"S
2	24°45'8.22"E	27° 2'41.89"S
3	24°45'13.87"E	27° 2'34.82"S
4	24°45'10.17"E	27° 1'13.78"S
5	24°44'45.43"E	27° 0'24.20"S
6	24°44'38.25"E	27° 0'26.36"S

Point	Longitude	Latitude
End	24°44'39.78"E	27° 0'30.40"S
Pylons		
P01	24° 44' 47.636" E	27°03'048.539"S
P02	24° 44' 54.380" E	27°03'044.887"S
P03	24° 45' 0.311" E	27°03'041.860"S
P04	24° 45' 6.887" E	27°03'038.504"S
P05	24° 45' 7.127" E	27°03'030.924"S
P06	24° 45' 7.197" E	27°03'022.362"S
P07	24° 45' 7.325" E	27°03'015.715"S
P08	24° 45' 7.453" E	27°03'09.068"S
P09	24° 45' 7.580" E	27°03'02.421"S
P10	24° 45' 7.708" E	27°02'055.774"S
P11	24° 45' 7.836" E	27°02'049.127"S
P12	24° 45' 7.981" E	27°02'041.555"S
P13	24° 45' 13.970" E	27°02'034.010"S
P14	24° 45' 13.736" E	27°02'028.556"S
P15	24° 45' 13.551" E	27°02'024.255"S
P16	24° 45' 13.266" E	27°02'017.612"S
P17	24° 45' 12.981" E	27°02'010.969"S
P18	24° 45' 12.696" E	27°02'04.326"S
P19	24° 45' 12.411" E	27°01'057.683"S
P20	24° 45' 12.126" E	27°01'051.040"S
P21	24° 45' 11.841" E	27°01'044.397"S
P22	24° 45' 11.556" E	27°01'037.753"S
P23	24° 45' 11.271" E	27°01'031.110"S
P24	24° 45' 10.986" E	27°01'024.467"S
P25	24° 45' 10.735" E	27°01'018.628"S

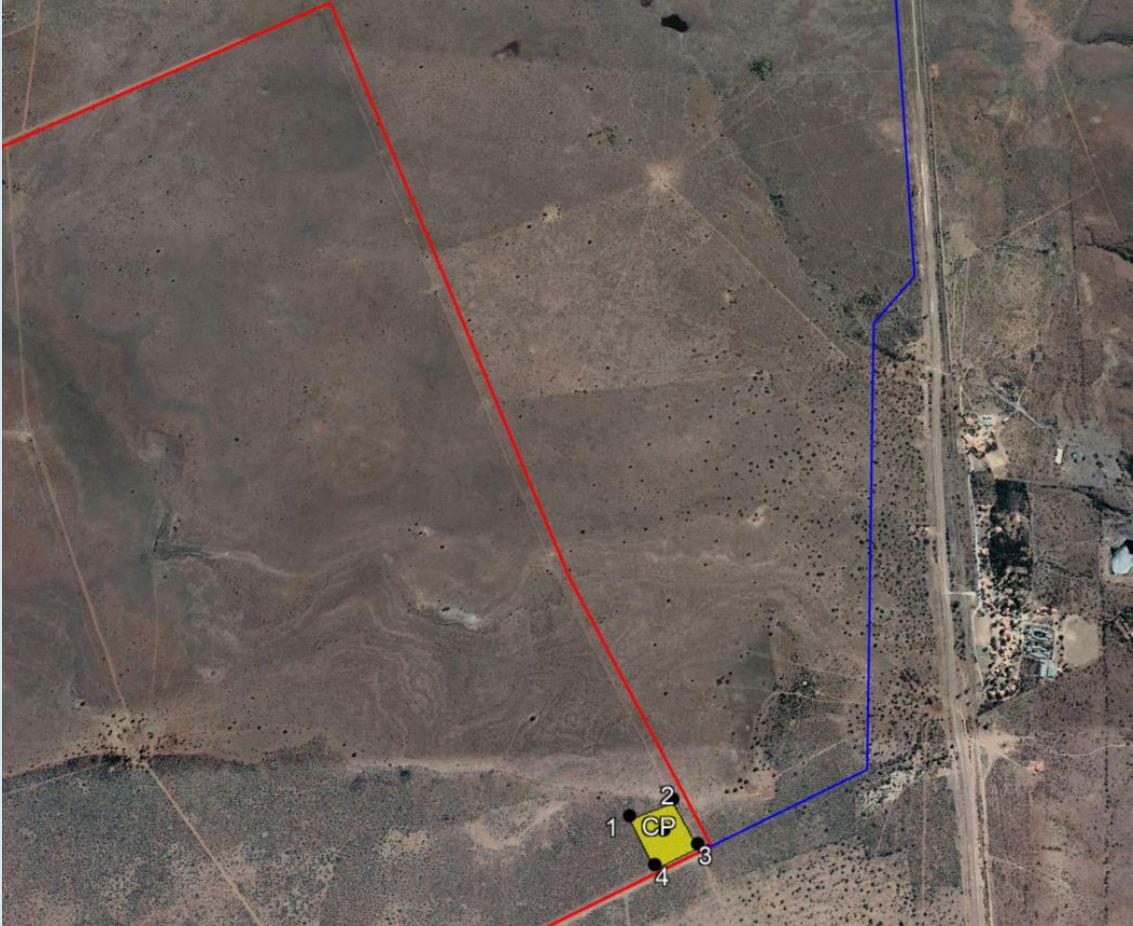
Point	Longitude	Latitude
P26	24° 45' 10.525" E	27°01'013.735"S
P27	24° 45' 7.341" E	27°01'07.406"S
P28	24° 45' 3.253" E	27°00'059.283"S
P29	24° 45' 0.204" E	27°00'053.222"S
P30	24° 44' 57.154" E	27°00'047.161"S
P31	24° 44' 54.105" E	27°00'041.100"S
P32	24° 44' 51.056" E	27°00'035.039"S
P33	24° 44' 48.007" E	27°00'028.978"S
P34	24° 44' 45.375" E	27°00'023.746"S
P35	24° 44' 38.140" E	27°00'026.509"S
P36	24° 44' 39.834" E	27°00'030.033"S

Table 2-4 - Sendawo BESS Facility Co-ordinates

Point	Longitude	Latitude
		
		
BESS Development Area		

Point	Longitude	Latitude
BESS Alternative 1 (Green)		
Centre Point	24°44'35.57"E	27° 3'50.31"S
1	24°44'30.69"E	27° 3'48.84"S
2	24°44'32.44"E	27° 3'47.06"S
3	24°44'36.59"E	27° 3'45.27"S
4	24°44'41.11"E	27° 3'51.83"S
5	24°44'34.11"E	27° 3'55.30"S

Table 2-5 – Sendawo Substation Co-ordinates

Point	Longitude	Latitude
		


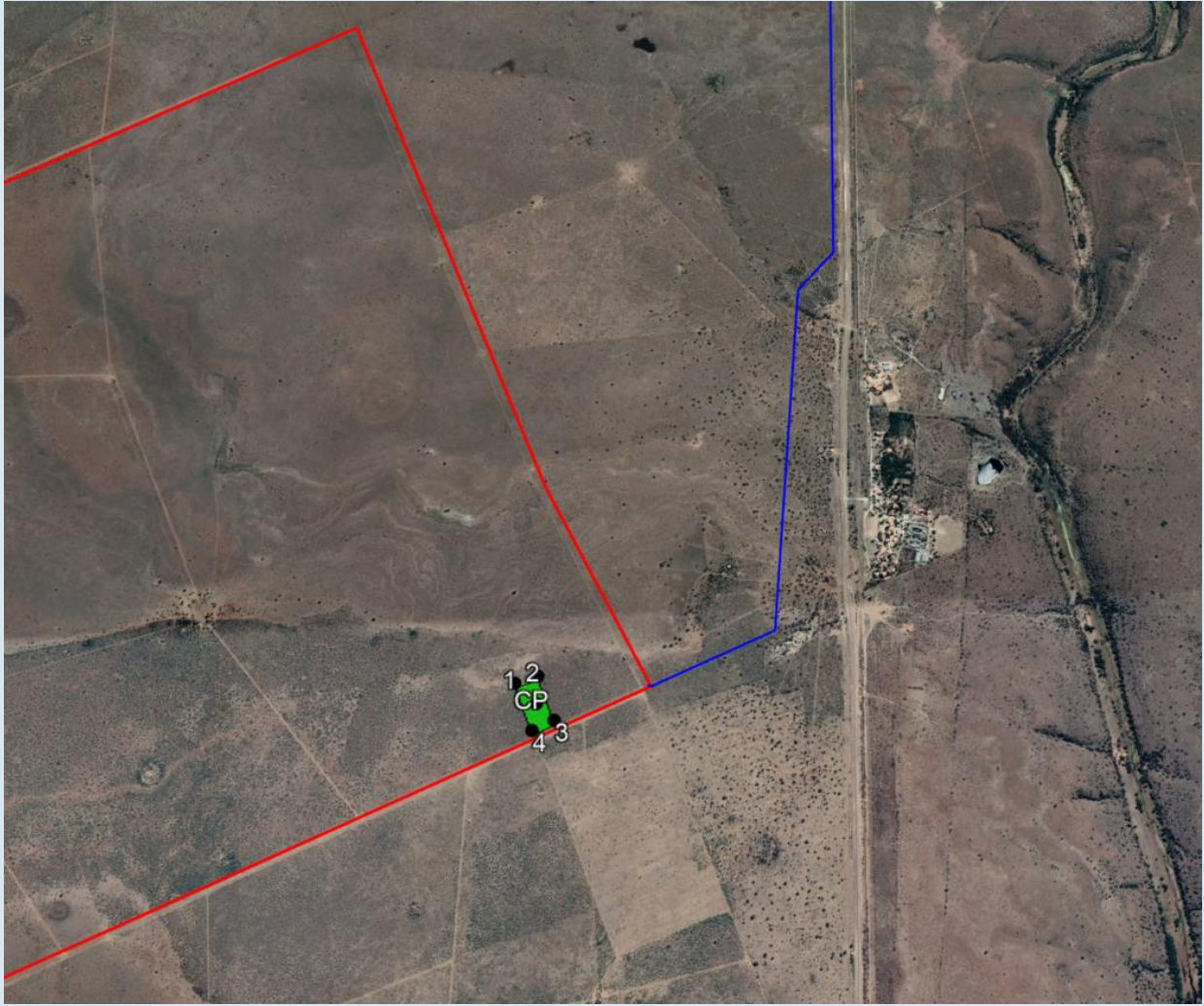
Point	Longitude	Latitude
		
Substation Development Area		
Substation Alternative 1 (Yellow)		
Centre Point	24°44'42.50"E	27° 3'47.86"S
1	24°44'38.25"E	27° 3'46.64"S
2	24°44'43.35"E	27° 3'44.50"S
3	24°44'46.63"E	27° 3'49.05"S
4	24°44'41.67"E	27° 3'51.57"S

Table 2-6 – Sendawo Laydown Area Co-ordinates

Point	Longitude	Latitude
		

Point	Longitude	Latitude
		
Laydown Area		
Laydown Area Alternative 1 (Green)		
Centre Point	24°44'31.06"E	27° 3'53.03"S
1	24°44'27.36"E	27° 3'50.36"S
2	24°44'30.78"E	27° 3'49.07"S
3	24°44'34.07"E	27° 3'55.23"S
4	24°44'30.90"E	27° 3'56.88"S

2.2 BESS TECHNOLOGY

Energy storage systems capture surplus energy during times of high production/low demand and store it for use during times of low production/high demand. While not a new technology, energy storage is rapidly gaining traction as a way to provide a stable and consistent supply of renewable energy to the grid. The energy storage system of most interest to power producers is the BESS, as these facilities can be designed and constructed to be a standalone facility, charging and discharging from the electrical grid when the demand requires. Furthermore, BESS facilities can be integrated into renewable energy projects.

Being able to store excess energy is also a financial benefit to renewable energy producers. Instead of having to curtail production, at the request of the grid or utility, that curtailment can be stored. When production later goes down, that stored energy is available for sale to fill in the gaps.

2.2.1 BATTERY TYPES

The Proposed Project will utilize either of two BESS technology options; liquid cooled Lithium-ion batteries; or VRFB, and the different technology types are discussed below.

2.2.2 DESIGN OF THE LITHIUM-ION BATTERY FACILITY

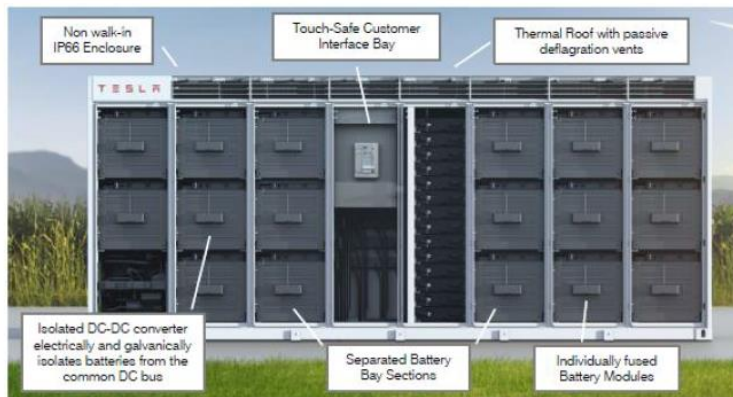
In this design, the BESS will be made up of several liquid cooled Lithium-Ion batteries, due to them being a mature and safe technology with regard to being modular and easy to install and due to their technical characteristics, will work well as energy storage systems for solar facilities, as well as supporting grid stability.

The liquid cooled Lithium-Ion batteries consists of multiple battery cells that are assembled together to form modules. Each cell contains a positive electrode and a negative electrode. The BESS will comprise of multiple battery units or modules housed in shipping containers and/or an applicable housing structure which is delivered pre-assembled to the project site. Containers are usually raised slightly off the ground and layout out in rows. They can be stacked if required although this may increase the risk of events in one container spreading to another container.

Supplementary infrastructure and equipment may include substations, power cables, transformers, power converters, substation buildings & offices, HV/MV switch gear, inverters and temperature control equipment that may be positioned between the battery containers. The images in **Figure 2-1** are typical BESS installations. **Figure 2-2** and **Figure 2-3** show typical battery modules in the BESS facility.



Figure 2-1 – Images of Typical BESS Systems



Source – Tesla MegaPack – Safety Overview

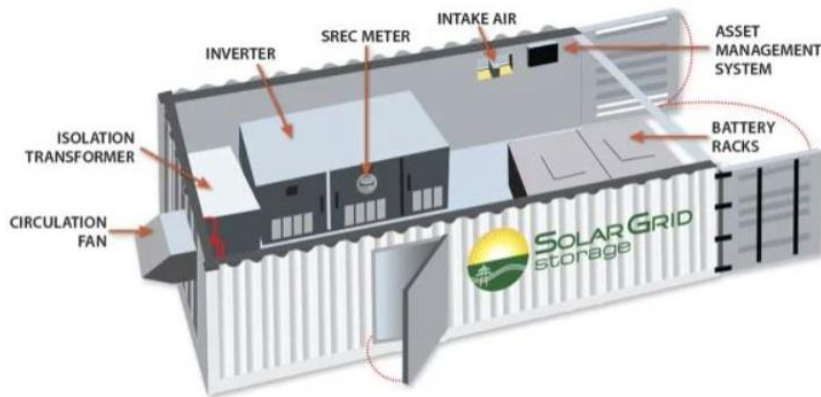


Figure 2-2 – Typical Battery Modules in a BESS with the Separated Sections

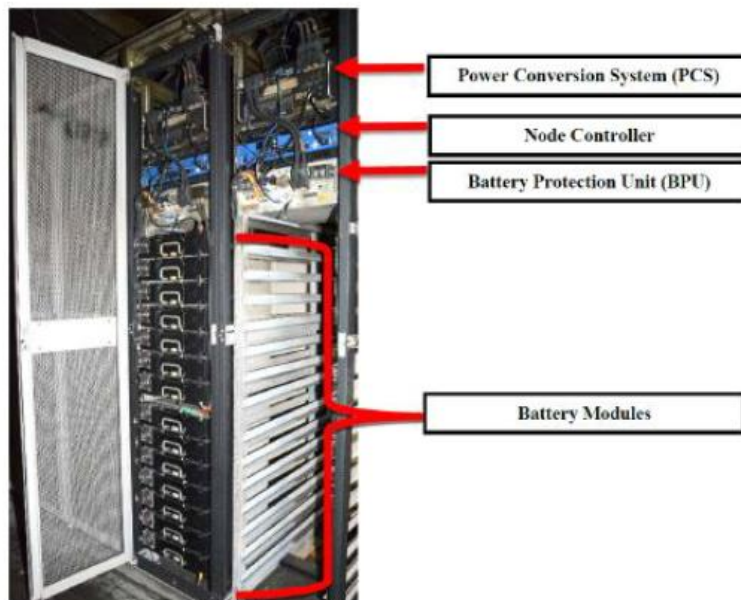


Figure 2-3 - Typical Battery Modules in a BESS with the Power Conversion Systems in the Batteries

2.2.3 DESIGN OF THE VANADIUM REDOX FLOW BATTERIES

In this design, VRFB's are a type of rechargeable battery that utilise a Vanadium electrolyte solution. They are unique in that they use Vanadium ions in different oxidation states (V^{2+} and V^{3+} for the negative electrode, V^{4+} and V^{5+} for the positive electrode) to store and release electrical energy. A single VRFB unit (**Figure 2-4**) comprises of a number of VRFB stacks, back cooler, flame arrestor, gas barriers, switch cabinets, pre-pressure tanks, electrolyte pumps and electrolyte tanks, additionally associated auxiliary transformers and an HV substation will be required.

The heart of a VRFB is the stack (**Figure 2-5**), which consists of multiple cells stacked on top of each other. Each cell consists of a positive and negative electrode compartment, separated by an ion exchange membrane. The positive and negative electrodes are made of carbon-based materials coated with a catalyst to facilitate the reaction with the vanadium ions.

When the VRFB is in use, the electrolyte solution is pumped from the storage tanks (**Figure 2-6**) through the stack, where the chemical reactions take place, producing electricity. The size of the stack and the number of cells depends on the desired capacity and power output of the battery.

One of the advantages of VRFBs is their scalability, as their capacity can be easily increased or decreased by simply adding or removing electrolyte solution. They also have a long cycle life and are able to maintain their capacity over many charge-discharge cycles.

Another advantage of VRFB stacks is their ability to operate at a constant voltage, which simplifies the power electronics required for the battery system. Additionally, because the chemical reactions take place outside the stack, there is no risk of cross-contamination between the electrolyte solutions, which improves the longevity and reliability of the battery.

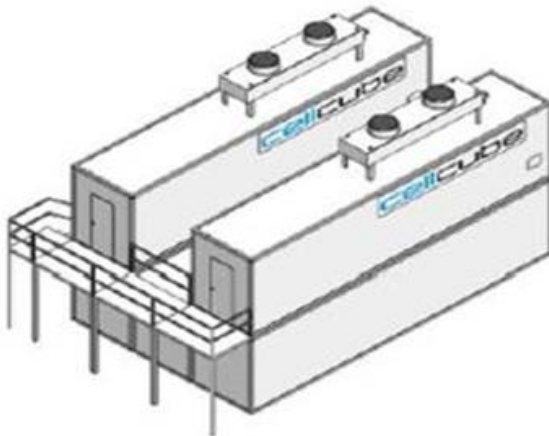


Figure 2-4 - A VRFB unit

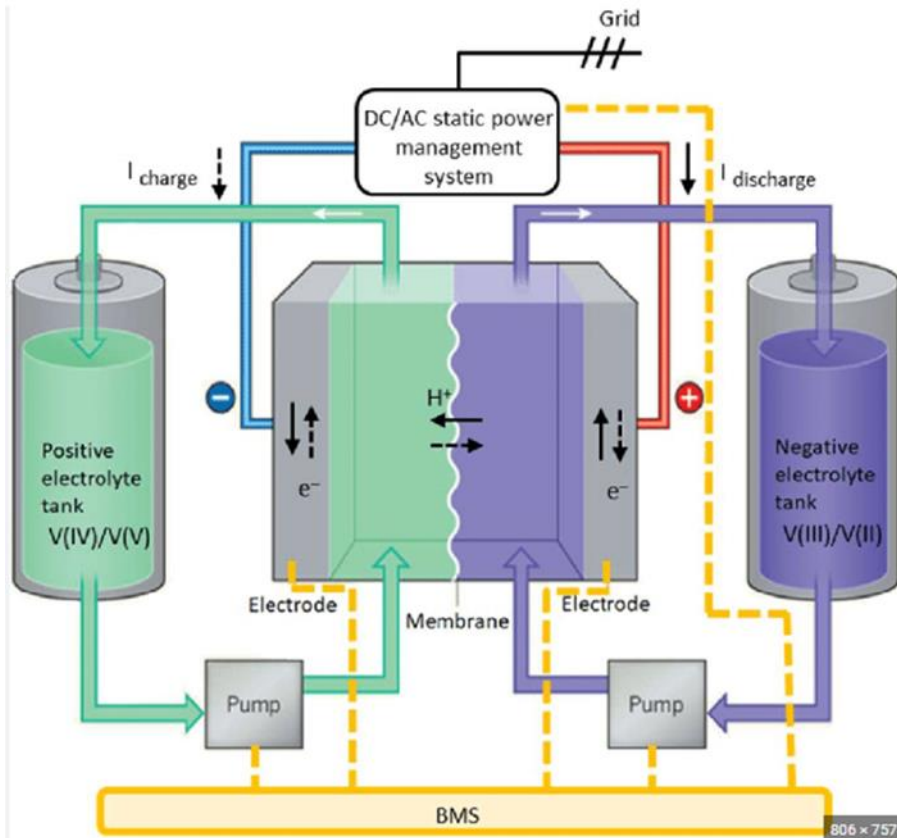


Figure 2-5 – VRFB stack

System Architecture

CellCube FB 500-2000 DC Rel 4.0

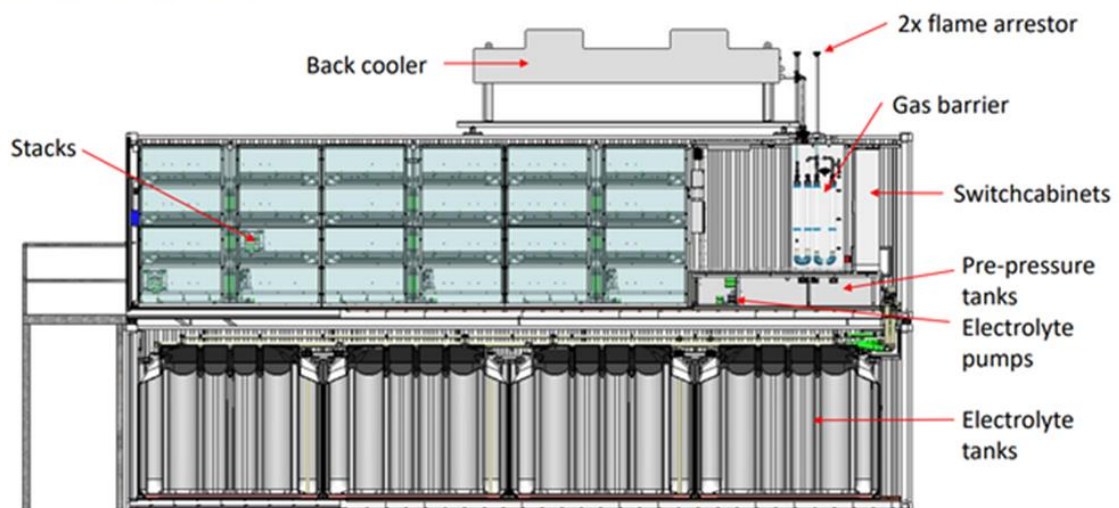


Figure 2-6 - Cross section of a VRFB unit indicating the stacks and electrolyte tanks

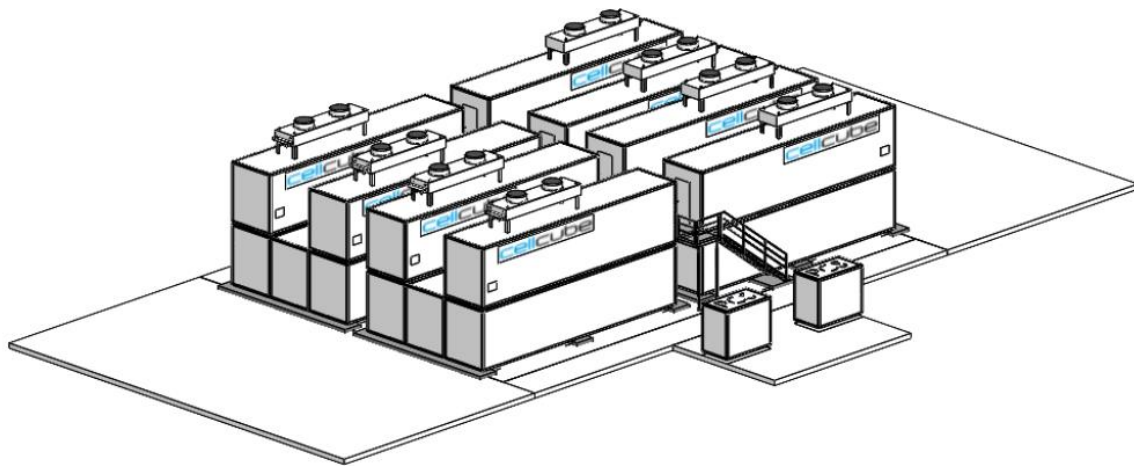


Figure 2-7 - Conceptual VRFB Facility Layout

2.3 ACTIVITY DESCRIPTION

2.3.1 OVERHEAD POWERLINE

The OHPL will be a 132kV steel single or double structure with kingbird conductor. The powerline towers will either be steel lattice or monopole structures.

Figure 2-8 below provides an example of a conventional lattice tower compared with a monopole structure. It is anticipated that pylon towers will be located approximately 200m apart.



Figure 2-8 - Comparison between a lattice pylon structure and steel monopole pylon structure

2.3.2 SERVITUDE

A 200 m corridor around the OHPL (100 m on either side of the centreline) has been assessed for the purposes of this BAR. The registered servitude will fall within this 200 m corridor and will likely be between 40 m and 45 m. The length of the transmission line is approximately 7.2 km for alternative 1 and 4.9 km for alternative 2, which will result in a servitude area of approximately 32.4ha and 22.1ha respectively.

The length of the final pre-negotiated route (alternative 1) is approximately 7.2 km in length in its entirety from the proposed onsite Substation to the existing Eskom Mookodi Substation. The OHPL servitude width is approximately 45m (22.5 m either side of the OHPL, including access roads), and the area of investigation is approximately 324 000 m² (i.e. servitude).

The final pre-negotiated route comprises of a corridor. Although pylons positions are provided, the final pylon positions may differ from those presented, they will fall within the final pre-negotiated route applied for and presented within this Draft BAR.

The servitude is required to ensure safe construction, maintenance and operation of the powerline. Registration of the servitude grants Sendawo BESS the right to erect, operate and maintain the powerline and to access the land to carry out such activities, but it does not constitute full ownership

of the land. It should be noted that the OHPL will be ceded to Eskom post-construction. Construction and operation activities and access to the powerline must be carried out with due respect to the affected landowners. The servitude required for the Project will be registered at the Deeds Office and will form part of the title deed of the relevant properties once the environmental authorisation has been obtained.

2.3.3 SUBSTATIONS

An onsite substation will be established within the extent of the authorised Sendawo SEF. The following infrastructure is proposed:

- A high voltage substation yard to allow for multiple 132 kV feeder bays and transformers;
- The control building, telecommunication infrastructure, oil dams(s) etc; and
- All the access road infrastructure to and within the substation.
- The onsite HV substation will be constructed with a maximum footprint of approximately 150 m x 150 m, and encloses the 22 kV/66 kV HV power transformer, a lightning mast with a maximum height of 24 m, tower sections, earthing switches, circuit breakers, surge arrestors, busbars, and other miscellaneous substation equipment, including a substation building containing MV switchgear, control and protection equipment;

The power from the proposed on-site substation will be evacuated via the proposed OHPL and feed into the operational Eskom 400 kV Mookodi substation.

2.3.4 LIQUID COOLED LITHIUM-ION BATTERIES:

- The proposed technology comprises of a number of DC Battery Enclosures, Converter Stations, associated auxiliary transformers and an HV substation.
- Each DC Battery Enclosure has approximate dimensions of 10 x 2 x 4 m (l x b x h) and houses a number of liquid cooled Lithium-ion batteries. The enclosure is equipped with a fire detection system, as well as a gas detection and prevention mechanism.
- Each DC Battery Enclosure will have a capacity of 2.81 MW, with a 4 hour discharge time, the usable energy from the system is 0.7 MW, hence, for an up to 153 MW/612 MWh BESS system, the approximate number of Battery Enclosures required is ~218.
- Each Converter Station is comprised of 2 converters (~4200 kW, ~1500 VDC, - 690 Vac) feeding into one MV transformer (690 V/(22 kV-33 kV)) and each Converter has approximate dimensions of 3.0 x 2.0 x 2.2 m.
- Each Converter is fed from approximately 7 Battery Enclosures.
- A number of outdoor auxiliary transformer is required ((22 kV-33 kV)/(220-380 V)) to provide auxiliary power to the facility.
- Internal underground MV cable of up to 33 kV;
- The MV transformers feed the HV substation which steps the voltage from 22 kV to 66 kV;
- Temporary laydown area will be situated adjacent to the BESS (occupying a maximum area of 2.24 ha) and will be utilised for all project infrastructure;
- Lightning masts with a maximum height of 24 m;
- ~6m wide access road around the facility, with 1m wide drainage channel on either side;
- Fencing (between 2 – 3 m high) around the BESS Facility;
- Stormwater system;
- Possible firebreak located within the footprint.

2.3.5 VANADIUM REDOX FLOW BATTERIES (VRFB):

- The proposed technology comprises of a number of VRFB stacks, back cooler, flame arrestor, gas barriers, switch cabinets, pre-pressure tanks, electrolyte pumps and electrolyte tanks, all within a single VRFB unit, additionally associated auxiliary transformers and an HV substation will be required.
- Each VRFB unit comprises of 5, 40 foot containers:
 - The 2 containers situated at the top of the VRFB unit contains the stacks (where the charging and discharging of electrolyte solution occur) and control mechanisms (required for operation of each VRFB unit)
 - The 3 containers situated at the bottom of the VRFB unit stores the charged/discharged electrolyte solution, housed within double containment tanks.
- There will be up to 230 VRFB units required to provide up to 153MW of generation capacity.
- The development area required for an up to 153MW VRFB facility is approximately up to 12.4 ha in extent.
- The entire facility will require bunding to contain 110% of the total electrolyte tank capacity.
- Internal underground MV cable of up to 33 kV;
- The MV transformers feed the HV substation which steps the voltage from 22 kV to 66 kV;
- Temporary laydown area will be situated adjacent to the BESS (occupying a maximum area of 2.24 ha) and will be utilised for all project infrastructure;
- Lightning masts with a maximum height of 24 m;
- ~6m wide access road around the facility, with 1m wide drainage channel on either side;
- Fencing (between 2 – 3 m high) around the BESS Facility;
- Stormwater system;
- Possible firebreak located within the footprint.

Vanadium Electrolyte Solution

The Vanadium Electrolyte Solution comprises of approximately 15% concentration of Sulphuric Acid and <1% concentration of Phosphoric acid, as listed in the safety data sheet. Both these chemicals are listed in the SANS 10234-A (2008) as a dangerous good. The total Vanadium electrolyte solution proposed to be stored in the positive and negative electrolyte tanks summates up to 33 603m³, with an approximate dangerous good concentration of up to 5 040m³.

Filling process:

IBCs containing the Vanadium electrolyte solution will be brought to site in order to fill the stacks and electrolyte tanks during the commissioning phase. Not more than 500 IBCs will be on site at any given time, thus not exceeding the volumes stipulated in Listing Notice 1, Activity 14.

Battery operation

With reference to the letter received by Bushveld Energy on 4 April 2020 from the DFFE, “*The development and related operation of facilities or infrastructure, for the storage and handling of dangerous good, where such storage occurs in containers with a combined capacity, quantified by the relevant threshold for the activity listed or specified in the relevant Listing Notice.*” “*Batteries are not regarded as facilities or infrastructure for the storage or storage and handling of a dangerous good, considering its inherent purpose or objective is not to store, or store and handle a dangerous good and that is not considered a “container”, for the purposes of the interpretation of these Regulations.*”

2.3.6 SITE ACCESS

The site will be accessed via the N18 for both alternatives, utilising existing access roads from the Eskom Mookodi Substation to the proposed Overhead Powerline, BESS and on-site Substation. Existing access roads and tracks (upgraded to $\pm 2-4$ m wide where needed) will be used as far as possible and new access tracks would be created where required ($\pm 2-4$ m wide).

2.3.7 PROJECT FOOTPRINTS

The approximate project footprints and total disturbance of both project alternatives are detailed in **Table 2-7** below.

Table 2-7 – Project Footprints

Project component	Disturbance footprint (ha) (alternative 1)	Disturbance footprint (ha) (alternative 2)
Overhead Powerline (includes 40m servitude buffer)	32.4	22.1
BESS	5	12.4
Substation	2.8	5.8
Access roads and tracks (includes utilisation of new and existing access roads, and excludes OHPL maintenance track)	21.6	12
Laydown Areas	2.3	1.2
Total disturbance footprint: Temporary	2.3	1.2
Total disturbance footprint: Permanent	61.8	52.3
Total	64.1	53.5

2.4 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

2.4.1 CONSTRUCTION PHASE

The construction process will follow industry standard methods and techniques. Key activities associated with the construction phase are described in **Table 2-8**.

Table 2-8 – Construction activities

Activity	Description
Establishment of an access road	Access to the Proposed Development site will be via the existing N18 and the internal access roads/tracks from the Eskom Mookodi Substation and internal farm roads/tracks will be utilised. An additional 6m wide access road, with 1m wide drainage channel on either side is also proposed for the BESS Facility.
Site preparation and establishment	Site establishment will include clearing of vegetation and any bulk earthworks that may be required.

Activity	Description
Transport of components and equipment to site	All construction material, machinery and equipment (i.e. graders, excavators, trucks, cement mixers etc.) will be transported to site utilising the national, regional and local road network. Larger components (may be defined as abnormal loads in terms of the Road Traffic Act (No. 29 of 1989). In such cases a permit may be required for the transportation of these loads on public roads.
Establishment of a laydown area on site	Construction materials, machinery and equipment will be kept at relevant laydown and/or storage areas. Laydown areas (site camps) of approximately up to 2.3 ha have been proposed. The laydown area will limit potential environmental impacts associated with the construction phase by limiting the extent of the activities to one designated area.
Construction of substation and inverters	The facility output voltage will be stepped up from medium voltage to high voltage in the transformer. The medium voltage cables will be run underground within the facility to a common point before being fed to the substation.
Establishment of ancillary infrastructure	Ancillary infrastructure will include a workshop, storage areas, office, and a temporary laydown area for contractor's equipment.
Rehabilitation	Once all construction is completed on site and all equipment and machinery has been removed from the site, the site will be rehabilitated.

2.4.2 OPERATIONAL PHASE

During operation the key activities will include inspection and maintenance of the BESS and other associated infrastructure.

2.4.3 DECOMMISSIONING PHASE

The decommissioning phase will include activities similar to that of the construction phase as indicated in **Table 2-8**.

3 ENVIRONMENTAL SENSITIVITY

3.1 SITE SENSITIVITY

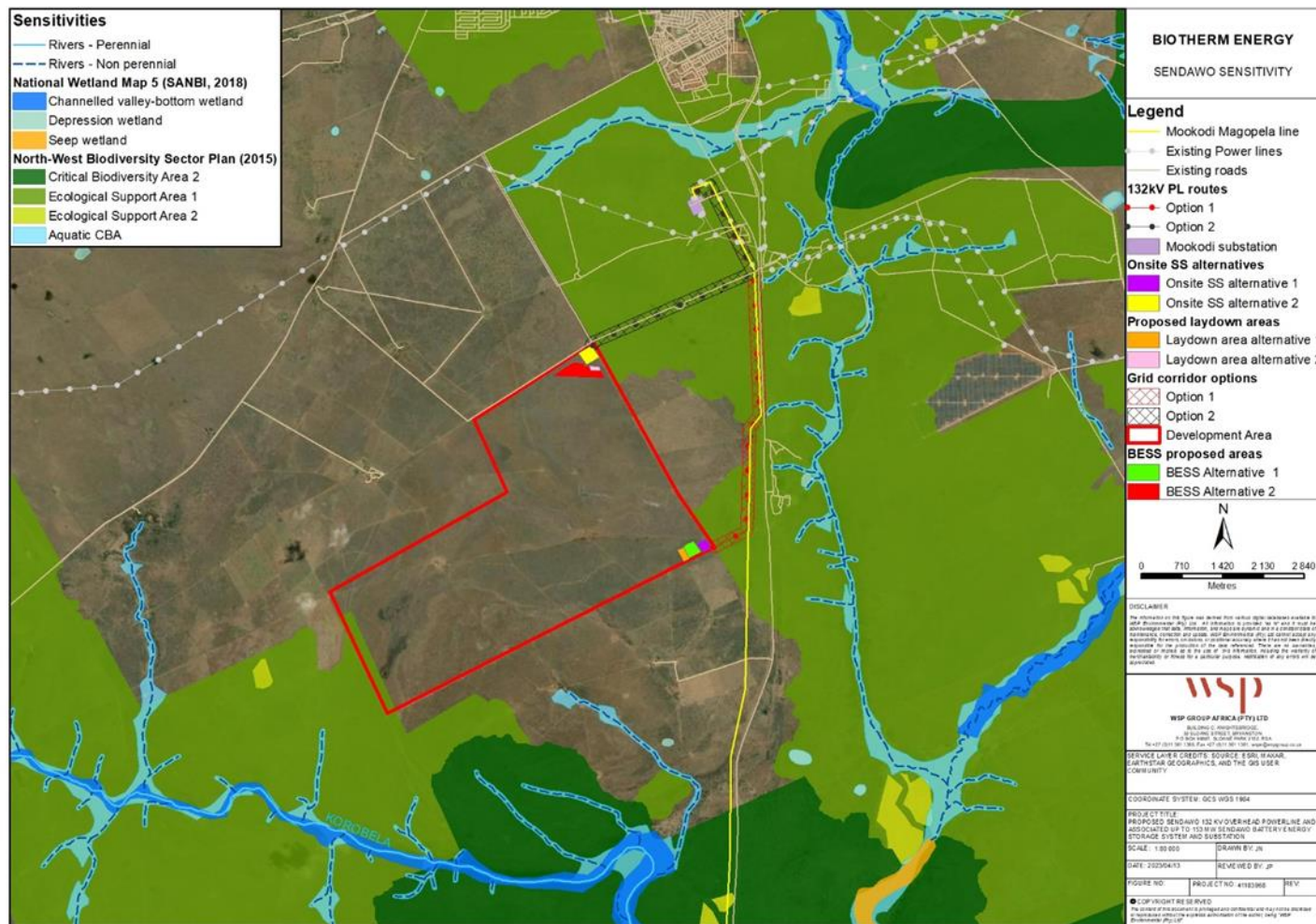
Based on the findings of this assessment, the site is generally considered to be medium to low sensitivity in relation to the identified and verified biological aspects as per the DFFE Screening Tool, however the Palaeontology sensitivity is considered high due to the presence of dolomite in the Boomplaas and Clearwater dominated areas and the quaternary calcrete deposits overlie the Archaean rocks in the central area. **Figure 3-1** and **Figure 3-2** illustrate the overall sensitivity of alternative 1 in relation to the Proposed Project. The environmental sensitivities identified on site are included in **Table 3-1**.

Table 3-1 – Environmental Sensitivities identified by specialists

Discipline	Infrastructure Type and Sensitivity Criteria	
	OHPL route	BESS, Substation and Laydown area
Agriculture	<ul style="list-style-type: none"> Proposed site is considered low in agricultural potential therefore no specialist restrictions imposed. 	<ul style="list-style-type: none"> Proposed site is considered low in agricultural potential therefore no specialist restrictions imposed.
Aquatic Ecology	<ul style="list-style-type: none"> Proposed study area is considered to be of low sensitivity for aquatic biodiversity, and no significant impacts on aquatic biodiversity as a result of development of the preferred Option 1 are predicted. 	<ul style="list-style-type: none"> Proposed site is considered low in sensitivity as there are no aquatic resources within the site boundaries or the immediate vicinity of the site, therefore no specialist restrictions imposed.
Avifauna Ecology	<ul style="list-style-type: none"> Proposed site is considered low-moderate (with the implementation of mitigation measures) in avifauna sensitivity therefore no specialist restrictions imposed. 	<ul style="list-style-type: none"> Proposed site is considered low-moderate (with the implementation of mitigation measures) in avifauna sensitivity therefore no specialist restrictions imposed.
Terrestrial Ecology	<ul style="list-style-type: none"> The two shrubland habitats had a “Moderate” sensitivity, while the Water Resources were given a “Very High” sensitivity and the transformed in turn a “Very Low” sensitivity. Majority of the PAOI was found to be of a “moderate” sensitivity which differs to that of the screening tool. The PAOI overlaps with a CBA2, ESA1 and ESA2 classified area 	<ul style="list-style-type: none"> The two shrubland habitats had a “Moderate” sensitivity, while the Water Resources were given a “Very High” sensitivity and the transformed in turn a “Very Low” sensitivity. Majority of the PAOI was found to be of a “moderate” sensitivity which differs to that of the screening tool.
Heritage and Palaeontology	<ul style="list-style-type: none"> Proposed site is considered as having high Palaeontology sensitivity by the specialist and 	<ul style="list-style-type: none"> Proposed site is considered as having high Palaeontology sensitivity by the specialist and

Discipline	Infrastructure Type and Sensitivity Criteria	
	OHPL route	BESS, Substation and Laydown area
	<p>the necessary mitigation measures must be adhered to.</p> <ul style="list-style-type: none"> ■ This is based on the presence of dolomite in the Boomplaas and Clearwater dominated areas ■ The quaternary calcrete deposits overlie the Archaean rocks in the central area of the proposed development to an unknown depth and are in themselves considered of high sensitivity due to their potential in preserving a wide range of vertebrate and invertebrate trace fossils and archaeological remains. ■ OHPL is associated with areas of archaeological sensitivity, therefore the specialist preferred OHPL 1 over OHPL 2. 	<p>the necessary mitigation measures must be adhered to.</p> <ul style="list-style-type: none"> ■ This is based on the presence of dolomite in the Boomplaas and Clearwater dominated areas ■ The quaternary calcrete deposits overlie the Archaean rocks in the central area of the proposed development to an unknown depth and are in themselves considered of high sensitivity due to their potential in preserving a wide range of vertebrate and invertebrate trace fossils and archaeological remains. ■ Due to the similarity in the significance of impacts for the BESS and substations, the specialist did not identify a preferred alternative.

Figure 3-1 – Environmental Sensitivity Map of the Proposed Project



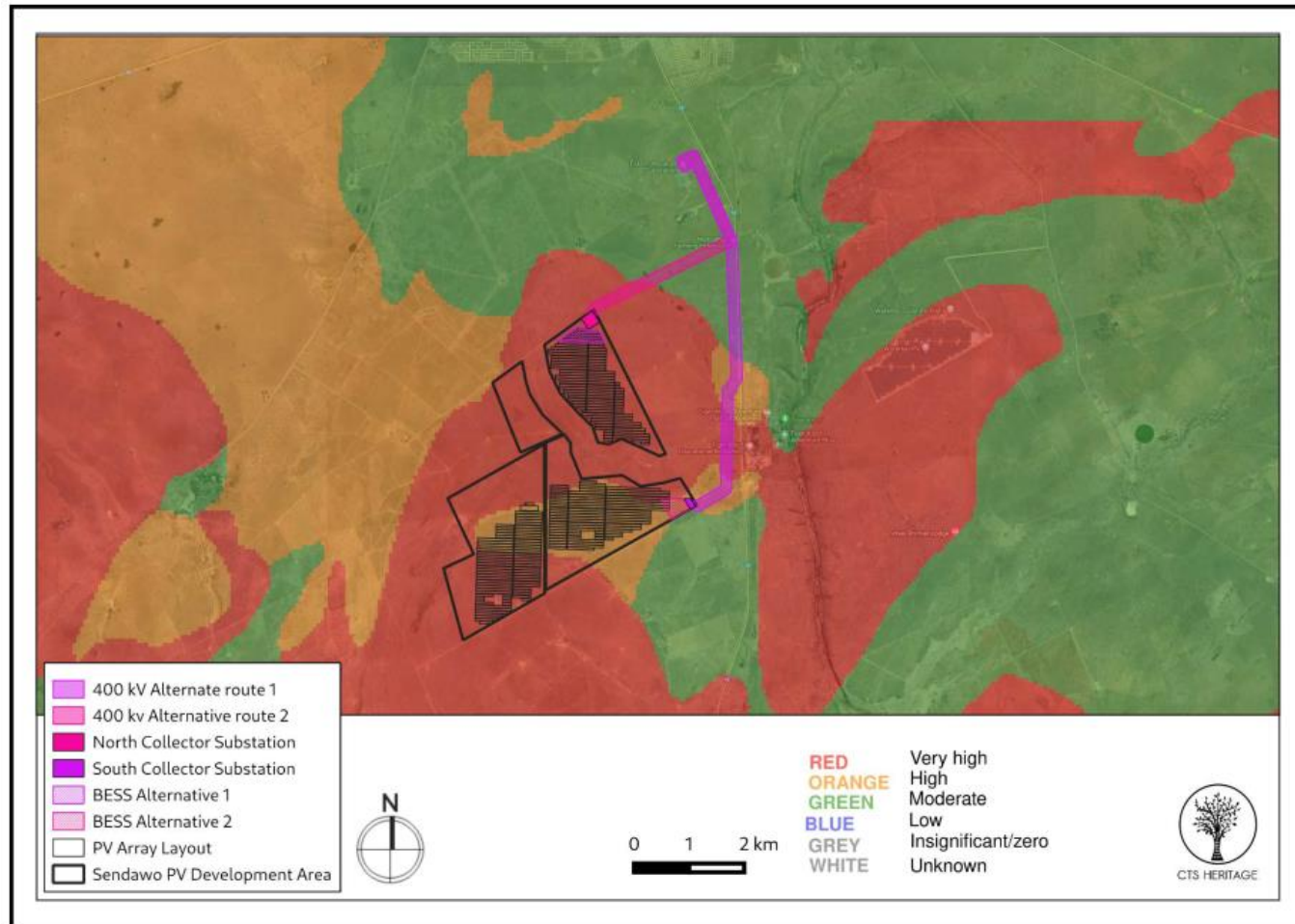


Figure 3-2 - Palaeontological sensitivity of the development area from the SAHRIS PalaeoMap

3.1.1 SITE SENSITIVITY VERIFICATION

Specialist assessments were conducted in accordance with the Procedures for the Assessment and Minimum Criteria for Reporting on identified Environmental Themes, which were promulgated in Government Notice No. 320 of 20 March 2020 and in Government Notice No. 1150 of 30 October 2020 (i.e. “the Protocols”), or Appendix 6 of the EIA Regulations, depending on which legislation apply to the assessment under consideration. A summary of the DFFE screening tool, the applicable legislation as well as the specialist sensitivity verification are detailed in **Table 3-2** below. The site verification process is discussed in the section below.

Table 3-2 - Assessment Protocols and Site Sensitivity Verifications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources</i>	Medium to Low Sensitivity	Low Sensitivity
Animal Species Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species</i>	Medium to Low Sensitivity	Medium to Low Sensitivity
Aquatic Biodiversity Compliance Statement	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Aquatic Biodiversity</i>	Very High Sensitivity (OHPL 1) and Low Sensitivity (BESS and substations)	Low Sensitivity
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity (OHPL1), and Low Sensitivity (BESS and substations)	Low Sensitivity with the exception to high sensitivity archaeological sites 45521 and 45529
Civil Aviation Theme	No specialist assessment protocol identified by the Screening Tool	Medium Sensitivity	Low Sensitivity (as verified by the EAP)
Relative Defence Theme	No specialist assessment protocol identified by the Screening Tool	Medium Sensitivity	Low Sensitivity (as verified by the EAP)
Palaeontology Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity	High Sensitivity

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Plant Species Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species</i>	Low Sensitivity	Low Sensitivity
Terrestrial Biodiversity Compliance Statement	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very High Sensitivity (OHPL 1) and Low Sensitivity (BESS and substations)	Medium to Low Sensitivity

3.2 IMPACT ASSESSMENT OUTCOMES

All impacts associated with the Proposed Project can be reduced to a medium-low significance with the implementation of recommended mitigation measures as presented within this BAR and the associated specialist studies.

A summary of the identified impacts and corresponding significance ratings for the Proposed Project is provided in **Table 3-3** below.

Table 3-3 – Impact Summary

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
Climate Change	Impact of project on climate change	O	(+)	80	High	N/A	
Agricultural Potential	Decrease in land capability	C/O/D	(-)	7	Very Low	7	Very Low
Terrestrial Biodiversity	Loss of habitat associated with OHPL1	C/D	(-)	60	Moderate	33	Moderate
Terrestrial Biodiversity	Habitat loss associated with the BESS and substations	C/D	(-)	52	Moderate	30	Low
Terrestrial Biodiversity	Loss of SCC	C/D	(-)	60	Moderate	18	Low
Terrestrial Biodiversity	Direct mortality of fauna including Species of Conservation Concern (SCC) due to roadkill, poaching and earthworks	C/D	(-)	60	Moderate	18	Low
Terrestrial Biodiversity	Encroachment of disturbed areas by	C/D	(-)	52	Moderate	33	Moderate

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
	Invasive Alien Plants (IAPs)						
Terrestrial Biodiversity	Continued encroachment of disturbed areas by Invasive Alien Plants (IAPs)	O	(-)	52	Moderate	18	Low
Terrestrial Biodiversity	Continued erosion of surrounding habitat due to poor stormwater management	O	(-)	36	Moderate	8	Very Low
Terrestrial Biodiversity	Heat Radiation from the BESS	O	(-)	42	Moderate	18	Low
Terrestrial Biodiversity	Collisions with the powerlines	O	(-)	72	High	36	Moderate
Terrestrial Biodiversity	Electrocutions with the OHPL	O	(-)	64	High	36	Moderate
Heritage and Palaeontology	Impacts of the proposed OHLPLs sites	C/O/D	(-)	68	High	12	Low
Heritage and Palaeontology	Impacts of the proposed Project on Heritage and Palaeontology of the BESS and substations	C/O/D	(-)	39	Moderate	12	Low
Traffic	Impact of increased road incidents during the construction phase	C	(-)	60	Moderate	18	Low
Traffic	Impact of road degradation during the construction phase	C	(-)	60	Moderate	18	Low
Traffic	Impact of dust during the construction phase	C	(-)	36	Moderate	27	Low
Traffic	Impact of intersection safety during the construction phase	C	(-)	60	Moderate	16	Low
Visual	Impact of visual effect of construction activities on the visual nature of the proposed BESS Facility Site	C	(-)	40	Moderate	30	Low
Visual	Impact of visual intrusion on scenic resources and	O	(-)	48	Moderate	48	Moderate

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
	sensitive receptors during the operational phase						
Social	Impact on regional employment and household income during the construction phase	C	(+)	24	Low	45	Moderate
Social	Impact of influx of people during the construction phase	C	(-)	33	Moderate	27	Low
Social	Impact of surrounding landowners and communities during the construction phase	C	(-)	44	Moderate	30	Low
Social	Impact on regional employment and household income during the operational phase	O	(+)	24	Low	45	Moderate
Social	Impact of influx of people during the operational phase	O	(-)	33	Moderate	30	Low
Social	Impact on surrounding landowners and communities during the operational phase	O	(-)	36	Moderate	22	Low
Social	Impact on regional employment and household income during the operational phase	D	(+)	24	Low	45	Moderate
Social	Impact of influx of people during the decommissioning phase	D	(-)	33	Moderate	27	Low
Social	Impact of surrounding landowners and communities during the decommissioning phase	D	(-)	36	Moderate	22	Low
SHE – Li-ion Batteries	Human Health - chronic exposure to toxic chemical or biological agents	C	(-)	44	Moderate	18	Low
SHE	Human Health - exposure to noise	C	(-)	56	Moderate	26	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Human Health - exposure to temperature extremes and/or humidity	C	(-)	18	Low	8	Very Low
SHE	Human Health - exposure to ergonomic stress	C	(-)	30	Low	20	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating to external fires, vehicles etc	C	(-)	56	Moderate	28	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating damage to battery containers	C	(-)	34	Moderate	17	Low
SHE	Human and Equipment Safety - exposure to explosion over pressures	C	(-)	57	Moderate	19	Low
SHE	Human and Equipment Safety - exposure to acute toxic chemical and biological agents relating to diseases, animal bites, etc	C	(-)	33	Moderate	20	Low
SHE	Human and Equipment Safety – exposure to acute toxic chemical and biological agents relating to damage to the batteries	C	(-)	45	Moderate	30	Low
SHE	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	C	(-)	64	High	16	Low
SHE	Human and Equipment Safety - exposure to electromagnetic waves	C	(-)	51	Moderate	17	Low
SHE	Environment - emissions to air	C	(-)	28	Low	12	Very Low
SHE	Environment - emissions to water	C	(-)	27	Low	18	Low
SHE	Environment - emissions to earth	C	(-)	30	Low	18	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Environment - waste of resources e.g., water, power etc	C	(-)	20	Low	10	Very Low
SHE	Investors - Financial	C	(-)	39	Moderate	22	Low
SHE	Employees and investors - Security	C	(-)	40	Moderate	27	Low
SHE	Emergencies	C	(-)	56	Moderate	28	Low
SHE	Investors - Legal	C	(-)	40	Moderate	18	Low
SHE – Li-ion Batteries	Human Health - chronic exposure to toxic chemical or biological agents relating to operation and maintenance	O	(-)	50	Moderate	18	Low
SHE	Human Health - chronic exposure to toxic chemical or biological agents relating to compromised battery components	O	(-)	48	Moderate	20	Low
SHE	Human Health - exposure to noise	O	(-)	52	Moderate	26	Low
SHE	Human Health - exposure to temperature extremes and/or humidity	O	(-)	20	Low	9	Very Low
SHE	Human Health - exposure to psychological stress	O	(-)	20	Low	9	Very Low
SHE	Human Health - exposure to ergonomic stress	O	(-)	33	Low	20	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating to external fires, vehicles etc	O	(-)	64	High	16	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating to PCS Damage	O	(-)	68	High	17	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Human and Equipment Safety - exposure to explosion over pressures	O	(-)	32	Moderate	16	Low
SHE	Human and Equipment Safety - exposure to acute toxic chemical and biological agents relating to diseases, animal bites, etc	O	(-)	30	Low	16	Low
SHE	Human and Equipment Safety – exposure to acute toxic chemical and biological agents relating to damage to the batteries	O	(-)	45	Moderate	28	Low
SHE	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	O	(-)	48	Moderate	16	Low
SHE	Human and Equipment Safety - exposure to electromagnetic waves	O	(-)	51	Moderate	17	Low
SHE	Environment - emissions to air	O	(-)	18	Low	6	Very Low
SHE	Environment - emissions to water	O	(-)	27	Low	18	Low
SHE	Environment - emissions to earth	O	(-)	30	Low	10	Very Low
SHE	Environment - waste of resources e.g., water, power etc	O	(-)	20	Low	10	Very Low
SHE	Investors - Financial	O	(-)	39	Moderate	22	Low
SHE	Employees and investors – Security relating to on route delivery of the battery	O	(-)	39	Moderate	22	Low
SHE	Employees and investors – Security relating to cyber security	O	(-)	48	Moderate	24	Low
SHE	Emergencies	O	(-)	39	Moderate	26	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Investors - Legal	O	(-)	40	Moderate	20	Low
SHE	Human Health - chronic exposure to toxic chemical or biological agents	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to noise	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to temperature extremes and/or humidity	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to psychological stress	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to ergonomic stress	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to fire radiation	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to explosion over pressures	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to acute toxic chemical and biological agents	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to electromagnetic waves	D	(-)	4	Very Low	4	Very Low
SHE	Environment - emissions to air	D	(-)	4	Very Low	4	Very Low
SHE	Environment - emissions to water	D	(-)	4	Very Low	4	Very Low
SHE	Environment - emissions to earth	D	(-)	60	Moderate	30	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Environment - waste of resources e.g., water, power etc	D	(-)	4	Very Low	4	Very Low
SHE	Public - Aesthetics	D	(-)	4	Very Low	4	Very Low
SHE	Investors - Financial	D	(-)	4	Very Low	4	Very Low
SHE	Employees and investors - Security	D	(-)	4	Very Low	4	Very Low
SHE	Emergencies	D	(-)	4	Very Low	4	Very Low
SHE	Investors - Legal	D	(-)	40	Moderate	30	Low
SHE – VRFBs	Human Health - chronic exposure to toxic chemical or biological agents	C	(-)	44	Moderate	18	Low
SHE	Human Health - exposure to noise	C	(-)	56	Moderate	26	Low
SHE	Human Health - exposure to temperature extremes and/or humidity	C	(-)	18	Low	8	Very Low
SHE	Human Health - exposure to ergonomic stress	C	(-)	30	Low	20	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating to external fires, vehicles etc	C	(-)	56	Moderate	28	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating damage to battery containers	C	(-)	34	Moderate	17	Low
SHE	Human and Equipment Safety - exposure to explosion over pressures	C	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to acute toxic chemical and biological agents relating to diseases, animal bites, etc	C	(-)	33	Moderate	20	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Human and Equipment Safety – exposure to acute toxic chemical and biological agents relating to damage to the batteries	C	(-)	33	Moderate	20	Low
SHE	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	C	(-)	64	High	16	Low
SHE	Human and Equipment Safety - exposure to electromagnetic waves	C	(-)	51	Moderate	17	Low
SHE	Environment - emissions to air	C	(-)	28	Low	12	Very Low
SHE	Environment - emissions to water	C	(-)	27	Low	18	Low
SHE	Environment - emissions to earth	C	(-)	30	Low	18	Low
SHE	Environment - waste of resources e.g., water, power etc	C	(-)	20	Low	10	Very Low
SHE	Investors - Financial	C	(-)	39	Moderate	22	Low
SHE	Employees and investors - Security	C	(-)	40	Moderate	27	Low
SHE	Emergencies	C	(-)	39	Moderate	26	Low
SHE	Investors - Legal	C	(-)	40	Moderate	18	Low
SHE – VRFBs	Human Health - chronic exposure to toxic chemical or biological agents relating to operation and maintenance	O	(-)	50	Moderate	18	Low
SHE	Human Health - chronic exposure to toxic chemical or biological agents relating to compromised battery components	O	(-)	44	Moderate	20	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Human Health - exposure to noise	O	(-)	52	Moderate	26	Low
SHE	Human Health - exposure to temperature extremes and/or humidity	O	(-)	20	Low	9	Very Low
SHE	Human Health - exposure to psychological stress	O	(-)	20	Low	9	Very Low
SHE	Human Health - exposure to ergonomic stress	O	(-)	33	Low	20	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating to external fires, vehicles etc	O	(-)	48	Moderate	16	Low
SHE	Human and Equipment Safety - exposure to fire radiation relating to PCS Damage	O	(-)	51	Moderate	17	Low
SHE	Human and Equipment Safety - exposure to explosion over pressures	O	(-)	32	Moderate	16	Low
SHE	Human and Equipment Safety - exposure to acute toxic chemical and biological agents relating to diseases, animal bites, etc	O	(-)	30	Low	16	Low
SHE	Human and Equipment Safety – exposure to acute toxic chemical and biological agents relating to damage to the batteries	O	(-)	45	Moderate	28	Low
SHE	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	O	(-)	48	Moderate	16	Low
SHE	Human and Equipment Safety - exposure to electromagnetic waves	O	(-)	51	Moderate	17	Low
SHE	Environment - emissions to air	O	(-)	18	Low	6	Very Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
SHE	Environment - emissions to water	O	(-)	30	Low	20	Low
SHE	Environment - emissions to earth	O	(-)	30	Low	10	Very Low
SHE	Environment - waste of resources e.g., water, power etc	O	(-)	24	Low	12	Very Low
SHE	Investors - Financial	O	(-)	39	Moderate	22	Low
SHE	Employees and investors – Security relating to on route delivery of the battery	O	(-)	36	Moderate	18	Low
SHE	Employees and investors – Security relating to cyber security	O	(-)	48	Moderate	24	Low
SHE	Emergencies	O	(-)	39	Moderate	26	Low
SHE	Investors - Legal	O	(-)	40	Moderate	20	Low
SHE	Human Health - chronic exposure to toxic chemical or biological agents	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to noise	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to temperature extremes and/or humidity	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to psychological stress	D	(-)	4	Very Low	4	Very Low
SHE	Human Health - exposure to ergonomic stress	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to fire radiation	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to explosion over pressures	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to	D	(-)	4	Very Low	4	Very Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
	acute toxic chemical and biological agents						
SHE	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	D	(-)	4	Very Low	4	Very Low
SHE	Human and Equipment Safety - exposure to electromagnetic waves	D	(-)	4	Very Low	4	Very Low
SHE	Environment - emissions to air	D	(-)	4	Very Low	4	Very Low
SHE	Environment - emissions to water	D	(-)	4	Very Low	4	Very Low
SHE	Environment - emissions to earth	D	(-)	60	Moderate	30	Low
SHE	Environment - waste of resources e.g., water, power etc	D	(-)	4	Very Low	4	Very Low
SHE	Public - Aesthetics	D	(-)	4	Very Low	4	Very Low
SHE	Investors - Financial	D	(-)	4	Very Low	4	Very Low
SHE	Employees and investors - Security	D	(-)	4	Very Low	4	Very Low
SHE	Emergencies	D	(-)	4	Very Low	4	Very Low
SHE	Investors - Legal	D	(-)	40	Moderate	30	Low
Cumulative Impacts							
Agricultural Potential	Loss of agricultural potential at the BESS Facility Site	C	(-)	7	Very Low	7	Very Low
Terrestrial Biodiversity	The cumulative impacts considered for avifauna	O	(-)	36	Moderate	30	Low
Heritage and Palaeontology	Cumulative impact to archaeological resources during the construction, operation and decommissioning phases	C/O/D	(-)	48	Moderate	28	Low
Traffic	Cumulative impact of increased road incidents	C	(-)	36	Moderate	27	Low

Aspect	Impact Description	Phase	Character	Without Mitigation		With Mitigation	
	during the construction phase						
Traffic	Cumulative impact of road degradation during the construction phase	C	(-)	36	Moderate	27	Low
Traffic	Cumulative impact of dust during the construction phase	C	(-)	36	Moderate	27	Low
Traffic	Cumulative impact of intersection safety during the construction phase	C	(-)	39	Moderate	12	Very Low
Traffic	Cumulative impact of intersection safety during the operational phase	O	(-)	39	Moderate	12	Very Low
Visual	Impact of visual effect of construction activities on the visual nature of the proposed Project.	C	(-)	40	Moderate	30	Low
Visual	Impact of visual intrusion on scenic resources and sensitive receptors during the operational phase	O	(-)	48	Moderate	16	Low
Visual	Impact of visual intrusion on scenic resources and sensitive receptors during the operational phase	O	(-)	16	Low	16	Low
Visual	Cumulative Impact of visual intrusion on scenic resources and sensitive receptors	D	(-)	16	Low	16	Low
Social	Cumulative impact on regional employment and household income	C/O/D	(+)	30	Low	55	Moderate
Social	Cumulative impact of funding of local socio-economic development	C/O/D	(+)	30	Low	55	Moderate
Social	Cumulative impact of influx of people	C/O/D	(-)	52	Moderate	48	Moderate
Social	Cumulative impact of surrounding landowners and communities	C/O/D	(-)	48	Moderate	33	Moderate

3.3 APPLICABLE DOCUMENTATION

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

- BA for the Proposed Sendawo BESS Project;
- EA issued by the DFFE in terms of the NEMA (once issued).

4 GOVERNANCE FRAMEWORK

4.1 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 4-1**.

Table 4-1 – Applicable National Legislation

Legislation	Description of Legislation and Applicability
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated 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)	<p>In terms of Section 24(2) of the NEMA, the Minister may identify activities, which may not commence without prior authorisation. The Minister thus published GNR 983 (as amended) (Listing Notice 1), GNR 984 (as amended) (Listing Notice 2) and GNR 985 (as amended) (Listing Notice 3) listing activities that may not commence prior to authorisation.</p> <p>The regulations outlining the procedures required for authorisation are published in the EIA Regulations of 2014 (GNR 982) (as amended). Listing Notice 1 identifies activities that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity.</p> <p>WSP undertook a legal review of the listed activities according to the proposed project description to conclude that the activities listed in in this section are considered applicable to the development: An EA is required and will be applied for with the DFFE.</p>
Listing Notice 1: GNR 983	<p>Activity 11 of GNR 983</p> <p><i>The development of facilities or infrastructure for the transmission and distribution of electricity—</i></p> <p><i>(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts</i></p> <p>Description:</p>

	<p>The site is currently being rezoned for purposes of the larger Sendawo PV Facilities which are located outside the urban edge approximately 6km Vryburg City Centre.</p> <p>This activity is applicable to the Sendawo 132kV OHPL and substation.</p> <p>Activity 12 of GNR 983</p> <p><i>The development of—</i></p> <p><i>(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—</i></p> <p><i>(a) within a watercourse; or</i></p> <p><i>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse</i></p> <p>Description:</p> <p>Sections of the OHPL for Alternative 2 will be located within 32 m from non-perennial rivers therefore this activity is applicable.</p> <p>Activity 14 of GNR 983</p> <p><i>The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80 cubic metres or more but not exceeding 500 cubic metres.</i></p> <p>Description:</p> <p>If the Vanadium Redox Flow Battery technology will be utilised for the development, then IBCs containing the Vanadium electrolyte solution will be brought to site in order to fill the stacks and electrolyte tanks during the commissioning phase. Not more than 500 IBCs will be on site at any given time, thus not exceeding the 500 cubic metre threshold.</p> <p>Activity 27 of GNR 983</p> <p><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></p> <p><i>(i) the undertaking of a linear activity; or</i></p> <p><i>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</i></p> <p>Description:</p> <p>The construction of the BESS Facility and substation will require the clearance of indigenous vegetation of more than 1 ha, but less than 20 ha. Approximately up to 13 ha of indigenous vegetation will be removed for the BESS facility and laydown area, and ~6 ha for the substation.</p>
<p>Listing Notice 3: GNR 985</p>	<p>Activity 12 of GNR 985</p> <p>The clearance of an area of 300 square metres or more of indigenous vegetation in h. North West:</p>

	<p>vi. Areas within a watercourse or wetland, or within 100 metres from the edge of a wetland or watercourse.</p> <p>Sections of the OHPL for Alternative 2 will be located within 100 m from non-perennial rivers therefore this activity is applicable.</p>
<p>NEMA: Notice of identification in terms of section 24(5)(a) and (b) of the national Environmental Management Act, 1998, of the procedure to be followed in applying for environmental authorisation for large scale wind and solar Photovoltaic energy development activities identified in terms of section 24(2)(a) of the National Environmental Management Act, 1998, when occurring in Geographical areas of strategic importance</p>	<p>On 16 February 2018, the DFFE gazetted the Renewable Energy Development Zones (REDZs) and Strategic Transmission Corridors and Procedures for the Assessment of Large-scale Wind and Solar Photovoltaic Energy Development Activities (GN 114) and Grid Infrastructure (GN 113). Subsequently, on 26 February 2021 a further three REDZ were gazetted (GN 142).</p> <p>The procedure allows for wind and solar PV activities within the eight REDZs and electricity grid development within the five power corridors to be subjected to a BA and not a full S&EIA process. In addition, the timeframes associated with the decision-making process on the application is reduced from 107 days to 57 days.</p> <p><i>The proposed Project is situated within the Northern Strategic Corridor and therefore is subject to a BA Process with a reduced timeframe.</i></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:</p> <ul style="list-style-type: none"> ■ Agricultural Impact Assessment; ■ Landscape/Visual Impact Assessment; ■ Archaeological and Cultural Heritage Impact Assessment ; ■ Palaeontology Impact Assessment; ■ Terrestrial Biodiversity Impact Assessment; ■ Aquatic Biodiversity Impact Assessment; ■ Avian Impact Assessment; ■ Hydrology Impact Assessment; ■ Noise Impact Assessment; ■ Traffic Impact Assessment; ■ RFI Assessment; ■ Geotechnical Impact Assessment; ■ Socio-Economic Assessment; ■ Plant Species Assessment; and ■ Animal Species Assessment.
<p>National Environmental Management: Waste Act (59 of 2008) (NEM:WA)</p>	<p>This Act provides for regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation. The Act also provides for the licensing and control of waste management activities through GNR. 921 (2013): 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>National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)</p>	<p>The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) was promulgated in June 2004 within the framework of NEMA to provide for the management and conservation of national biodiversity. The NEMBA's primary aims are for the protection of species and ecosystems that warrant national protection, the sustainable use of indigenous biological resources, the fair and equitable sharing of benefits arising from bioprospecting involving indigenous biological resources. In addition, the NEMBA provides for the establishment and functions of a South African National Biodiversity Institute (SANBI).</p> <p>SANBI was established by the NEMBA with the primary purpose of reporting on the status of the country's biodiversity and conservation status of all listed threatened or protected species and ecosystems.</p> <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>The Terrestrial Biodiversity Assessment identifies no CBAs within the Project footprint however the Project does intersect with an Ecological Support Area 2 as defined within the North West Biodiversity Plan, 2015.</p> <p><i>Ammocharis coranica</i> (Ground Lilly) is a nationally protected species which was observed in the PAOI. <i>Vachellia erioloba</i> (Camel Thorn) was also observed, this tree is protected under the National Forest Act. Despite the occurrence of these protected species within the PAOI, none were recorded at the Project site.</p> <p>If any protected tree species are required to be removed from the Proposed Project development area then a permit from the DFFE must be obtained prior to the commencement of clearing and construction activities.</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, <i>inter alia</i>, 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."</p> <p>According to the National Protected Areas Expansion Strategy (NPAES) (2016) dataset, the Project does not intersect with a priority area as defined within the National Environmental Management Protected Areas Act.</p>
<p>The National Heritage Resources Act (No. 25 Of 1999)</p>	<p>The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA) and lists activities that require any person who intends to undertake to notify the responsible</p>

	<p>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- <ul style="list-style-type: none"> • 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- <ul style="list-style-type: none"> • any development or other activity which will change the character of a site— (i) exceeding 5 000 m2 in extent, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development. <p>In terms of Section 38(8), approval from the heritage authority is not required if an evaluation of the impact of such development on heritage resources is required in terms of any other legislation (such as NEMA), provided that the consenting authority ensures that the evaluation of impacts fulfils the requirements of the relevant heritage resources authority in terms of Section 38(3) and any comments and recommendations of the relevant resources authority with regard to such development have been taken into account prior to the granting of the consent. However, should heritage resources of significance be affected by the Proposed Project, a permit is required to be obtained prior to disturbing or destroying such resources as per the requirements of Section 48 of the NHRA, and the SAHRA Permit Regulations (GN R668).</p> <p>A Heritage Assessment has been conducted by a suitably qualified specialist, revealing:</p> <ul style="list-style-type: none"> ■ The majority heritage resources identified relate to the historic farm occupation of this area and are considered to be Not Conservation-Worthy. ■ A no development buffer of 50 m must be implemented around sites 45521 and 45529 which occurs along the OHPL routes, these sites are identified as archaeologically sensitive. ■ From a paleontological perspective, the powerlines both extend partially over Boomplaas dolomites therefore both options are considered as High in sensitivity. ■ Given the potential for mixed lithologies in this area, a protocol for fossil reporting by the ECO should be implemented.
<p>Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)</p>	<p>In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards, SABS) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act 73 of 1989 (ECA), provisions were made to control noise from a National level in the form of</p>

	<p>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>(1) The minister may prescribe essential national standards –</p> <p>(a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or</p> <p>(b) for determining –</p> <p>(i) a definition of noise; and</p> <p>(ii) the maximum levels of noise.</p> <p>(2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards.</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>
National Environment Management Air Quality Act (No. 39 of 2004)	<p>The National Environment Management: Air Quality Act (No. 39 of 2004) (NEMAQA) came into effect on 11 September 2005. Persons undertaking such activities listed under GNR 893, as amended, are required to possess an Atmospheric Emissions License (AEL).</p> <p>The National Dust Control Regulations (GNR 827) were promulgated in terms of Section 32 of NEMAQA, which aim at prescribing general measures for the control of dust in both residential and non-residential areas.</p> <p>Although no AEL will be required for the construction and operation of the Proposed Development, the dust control regulations will be applicable during construction.</p>
Conservation of Agricultural Resources Act (No. 43 of 1983)	<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 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 DFFE Screening Tool Report identified Civil Aviation as having High sensitivity for the proposed Project due to the presence of aerodromes within 8 to 15km however the DFFE Screening Tool did not prescribe any specialist study to be undertaken. Furthermore, the proposed Project will have no impact on the aerodromes and therefore the high sensitivity rating is refuted.</p> <p>Air Traffic Navigation Services (ATNS) and South African Civil Aviation Authority (SACAA) will be included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought from these authorities as applicable.</p>
<p>Occupational Health and Safety Act (No. 85 of 1993)</p>	<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>
<p>National Energy Act (No. 34 of 2008)</p>	<p>The National Energy Act aims to ensure that diverse energy resources are available, in sustainable quantities, and at affordable prices, to the South African economy in support of economic growth and poverty alleviation, taking into account environmental management requirements and interactions amongst economic sectors.</p> <p>The main objectives of the Act are to:</p> <ul style="list-style-type: none"> ■ Ensure uninterrupted supply of energy to the Republic; ■ Promote diversity of supply of energy and its sources; ■ Facilitate effective management of energy demand and its conservation; ■ Promote energy research; ■ Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy; ■ Ensure collection of data and information relating to energy supply, transportation and demand;

	<ul style="list-style-type: none"> ■ 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; ■ 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>

4.2 INTERNATIONAL STANDARDS AND GUIDELINES

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

The objectives and applicability of the eight PSs are outlined in **Table 4-2**.

Table 4-2 – 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	1.1	Policy	The IFC Standards state under PS 1 (Guidance Note 23) that “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.” 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. In addition, an EMPr has been compiled and is included in Error! Reference source not found..
	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	
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.		

Reference	Requirements	Project Specific Applicability	
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.		
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>Even though the nature and scale of the project is considered to be small, PS2 is considered applicable as a contractor will be appointed to undertake the required scope of work. This BA Report and the EMP, however, incorporate the requirements for compliance with local and international Labour and Working legislation and good practice on the part of the contractors.</p> <p>Formal human resource and labour policies will be compiled in the event that the project is developed in the future as part of the project specific ESMS/corporate ESMS.</p>
	2.2	<ul style="list-style-type: none">■ Protecting the Workforce■ Child Labour■ Forced Labour	
	2.3	Occupational health and Safety	
	2.4	Workers Engaged by Third Parties	
	2.5	Supply Chain	
Performance Standard 3: Resource Efficiency and Pollution Prevention			
Overview	<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.		

Reference	Requirements		Project Specific Applicability
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 Error! Reference source not found. of the BAR.</p> <p>There are no material resource efficiency issues associated with the Proposed Development. The EMPr will include 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, the proposed Project seeks to facilitate resource efficiency and pollution prevention by contributing to the South African green economy.</p> <p>Dust air pollution in the construction phase has been adequately addressed in the EMPr (Section 7).</p> <p>The proposed Project will not result in the release of industrial effluents. Potential pollution associated with sanitary wastewater is low and mitigation measures have been included in the EMPr.</p> <p>Land contamination of the site from historical land use (i.e., low intensity agricultural / grazing) is not considered to be a cause for concern.</p> <p>The waste generation profile of the project is not complex. Waste mitigation and management measures have been included in EMPr.</p> <p>Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel etc.) are the only wastes expected to be associated with the project. The EMPr identifies these anticipated hazardous materials and recommends relevant mitigation and management measures.</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 	<p>The requirements included in PS 4 have addressed in the BA process and the development of the EMPr (Section 7).</p> <p>The following generic plans have been included in the EMPr:</p> <ul style="list-style-type: none"> Emergency Response Plan; Transport Management Plan; HIV/AIDS Management Plan; and

Reference	Requirements		Project Specific Applicability
		<ul style="list-style-type: none">Community Exposure to DiseaseEmergency Preparedness and Response	<ul style="list-style-type: none">Security Policy. <p>All plans will be made site specific as part of the financial close process, in the event that the project is developed in the future.</p>
	4.2	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">DisplacementPhysical DisplacementEconomic DisplacementPrivate Sector Responsibilities under Government Managed Resettlement	<p>PS5 is not applicable to the proposed Project as no physical or economic displacement or livelihood restoration will be required.</p> <p>The proposed Project and the associated components are located on privately owned land that forms part of the larger Sendawo SEF.</p>
1Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources			
Overview	Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.		
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.		

Reference	Requirements		Project Specific Applicability
Aspects	6.1	Protection and Conservation of Biodiversity	<p>The proposed development does not fall within any CBAs but is located within an Ecological Support Area. A Terrestrial Biodiversity Assessment as well as an Aquatic 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 will be determined, and mitigation and management measures are included in the EMP.</p>
Performance Standard 7: Indigenous People			
Overview	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.		
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	General <ul style="list-style-type: none"> ■ Avoidance of Adverse Impacts ■ Participation and Consent 	As per the international instruments under the United Nations (UN) Human Rights Conventions, no indigenous peoples are present within the study area.
	7.2	Circumstances Requiring Free, Prior, and Informed Consent <ul style="list-style-type: none"> ■ Impacts on Lands and Natural Resources 	

Reference	Requirements		Project Specific Applicability
		Subject to Traditional Ownership or Under Customary Use <ul style="list-style-type: none"> ■ Critical Cultural Heritage ■ Relocation of Indigenous Peoples from Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use 	
	7.3	Mitigation and Development Benefits	
	7.4	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	Protection of Cultural Heritage in Project Design and Execution	A Heritage Assessment has been carried out by a suitably qualified specialist. A Chance Find Procedure has been included in the EMPr (Section 8).

4.2.2 WORLD BANK GROUP ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES

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

Where host country regulations differ from the levels and measures presented in the EHS Guidelines, projects seeking international funding may be expected to achieve whichever is more

stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required.

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

- Electric Power Transmission and Distribution (2007) - 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
- General EHS Guidelines – this includes a section on a range of environmental, occupational health and safety, community health and safety, and construction activities that would apply to the project. The guideline also contains recommended guidelines adopted from the World Health Organisation (WHO) for ambient air and water quality, which are referred to in the relevant impact assessment sections in the ESIA report.

4.2.3 EQUATOR PRINCIPALS

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

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

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

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

The requirements and applicability of the EPs are outlined in **Table 4-3**.

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 4-3 - Requirements and Applicability of the Equator Principles

Requirement		Project Specific Applicability
Principle 1: Review and Categorisation		
Overview	<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> <ul style="list-style-type: none"> ■ Category A: Projects with potential significant adverse environmental and social risks and/or impacts that are diverse, irreversible or unprecedented; ■ Category B: Projects with potential limited adverse environmental and social risks and/or impacts that are few in number, generally site-specific, largely reversible and readily addressed through mitigation measures; and ■ Category C: Projects with minimal or no adverse environmental and social risks and/or impacts. 	<p>Based upon the significance and scale of the proposed 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>
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</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 and is included in Section 7, which is to be read in conjunction with the generic powerline and substation EMPRs.</p>

Requirement		Project Specific Applicability
	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.	
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>	As South Africa has been identified as a non-designated country, the reference framework for environmental and social assessment is based on the IFC PS. In addition, this BA process has been undertaken in accordance with NEMA (the host country's relevant legislation).
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>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>	The EMP will serve to management and monitor activities associated with all phases of the proposed Project.
Principle 5: Stakeholder Engagement		
Overview	EPFI will require the client to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally	The BA process includes an extensive stakeholder engagement process which complies with the South African EIA

Requirement	Project Specific Applicability
<p>appropriate manner with Affected Communities Workers and, where relevant, Other Stakeholders. For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process.</p> <p>To accomplish this, the appropriate assessment documentation, or non-technical summaries thereof, will be made available to the public by the borrower for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The borrower will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation.</p> <p>Disclosure of environmental or social risks and adverse impacts should occur early in the Assessment process, in any event before the Project construction commences, and on an ongoing basis.</p>	<p>Regulations. The process includes consultations with local communities, nearby businesses, and a range of government sector stakeholders (state owned enterprises, national, provincial and local departments).</p> <p>The stakeholder engagement process solicits interest from potentially interested parties through the placement of site notices and newspaper advertisements as well as written and telephonic communication.</p> <p>The stakeholder engagement process is detailed in Section Error! Reference source not found. of the BAR.</p>
Principle 6: Grievance Mechanism	
<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.</p>
Principle 7: Independent Review	
<p>Overview</p> <p>For all Category A and, as appropriate, Category B Projects, an Independent Environmental and Social Consultant, not directly associated with the client, will carry out an Independent Review of the Assessment Documentation including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation in order to assist the</p>	<p>This principle is not applicable to the proposed Project.</p>

Requirement		Project Specific Applicability
	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 is not applicable to the proposed Project.

4.3 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS

4.3.1 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 nature.”¹

The generic EMPrs (for Substations and powerlines) are included in **Appendix D** and **Appendix E**.

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

5 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS

5.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

Formal responsibilities are necessary to ensure that key management measures/procedures are executed. Sendawo BESS (the Project Company) (via the appointed Engineering, Procurement, and Construction (EPC) contractor/contractor/principal contractor), will be responsible for the overall control of the project site during the pre-construction, construction, operation, decommissioning and rehabilitation phases of the project. Sendawo BESS's responsibilities (via the appointed EPC contractor/contractor/principal contractor) will include the following:

- Appointing an independent environmental control officer (ECO) for the duration of the Contract during construction and as specified by the DFFE during operation;
- Being fully familiar with the BAR, 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;
- Ensuring that any other necessary permits or licences are obtained and complied with;
- Preventing pollution and actions that will harm or may cause harm to the environment;
- 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.

Table 5-1 provides a high-level outline of the various roles and responsibilities of the project

Table 5-1 – Roles and Responsibilities

Designation	Roles and Responsibilities
DFFE	<ul style="list-style-type: none"> ■ Is the designated authority responsible for authorising this EMPr and has overall responsibility for ensuring that the Proposed Project complies with this EMPr, and any conditions listed in the Environmental Authorisation. ■ Shall also be responsible for approving any significant amendments that may be required to the EMPr. ■ May further perform random site inspections to check compliance with the EMPr.
Project Manager/Engineer/Site Engineer	<ul style="list-style-type: none"> ■ Ensure that Sendawo BESS and the relevant contractor/s are aware of all specifications, legal constraints pertaining to the project during construction, 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 Sendawo BESS and its contractor(s). ■ Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site

Designation	Roles and Responsibilities
	<p>inspections and meetings. This will be documented as part of the site meeting minutes.</p> <ul style="list-style-type: none"> 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 during construction. During the operational phase environmental monitoring reports may be as specified by the DFFE (such as annually) by the external EO or ECO. 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 Sendawo BESS (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, but not limited to:</p> <ul style="list-style-type: none"> Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the EA, environmental legislation and EMPr; Keeping a register of compliance / non-compliance with the environmental specifications; Identifying and assessing previously unforeseen, actual or potential impacts on the environment; Ensuring that a brief weekly environmental monitoring report is submitted to the ECO;

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> ■ 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 the environmental awareness training course to all staff, Contractors and Sub contractors, and monitoring the environmental awareness training for all new personnel on-site, as undertaken by the Contractor; ■ Ensuring that a copy of the EA and the latest version of the EMPr are available on site at all times, and maintaining a records-keeping system of all compliance and environmental documentation; ■ Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the DEA; ■ Assisting the Contractor in drafting environmental method statements and/or the Environmental Policy where such knowledge/expertise is lacking; ■ Undertaking daily environmental monitoring to ensure the Contractor's activities do not impact upon the receiving environment. Such monitoring shall include dust, noise and water monitoring; and ■ Maintaining the following on site: <ul style="list-style-type: none"> ● A weekly site diary. ● A non-conformance register (NCR). ● An I&AP communications register, and ● A register of audits. ● Records of all communication received in relation to compliance actions. <p>The EO will remain employed until all rehabilitation measures, as required for implementation due to construction damage, are completed and the site is handed over to the Operator.</p>
Independent ECO	<p>A suitably qualified ECO must be appointed by Sendawo BESS to monitor the project compliance with the EMPr and conditions of the environmental authorisation on a monthly basis during construction. During the operational phase environmental monitoring may be undertaken as specified by the DFFE (such as annually) by this external ECO. Proof of external ECO appointment must be maintained onsite.</p> <p>Responsibilities of the ECO include:</p> <ul style="list-style-type: none"> ■ Be fully conversant with the BAR, the conditions of environmental authorisation and the EMPr; ■ Be fully conversant with all relevant environmental legislation and ensure compliance thereof; ■ Approve method statements; ■ Remain employed until the completion of the construction activities; and ■ Report to the Project Manager, including all findings identified onsite. <p>In addition, the ECO will:</p> <ul style="list-style-type: none"> ■ Undertake independent monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation; ■ Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed; ■ Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and

Designation	Roles and Responsibilities
	<ul style="list-style-type: none"> Ensure that activities onsite comply with all relevant environmental legislation.
Contractors, Staff and Service Providers	<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. Regular on-site auditing to assess performance against the requirements of this EMPr. 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.

5.2 ENVIRONMENTAL AWARENESS PLAN

Legislation requires that Sendawo BESS (via the appointed EPC contractor/contractor/principal contractor) must develop an environmental awareness plan that describes the manner in which Sendawo BESS 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 environmental authorisation.

Sendawo BESS will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. Sendawo BESS 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 described must be used to implement and ensure environmental and social awareness and competence:

5.2.1 INTERNAL COMMUNICATION

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

- Meetings;
- Memos;

- Notice boards;
- Briefs;
- Reports;
- Monthly themes;
- Daily operational bulletins;
- Newsletter;
- E-mail;
- Telephone; and
- Induction training.

5.2.2 STANDARD MEETINGS

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

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

5.2.3 ENVIRONMENTAL AND SOCIAL TALK TOPICS

Monthly environmental and social talk topics must be compiled and distributed/shared to relevant personnel and must be displayed on appropriate notice boards or shared by whatever means established on site. As a minimum, the following topics must be considered during the course of the construction phase:

- 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
- General Awareness (e.g. World Environment Day, National Arbour Day).

5.2.4 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; or
- Formal meetings.

5.2.5 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 EMP 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.

5.3 MONITORING

The EPC contractor EO will monitor the day-to-day site activities on an ongoing basis and will produce weekly monitoring reports during construction. The independent, 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, Sendawo BESS (via the appointed EPC contractor/contractor/principal contractor) will establish, implement and maintain a procedure to monitor and measure, on a regular basis, the key characteristics of the operations that may have a significant environmental impact. The procedure shall include the documenting of information to monitor performance, applicable operational controls and conformity with the operation's environmental objectives and targets.

Sendawo BESS 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 6 and 7**) will be subject to required internal day-to-day monitoring and external compliance monitoring. Where required, any specific additional monitoring has been outlined in the EMPr (**Section 76**).

5.4 NON-CONFORMANCE AND CORRECTIVE ACTION

The auditing of the construction and operational activities may identify non-conformances to the EMPr and conditions of the EA. 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.

5.4.1 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 BAR and EMPr for the purpose of assessing and/or monitoring compliance with the EMPr and conditions of the environmental authorisation, at all reasonable times.

5.4.2 DUTY OF CARE

Under Section 28 of the NEMA, 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. Failure to comply with the above conditions is a breach of the duty of care. If such harm is unavoidable, steps must be taken to minimise and rectify such pollution or degradation of the environment.

5.5 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 EA, 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.

5.6 PUBLIC COMPLAINTS

The Contractor shall keep a Complaints Register on site to allow the general public to document any comments on or complaints regarding the activities of the site.

The Complaints Register must:

- Have numbered pages – any missing pages must be accounted for by the Contractor;
- Be tabled during monthly site meetings;
- Be made available to the SE/Contract Manager, the ECO, the Project Company, and/or any authority at any time if requested; and
- Include a section for the documentation of the action taken to address the complaint.

All complaints must be investigated, responded to, and recorded in the Complaints Register within 28 calendar days.

6 GENERIC ENVIRONMENTAL CONTROLS

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

These control measures are defined within Part B: Section 1 of the pre-approved generic EMPs (attached as **Appendix D** and **Appendix E**). The format of a general environmental control is shown below, see **Table 6-1**. 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 6-1 – Format of a general environmental control illustrating aspects which are predefined versus those which still need to be completed by the contractor

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

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements must be prepared and agreed to by the holder of the EA, prior to commencement, and 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 6-2 - 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 D (Part B: Section 1)	Refer to Generic EMPr for the development and expansion of substation infrastructure, attached as Appendix E (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
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

Activity	Refer to Generic EMPr for the development of overhead transmission and distribution infrastructure, attached as Appendix D (Part B: Section 1)	Refer to Generic EMPr for the development and expansion of substation infrastructure, attached as Appendix E (Part B: Section 1)
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	
Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)	5.28	5.28
Stringing (and cabling)	5.28	5.30
Testing and Commissioning (all equipment testing, earthing system, system integration)	5.31	5.31
Socio-economic	5.29	5.32
Temporary closure of site	5.30	5.33
Dismantling of old equipment	5.34	5.34
Landscaping and rehabilitation	5.31	5.35

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

7 SITE SPECIFIC ENVIRONMENTAL CONTROLS

The EMPr contains guidelines, operating procedures, rehabilitation and pollution control requirements which will be binding to the onsite personnel working for, or on behalf of the Proposed Project. 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 Proposed 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 **Table 7-1** below.

Table 7-1 – 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.
Impact Management Outcome	The desired outcomes from effectively minimising negative impacts and/or enhancing positive impacts.
Impact Management Actions/Measures	Indicates the actions required to prevent and /or minimise the potential impacts on the environment that are associated with the project.
Indicator and Compliance Management	Items that will assist with determining compliance against management actions.
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.
Priority Timeframe	Indicates when the actions for the specific aspect must be implemented and/or monitored.

Table 7-2 – Contractor laydown area and site access: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
CONTRACTOR LAYDOWN AREA AND SITE ACCESS			
Impact Management Outcome: <ul style="list-style-type: none"> 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. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Close-out on incidents. Monitoring and audit reports. Inductions training and register. Environmental awareness programme/toolbox talks. 			
Project Initiation of Construction Activities	Appoint an ECO to manage and verify compliance with the EA and EMP.	<ul style="list-style-type: none"> Project Manager EO Contractor (Site Manager) 	<ul style="list-style-type: none"> Construction Decommissioning
	The Project area must be demarcated to ensure that only the demarcated areas are impacted upon. The no-go area identified must be demarcated before the construction or decommissioning commences. This includes any high sensitivity areas as indicated in Figure 3-1 and Figure 3-2 . Label these areas as environmentally sensitive areas, keep out.		
	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area to inform importance of these areas and their conservation. A signed register of attendance must be kept for proof.		<ul style="list-style-type: none"> Construction Operation
	Site clearing must be limited to the footprint of the infrastructure requirements.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Laydown and construction preparation activities (such as cement mixing, temporary toilets, etc.) must be limited to demarcated areas and should take up the smallest footprint possible.		<ul style="list-style-type: none"> Construction
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	Firefighting equipment must be securely placed and inspected monthly.		
	Any materials may not be stored for extended periods of time and must be removed from the project area once the construction phase has been concluded. No permanent construction phase structures should be permitted. Construction buildings should preferably be prefabricated or constructed of re-usable/recyclable materials.		

Table 7-3 – Vehicle, Equipment and Machinery Management: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Close-out on incidents. Monitoring and audit reports. Transport route delineation. Daily equipment, machinery and vehicle checklists. Incident classification and reporting procedure. 			
Operation of Equipment, Machinery and Vehicles	Ensure that the equipment, machinery and vehicles are adequately maintained so as to: <ul style="list-style-type: none"> Reduce the potential for spillages of oil, diesel, fuel or hydraulic fluid. Ensure road-worthiness. Reduce emissions. Evidence of such maintenance must be recorded and maintained onsite for verification.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Operation Decommissioning
	The movement of vehicles into and out of the site must be managed to ensure the impact on public areas is minimised, such as ensuring that abnormal loads are moved outside of peak traffic hours, and reasonable measures are taken to ensure that public and staff safety is managed adequately		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All construction and maintenance motor vehicle operators should undergo an environmental induction that includes instruction on the need to comply with speed limits, to respect all forms of wildlife. Speed limits must be enforced to ensure that road killings and erosion is limited.		
	No storage of vehicles or equipment must be allowed outside of the designated laydown areas.		
	No servicing of plant and equipment should take place on site unless necessary. Drip trays must be utilized if emergency servicing/repairs are required.		

Table 7-4 – Fuel and Chemical Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
FUEL AND CHEMICAL MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure the correct storage, handling and disposal of fuels and chemicals in order to prevent impacts to the surrounding environment. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Maintenance records. Safe disposal certificates (if applicable) Material safety data sheets (MSDS). Health, safety, environmental and community incident and complaints management system register. Chemicals management procedure (to be developed). Monitoring and audit reports. Training records. 			
Fuel and Chemical Management	Provide secure storage for fuel, oil, chemicals and other hazardous materials. Securely fence and lock the storage areas to accommodate all hazardous substances such as fuel, oils and chemicals. The storage area must be roofed and the floor must be an impermeable surface and suitably bunded as per the requirements outlined in SANS 10089-1 (2008). If storage capacity triggers licencing, those must be acquired.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Operation
	Indicate the location of the fuel and chemical storage area on the layout plans.		
	Label all liquids (chemicals and hydrocarbons) stored onsite for easy identification. MSDS for onsite chemicals, hydrocarbon materials and hazardous substances must be readily available. MSDS must include mitigation measures to ameliorate potential environmental impacts which may result from a spill, incorporating health and safety mitigation measures.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	A spill management plan must be in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use.		
	No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers for safe disposal.		
	In cases where a surface leak occurs during loading and off-loading activities, the spill material will be cleaned using a spill kit.		
	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair		
	Ensure a specific transport, handling and filling procedure for the VRFB electrolyte solution during the commissioning and maintenance of the electrocyte stacks and storage tanks must be in place. Spill management, specifically for the VRFB electrocyte solution must form part of the facilities' Spill Management Plan.	<ul style="list-style-type: none"> EO Contractor Operator 	<ul style="list-style-type: none"> Construction Operation
	Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them from leaking and entering the environment.		
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.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Operation
	Strategically place the correct types of fire extinguishers onsite and near the hazardous material store. Train key personnel on basic firefighting skills		
	Frequently inspect and maintain containment facilities and retain records onsite.		

Table 7-5 – Waste Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
WASTE MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Waste Management Plan (WMP). Relevant SANS Codes of Practice. Waste manifests and safety disposal certificates (all waste streams). Emergency preparedness and response procedure. Incident classification and reporting management procedure (to be developed). Health, safety, environmental and community incident and complaints management system register. Monitoring and audit reports. 			
General Waste Management	General waste generated as a result of construction and operational activities must be managed in accordance with a WMP (to be developed).	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Operation Decommissioning
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the WMP.		
	Prohibit littering and burning of waste onsite.		
	Place an adequate number of labelled or colour coded general waste bins around the laydown area and at the construction sites during construction activities in		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	order to minimise littering. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		
	Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site.		
	Refuse bins shall be emptied daily (or as required) and secured.		
	Temporary storage of domestic waste shall be in covered waste skips.		
	Maximum domestic waste storage period shall be 10 days.		
	Retain records such as waybills and waste manifests associated with waste removal, transportation and disposal (safe disposal certificates).		
	Prohibit the mixing of general waste with hazardous waste. Should general waste be mixed with hazardous waste, it will be considered hazardous waste.		
	There should be waste segregation (e.g. electronic equipment, chemicals, oil contaminated rags, paper, plastic) and management on the site.		
Hazardous Waste Management	Recover, recycle and reuse waste of general waste as far as possible.	<ul style="list-style-type: none"> ■ ECO ■ EO ■ Contractor 	<ul style="list-style-type: none"> ■ Construction ■ Operation ■ Decommissioning
	Hazardous waste generated as a result of construction, operational and decommissioning activities must be managed in accordance with a WMP.		
	The WMP must include a procedure for handling spillages.		
	Strict use and management of all hazardous materials used on site.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Strict management of potential sources of pollution (e.g. litter, hydrocarbons from vehicles & machinery, cement during construction, etc.) within demarcated / bunded areas		
	Train and inform all onsite personnel regarding hazardous waste minimisation, management and disposal as per the WMP.		
	A hazard waste storage area must be designated and appropriately demarcated. These areas must be bunded and lined with a sealant to prevent infiltration of hydrocarbons and chemicals. A weather proof sign must be displayed indicating the waste to be stored. A roof should be installed above the bund to prevent ponding from rainwater, alternatively metal skips with lids can be utilised.		
	Ensure that all hazardous wastes temporarily stored on site are stored in a covered skip and are placed on a hard standing		
	Clean areas where hazardous waste spills have occurred and dispose of the hazardous material appropriately. Key personnel must be trained on handling spillages.		
	Retain records of appropriate safety disposal certificates associated with hazardous waste removal, transportation and disposal.		
	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 Waste Classification and Management Regulations – GNR 634) is prepared and maintained for the generation, transportation and disposal of waste.		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All spills should be reported to the authorities as per the emergency preparedness and response frequencies / specifications.		

Table 7-6 – Health and Safety: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
HEALTH AND SAFETY			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure communication with members of the public to promote safety awareness. ■ To prevent public access to construction sites and storage areas. ■ To ensure safety for all onsite personnel. ■ To ensure the health and safety of all site personnel, landowners and communities that may emanate from the lithium-ion or VRF battery technology 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ 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). ■ Competency certification. ■ Health and safety file for Developer, EPC and contractors. ■ SANS certification. ■ Compliance with OSHACT, Act 85 of 1993. ■ Legal Register. ■ Legal Appointments as per OSHACT. 			
Health and Safety	The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations.	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ EO 	<ul style="list-style-type: none"> ■ Construction ■ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of the conditions contained herein.		
	Development and implementation of an occupational health and safety plan and Safety Health Environment Risk & Quality (SHERQ) policy	<ul style="list-style-type: none"> Contractor/Operator Site Manager 	<ul style="list-style-type: none"> Construction Operation
	The appointed contractor will be responsible for the development of a comprehensive health and safety protocol which must be adhered to.	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Construction
	Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.		
	Provide and wear appropriate PPE onsite. Ensure specific PPE is utilised depending on the type of materials being handled and activities being conducted.	<ul style="list-style-type: none"> Contractor/Operator Site Manager 	<ul style="list-style-type: none"> Construction Operation
	Compile detailed Risk Assessments for all aspects of construction and operational activities prior to work.		
	Ensure all legal OSHACT appointments are in place.		
	Ensure all contractor's safety files are in place and up to date prior to commencement of their work.		
	Health Risk Assessment to determine if equipment noise exceeds 85dB at workstation and 61dB at boundary of the site. Employees to be provided with hearing protection if working near equipment that exceeds the noise limits.		
	All OSHACT and best practice procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction commences.	<ul style="list-style-type: none"> Contractor/Operator Site Manager 	<ul style="list-style-type: none"> Construction Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	All necessary good hygiene practices to be in place, e.g. provision of toilets, eating areas, infectious disease controls.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others.		
	Prior to construction determine the dangerous species in the area and what responses are needed to bites/exposure/attacks.		
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Outside work must be stopped during thunderstorms. Lighting conductors may be required for the final installation, to be confirmed during design phase.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	The procurement, construction and operation of the facility must adhere to the Health and Safety requirements, battery safety specifications, handling, storage and transportation requirements, understanding and incorporation of hazardous Risk Assessments associated with the different battery technologies, stipulated in the Qualitative Risk Assessment (QRA) compiled by ISHEcon, 2023.	<ul style="list-style-type: none"> Site Manager Contractor Operator 	<ul style="list-style-type: none"> Construction Operation
	Ensure that risks and mitigations identified in the QRA compiled by iSHEcon (2023) form part of the sites Health and Safety documentation from the pre-planning stages to the end of life of the BESS Facility.		
Facility emergencies	Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as: <ul style="list-style-type: none"> Appointment of emergency controller, What gases would be released in a fire and are there inhalation hazards, 	<ul style="list-style-type: none"> Operator 	<ul style="list-style-type: none"> Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> What initial fire extinguishing medium should be used, Whether there are any secondary gases or residues from use of extinguishers, If water is appropriate, determine if the system needs outside connections to sprinklers inside the container, First responders need to know what media to use, especially if water totally unsuitable and if there are no connection points for water etc., Whether the container be left unopened or opened, PPE to be specified including possible exposure to chemicals and fumes as well as radiate heat, Suitable safe making and disposal plan for after the event i.e. how do responders deal with partially charged damage units, contaminated surfaces (e.g., HF residues), Emergency isolation systems for electricity, Emergency isolation and containment systems for electrolyte, Provision of emergency facilities for staff at the main office building, Provision of first aid facilities, First responder contact numbers Anti-venom, snake bite treatment Dr's and facilities 		
	A detailed risk assessment of all normal operating and maintenance activities on site to be compiled, and form the basis of operating instructions, prior to commencing commissioning.	<ul style="list-style-type: none"> Operator 	<ul style="list-style-type: none"> Operation
	Consider suitably located Emergency stop buttons for the facility and the other equipment on site.	<ul style="list-style-type: none"> Site Manager Contractor Operator EO 	<ul style="list-style-type: none"> Construction Operation
	Material Safety Data Sheets (MSDSs) must be made available for all chemicals and substances on site		
Fire risk	Full Process Safety Management system with all elements to be implemented to highest international best practice levels.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Construction Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Suitable fire-fighting equipment on site near source of fuel, e.g. diesel tank, generators, mess, workshops etc	<ul style="list-style-type: none"> Operator EO 	
	Ensure appropriate automated gas detection and fire systems are in place, suitable for controlling and extinguishing fires associated with the installed BESS technology.		
	Safety integrity level rating of equipment (failure probability) with suitable redundancy if required.		
	Ensure regular testing of emergency alarm systems and fire systems are undertaken.		
	Emergency Response plan in compliance with SANS 1514 to be compiled, e.g. plan from transport and construction phase to be extended to operational phase to include the hazards of the systems containing large quantities of highly hazardous chemicals.		
	Grass cutting and fire breaks around the BESS installations must be maintained to prevent veld fires. No combustible materials to be stored in or near the batteries or electrical infrastructure. Separation of site diesel tank, transformers from BESS and vice versa.		
Public Safety	Restrict public access by employing full time security for the site.	<ul style="list-style-type: none"> Site Manager EO 	<ul style="list-style-type: none"> Construction Operation
BESS	Except during shipping, ideally the units should not be stored any closer to each other than they would be in the final installation so that propagation is prevented, i.e. laydown area needs to be considered.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Handling protocols to be provided by battery supplier.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Once an import route has been chosen, e.g., Richards Bay or Durban and along N2/N3/N11 etc, then the appointed transport company should ensure key emergency services on route could be given awareness training in battery fire/accident response. Emergency response planning and training referred to above may be important for key locations such as the mountain passes / tunnels.		
	The company in charge of the containers at each stage in the transport process needs to be very clear so that responsibility for the integrity of the load and protection of the persons involved in transfer and coordination of emergency response on-route. E.g., if purchased from Tesla where does hand over occur to the South African contractor / owner, at the factory door in USA, at the port in RSA, at the site fence. For example, who will be accountable if there's thermal runaway event on a truck with a container that stops in a small town for driver refreshments		
	Ensure VRFB IBCs are stored within bunded areas during storage and filling of the battery stacks and electrolyte tanks. Ensure that the loading and offloading of VRFB IBC's are conducted within bunded areas.		
	Ensure the entire footprint housing the VRFB units/Facility are bunded (with sealant, polished concrete, etc. to prevent degradation of the concrete or infiltration through cracks and holes) to contain 110% of all electrolytes within the facility.		
	Suitably competent transport companies should be appointed for the transportation of dangerous goods, complying with the relevant regulations stipulated in the National Road Traffic Act and SANS 10228/29.	<ul style="list-style-type: none"> Site Manager Contractor Operator 	<ul style="list-style-type: none"> Construction Operation
	Ensure compliance with Eskom Operating Regulations for high voltage systems including access control, permit to work, safe work procedures, live work, abnormal and emergency situations, keeping records.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Ensure that a permit to work system is in place and understood by all site personnel.		
	Appropriate Health and Safety signage must be placed as per the OSHACT, indicating apparent dangers in various areas.		
	Ensure all site personnel are adequately trained on the hazards of the various BESS infrastructure and technology.		
	Implement fencing around electrical infrastructure to SANS standards and Eskom guidelines.		
	Ensure that emergency isolation systems are in place electrical components and containment systems for electrolytes.		
	End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery units from day one.	■ Operator	■ Operation
	Operating manuals to be provided including start-up, shut-down, steady state, monitoring requirements.		
	Maintenance manuals with make safe, decontamination and repair procedures.		
	Proposed maintenance schedules daily, weekly, monthly, annual etc.		
	Provided portable equipment for calibration and for testing/verification of defective equipment.		
	There needs to be careful thought given to procedures to be adopted before entering into the BESS or a container under normal circumstances (confined space) but particularly after a BMS shut down where there may be flammable or toxic gases present, a fire etc.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Conduct all relevant hygiene surveys in line with the requirements of the OSHACT and SANS codes.		
	Ensure that smoke or gas detector systems that are not part of the original battery container package, need to be linked to the main control panel for the entire system so that issues can be detected and responded to rapidly		
Decommissioning of facility and battery units	Implement End of Life shutdown procedure including a risk assessment of the specific activities involved.	<ul style="list-style-type: none"> ■ Operator ■ EO 	<ul style="list-style-type: none"> ■ Decommissioning
	Investigate End of Life plan for solid state batteries and decommissioned containers for reuse, recovery and reconditioning.		
	Re-purpose the equipment with associated environmental impact considered.		
	Disposal according to local regulations and other international directives.		
	Operator should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.		

Table 7-7 – Water Management: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
WATER MANAGEMENT			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To implement measures to prevent the contamination on surface and groundwater resources. ■ To prevent erosion. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Induction training and records. ■ WMP (to be developed). ■ Incident classification and reporting management procedure (to be developed). ■ Environmental awareness programme/toolbox talks. ■ SWMP (to be developed). 			
Surface Water Management	A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems	<ul style="list-style-type: none"> ■ Site Manager ■ EO 	<ul style="list-style-type: none"> ■ Pre-Construction ■ Construction
	The stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks.		
	Install properly sized culverts with erosion protection measures at the present road / track crossings where already installed by local landowners / public works entities.		
	To appropriately manage storm water, the SWMP needs to be implemented.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	It is recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset i.e. during the detailed design phase prior to construction, to ensure a net benefit to the environment within all areas that will remain undisturbed.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Pre- construction Construction Operation
	The site must be prepared/managed/contoured as according to the SWMP (to be developed) to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site.		
	Containment of all contaminated water by means of careful run-off management on site.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out for the project and strictly enforced.		
	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.		
	Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage. All spillage incidents must be reported to the responsible site officer as soon as they occur.		
Groundwater Management	Oils, greases, diesel and other chemicals will be stored in the prescribed manner and within bunded areas to prevent groundwater contamination.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment		
	Appropriate ablution facilities should be provided for construction workers during construction and on-site staff during the operation of the facility. These must be situated outside of any delineated aquatic areas.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Potable Water Management	Onsite staff must be made aware and encouraged to use water sparingly such that there is no water wastage.	<ul style="list-style-type: none"> Contractor/Operator EO 	<ul style="list-style-type: none"> Construction Operation
	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.		

Table 7-8 – Air quality: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
AIR QUALITY			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that impacts to air quality of the surrounding environment are minimised. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> 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. 			
Dust Management	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.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Operation
	Activities with high dust-causing potential, such as grading and moving of soil, must not be carried out in sensitive areas during adverse wind conditions.		<ul style="list-style-type: none"> Construction
	All stockpiles (if any) must be restricted to designated areas and may not exceed a height of two (2) metres;		
	Earth-moving works have the potential to generate large amounts of dust. Pre-planning of earth-moving works can reduce dust emissions by limiting the time the site is exposed. Options for dust control can include the following: <ul style="list-style-type: none"> Plan earth-moving works so that they are completed just prior to the time they are needed 		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	<ul style="list-style-type: none"> 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 		
	Cover trucks hauling any loose material that could produce dust when travelling. Minimise transfer points.		
	Re-vegetate disturbed areas as soon as possible to prevent excessive dust from occurring.		
	Once construction is complete, initiate rehabilitation (e.g. re-vegetation) procedures to reduce wind speed across exposed surfaces.		
	Dampen exposed soil to suppress dust if required. Use watering sprays on materials to be loaded and during loading. No non-environmentally friendly dust suppressants may be used.		
	Where possible, minimise speed limits, vehicle weights and the number of vehicles using unpaved roads.		

Table 7-9 – Noise: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
NOISE			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that noise impacts to the surrounding environment are minimal or mitigated. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> 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. 			
Noise	Fit equipment, machinery and vehicles generating excessive noise with appropriate noise abatement measures and undergo regular maintenance to ensure optimum efficiency during operation	<ul style="list-style-type: none"> EO Contractor/Operator 	<ul style="list-style-type: none"> Construction Operation
	Provide a complaints register to report any excessive noise incidents. Manage all complaints as per the Incident Classification and Reporting Management Procedure		
	Regular maintenance of equipment to reduce the generation of additional unwanted noise		
	Avoid noisy activities at night-time and outside of normal weekend working hours where possible.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Due to rural nature of site, construction is unlikely to continue at after sunset, however if required to work afterhours, notices should be put up informing the public accordingly.		
	Employees / contractors are to be provided with appropriate hearing protection when undertaking noisy activities.	<ul style="list-style-type: none"> EO Contractor/Operator 	<ul style="list-style-type: none"> Construction Operation
	Employees to be provided with hearing protection if working near equipment that exceeds the noise limits.	<ul style="list-style-type: none"> EO Contractor/Operator 	<ul style="list-style-type: none"> Construction Operation

Table 7-10 – Soil, Land Use and Agriculture: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
SOIL, LAND USE AND AGRICULTURE			
Impact Management Outcome: <ul style="list-style-type: none"> To prevent any disturbance, erosion or contamination of soil resources. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. WMP (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. Stormwater Management Plan (SWMP) (to be developed). 			
Soil and Land Management	Land clearance must only be undertaken immediately prior to construction activities and only within the project footprint. Unnecessary land clearance must be avoided.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Access roads must have gradients or surface treatment to limit erosion, and road drainage systems must be accounted for.		
	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.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction
Erosion Management	A system of stormwater management, which will prevent erosion, will be an inherent part of the engineering on site.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Topsoil	Any occurrences of erosion must be attended to immediately and the integrity of the erosion control system at that point must be amended to prevent further erosion from occurring there	<ul style="list-style-type: none"> Operator/Developer EO 	
	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation or stored topsoil to prevent erosion from high winds and rainfall events.		
	Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile for use in rehabilitation.		
	When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface.		
	Topsoil should only be stripped in areas that are excavated.		
	Across the majority of the site, including construction laydown areas, it will be much more effective for rehabilitation, to retain the topsoil in place.		
	If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface.		
	It will be advantageous to have topsoil and vegetation cover around the disturbed areas during the operational phase to control dust and erosion.		<ul style="list-style-type: none"> Operation

Table 7-11 – Terrestrial Biodiversity: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
TERRESTRIAL BIODIVERSITY			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent the unnecessary destruction of, and fragmentation of the biodiversity of the area. No excess habitat loss within sensitive areas. Revegetation of cleared areas. Alien vegetation clearing & control. Reduce erosion. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Monitoring and audit reports. Alien Invasive Management Plan. 			
No-go areas	Prior to commencement of construction, demarcate sensitive or no-go area with hard barricading.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
Awareness Training	All personnel and contractors to undergo Environmental Awareness Training. A signed register of attendance must be kept for proof. Discussions are required on sensitive environmental receptors within the project area to inform contractors and site staff on the importance, biology, habitat requirements and management requirements of the Environmental Authorisation.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction Operation
Rehabilitation	Prior to commencement of construction, compile a Rehabilitation Plan including monitoring specifications, to be implemented from the onset of the project	<ul style="list-style-type: none"> Contractor EO 	<ul style="list-style-type: none"> Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Surface scarification and active rehabilitation of temporary use areas after construction with indigenous species.		
Invasive Alien Species Management	Prior to commencement of construction, compile and implement an Invasive Alien Management Plan, which highlights control priorities and areas and provides a programme for long-term control, including monitoring specifications.	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ EO ■ Operator 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	All alien vegetation occurring within construction and operational areas must be removed and monitored for re-growth.		
	A pest control plan must be put in place and implemented; it is imperative that poisons not be used due to the presence of indigenous fauna.		
	Walked Surveys of the project perimeter, access roads and other areas adjacent to hard infrastructure to monitor for alien vegetation and re-growth.		
Erosion Management	Remedial action to reduce erosion including revegetation where necessary.	<ul style="list-style-type: none"> ■ Contractor ■ EO 	<ul style="list-style-type: none"> ■ Construction
BESS	The BESS must be placed in a structure with non reflective surfaces after being insulated	<ul style="list-style-type: none"> ■ Developer 	<ul style="list-style-type: none"> ■ Operations

Table 7-12 – Plant Species: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
PLANT SPECIES			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To minimise impact to the vegetation community ■ To minimise impact to plant Species Conservation Concern (SCC) 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Induction training and records. ■ Environmental awareness programme/toolbox talks. ■ Monitoring and audit reports. 			
Vegetation Management	Develop and implement alien vegetation, soil erosion, revegetation and rehabilitation management plans based on the site attributes and environmental constraints. This can be developed post-authorisation once the project is certain to go ahead.	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ Developer ■ EO 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	The areas to be developed must be specifically demarcated to prevent movement into surrounding environments.		
	Preconstruction walk-through of the final development footprint to check the final footprint areas and access road routes to verify that sensitive habitats are being avoided as much as possible and also provide certainty as to the zero expected impact on plant SCC.		
	Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	A hydrocarbon spill management plan must be put in place to ensure that should there be any chemical spill out or over that it does not run into the surrounding areas. The Contractor shall be in possession of an emergency spill kit that must always be complete and available on site. Drip trays or any form of oil absorbent material must be placed underneath vehicles/machinery and equipment when not in use. No servicing of equipment on site unless necessary. All contaminated soil / yard stone shall be treated in situ or removed and be placed in containers. Appropriately contain any generator diesel storage tanks, machinery spills (e.g., accidental spills of hydrocarbons oils, diesel etc.) in such a way as to prevent them leaking and entering the environment.		
	Leaking equipment and vehicles must be repaired immediately or be removed from project area to facilitate repair.		
	A Fire Management Plan needs to be compiled to restrict the impact of fire. This is especially concerning stochastic fire events such as discarding of lit cigarette butts and/or glowing embers from cooking fires. The fire management plan must ensure that natural fire regimes of the surrounding vegetation is not affected.		
	Monitoring of vegetation clearing during construction by the EO to ensure that any protected plant within the development footprint area are translocated to safety where necessary.		
Permitting	Ensure that all preconstruction permits for the relocation/removal of plant and tress species have been obtained, and surveys and walk-throughs have been conducted prior to the commencement of construction activity.		
Rehabilitation	Annual rehabilitation activities in line with the Generic EMPr requirements (for example, any erosion problems observed on-site should be rectified as soon as possible using appropriate revegetation and erosion control works).	<ul style="list-style-type: none"> EO Operator 	<ul style="list-style-type: none"> Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Areas that are denuded during construction need to be re-vegetated with indigenous vegetation according to a habitat rehabilitation plan, to prevent erosion during flood and wind events and to promote the regeneration of functional habitat. This will also reduce the likelihood of encroachment by invasive alien plant species. All grazing mammals must be kept out of the areas that have recently been re-planted. This must be undertaken on a quarterly basis for up to two (2) years after the closure.		
Erosion Monitoring	An Erosion Management Plan must be developed and implemented	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ Developer ■ EO ■ Operator 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	Appropriate drainage must be constructed along the access roads in order to slow the flow of water run-off from the road surface.		
	Areas that are denuded during construction that do not have infrastructure during the operational phase must be re-vegetated with indigenous vegetation to prevent erosion.		
	All areas affected by the development must be re-vegetated with indigenous vegetation to prevent erosion on an extensive temporal scale		

Table 7-13 – Animal Species: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
ANIMAL SPECIES			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent the loss of the faunal community 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Adhere to sensitivity map criteria Monitoring and audit reports. 			
Fauna Management	All vehicles should adhere to a low speed limit on site. Heavy vehicles should be restricted to 30km/h and light vehicles to 40km/h.	<ul style="list-style-type: none"> Contractor EO ECO 	<ul style="list-style-type: none"> Construction
	All laydown areas, construction sites etc with waste disposal bins, should be provided with lockable bins that are tamper proof by fauna.		
	Several Search and Rescue operations must occur in the proposed infrastructure footprint to ensure that species are relocated to proximal natural areas. Such search and rescue should be conducted by relevant experts with experience in search and rescue of the faunal groups concerned.		
	Noise must be kept to an absolute minimum during the evenings and at night to minimize all possible disturbances to amphibian species and nocturnal mammals.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Limiting access to the site and ensuring that construction staff and machinery remain within the demarcated construction areas during the construction phase. Environmental induction for all staff and contractors on-site.		
	The duration of the construction should be minimized to as short term as possible, to reduce the period of disturbance on fauna.		
	No excavated holes or trenches should be left open for extended periods as fauna may fall in become trapped.		
	Trapping, killing or poisoning of any fauna must be prohibited and communicated in toolbox talks, inductions and all relevant project documentation. Signs must be put up to enforce this and must be made a punishable offence.	<ul style="list-style-type: none"> Site Manager Developer Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Outside lighting should be designed and limited to minimize impacts on fauna. Fluorescent and mercury vapor lighting should be avoided, and sodium vapor (yellow) lights should be used wherever possible.		
	A log should be kept detailing all fauna-related incidences or mortalities that occur on site, including roadkill, electrocutions etc. during construction and operation. These should be reviewed annually and used to inform operational management and mitigation measures.	<ul style="list-style-type: none"> Contractor EO 	<ul style="list-style-type: none"> Construction Operation
	Once the development layout has been confirmed, the footprint area must be fenced off appropriately in segments pre-construction to allow animals to move or be moved out of these areas before breaking ground activities occur. Construction activities must take place systemically and the perimeter fence should not be completed (i.e., leaving sections unfenced to allow fauna to escape) until systematic clearing is completed.	<ul style="list-style-type: none"> Contractor EO 	<ul style="list-style-type: none"> Construction
Erosion Monitoring	There should be on-going maintenance and monitoring of the perimeter fences to ensure that there is no sedimentation or vegetation build-up. Should some fauna	<ul style="list-style-type: none"> EO Operator 	<ul style="list-style-type: none"> Operation



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	burrow under the fence, such burrow access-points can be allowed to remain provided that the fauna accessing the facility are not causing problems inside the facility or would be endangered themselves.		

Table 7-14 – Aquatic: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
AQUATIC BIODIVERSITY			
Impact Management Outcome: <ul style="list-style-type: none"> Prevent the unnecessary destruction of, and fragmentation of the biodiversity of the area. Revegetation of cleared areas. Alien vegetation clearing & control. Reduce erosion. Reduce sedimentation Prevent loss of aquatic ephemeral systems 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Monitoring and audit reports. Alien Invasive Management Plan. 			
Vegetation	Limit vegetation removal to the infrastructure footprint areas only. Where removed or damaged, vegetation areas (riparian or aquatic-related) should be revegetated as soon as possible.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	The construction servitude should be kept to a minimum width to limit vegetation destruction, and must be clearly demarcated in the field. Ideally the construction disturbance footprint should be kept to an area no wider than 10 m. No activities should be allowed outside the construction servitude.		
Water Resource Management	Bare land surfaces downstream of construction activities must be vegetated to limit erosion from the expected increase in surface runoff from infrastructure.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Should option 2 be selected, the OHPL pylons should be located outside of identified wetland areas and their immediate catchment – these areas to be demarcated in the field so that contractors may avoid them.	<ul style="list-style-type: none"> Site Manager Contractor EO Operator 	<ul style="list-style-type: none"> Construction Operation
	The formation of drainage paths and erosive processes should be avoided or limited.		
	Peak rainfall periods (December to February) should be avoided during construction to possibly avoid increased surface runoff in an attempt to limit erosion and the entering of external material (i.e. contaminants) into associated aquatic systems.		
	Water used at construction sites should be utilised in such a manner that it is kept on site and not allowed to run freely into watercourses.		
	Concrete and cement should be used in an environmentally safe manner with correct storage, as per each substances' specific storage descriptions.		
	No material may be dumped or stockpiled within the associated drainage lines in the vicinity of the proposed project;		
	The ephemeral drainage line should be avoided as far as practically possible during the construction and operation of the project.		
	Vehicles should remain on the existing dirt track with no new access roads/tracks constructed within the delineated drainage line.		
	No vegetation should be removed from the ephemeral drainage line.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	The outer areas of the cleared pylons and lay-down area, within 100 m of the ephemeral drainage line should make use of sedimentation preventative		



Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	measures such as the use of silt nets and/or sandbags to prevent sedimentation entering the watercourse via surface water run-off during construction activities.		
	Any soil stockpiles within 100 m of the watercourse should be bunded using an appropriate structure (silt nets, sandbags, etc.) and covered with a suitable material.		
	Bunded, impervious areas must be designated by an Environmental Control Officer for temporary toilets, vehicle parking/servicing areas and for pouring and mixing of concrete/cement, paint, and chemicals.		

Table 7-15 – Avifauna: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
AVIFAUNA			
Impact Management Outcome: <ul style="list-style-type: none"> To minimise impacts to avifauna and their habitat 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Induction training and records. Incident classification and reporting management procedure (to be developed). Environmental awareness programme/toolbox talks. Monitoring and audit reports. 			
Avifauna Management	All areas to be developed must be walked through prior to any activity to ensure no nests or avifauna species are found in the area. Should any Species of Conservation Concern be found and not move out of the area, or their nest be found in the area a suitably qualified specialist must be consulted to advise on the correct actions to be taken.	<ul style="list-style-type: none"> Site Manager Developer Contractor EO 	<ul style="list-style-type: none"> Construction
	General good environmental practice should be implemented during construction in terms of control of vehicles, staff, minimising the impact on the receiving environment as much as possible.		
	Anti-perching devices must be installed on overhead powerline pylons.		
	Overhead cables/lines must be fitted with industry standard bird flight diverters in order to make the lines as visible as possible to collision-susceptible species. Bird diverters such as flapping devices (dynamic device) and thickened wire spirals (static device) that increase the visibility of the lines should be fitted 5 m apart.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The Inotec BFD88 bird diverter is highly recommended due to its visibility under low light conditions when most species move from roosting to feeding sites;		
	The design of the proposed grid lines must be of a type or similar structure as endorsed by the Eskom-EWT Strategic Partnership on Birds and Energy, considering the mitigation guidelines recommended by Birdlife South Africa		
	Infrastructure must be consolidated where possible in order to minimise the amount of ground and air space used.		
	All the parts of the infrastructure must be nest proofed and anti-perch devices placed on areas that can lead to electrocution		
	Once operational, if facility staff identify any bird nesting which interferes with operations this should be reported on fully through the sites incident reporting system. A suitably qualified ornithologist should be consulted for any case specific reactive mitigation measures. All nest management measures should only be undertaken in compliance with national and provincial environmental legislation in this regard.	<ul style="list-style-type: none"> Operator EO Ornithologist 	<ul style="list-style-type: none"> Operation

Table 7-16 – Archaeological and Cultural Heritage: EMP Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
ARCHAEOLOGICAL AND CULTURAL HERITAGE			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that sites/artefacts of heritage value are identified and protected. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Incident classification and reporting management procedure (to be developed). Monitoring and audit reports. 			
No-Go Area	A no development buffer of 50m must be implemented around sites 45521 and 45529 (found along the OHPL alternative 1 and alternative 2 development routes) and the area identified as archaeologically sensitive is excluded from the development layout	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
Chance Finds	Should any buried archaeological resources or human remains or burials be uncovered during the course of development activities, work must cease in the vicinity of these sites. The South African Heritage Resources Agency (SAHRA) must be contacted immediately in order to determine an appropriate way forward, the finds must be reported and the Chance Find Protocol must be implemented (Section 8.14.1).	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
General	Keep the construction duration as short as possible.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Ensure that the smallest area possible is cleared for construction.		
	Ensure that any areas not required during operation are rehabilitated.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Ensure that all maintenance activities remain within the approved footprint.	<ul style="list-style-type: none"> Operator 	<ul style="list-style-type: none"> Operation
	Ensure that night time light pollution is minimised.		
	Keep the decommissioning duration as short as possible.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Decommissioning
	Ensure that the site is fully rehabilitated after the infrastructure has been removed.		

Table 7-17 – Palaeontology: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
PALAEONTOLOGY			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure that palaeontological material is identified and protected. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ Health, safety, environmental and community incident and complaints management system register. ■ Incident classification and reporting management procedure (to be developed). ■ Monitoring and audit reports. 			
Chance Finds	If any palaeontological material is exposed during digging, excavating, drilling or blasting Implement the finds must be reported and the Chance Find Protocol must be implemented (Section 8.14.1).	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ EO 	<ul style="list-style-type: none"> ■ Construction

Table 7-18 – Traffic: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
TRAFFIC			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that the traffic impacts of the project are mitigated and managed. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> 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). Traffic and transportation management plan 			
Management Plan	Traffic Management Plan (TMP) is to be compiled once the contractor has been appointed and all the relevant details of the construction process are known. The TMP needs to address, inter alia: <ul style="list-style-type: none"> clearly defined route/s to the site for specific vehicles needed to transport equipment and materials scheduled deliveries to avoid local congestion; 	<ul style="list-style-type: none"> Site Manager Contractor Developer EO 	<ul style="list-style-type: none"> Construction Operation
Records	A photographic record of the road condition should be maintained throughout the various phases of the development/s. This provides an objective assessment and mitigates any subjective views from road users.	<ul style="list-style-type: none"> Contractor Developer EO 	<ul style="list-style-type: none"> Construction Operation Decommissioning
Signage and Notifications	Post relevant road signage along affected routes.	<ul style="list-style-type: none"> Site Manager 	<ul style="list-style-type: none"> Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
		<ul style="list-style-type: none"> Contractor EO 	
	The developer shall ensure that the contractor erects temporary signs warning motorists of construction vehicles on the approaches to the access road.	<ul style="list-style-type: none"> Contractor Developer EO 	
	Create a local WhatsApp Group for the local community and post notices of road conditions and proposed alternatives. Developer to contribute to the maintenance of the public roads in the area during the construction phase of the development/s.	<ul style="list-style-type: none"> Developer 	
Dust Emissions	Reduce travel speed for construction vehicles on the gravel road to reduce dust	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Construction
	Dust suppression of the roads in the immediate vicinity of the site where feasible		
Vehicle Management	Ensure all vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
Road Management	Upgrade unpaved roads to a suitable condition for proposed construction vehicles.	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Construction
	Ensure that the roads are left in the same or better condition, post-construction.		
	The developer shall ensure that the condition of the roads impacted by construction of the development is left in a similar or better state once the construction phase is complete.	<ul style="list-style-type: none"> Contractor Developer 	
	All remedial work or modifications to any of the public roads shall be done in consultation with and have the approval of the local road's authority (as is standard practice, this will be finalised during and be a requirement of the municipal planning approval process.	<ul style="list-style-type: none"> Site Manager Contractor Developer 	

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The developer shall ensure that the contractor provides the necessary driver training to key personnel to minimise the potential of incidents on the public road network.		
Intersection Safety	Regular preventative maintenance of roads within the immediate vicinity of the site should be conducted over weekends to minimise the impact on the average construction period.	<ul style="list-style-type: none"> Site Manager Contractor EO 	<ul style="list-style-type: none"> Construction
	Reduce speed at intersections and use appropriate traffic warning signs		<ul style="list-style-type: none"> Construction Operation
	Identify alternative routes where possible		
	Request the assistance of local law enforcement		
	Ensure that all construction vehicles are roadworthy, visible, adequately marked, and operated by an appropriately licenced operator.		
	Provide drivers with advanced driver training.		
Permits	A permit must be obtained from the relevant authority for any abnormal loads transported.	<ul style="list-style-type: none"> Site Manager Contractor EO Operator 	<ul style="list-style-type: none"> Construction Operation Decommissioning

Table 7-19 – Visual: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
VISUAL			
Impact Management Outcome: <ul style="list-style-type: none"> To ensure that the changes to the landscape character of the area are mitigated to minimise the negative impact. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> Health, safety, environmental and community incident and complaints management system register. Incident classification and reporting management procedure (to be developed). Monitoring and audit reports. 			
Layout	The layout of the Proposed Project (including all associated infrastructure) must avoid the sensitive areas identified.	<ul style="list-style-type: none"> Developer 	<ul style="list-style-type: none"> Pre-Construction Construction
	New construction camps to be located within the dedicated laydown area.	<ul style="list-style-type: none"> Developer Site Manager Contractor 	<ul style="list-style-type: none"> Construction
Rehabilitation	Disturbed areas to be rehabilitated / revegetated as soon as possible during the construction phase.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Construction
	Stockpiles to be located within approved construction footprints.		
	Disturbed areas to be rehabilitated / revegetated as soon as possible during the construction phase.		
	Disturbed areas to be rehabilitated / revegetated as soon as possible after the decommissioning phase.		<ul style="list-style-type: none"> Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Housekeeping	Recycling and refuse bins to be provided to eliminate litter from the site.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Construction
	Structures to be removed at the end of the life of the project.		<ul style="list-style-type: none"> Decommissioning
	Limit speed to reduce dust and noise emissions.		<ul style="list-style-type: none"> Construction Operation Decommissioning
	Ensure that dust suppression techniques are implemented on all gravel access roads.	<ul style="list-style-type: none"> EO Contractor 	<ul style="list-style-type: none"> Construction Decommissioning
Lighting	As far as possible, limit the amount of security and operational lighting present on site.	<ul style="list-style-type: none"> EO 	<ul style="list-style-type: none"> Operation
	Light fittings for security at night should reflect the light toward the ground and prevent light spill.	<ul style="list-style-type: none"> EO Contractor Operator 	<ul style="list-style-type: none"> Construction Operation Decommissioning
	Lighting fixtures should make use of minimum lumen or wattage whilst adhering to safety and security requirements.		
	Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used		
	If economically and technically feasible, make use of motion detectors on security lighting.		
	Non-reflective surfaces should be used where possible.		

Table 7-20 – Socio-Economic: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
SOCIO-ECONOMIC			
Impact Management Outcome: <ul style="list-style-type: none"> ■ To ensure that the negative socio-economic impacts are mitigated and managed. ■ To ensure that the positive socio-economic impacts are enhanced. 			
Indicator and Compliance Mechanism: <ul style="list-style-type: none"> ■ 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). ■ Employment records and community engagement local enterprise development records. 			
Employment	Opportunities for the training of unskilled and skilled workers from local communities should be maximized, including those from adjacent farms who have indicated that they would like to benefit from the proposed project and its related opportunities.	<ul style="list-style-type: none"> ■ Site Manager ■ Contractor ■ Developer 	<ul style="list-style-type: none"> ■ Construction ■ Operation
	Using local sub-contractors where possible and requiring that contractors from outside the local area that tender also meet targets for how many locals are given employment.		
	Exploring ways to enhance local community benefits with a focus on broad-based BEE and preferential procurement.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	A 'locals first' policy with regard to construction and operational labour needs.		
	An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Construction Operation Decommissioning
Employee Management	The applicant and the contractors should develop a Code of Conduct for the project. The code should identify what types of behaviour and activities by workers are not permitted in agreement with surrounding landowners and land managers.	<ul style="list-style-type: none"> Site Manager Contractor Developer 	<ul style="list-style-type: none"> Construction Operation
	The applicant and the contractor should implement a Tuberculosis and HIV/AIDS awareness programme for all construction workers at the outset of the construction phase.		<ul style="list-style-type: none"> Construction
	The applicant should implement measures to assist and, if needed, fairly compensate potentially affected surrounding landowners whereby damages to farm property, stock theft or significant disruptions to farming activities can be minimized or reduced. Measures should be agreed on before construction commences.		<ul style="list-style-type: none"> Operation
	No construction workers, with the exception of security personnel, should be allowed to stay on the site overnight.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Operation
	The movement of workers on and off the site should be closely managed and monitored by the contractors. In this regard the contractors should be responsible for making the necessary arrangements for transporting workers to and from site on a daily basis.		
Complaints	A complaints register should be available on site to any individual who may have a particular complaint with regards to the construction or operations processes.	<ul style="list-style-type: none"> Site Manager Contractor 	<ul style="list-style-type: none"> Construction Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	The community should be able to contact the site manager or his/her representative to report any issues which they may have. The site manager and his/her representative should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.	■ EO	
	The community should be able to contact the site manager to report any issues which they may have. The site manager should be stationed within the area and should therefore be available on hand to deal with and address any concerns which may be raised.		■ Operation
Stakeholder Engagement	The applicant must establish a communications committee early on in the project to ensure inclusive planning and regular feedback from stakeholders.	■ Developer	■ Operation
	Community development should be guided by a community needs analysis, drawn up by a third party and based on local socio-economic conditions, a review of planning documents such as the IDP, and discussions with local government and community representatives. Interventions should be planned in collaboration with other energy developers in the area where relevant.		
	Close liaison with local municipal managers, local councillors and other stakeholders involved in socio-economic development is required to ensure that any projects are integrated into wider socio-economic development strategies and plans.		
	Close coordination with the municipality is required, including regular meetings.		

8 MANAGEMENT PLANS

A number of generic management plans have been included in the EMPr. The plans included below provide an indication of the requirements that must be followed on the proposed construction and operation of the Proposed Project. It must be noted that many of these plans can be updated at any stage depending on any changes that may occur on the site.

The following specific plans have been compiled:

- Emergency Response Plan (ERP);
- Waste Management Plan;
- Hazardous Substance Management Plan;
- Fire Management Plan;
- Alien Invasive Plant Management Plan;
- Plant Rescue and Protection Plan;
- Re-vegetation and Habitat Rehabilitation Plan;
- Stormwater Management Plan;
- Erosion Management Plan;
- Traffic and Transport Management Plan;
- Fauna Management Plan;
- Soil Management Plan;
- Heritage and Palaeontological Management Plan;
- Grievance Mechanism; and
- HIV/AIDS Management Plan.

8.1 EMERGENCY RESPONSE PLAN

Appropriate resources must be provided to respond to accidental and emergency situations for operations and activities during construction and operation 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.

This ERP is intended as a practical working document for the Proposed Project. The purpose of this document is to provide the basic guidelines on how to respond to potential emergency situations that may arise during project activities. These potential emergency situations include medical emergencies and fires.

All 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 and operational phases of the project.
- Assign responsibilities for responding to emergency situations.

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

8.1.1 ROLES AND RESPONSIBILITIES

With respect to this plan, Sendawo BESS (via the appointed EPC contractor/contractor/ principal contractor) has the responsibility to:

- Provide emergency response services (such as first aid and firefighting representative) and to structure and coordinate emergency response procedures for the project.
- Ensure that specific emergency responsibilities allocated to them are organised and undertaken.
- Ensure that employees and contractor third parties are trained and aware of all required emergency procedures.

8.1.2 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 (or suitably tasked person) who will determine the appropriate plan of action depending on the severity of the emergency, the people affected, and the need to evacuate.

If there is a developing emergency or unusual situation, where an emergency is not imminent, but could occur if no action is taken, the Project Manager (or if the Project Manager is absent the Environmental Officer) 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 (or suitably tasked person) will be tasked with responding to the potential risk. Should the emergency situation be such that it can be managed by Sendawo BESS, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risks.

8.1.3 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.

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

8.1.4 BUDGET FOR EMERGENCY RESPONSE

Costs for emergency response and management will be included in the capital expenditure budget for the construction phase and operational budget for the operational and decommissioning phases of the project.

8.1.5 VERIFICATION

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

- Fire Drills
- Emergency Evacuation Drills
- 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
- Bi-annual emergency response drills
- 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.

8.2 WASTE MANAGEMENT PLAN

8.2.1 WASTE HIERARCHY

A waste is any solid, liquid or contained gaseous material that is being discarded by, disposal, recycling, burning or incineration. Waste management options for a particular waste need to be considered according to the Waste Management Hierarchy (**Figure 8-1**) which reflects the relative sustainability of each of the options. One of the key principles underlying the waste management hierarchy is to ensure that waste is dealt with as high up the waste hierarchy as possible. Since all waste disposal options have some impact on the environment, the only way to avoid impact is not to produce waste in the first place, and waste reduction is therefore at the top of the hierarchy. Re-use, followed by recovery techniques (recycling, composting and generating energy from waste) follow, while disposal to landfill or by incineration (the worst options) are at the bottom of the hierarchy.

In deciding on the most appropriate disposal route, both environmental and economic costs and benefits need to be considered. This decision must be reached taking into account all the costs and impacts associated with waste disposal, including those associated with the movement of waste.

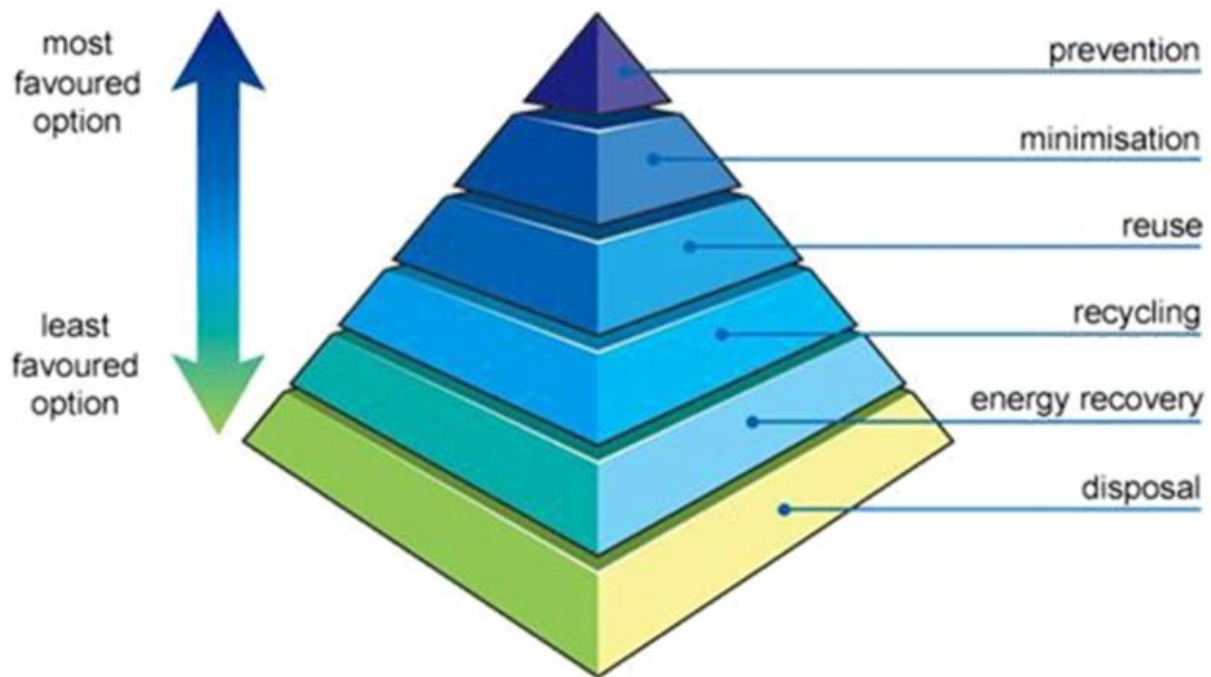


Figure 8-1: Waste Hierarchy

8.2.2 PROJECT STAGES

The purpose of this section is to assess the construction, operational processes of the Proposed Project in order to identify short comings, like raw materials procurement, infrastructure, employee training, health and safety, transportation, storage, compliance with legislative requirements, emergency preparedness and waste streams arising from an operation and its related activities, as well as the current waste management practices per waste stream. The assessment serves as the baseline against which any problem areas or gaps in waste management practises, process technology and environmental authorisations are identified and against which future performance objectives, activities and targets can be set.

The project stages are described below with the waste generation and management methods described in the corresponding tables below them including:

- Details on how waste will be managed during the construction and operational phases taking into consideration the waste management hierarchy;
- Details of the procedure for the separation of non-recyclable and recyclable waste;
- Details of the management of non-recyclable waste i.e. how waste will be stored on site during construction and operational phases, including the frequency for the removal of waste from the site and an indication of the landfill site where it will be disposed;
- Details for the management of recyclable waste e.g. the type of waste materials that will be recycled on site and the details pertaining to the offloading, sorting, handling, storage and collection procedures for the waste types (e.g. compaction and bailing, breaking of glass etc.); and
- The frequency for the removal of waste from the proposed development to where it will be finally managed must be included.

Waste Management at the project site will be undertaken in line with the EMPr to consider the correct disposal of general and hazardous waste generated on the project. **Table 8-1** describes the different waste products that the proposed project will produce, as well as the various options to dispose of them. Waste will mainly be generated during the construction phase. During operation, contractors are only on the site for limited amount of time as and when maintenance is required.

Table 8-1 - Waste Management Options

Waste	Type of Waste	Management Options
Hydrocarbons (Contaminated soil)	Hazardous	<ul style="list-style-type: none"> Fuel and oil spillages can be a source of contamination of water sources and the soil. Management options include: <ul style="list-style-type: none"> Using spill kits to clean any spillages; Ensure storage facilities are maintained and meet industry regulations; Transportation and storage of fuel must be regulated and correctly managed according to the EMPr; All hazardous waste is to be disposed of at a registered hazardous landfill (safe disposal certificates must be obtained).
Contaminated Personal Protective Equipment (PPE)	Hazardous	<ul style="list-style-type: none"> PPE can be contaminated during handling of hydrocarbons. Management options include: <ul style="list-style-type: none"> Store contaminated PPE in hazardous waste skips along the servitude; Ensure contaminated PPE is disposed of at a registered hazardous landfill (safe disposal certificates must be obtained).
General waste	General	<ul style="list-style-type: none"> General waste (inorganic matter) can be disposed of as per normal and form part of the municipal waste management system. Management options include: <ul style="list-style-type: none"> Ensure waste is stored securely in refuse bins; Co-ordinate waste removal with the general removal of waste from the contractor laydown area .
Food waste	General	<ul style="list-style-type: none"> Food waste is generated as site personnel take their meals on the construction site. Management options include: <ul style="list-style-type: none"> Store any waste and packaging into a labelled food waste bin; Co-ordinate waste removal with the removal of waste from the contractor laydown area; and Co-ordinate waste removal with the general removal of waste.

8.3 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 Proposed 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.

8.3.1 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 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 complied 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 must be informed. 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.

8.3.2 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.

8.3.3 INSPECTION, MONITORING AND TRAINING

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

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 relevant Training Procedure.

Examples of Toolbox Talks include:

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

8.4 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 must include appropriate instruction of employees about fire risks and designated smoking areas.
- Fire prevention facilities must be present at all storage facilities. No open fires shall be allowed on site under any circumstance. No cooking on open fires shall be done onsite to prevent 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 must only be conducted in demarcated areas.
- Firefighting equipment must be regularly maintained by a suitable service provider.

8.5 ALIEN INVASIVE PLANT MANAGEMENT PLAN

The purpose of this Plan is to provide a framework for the management of alien and invasive plant species during the construction and operation of the project, which in turn serves to manage open spaces, as required. The broad objectives of the plan include the following:

- Ensure alien plants do not become dominant in parts or the whole site 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.

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

- Monitor for early detection, to find species when they first appear on site. This should be as per the frequency specified in the management plan, and should be conducted by an experienced botanist. Early detection should provide a list of species and locations where they have been detected. Summer (vegetation maximum growth period) is usually the most appropriate time, but monitoring can be adaptable, depending on local conditions.
- Monitor for the effect of management actions on target species, which provides information on the effectiveness of management actions. Such monitoring depends on the management actions taking place. It should take place after each management action.
- Monitor for the effect of management actions on non-target species and habitats.
- Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding.
- Alien vegetation and the spread of exotic species on the site will need to be controlled.
- The contractor must be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.
- Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only suitable herbicides shall be used.
- The use of pesticides and herbicides on the site must be discouraged as these can impact on important pollinator species of indigenous vegetation. Use of these should only be permitted where absolutely necessary.
- Correct rehabilitation with locally indigenous species.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.
- Constant maintenance of the area to ensure re-colonisation of floral species.
- Ensure regular removal of alien species, which may otherwise jeopardise the proliferation of indigenous species.

8.6 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.

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

- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- The health / vigour of each transplanted individual should be monitored as per the frequency and duration specified in the management plan.
- As a scientific control, an equal number of non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.
- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned.
- Vegetation clearing must only commence after a walk down has been conducted by a suitably qualified person 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 or grassed accordingly.
- The use of pesticides and herbicides on the site must be discouraged as these can impact on important pollinator species of indigenous vegetation. Use of these should only be permitted where absolutely necessary.
- 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.
- It is a legal requirement to obtain permits for specimens or protected species that will be lost due to construction of the project.
- A detailed pre-construction walk-through survey will be required during a favourable season where possible, to locate any individuals of protected plants, as well as for any populations of threatened plant species. This survey must cover the footprint of all approved infrastructure, including internal access roads and substations. The best season is early to late Summer if possible, taking administrative processes into account, but will be influenced by recent rainfall and vegetation growth.
- It is possible that some plants lost to the development can be rescued and planted in appropriate places in rehabilitation areas, but the description and appropriateness of such measures must be included in a Plant Rescue Plan. Any such measures will reduce the irreplaceable loss of resources as well as the cumulative effect. Note that Search and Rescue is only appropriate for

some species and that a high mortality rate can be expected from individuals of species that are not appropriate to transplant.

- Prior to construction commencing, a Plant Rescue Plan must be compiled to be approved by the appropriate authorities as part of the EMP approval.
- For any plants that are transplanted, annual monitoring should take place to assess survival. This should be undertaken as per the frequency specified in the management plan and be undertaken by a qualified botanist. The monitoring programme must be designed prior to translocation of plants and should include control sites (areas not disturbed by the project) to evaluate mortality relative to wild populations.
- No collecting or poaching of any plant species.

Rescued plants

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

Threatened species

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

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

- Detailed floristic walk-through survey of all footprint areas in order to document composition, especially of protected species. It is suggested this be undertaken after an appropriate time-period after rainfall, where possible, to allow emergence of any species of potential concern. The survey must also cover all footprint areas, including final road alignments. Renewable energy projects similar to the one assessed here tend to have high fluidity in terms of layout and technology, due to the current rapid evolution of the technology, which allows more efficient deployment of infrastructure. However, this means that “final” layouts regularly change. The walk-through survey:
 - Must assess the footprint that will be constructed – if this changes then the new footprint areas must be subject to a walk-through survey in full.
 - Must be undertaken in the correct season, if possible, taking administrative processes into account.
 - Must be adequately resourced to ensure it is done properly.
 - Must be undertaken by a competent botanist.

8.7 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/indigenous plant species or grass/crop.
- Minimise visual impact of disturbed areas.
- Ensure that disturbed areas are safe for future uses.

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

- Rehabilitation Plan must be compiled by an approved ecologist prior to the start of construction and decommissioning.
- All management actions associated with rehabilitation must be recorded after each management action has taken place.
- All rehabilitated areas should be monitored to assess vegetation recovery. This should be for a minimum of three years after post-construction rehabilitation but depends on the assessed trajectory of rehabilitation (whether it is following a favourable progression of vegetation establishment or not – this depends on the total vegetation cover present, and the proportion that consists of perennial growth of desired species). For each monitoring site, an equivalent comparative site in adjacent undisturbed vegetation should be similarly monitored. Monitoring data collection should include the following:
 - total vegetation cover and height, as well as for each major growth form;
 - species composition, including relative dominance;
 - soil stability and/or development of erosion features;
 - representative photographs should be taken at each monitoring period.
- Monitoring of rehabilitated areas should take place at the frequency and for the duration determined in the rehabilitation plan, or until vegetation stability has been achieved.
- Re-vegetation must aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.
- Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. This must be done through seeding with suitable crop or locally indigenous species typical of the representative botanical unit.
- Re-vegetation of the disturbed site is aimed at approximating as near as possible the existing vegetative conditions prevailing prior to construction.
- Seeds from surrounding seed banks can be used for re-seeding.
- Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas.
- Planting of indigenous tree species in areas not to be cultivated or built on must be encouraged.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads. In this respect, the recommendations from the Biodiversity Assessment must be applied strictly. Personnel must be adequately briefed on the need to restrict habitat destruction, and must be restricted to the actual construction area.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.

8.8 STORMWATER MANAGEMENT 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.

A Storm Water Management and Surface Water Protection Plan cannot be compiled until the detailed designs are complete. It is stipulated in this EMP that a Storm Water Management Plan must be compiled before any construction commences and implemented during the construction phase. This plan must indicate how all surface runoff generated as a result of the project and associated activities (during both the construction and operational phases) will be managed prior to entering any natural drainage system or wetland and how surface water runoff will be retained outside of any demarcated buffer zones and subsequently released to simulate natural hydrological conditions.

A Storm Water Management Plan will be required to support the relevant facility processes. A stormwater management plan must be developed in the preconstruction phase, detailing the stormwater structures and management interventions that must be installed to manage the increase of surface water flows directly into any natural systems. The stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions, Reno mattresses or similar) of exposed soil and the re-vegetation of any disturbed water courses.

8.9 EROSION MANAGEMENT PLAN

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 should not operate independently but should rather be seen as complementary activities within the broader environmental management of the site and should therefore be managed together. This Erosion Management Plan addresses the management and mitigation of potential impacts relating to soil erosion, including:

- Material stockpiled for long periods (2 weeks) must be retained in a bermed area.
- Stockpiles not used in three (3) months after stripping must be covered with hessian or a similar material to prevent dust and erosion.
- Sensitive areas need to be identified prior to construction so that the necessary precautions can be implemented.
- Any vegetation clearance must be phased to ensure that the minimum area of soil is exposed to potential erosion at any one time.
- Areas to be cleared must be clearly demarcated and this footprint strictly maintained.
- Silt fences and erosion control measures must be implemented in areas where these risks are more prevalent.
- Wind screening and stormwater control must be undertaken to prevent soil loss from the site.
- Other erosion control measures that can be implemented are as follows:
 - Brush packing with cleared vegetation

- Mulch or chip packing
- Planting of vegetation
- Hydroseeding / hand sowing
- All erosion control mechanisms need to be regularly maintained.
- Seeding of topsoil and subsoil stockpiles to prevent wind and water erosion of soil surfaces.
- Re-vegetation of disturbed surfaces must occur immediately after construction activities are completed. This must be done through seeding with indigenous grasses.
- No impediment to the natural water flow other than approved erosion control works is permitted.
- To prevent stormwater damage, the increase in stormwater run-off resulting from construction activities must be estimated and the drainage system assessed accordingly.

8.9.1 MONITORING

The site must be monitored continuously during construction and operation in order to determine any indications of erosion. If any erosion features are recorded as a result of the activities on-site the Environmental Officer (during construction) or Site Manager (during operation) must:

- Assess the significance of the situation.
- Take photographs of the soil degradation.
- Determine the cause of the soil erosion.
- Inform the contractor/operator that rehabilitation must take place and that the contractor/operator is to implement a rehabilitation method statement and management plan.
- Monitor that the contractor/operator is taking action to stop the erosion and assist them where needed.
- Report and monitor the progress of the rehabilitation weekly and record all the findings in a site register.
- All actions with regards to the incidents must be reported on a monthly compliance report which will be submitted to the Competent Authority (during construction) and kept on file for consideration during the annual audits (during construction and operation).

The Contractor (in consultation with an appropriate specialist) must:

- Select a system/mechanism to treat the erosion.
- Design and implement the appropriate system/mechanism.
- Monitor the area to ensure that the system functions like it should. If the system fails, the method must be adapted or adjusted to ensure the accelerated erosion is controlled.
- Continue monitoring until the area has been stabilised.

8.10 TRAFFIC AND TRANSPORT MANAGEMENT PLAN

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

- To ensure compliance with all legislation regulating traffic and transportation within South Africa National, Provincial, Local and associated guidelines.
- To avoid incidents and accidents while vehicles are being driven and while transporting personnel, materials, and equipment to and from the project site.

- To raise greater safety awareness in each driver and to ensure the compliance of all safe driving provisions for all the vehicles.
- To raise awareness to ensure drivers respect and follow traffic regulations.
- To avoid the deterioration of access roads and the pollution that can be created due to noise and emissions produced by equipment, machinery, and vehicles.

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

- All vehicles used during the transport of materials and in the construction activities are required to be roadworthy per the National Road Traffic Act (NRTA) and display all pertinent certificates as required.
- All vehicles travelling to and from the site shall adhere to all laws imposed by the law enforcement agencies, and shall comply with any requests made by the law enforcement officials.
- For each convoy of abnormal vehicles/loads a designated safety officer shall be nominated. All abnormal vehicles and loads to be transported are required to have a valid permit before any trip is begun.
- The route must be assessed to determine if any structures or vegetation need to be temporarily or permanently relocated so as to avoid damage to the load as well as public and private property during the trips.
- A designated transport coordination manager must be appointed to oversee and manage the traffic safety officers. Additionally, the designated transport coordination manager must inform and keep up-to-date the interested and affected parties of all the activities taking place that may have a direct impact on them.
- A traffic safety officer shall be nominated to make all the necessary arrangements to maintain the required traffic measures for the duration of the project as outlined in the "Standard Specifications for Road and Bridge Works for State Road Authorities," 1998 edition. The safety officer shall liaise daily with the transportation coordination manager to keep them apprised of the state of all the traffic arrangements.
- All construction vehicles that are entering the site shall also be available via radio or telephone communication to the transport coordination manager. So that in the event of an emergency, all vehicles can be accounted for.
- All vehicles shall comply with the posted speed limits on public roads as well as the speed limits within the development. For additional speed limits that are imposed on the construction traffic, refer to the South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 for the restrictions.
- All construction traffic shall comply with the legal load requirements as outlined in the National Road Traffic Act and National Road Traffic Regulations.
- Construction traffic entering the site along public roads must be limited to times when peak hour traffic can be avoided. The peak traffic occurs during 7h00 to 8h30, and 16h00 to 17h30.
- The South African Road Traffic Signs Manual (SARTSM), Volume 2, June 1999 is to be used for all traffic during the construction activities of the proposed project.
- During periods of high construction traffic entering and exiting the site, it is recommended that flagmen help direct the traffic. This will enable the safe movement of construction and public traffic at the entrance and reduce the number of potential conflicts.

8.11 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 Proposed Project.

8.11.1 MANAGING IMPACT 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 ECO. The objective is to identify any sensitive habitats including potential for species of conservation interest (i.e. to consider the presence of any rare species of fauna, but establish possible risk of snake bites; inspect tree cavities for bats, etc.) that may be directly or indirectly affected by the proposed works.

Any important and significant habitats must be suitably demarcated and made a no-go area.

LIMIT THE DEVELOPMENT FOOTPRINT

- The development area must be clearly defined and marked off accordingly. All No- Go areas must be demarcated and warning signs prohibiting access erected.

- Areas to be cleared must be clearly marked in the field to eliminate unnecessary clearing/disturbance.

LIMIT DISTURBANCE

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

INSPECTIONS AND MONITORING

- The following inspections and monitoring need to be undertaken during the construction phase:
- Observation of vegetation clearing activities by the Environmental 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 relevant Training Procedures

Examples of Toolbox Talks include:

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

8.12 AVIFAUNAL MANAGEMENT PLAN

The purpose of this avifaunal management plan is to provide mitigation and management measures onsite that to minimise the impacts on the priority bird species that potentially occur onsite. A number of the priority species are associated with the aquatic features on the site.

8.12.1 DESIGN MANAGEMENT PROCEDURES

- Ensure that key areas of conservation importance and sensitivity are avoided (as determined by the avifaunal specialist assessment).
- Where possible, installing transmission cables underground (subject to habitat sensitivities and in accordance with existing best practice guidelines for underground cable installation).

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

8.12.2 CONSTRUCTION MANAGEMENT PROCEDURE

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

- A site- specific construction management Plan (CEMP) must be implemented, which gives appropriate detailed description of how construction activities must be conducted. All contractors are to adhere to the CEMP and must apply good environmental practice during construction. This must be done by an Avifaunal Specialist.
- Providing adequate briefing for site personnel and, in particularly sensitive locations. Personnel must be adequately briefed on the need to restrict habitat destruction, and must be restricted to the actual building sites.
- Habitat destruction must be limited to what is absolutely necessary for the construction of the infrastructure, including the construction of new roads.
- During the construction phase, an avifaunal specialist must conduct surveys/exploration of the site. The aim will be to locate nest sites, so that these may continue to be monitored during the construction and operation phase.
- Measures to control noise and dust must be applied according to current best practice in the industry.
- Maximum use must be made of existing access roads and the construction of new roads must be kept to a minimum.
- Implementing an agreed post-development monitoring programme.
- Timing construction to avoid sensitive periods.

8.12.3 MONITORING

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

8.13 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.

8.13.1 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.

8.14 HERITAGE AND PALAEOLOGICAL 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 area of the Proposed Project. Heritage resources are protected in terms of the National Heritage Resources Act, Act 25 of 1999 (NHRA).

8.14.1 CHANCE FIND PROCEDURE

The following procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the Proposed Project. This chance find procedure (CFP) must be read in conjunction with the Environmental Authorisation, the Environmental Management Programme, Final BAR and the final layout archaeological ground-truthing report.

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

- Once alerted to fossil occurrence(s): alert site foreman, stop work in area immediately, safeguard site with security tape / fence / sand bags if necessary.
- Record key data while fossil remains are still in situ:
 - Accurate geographic location – describe and mark on site map / 1: 50 000 map / satellite image / aerial photo
 - Context – describe position of fossils within stratigraphy (rock layering), depth below surface
 - Photograph fossil(s) in situ with scale, from different angles, including images showing context (e.g. rock layering)
- If feasible to leave fossils in situ:
 - Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation
 - Ensure fossil site remains safeguarded until clearance is given by the Heritage Resources Agency for work to resume
- If not feasible to leave fossils in situ (emergency procedure only):
 - Carefully remove fossils, as far as possible still enclosed within the original sedimentary matrix (e.g. entire block of fossiliferous rock)
 - Photograph fossils against a plain, level background, with scale
 - Carefully wrap fossils in several layers of newspaper / tissue paper / plastic bags
 - Safeguard fossils together with locality and collection data (including collector and date) in a box in a safe place for examination by a palaeontologist
 - Alert Heritage Resources Agency and project palaeontologist (if any) who will advise on any necessary mitigation

- If required by Heritage Resources Agency, ensure that a suitably-qualified specialist palaeontologist is appointed as soon as possible by the developer.
- Implement any further mitigation measures proposed by the palaeontologist and Heritage Resources Agency;
- The Specialist Palaeontologist must undertake the following:
 - Apply for Fossil Collection Permit Record / submit Work Plan to relevant Heritage Resources Agency.
 - Describe and judiciously sample fossil remains together with relevant contextual data (stratigraphy / sedimentology / taphonomy).
 - Ensure that fossils are curated in an approved repository (e.g. museum / university / Council for Geoscience collection) together with full collection data.
 - Submit Palaeontological Mitigation report to Heritage Resources Agency.
 - Adhere to best international practice for palaeontological fieldwork and Heritage Resources Agency minimum standards.

8.14.2 TRAINING, 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.
- 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.

8.15 GRIEVANCE MECHANISM

8.15.1 GRIEVANCE MECHANISM - EXTERNAL

A grievance mechanism is a tool used to address affected communities' concerns and complaints and is an important pillar of the stakeholder engagement process, since it creates opportunities for companies and communities to identify problems and discover solutions together. The Project proponent can benefit from understanding community concerns and complaints and addressing them through all stages of project development.

Where it is anticipated that a new project will involve ongoing risk and adverse impacts on surrounding communities, the project proponent is required to establish a grievance mechanism to receive and facilitate resolution of the affected communities' concerns and complaints about the proponent's environmental and social performance. The grievance mechanism should be scaled to risks and adverse impacts of the project, address concerns promptly, use an understandable and transparent process that is culturally appropriate and readily accessible to all segments of the affected communities, and do so at no cost to communities and without retribution. The mechanism should not impede access to judicial and administrative remedies.

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 management of the facility;
- 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.

OBJECTIVES

The objectives of the grievance mechanism include:

- To be respectful of complainant culture, values, traditions and views;
- To resolve grievances at the local level and in a timely manner;
- To identify the root causes of grievances and address systemic issues;
- To provide a process that is dialogue based, with the complainant and the Proponent cooperating in the investigation, discussion, resolution and announcement of the grievance and result;
- To ensure fair, equitable and consistent outcomes to resolve grievances;
- To enhance and continuously improve the ability of the Proponent to fairly address community concerns.

SCOPE AND RESPONSIBLE PARTIES

A grievance mechanism is primarily for the community to raise relevant concerns about the Project / Proponent's activities and is to be implemented throughout the life cycle of the Project (i.e. throughout assessment, construction, and implementation phases).

WSP will only be involved in the stakeholder engagement and grievance management process for the assessment phase. The Project proponent and the Contractor will be responsible for implementation of the grievance mechanism throughout the construction phase.

GRIEVANCE REDRESS PROCEDURE

This grievance mechanism sets out the following steps to be taken to resolve grievances.

■ Register grievance

1. A grievance can be submitted in a written letter, e-mail, fax, or raised verbally in person or via telephone.
2. Grievances raised during the assessment process are to be submitted to the EAP via the details provided as per the stakeholder engagement notifications. The EAP will notify the Proponent of the grievance.

3. Grievances raised during the implementation process are to be submitted to the Proponent / Contractor via the relevant details, which are to be made available to registered stakeholders prior to commencement of onsite activities, as well as via site notice boards.
4. In the event that a complaint is raised verbally, the responsible person must obtain the approval of the complainant as to the documented complaint (by way of signature of the Receipt of Grievance Form). Should the complainant have literacy issues, the responsible person may request that a third party (friend / relative of complainant) is available to verify / approve the contents of the documented complaint to the satisfaction of the complainant.
5. The submission should include the nature of the grievance, the date when it occurred and the name and contact details of the complainant.
6. Grievances will be accepted anonymously or through a third party (e.g. unions, NGOs, local authorities, community representatives, etc.).
7. Individuals have the right to request that their name be kept confidential throughout the grievance process.
8. As men and women may communicate their grievances differently, and also have different types of grievances, the complainant may request that their grievance is processed by a female / male representative. In the event that such a request is made, the Proponent, as far as reasonably practicable, will accommodate this request.

■ **Within a Week (7 days) of receiving the grievance the Proponent will:**

1. Enter the grievance into the Proponent's records that track grievances;
2. Assess the grievance according to specific criteria and if necessary, develop an appropriate approach for the particular grievance;
3. Provide a written acknowledgement of the grievance including the name of the responsible person to contact about progress, an explanation of the steps that will be taken to investigate, discuss and resolve the grievance, and an anticipated timetable for processing the grievance.

■ **Processing the Grievance:**

The responsible person will:

1. Identify the parties involved;
2. Clarify issues and concerns raised by the grievance through direct dialogue;
3. Classify the grievance in terms of seriousness according to the gravity of the allegation, the potential impact on an individual's or a group's welfare and safety, or the public profile of the issue;
4. Convene a staff group with expertise relative to the grievance;
5. Determine the method for resolving the grievance – the most common approaches, not excluding others, will be:
 - The Proponent proposes a solution;
 - The Proponent and aggrieved party decide together the solution;

- The Proponent and aggrieved party defer to a third party for mediation / arbitration.
- 6. Gather views of other stakeholders, including those of the Proponent and if necessary, an agreed neutral technical opinion;
- 7. Determine initial options that parties have considered and explore various approaches for settlement;
- 8. Conduct the process as agreed;
- 9. Close the grievances by signing the Complaint Close-Out Form (i.e. that the grievance has been resolved satisfactory to both parties).
- 10. The Proponent may “close” the grievance even if the complainant is not satisfied with the outcome. This option can be pursued by the Proponent in the case that the complainant is unable to substantiate a grievance, or if there is an obvious speculative or fraudulent attempt. In such situations, the Proponent’s efforts to investigate the grievance and to arrive at a conclusion will be well documented and the complainant advised of the situation. The Proponent (or contractors working for the Proponent) will not dismiss grievances based on a cursory review and close them in their grievance record unless the complainant has been notified and had the opportunity to provide supplementary information / evidence;
- 11. Keep a record that tracks the progress and communications for each grievance.

■ **Processing Timeline**

1. The Proponent will aim to bring the grievance to a resolution within 30 days of receiving the grievance. The grievance shall be acknowledged within 7 days by the responsible person, and responded to within 30 days. If the matter takes longer than 30 days to resolve, the complainant will be informed through dialogue and in writing, of the reason for the delay, any advances or difficulties encountered and the anticipated new resolution date.

RECOURSE

If the complainant is not satisfied with the outcome of the grievance process the aggrieved party has the right to address the grievance via the judicial system.

MANAGING, TRACKING, RECORDING GRIEVANCES – INTERNALLY

In terms of managing grievances the Proponent will:

- Appoint a senior manager to oversee the Grievance Mechanism. Another member of staff will be appointed to carry out the day-to-day work in this area and involve specialist staff and external parties, where required, who may need to be consulted to resolve a grievance.
- Maintain a register of grievances. All activities, including registration of the grievance and the progress through to outcome will be recorded.
- Ensure that grievances and resolutions are communicated internally to all staff through monthly reports.
- Launch the Grievance Mechanism and regularly remind communities that it is available to use.

Contractors are expected to follow this Grievance Procedure. Contractor shall be proactive and available to participate in the grievance resolution processes. Contractor participation is intended to allow for specific contractor grievances to be addressed efficiently.

Contractors shall ensure that all individual contractor employees are aware of the Grievance Procedure.

Contractors will receive any grievance from an individual or community and notify the Proponent thereof immediately.

Contractors shall not make any direct agreements or resolution with local communities without prior coordination of such actions with the Proponent.

The Contractor's community relations team (or equivalent) will attend all coordination meetings requested by the Proponent, as required. The contractor community relations management (or equivalent) will report to the Proponent's management team on a regular basis – in regards to social incidents and community relations issues. The Proponent, or their representative, will conduct regular audits on contractors to ascertain compliance with this Grievance Procedure.

8.15.2 GRIEVANCE MECHANISM - INTERNAL

The Proponent will establish a Grievance Mechanism that will set out the process for workers to communicate their grievances. The grievance mechanism will be available to workers of the Proponent, Contractors and subcontractors.

A Code of Conduct will set out practice measures that the construction workers will have to adhere to, to ensure a positive relationship is built and maintained with the landowners and local communities.

8.16 HIV/AIDS MANAGEMENT PLAN

The HIV/AIDS management plan will be compiled in the event that the project is identified as a preferred bidder as part of the ESIPPPP (or a suitable private off-take agreement is concluded).

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

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

9 CONCLUSION

Sendawo BESS (RF) (Pty) Ltd is proposing the development of the Sendawo 132 kV Overhead Powerline and Associated up to 153 MW Battery Energy Storage System (BESS) Facility and Substation 6 km south of Vryburg in the North West Province. This report is specific to the Proposed Project.

This BA process considered the biophysical location of the proposed development, as well as a feasibility assessment by Sendawo BESS, which *inter alia* served to identify site options that would be optimal for grid interconnection. The purpose of the Proposed Project is to contribute to the national energy targets of diversification of energy supply and the promotion of clean energy via the ability to store energy and supply to the electric grid during high demand. The Proposed Project will also aid in overcoming the power shortages that are currently faced in the country. Other socio-economic benefits would result from the Proposed Project, including the increase of energy supply during high demand, employment opportunities and local economic development.

It is therefore the opinion of the EAP that provided this project is mitigated, as per the mitigation and management measures outlined in this EMPr, the project will result in impacts that should not negatively affect the environment. It is the applicant's responsibility to ensure that this EMPr is made binding on the contractor by including the EMPr in the contract documentation. The contractor must thoroughly familiarise himself with the requirements of the EMPr and appoint an EO to oversee the implementation of the EMPr on a day-to-day basis. In addition, the applicant must appoint an external ECO to undertake monthly compliance audits during construction against the requirements of the EMPr as well as the EA.

Parties responsible for transgression of this EMPr must be held responsible for any corrective actions that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence must receive penalties.

WSP is of the opinion that the project can proceed, provided that the outlined mitigation measures of the BA process and this EMPr are implemented effectively.

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.

Sendawo BESS also recognises that, in terms of NEMA, the cost to repair any environmental damage will be borne by the person responsible for the damage. Should the above-mentioned environmental guidelines and mitigation measures be adopted, it is anticipated that the negative environmental impacts of the Proposed Project will be mitigated adequately. Sendawo BESS 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

Attention: Jared Padavattan

(T) +27 31 240 8830

(E) Jared.Padavattan@wsp.com

Appendix A

EAP CV



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

CAREER SUMMARY

Ashlea is a Principal Associate with 19 years' experience in the environmental field. She currently provides technical and strategic expertise on a diverse range 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 Renewable Energy Developments and Transmission Powerlines. She also has significant environmental auditing experience and expertise having undertaken over 70 compliance audits. Ashlea holds a Masters in Environmental Management; a BTech (Nature Conservation), and a National Diploma (Nature Conservation). She is also a Registered Environmental Assessment Practitioner.



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

9 years with WSP

19 years of experience

Area of expertise

Auditing
ESIR
Energy
Infrastructure
Mining
Training
Waste Management

Language

English – Fluent
Afrikaans - Fluent

EDUCATION

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

ADDITIONAL TRAINING

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

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

Environmental Planning & Advisory, Principal Associate

PROFESSIONAL HISTORY

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

PROFESSIONAL EXPERIENCE

Energy Sector

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

Project Manager

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

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

Project Manager

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

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

Project Manager

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

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

Project Manager

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

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

Project Manager

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

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

Project Manager

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



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Red Rocket South Africa Limited, Bon Espirange to Komsberg 132kV Powerline Project, Matjiesfontein, Western Cape.
2021-2022

Project Manager

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

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

2021-2022

Project Manager

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

Calodex (Pty) Ltd., 100MW Solar Photovoltaic (PV) Plant, Springs in Gauteng, South Africa
2021

Project Director

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

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

2020

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

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

2019

Project Manager

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

Eskom Holdings SOC Limited, Ruigtevallei 132kV Powerline, Gariep in the Free State, South Africa
2019

Project Manager

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

Globeleq, Nakonde and Mpika Wind Energy Projects, Zambia
2018

Project Manager

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

G7 Renewable Energies, Rietkloof Wind Energy Facility Project, Matjiesfontein, Western Cape.
2018

Project Director

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

Southern African Power Pool (SAPP), Mozambique – Zambia Interconnector Powerline, Mozambique
2018

Project Manager

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

Eskom Holdings SOC Limited, Ankerlig – Koeberg 132kV powerline walkdown, South Africa
2017



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Project Manager

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

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

2018

Project Manager

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

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

2016

Project Manager

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

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

2015

Project Manager

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

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

2012

Strategic Environmental Advisor

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

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

2012

Project Manager

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

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

2012

Project Manager

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

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

2008

Project Manager

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

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



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

2008

Project Manager

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

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

2008

Project Manager

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

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

2008

Project Manager

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

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

2008

Project Manager

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

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

2008

Project Manager

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

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

2008

Project Manager

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

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

2008

Project Manager

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

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

2008

Project Manager

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



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

**Eskom Distribution – Central Regio, Basic Assessment for the proposed Watershed – Mmabatho 88kV Power line. Northwest, South Africa
2008**

Project Manager

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

**Eskom Distribution – Central Region, Proposed Watershed – Mmabatho 88kV Power line. Northwest, South Africa
2007**

Project Manager

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

**Eskom Holdings SOC Limited, Proposed Combined Cycle Gas Turbine Plant and Associated Infrastructure near Majuba, Mpumalanga, South Africa
2007**

Project Manager

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

**Eskom Generation, Proposed Capacity Increase of the Atlantis OCGT Plant and Associated Infrastructure, Western Cape, South Africa
2006**

Project Manager

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

**Eskom Holdings SOC Limited, Proposed Concentrated Solar Thermal Plant in the Northern Cape, South Africa
2006**

Project Manager

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

**Eskom Holdings SOC Limited, Proposed Underground Coal Gasification plant, Eskom, Mpumalanga, South Africa
2006**

Project Manager

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

**Eskom Generation, Proposed new Coal-fired Power Station in the Lephalale Area for Eskom, Limpopo, South Africa
2005**

Project Manager

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

**Eskom Generation, Proposed Open Cycle. Gas Turbine Power Station at Atlantis for Eskom, Western Cape, South Africa
2005**

Environmental Consultant

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

Infrastructure Sector



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

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

Project Manager

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

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

Project Director

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

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

Project Director

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

**Anglo American, Emalahleni Water Treatment Plant Amendment Project (EWRP), Emalahleni, Mpumalanga, South Africa.
2020**

Project Manager

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

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

Project Manager

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

**SANRAL, Rehabilitation of the R34 between Vryburg and Schweizer-Reneke, Vryburg and Schweizer-Reneke, Northwest, South Africa
2016**

Project Manager

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

**Envirocin Incineration Systems CC, Proposed Expansion of the Cremation Facilities at the Envirocin Pet Crematorium, Kyasands, Gauteng, South Africa
2013**

Project Manager

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

**Industrial Development Corporation of SA (Pty) Ltd, Proposed Kraft Paper Mill in Frankfort, Frankfort, Free State, South Africa
2013**

Project Manager

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

**SANRAL, Rehabilitation of the N14 between Delerayville and Sannieshof, Northwest, South Africa
2011**

Project Manager

This project involved the compilation of a Basic Assessment and Environmental Management Plan as well as the construction of a new bridge over the Hartsriver. This project also included the compilation of Water Use License and Mining Permit Applications.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

**Makhado Municipality, Proposed new Waterfall Cemetery, Limpopo, South Africa
2011**

Project Manager

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

**Johannesburg Roads Agency, Route determination of the proposed Metro Boulevard, Weltevreden Park Area, Gauteng, South Africa
2008**

Project Manager

This project involved the undertaking of an Environmental Impact Assessment.

**Eskom Generation, Proposed new fuel supply pipeline between Milnerton and Atlantis, Western Cape, South Africa
2007**

Project Manager

This project involved undertaking an Environmental Impact Assessment for the proposed new fuel supply pipeline between Milnerton and Atlantis to supply the Ankerlig Power Station.

Mining Sector

**Rietvlei Mining Company, Establishment of the Proposed Rietvlei Opencast Coal Mine, Middelburg, Mpumalanga, South Africa
2013**

Project Manager

This project involves the undertaking of an integrated environmental authorisation process, including an Environmental Impact Assessment, Environmental Management Programme Report, Waste Management License Application and Water Use License Application.

**AngloGold Ashanti, Decommissioning of Redundant Infrastructure at the Vaal River Operations, Northwest and Free State, South Africa
2013**

Project Manager

This project involves undertaking an integrated Environmental Authorisation and Waste Management License process for the proposed decommissioning of redundant infrastructure.

**AngloGold Ashanti (Pty) Ltd, Decommissioning of Redundant Infrastructure at the West Wits Operations, Gauteng, South Africa
2013**

Project Manager

This project involves undertaking a Basic Assessment process for the proposed decommissioning of redundant infrastructure.

**Exxaro Coal (Pty) Ltd Inyanda Mine Pegasus South Expansion, Middelburg, Mpumalanga, South Africa
2011**

Project Manager

This project included the compilation of an Environmental Impact Assessment, Environmental Management Plan, the Amendment of the existing Environmental Management Programme Report and the amendment of the existing Water Use License.

**Sishen Iron Ore (Pty) Ltd, Sishen Infrastructure Program, Northern Cape, South Africa
2010**

Project Manager

This project involved the compilation of an Environmental Impact Assessment and an Environmental Management Plan for the infrastructure expansion programme.

Sound Mining Solutions, Prospecting Permit Applications in the Kuruman area of the Northern Cape, South Africa



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

2011

Project Manager

This project involved the compilation of Environmental Management plans as part of six applications for Prospecting Permits.

Limpopo Department of Roads and Transport, Borrow pits required by the Limpopo Department of Roads and Transport, Limpopo, South Africa

2010

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits required for the rehabilitation of provincial roads.

Eskom Generation, Borrow pits required for the Medupi Coal Fired Power Station, Limpopo, South Africa

2008

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits for borrow pits.

Eskom Generation. Borrow pits required for the Ingula Pumped Storage Scheme, KwaZulu-Natal, South Africa

2008

Project Manager

This project involved the compilation of Environmental Management plans as part of the applications for Mining Permits.

Eskom Generation Project Manager, Mining Right Application for a 23 Hectare Borrow Pit required for the Steelpoort Pumped Storage Scheme, Mpumalanga, South Africa

2007

Project Manager

This project entailed the compilation of the required Environmental Management Programme Report in support of a Mining Right Application.

Minexpo, Renewed Mining and Prospecting Activities on the farm Quaggaskop 215, Vanrhynsdorp, Western Cape, South Africa

2004

Environmental Consultant

This project involved the compilation of an Environmental Management Programme Report for the recommencement of mining and prospecting activities.

Waste Management

Sasol Secunda Operations, Sasol Waste Management Environmental Management Programme, Secunda, South Africa

2019

Project Manager

Compilation of an operational Environmental Management Programme for the Sasol Waste Ash Facility, Charlie 1 Disposal Facility and the Waste Recycling Facility.

Eskom Holdings SOC Limited, Proposed continuous Ashing at Majuba Power Station, Mpumalanga, South Africa

2012

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Majuba Power Station in Mpumalanga.



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Eskom Holdings SOC Limited, Proposed continuous Ashing at Tutuka Power Station, Mpumalanga, South Africa
2012

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Tutuka Power Station in Mpumalanga.

Hendrina Power Station, Proposed extension of Ash Dams at Hendrina Power Station, Mpumalanga, South Africa
2011

Project Manager

This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed extension of the ash dams at the Hendrina Power Station in Mpumalanga.

Coega Development Corporation, Phase 1 of the Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility, Eastern Cape
2005

Project Manager

This project entailed the compilation Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility in the Eastern Cape.

Auditing

Sasol Chemical Industries, Secunda Synfuels Operations Waste Management License Audits for the Sasol Secunda, Mpumalanga, South Africa
2014 – 2021

Lead Auditor

These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities

South 32. Compliance Audits at South 32, Mpumalanga, South Africa
2016 – 2020

Project Manager

This project involved the environmental compliance audits of the Water Use Licenses for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga.

South 32, Compliance Audits at Middelburg Water Reclamation Plant (MWRP), Mpumalanga, South Africa
2016 – 2020

Project Manager

This project involved the environmental compliance audits of the Water Use License and Waste Management License for the MWRP at South 32 in Mpumalanga.

Nedbank, BioTherm Round 4 Lenders Technical Advisor, South Africa
2018 – 2021

Project Manager – Environmental

Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards.

Eskom Holdings SOC Limited, Water Use Licence Audits, Delmas, Mpumalanga, South Africa
2019

Lead Auditor

External compliance audits of the water use licences for the Delmas and Argent Powerlines in Mpumalanga.

Sasol Oil (Pty) Ltd, Sasol Alrode and Pretoria West Depot Audits, Pretoria, South Africa
2016 – 2020
Lead Auditor



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Environmental compliance audits for environmental authorisations and environmental management plans for the Sasol Alrode and Pretoria West Depots.

Sasol Oil (Pty) Ltd, Sasol Regulation 34 Audits, South Africa

2019

Lead Auditor

Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations.

Anglo American Platinum. Regulation 34 Audits at Mogalakwena Mine, Limpopo Province, South Africa

2019

Project Manager

Environmental compliance audits of the EMPR and various environmental authorisations at the Mogalakwena Mine.

Sasol Secunda Operations, Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations, Secunda, South Africa

2019

Lead Auditor

Environmental compliance audits for 49 authorisations for the Sasol Secunda.

Palabora Company, Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa

2019

Project Manager

Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine.

Sasol Mining, Water Use Licence Compliance, Secunda, South Africa

2018

Project Manager

Environmental compliance audit of six WULs held by mining operations.

South 32, Legal Assessment at South 32, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga, South Africa

2019

Project Manager and Lead Auditor

This project involved the assessment of legal compliance against the mine's legal register.

Investchem (Pty) Ltd, InvestChem Annual Environmental Compliance Monitoring, Kempton Park, Gauteng, South Africa

2013 – 2019

Lead Auditor

This project involved the annual environmental compliance auditing for InvestChem's Sulphonation Plant. The monitoring included InvestChem's compliance to various commitments contained in their environmental management programmes and conditions within their environmental authorisations (records of decision).

Sasol Oil (Pty) Ltd, Compliance Audits at Sasol Alrode and Pretoria West Depots, Gauteng, South Africa

2015 – 2019

Project Manager and Lead Auditor

Annual Environmental compliance auditing of the Environmental authorisations at the Alrode and Pretoria West Depots in Gauteng.

Eskom Holdings, Water Use Licence for the Letabo Power Station, Free State, South Africa

2018

Project Manager



Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Environmental compliance audit of the WUL held by Eskom Letabo Power Station.

**Seriti Coal, Compliance Audits at Kriel Colliery, Kriel, Mpumalanga, South Africa
2018**

Project Manager

This project involved the environmental compliance audits of the Water Use Licenses.

**South 32, Legal Assessment at South 32, Mpumalanga, South Africa
2017**

Project Manager and Lead Auditor

This project involved the assessment of legal compliance against the mine's legal register for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections.

**South 32, EMPR Performance Assessment Report at South 32, Mpumalanga, South Africa
2016**

Project Manager

This project involved the formal assessment and verification of the Environmental Management Programme Report for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections.

**ACWA Power, Solafrica Bokpoort CSP Power Plant (Pty) Ltd. Compliance Audit for the Bokpoort Concentrating Solar Power (CSP) Facility, Groblershoop, Northern Cape, South Africa
2016**

Lead Auditor

This project involved the environmental compliance auditing of the Waste Management License, Environmental Authorisation and Water Use License.

**Anglo Thermal Coal, EMPR Performance Assessment Report for the Landau Colliery, Mpumalanga, South Africa
2013**

Auditor

This project involved the formal assessment and verification of the Landau Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002).

**AfriSam Southern Africa (Pty) Ltd, Waste Management License Audit for the Slagment Operation, Vanderbijlpark, Gauteng, South Africa
2013**

Lead Auditor

This project involved the annual environmental compliance auditing for AfriSam's Slagment Operation in Vanderbijlpark in Gauteng Province. The audit included AfriSam's compliance to the conditions of their waste management license.

**Anglo American Thermal Coal, EMPR Performance Assessment Report for the New Vaal Colliery, Free State, South Africa
2006 – 2007**

Auditor

This project involved the formal assessment and verification of the New Vaal Colliery Environmental Management Programme Report, conducted in accordance with Regulation 55 of the Mineral and Petroleum Resources Development Act (No. 28 of 2002).

Environmental Control

**Wood South Africa (on behalf of Sasol South Africa Limited), Clean Fuels Projects (EHN & MFO, Large Tanks) Project, Secunda
2022-2024
Project Director**

Ashlea Strong

Environmental Planning & Advisory, Principal Associate

This project involved the monthly auditing of the contractor's compliance with the conditions of the environmental authorisation and environmental management plan for the Sasol Clean Fuels Projects in Secunda.

SANRAL.N14, rehabilitation between Sannieshof and Delareyville, Northwest, South Africa 2012

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer and SANRAL.

Victor Khanye Municipality. Delmas and Bontleng Wastewater Treatment Works, Mpumalanga, South Africa 2009

Environmental Control Officer

This project involved a once off compliance audit of the above-mentioned Wastewater Treatment Works.

Mkhondo Local Municipality. Nkonjaneni Water Borne Sewer Project in Piet Retief, Mpumalanga, South Africa 2009

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan as well as ad hoc environmental advise to the Project Engineer.

ERWAT, Upgrading of the Waterval Water Care Works, Gauteng, South Africa 2005 – 2007

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan.

City of Tshwane Lotus Gardens, Ext 2 Township establishment, Gauteng, South Africa 2003

Environmental Control Officer

This project involved the monthly auditing of the contractor's compliance with the conditions of the approved Environmental Management Plan.

Training

SANRAL, N14 rehabilitation between Sannieshof and Delareyville, Northwest, South Africa 2012

Project Manager

This project involved the provision of training for the staff of the N14 rehabilitation project with regards to the contents of the environmental management plan.

Mintek, Training in Environmental Aspects and Rehabilitation for the Small-Scale Mining Division of Mintek, City, Province, South Africa 2004

Trainer

This project involved the provision of environmental awareness training for delegates involved in the small-scale miner training programme run by the Mintek small scale mining division.

Transwerk, Training in Environmental Aspects and Impacts, Germiston, Gauteng, South Africa 2004

Trainer

This project involved the provision of environmental aspects and impacts training for the staff of Transwerk in Germiston.

**Environmental Assessment
Practitioners Association
of South Africa**



Registration No. 2015/1005

Herewith certifies that

Ashlea Strong

is registered as an

Environmental Assessment Practitioner

*Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).*

Effective: 01 March 2023

Expires: 29 February 2024

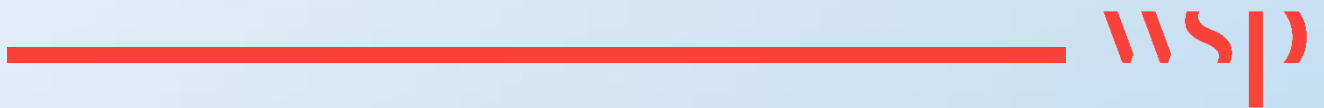
Chairperson

Registrar



Appendix B

EAP DECLARATION OF INTEREST AND OATH UNDERTAKING



**APPENDIX 12
UNDERTAKING UNDER OATH/ AFFIRMATION**

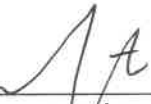
I, Ashlea Strong, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.



Signature of the Environmental Assessment Practitioner

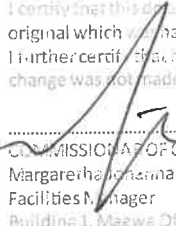
WSP Group Africa (Pty) Ltd
Name of Company

18/04/2023
Date



Signature of the Commissioner of Oaths

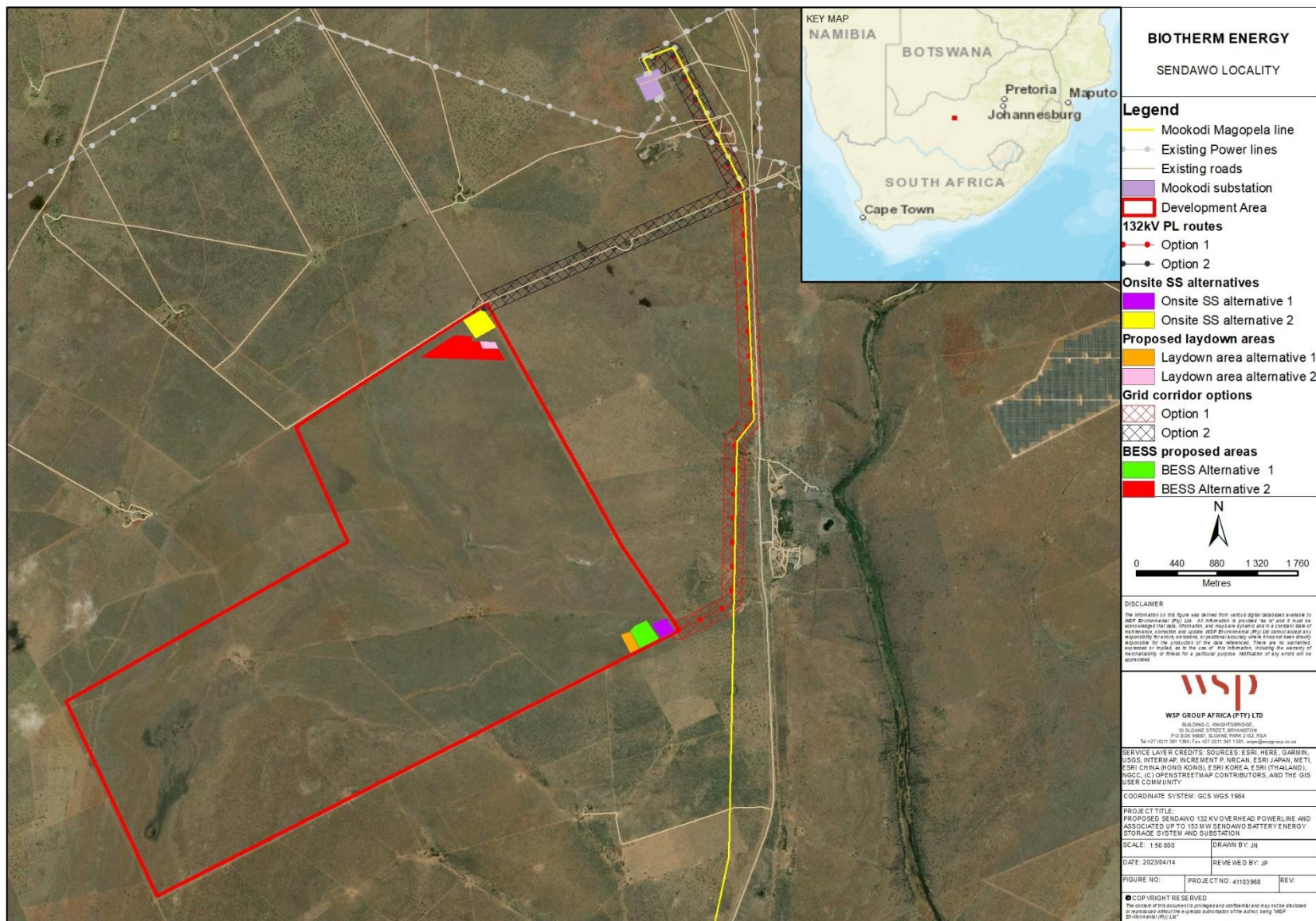
18 April 2023
Date

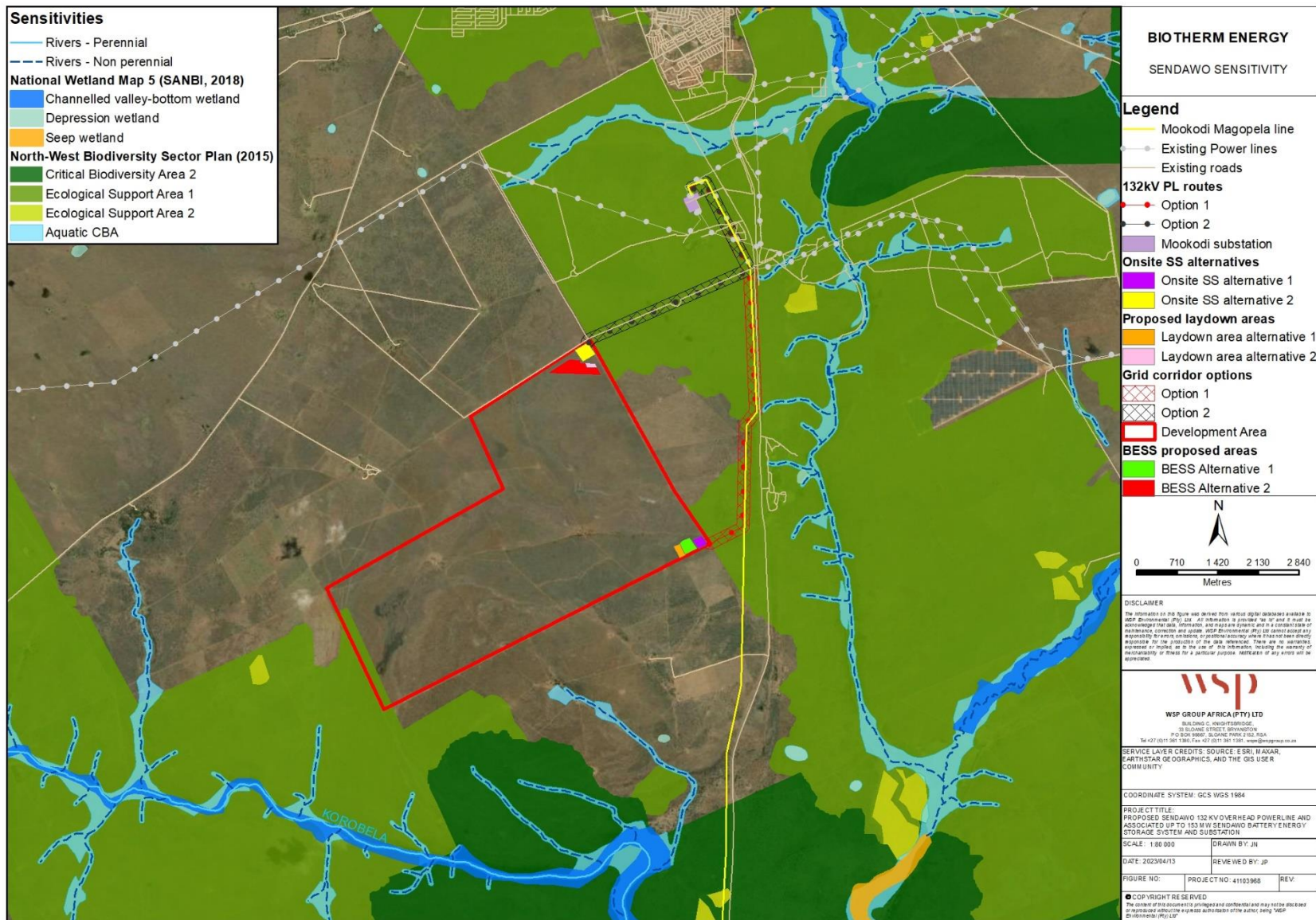
I certify that this document is a true and correct copy of the original which was handed to me for authentication.	
I further certify that from my observation, no amendment or change was made to the original document.	
	Date <u>18 April 2023</u>
COMMISSIONER OF OATHS	Ref: 97/17/2 Pretoria
Margaretha Jonhanna Kotze	2027/08/29
Facilities Manager	
Building 1, Magwa Office Park, Waterfall City, Midrand	

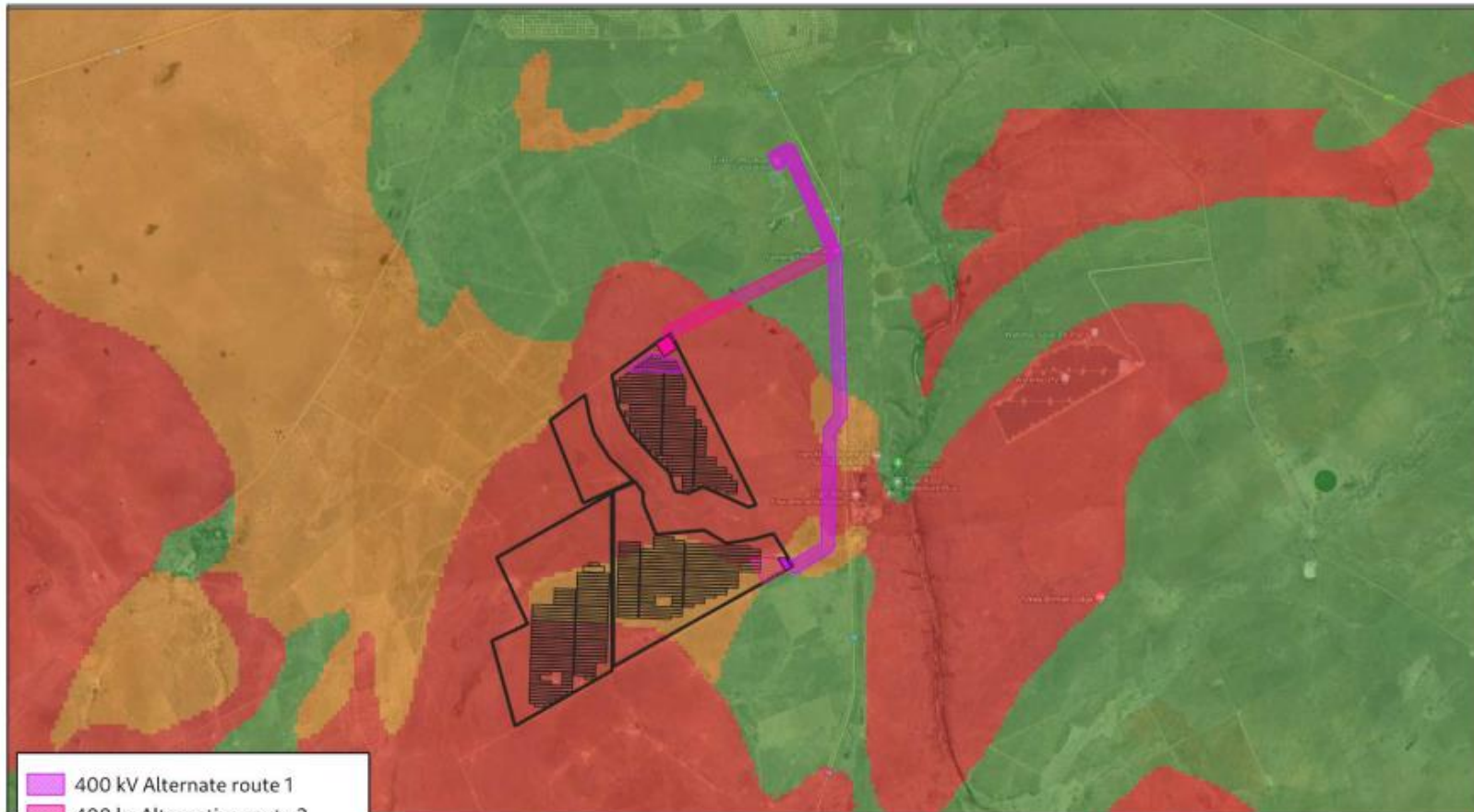
Appendix C

MAPS









- 400 kV Alternate route 1
- 400 kV Alternative route 2
- North Collector Substation
- South Collector Substation
- BESS Alternative 1
- BESS Alternative 2
- PV Array Layout
- Sendawo PV Development Area



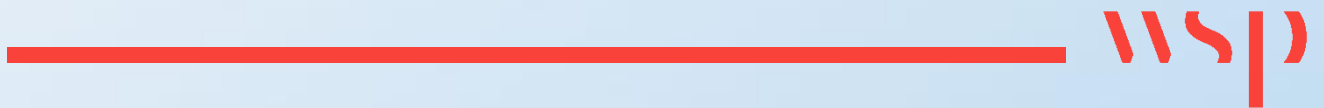
0 1 2 km

RED	Very high
ORANGE	High
GREEN	Moderate
BLUE	Low
GREY	Insignificant/zero
WHITE	Unknown



Appendix D

OVERHEAD POWERLINE GENERIC EMPR



APPENDIX 1

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

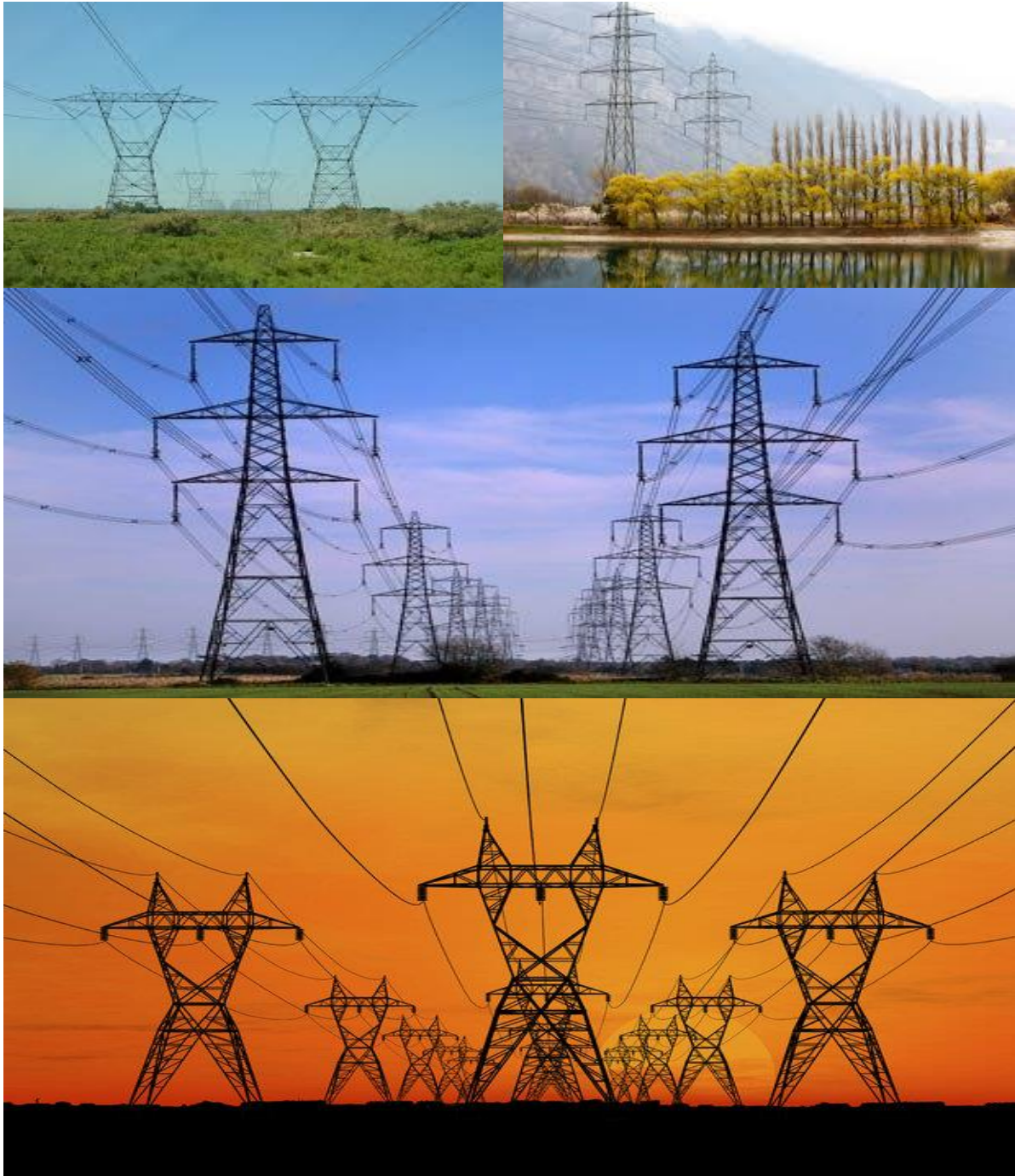




TABLE OF CONTENTS

INTRODUCTION	1
1. Background.....	1
2. Purpose.....	1
3. Objective	1
4. Scope	1
5. Structure of this document.....	1
6. Completion of part B: section 1: the pre-approved generic EMP template	4
7. Amendments of the impact management outcomes and impact management actions.....	4
8. Documents to be submitted as part of part B: section 2 site specific information and declaration.....	5
(a) Amendments to Part B: Section 2 – site specific information and declaration	5
PART A – GENERAL INFORMATION.....	6
1. DEFINITIONS.....	6
2. ACRONYMS and ABBREVIATIONS	7
National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)	7
3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION.....	8
4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE	14
4.1 Document control/Filing system.....	14
4.2 Documentation to be available	14
4.3 Weekly Environmental Checklist	14
4.4 Environmental site meetings	15
4.5 Required Method Statements.....	15
4.6 Environmental Incident Log (Diary)	16
4.7 Non-compliance	16
4.8 Corrective action records	17

4.9	Photographic record	17
4.10	Complaints register	18
4.11	Claims for damages.....	18
4.12	Interactions with affected parties.....	18
4.13	Environmental audits	19
4.14	Final environmental audits.....	19
PART B: SECTION 1: Pre-approved generic EMPr template		20
5.	IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS.....	20
5.1	Environmental awareness training.....	21
5.2	Site Establishment development	22
5.3	Access restricted areas	23
5.4	Access roads	24
5.5	Fencing and Gate installation	25
5.6	Water Supply Management.....	27
5.7	Storm and waste water management	28
5.8	Solid and hazardous waste management.....	29
5.9	Protection of watercourses and estuaries.....	30
5.10	Vegetation clearing.....	31
5.11	Protection of fauna	33
5.12	Protection of heritage resources.....	35
5.13	Safety of the public	35
5.14	Sanitation.....	36
5.15	Prevention of disease.....	37
5.16	Emergency procedures.....	39
5.17	Hazardous substances.....	39
5.18	Workshop, equipment maintenance and storage	42
5.19	Batching plants	43
5.20	Dust emissions	44
5.21	Blasting	45
5.22	Noise	45
5.23	Fire prevention.....	46
5.24	Stockpiling and stockpile areas.....	47

5.25	Finalising tower positions	48
5.26	Excavation and Installation of foundations	48
5.27	Assembly and erecting towers	49
5.28	Stringing	51
5.29	Socio-economic.....	53
5.30	Temporary closure of site	53
5.31	Landscaping and rehabilitation	54
6	ACCESS TO THE GENERIC EMPr.....	57
PART B: SECTION 2.....		58
7	SITE SPECIFIC INFORMATION AND DECLARATION.....	58
7.1	Sub-section 1: contact details and description of the project.....	58
7.2	Sub-section 2: Development footprint site map	69
7.3	Sub-section 3: Declaration	76
7.4	Sub-section 4: amendments to site specific information (Part B; section 2).....	76
8	SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES	77
APPENDIX 1: METHOD STATEMENTS.....		79

List of tables

Table 1: <i>Guide to roles and responsibilities for implementation of an EMPr</i>	8
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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 overhead electricity transmission and distribution infrastructure, 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 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.

4. 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.

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
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Part	Section	Heading	Content
A		Provides general guidance and information and is not legally binding	Definitions, acronyms, roles & responsibilities 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 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	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

Part	Section	Heading	Content
			<p>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 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</p>

Part	Section	Heading	Content
			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> .
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.

6. Completion of part B: section 1: the pre-approved generic EMP 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 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.

(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 EMPr for the development and the EMPr 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 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; and

“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></p> <p>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.

Responsible Person (s)	Role and Responsibilities
Developer Site Supervisor (DSS)	<p><u>Role</u></p> <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.
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,</p>

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

Responsible Person (s)	Role and Responsibilities
	<p>reviewing the training programmes of the Contractor;</p> <ul style="list-style-type: none"> - 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.
<p>developer Environmental Officer (dEO)</p>	<p><u>Role</u></p> <p>The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities.</p> <p><u>Responsibilities</u></p> <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;

Responsible Person (s)	Role and Responsibilities
	<ul style="list-style-type: none"> - 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 for overhead electricity transmission and distribution infrastructure activities.</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - project delivery and quality control for the development services as per appointment; - employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; - ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary</p>

Responsible Person (s)	Role and Responsibilities
	<p>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 overhead electricity transmission and distribution 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. 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.

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, 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 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.

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 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 I. 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> <p>d) Emergency procedures;</p> <p>e) Procedures to be followed when working near or within sensitive areas;</p> <p>f) Wastewater management procedures;</p> <p>g) Water usage and conservation;</p> <p>h) Solid waste management procedures;</p> <p>i) Sanitation procedures;</p> <p>j) Fire prevention; and</p> <p>k) Disease prevention.</p> <p>– A record of all environmental awareness training courses undertaken as part of the EMP must be available;</p> <p>– Educate workers on the dangers of open and/or unattended fires;</p> <p>– A staff attendance register of all staff to have received environmental awareness training must be available.</p> <p>– Course material must be available and presented in appropriate languages that all staff can understand.</p>						
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5.2 Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– A method statement must be provided by the contractor prior						

<p>to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including 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

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
– 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 clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited.						
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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
– Access to the servitude and tower positions must be negotiated with the relevant landowner and must fall within the assessed and authorised area; – An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; – The access roads to tower positions must be signposted after access has been negotiated and before the commencement of the activities; – All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition – All contractors must be made aware of all these access routes. – Any access route deviation from that in the written						

<p>agreement must be closed and re-vegetated immediately, at the contractor's expense;</p> <ul style="list-style-type: none"> 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 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 						

<p>agreed with the landowner;</p> <ul style="list-style-type: none"> – 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 reinforced concrete sill must be provided beneath the gate; – 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 overhead transmission and distribution electricity infrastructure development activities; – 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; – 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; 						
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– 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. 						

5.7 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
<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, at a location approved by the project manager; – All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; – Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's 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. 						

5.8 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
<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 collection site must be identified and provided; – The waste collection site must be maintained in a clean and orderly manner; – Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; – Staff must be trained in waste segregation; – Bins must be emptied regularly; – General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; – Hazardous waste must be disposed of at a registered waste disposal site; – Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						

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 – 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; 						

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
General: <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 						

<p>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> <ul style="list-style-type: none"> – Permits for removal must be obtained from the Department of Agriculture, Forestry and Fisheries 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 registered pest control operator, supervision of a registered pest control operator or is appropriately trained; – 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>Servitude:</p> <ul style="list-style-type: none"> – 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 						
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<p>area, and then only at the discretion of the Project Manager;</p> <ul style="list-style-type: none"> – 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 – Alien invasive vegetation must be removed according to a plan (in line with relevant municipal and provincial procedures, guidelines and recommendations) and disposed of at a recognised waste disposal facility; – 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; – 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; – 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. 						
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5.11 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
<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; – Nesting sites on existing parallel lines must be documented; – Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; – Bird guards and diverters must be installed on the new line as per the recommendations of the specialist; – No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; – No deliberate or intentional killing of fauna is allowed; – In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and – No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits. 						

5.12 Protection of heritage resources

Impact management outcome: Minimise impact to heritage resources.						
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. 						

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. 						
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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
<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.						
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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
– 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;						

<ul style="list-style-type: none"> – 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. 						
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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; – 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). 						

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; 						

<ul style="list-style-type: none"> – 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); – 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 bowzers; – The tanks/ bowzers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowzers (110% statutory requirement plus an allowance for rainfall); 						
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<ul style="list-style-type: none"> – 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 required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; – 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 						
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solid and hazardous waste management.						
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5.18 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
<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 fire as soon as it starts; 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. 						

5.19 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
<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; 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

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
<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 be re- vegetated or stabilised as soon as is practically possible; – 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; 						

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

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
<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: 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
<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. 						

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; 						

<ul style="list-style-type: none"> – 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. 						
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5.24 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
<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 minimise impacts to watercourses, watercourses and water bodies; – 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. 						

5.25 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
<ul style="list-style-type: none"> No vegetation clearing must occur during survey and pegging operations; No new access roads must be developed to facilitate access for survey and pegging purposes; Project manager, botanical specialist and contractor to agree on final tower positions based on survey within assessed and approved areas; 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. 						

5.26 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
<ul style="list-style-type: none"> 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; 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 . – 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 .						
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5.27 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
– 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						

<p>helicopter or by hand where it is warranted to limit the extent of environmental impact;</p> <ul style="list-style-type: none"> – Access to tower positions to be undertaken in accordance with access requirements in specified in Section 8.4: Access Roads; – Vegetation clearance to be undertaken in accordance with general vegetation clearance requirements specified in Section 8.10: Vegetation clearing; – No levelling at tower sites must be permitted unless approved by the Development Project Manager or Developer Site Supervisor; – Topsoil must be removed separately from subsoil material and stored for later use during rehabilitation of such tower sites; – Topsoil must be stored in heaps not higher than 1m to prevent destruction of the seed bank within the topsoil; – Excavated slopes must be no greater than 1:3, but where this is unavoidable, appropriate measures must be undertaken to stabilise the slopes; – 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; – Only existing disturbed areas are utilised as spoil areas; – Drainage is provided to control groundwater exit gradient with the spill areas such that migration of fines is kept to a minimum; – Surface water runoff is appropriately channeled through or around spoil areas; – During backfilling operations, care must be taken not to dump the topsoil at the bottom of the foundation and then 						
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<ul style="list-style-type: none"> put spoil on top of that; The surface of the spoil is appropriately rehabilitated in accordance with the requirements specified in Section 5.29: Landscaping and rehabilitation; The retained topsoil must be spread evenly over areas to be 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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5.28 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"> 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; The winch and tensioner station must be equipped with drip trays in order to contain any fuel, hydraulic fuel or oil spills and leaks; Refueling of the winch and tensioner stations must be undertaken in accordance with Section 5.17: Hazardous substances; In the case of the development of overhead transmission 						

<p>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> <ul style="list-style-type: none"> – Alternative methods of stringing which limit impact to the environment must always be considered e.g. by hand or by using a helicopter; – 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; – 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; – 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; – Necessary scaffolding protection measures must be installed to prevent damage to the structures supporting certain high value agricultural areas such as vineyards, orchards, nurseries. 						
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5.29 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
<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. 						

5.30 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: management of hazardous 						

<p>substances and 5.18 workshop, equipment maintenance and storage;</p> <ul style="list-style-type: none"> – 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. 						
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5.31 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 to a registered waste site and certificates of disposal provided; – 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 tower sites and 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; 						
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<ul style="list-style-type: none"> – Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled ; – 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:

Sendawo BESS (RF) (Pty) Ltd is the project proponent (Applicant) with regards to this application for the construction and operation of the Sendawo OHPL.

Proponent:	Sendawo (RF) (Pty) Ltd
Contact Person:	Robert Dan Skjodt
Postal Address	Building 1, Leslie Ave East, Design Quarter District, Fourways
Telephone:	011 367 4641
Email:	eiaadmin@biothermenergy.com

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA process for the proposed project. The CV of the EAP is available in Appendix A of the Site Specific EMPr. The EAP declaration of interest and undertaking is included in Appendix B of the Site Specific EMPr.

EAP	WSP Group Africa (PTY) Ltd
Company Registration:	1999/008928/07
Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392

Fax:	011 361 1381
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 1.2 of the EMPr

7.1.3 Project name:

Sendawo 132 kV Overhead Powerline and Associated up to 153 MW Battery Energy Storage System (BESS) Facility and Substation

7.1.4 Description of the project:

The proposed Sendawo OHPL Corridor falls within the Vryburg Renewable Energy Development Zones (REDZ) and one of the Northern Strategic Transmission Corridor; and as per Government Notice (GN) No. 145 in Government Gazette 44191 will be subject to a Basic Assessment (BA) Process in terms of NEMA (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017.

BioTherm Energy (Pty) Ltd, under its Special Purpose vehicle (SPV); Sendawo BESS (RF) (Pty) Ltd (hereafter referred to as "Sendawo BESS"), proposes to construct and operate a 132kV Overhead Powerline (OHPL) and associated up to 153 MW Battery Energy Storage System (BESS) Facility and Substation located approximately 6km South of Vryburg in the North West Province. The Proposed Project will allow for the previously authorised Sendawo Solar Energy Facilities (SEF) and proposed BESS Facility to be connected to the Eskom grid, whilst the BESS Facility will provide peak shifting power with a capacity of up to 153 MW and output of up to 612 MWh to be evacuated to the Eskom grid.

The transmission line will be a 132kV steel single or double structure with kingbird conductor. The powerline towers will either be steel lattice or monopole structures. It is anticipated that towers will be located approximately 200m to 250m apart, with a 100m corridor on either side of the centerline. The preferred route being alternative 1.

The proposed BESS Facility will utilize either of the two BESS technology options; Liquid Cooled Lithium-ion batteries; or Vanadium Redox Flow batteries (VRFB), required for applications set out in the Energy Storage Independent Power Producer's Procurement Programme (ESIPPPP)

Request for Proposal (RfP), as issued by the Independent Power Producer (IPP) office. The batteries will be charged via the Eskom grid and energy will be discharged back to the grid according to a Power Purchase Agreement (PPA) with Eskom.

7.1.5 Project location:

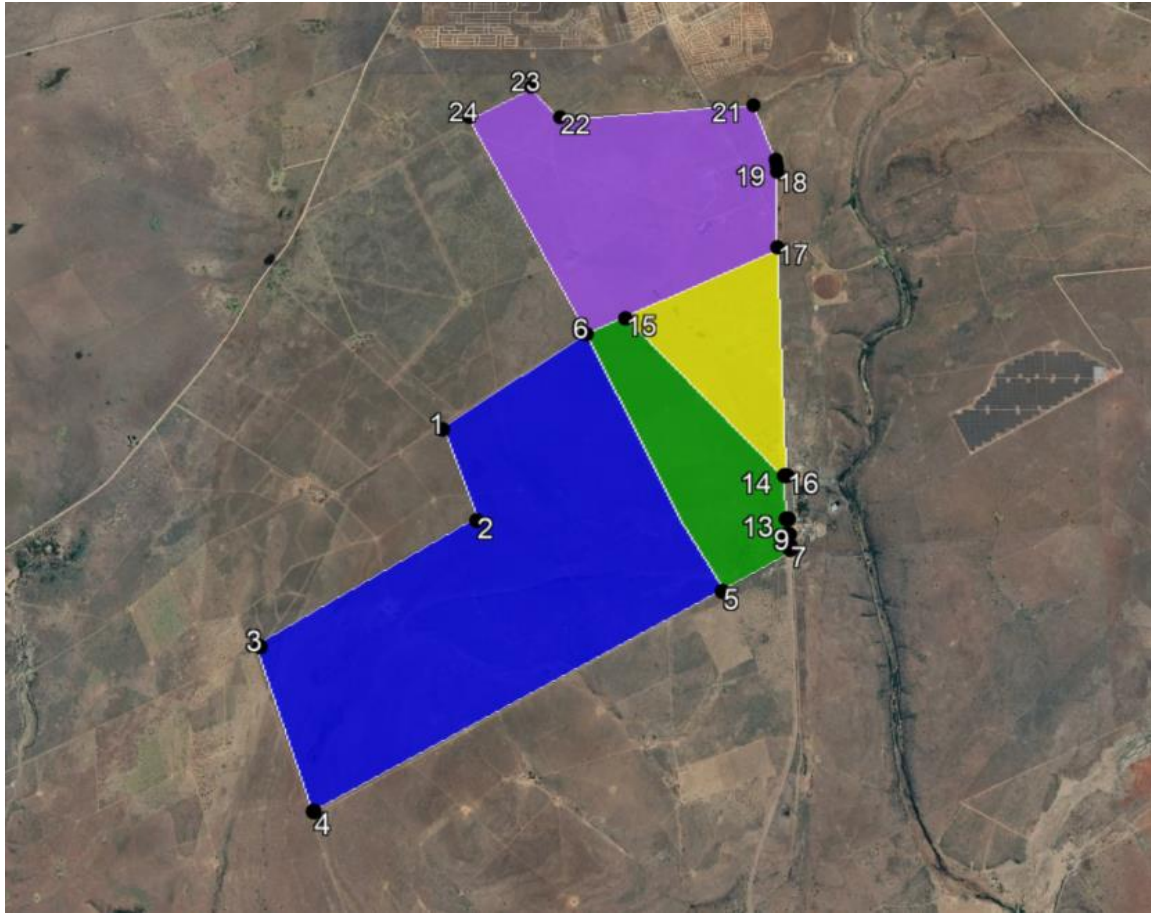
The proposed Overhead Powerline route will traverse a length of approximately 7.2 km (The preferred route being alternative1). The proposed BESS, laydown and substation will be developed within a project area of approximately 10 hectares (ha) at the previously authorised Sendawo 1, 2 and 3, 75MW (each) PV Facility (collected referred to as the Sendawo SEF for the purpose of this report), approximately 6 km south of Vryburg, North West Province. The site will be accessed via the N18, utilising existing access roads from the Eskom Mookodi Substation to the proposed Overhead Powerline, BESS and Substation.

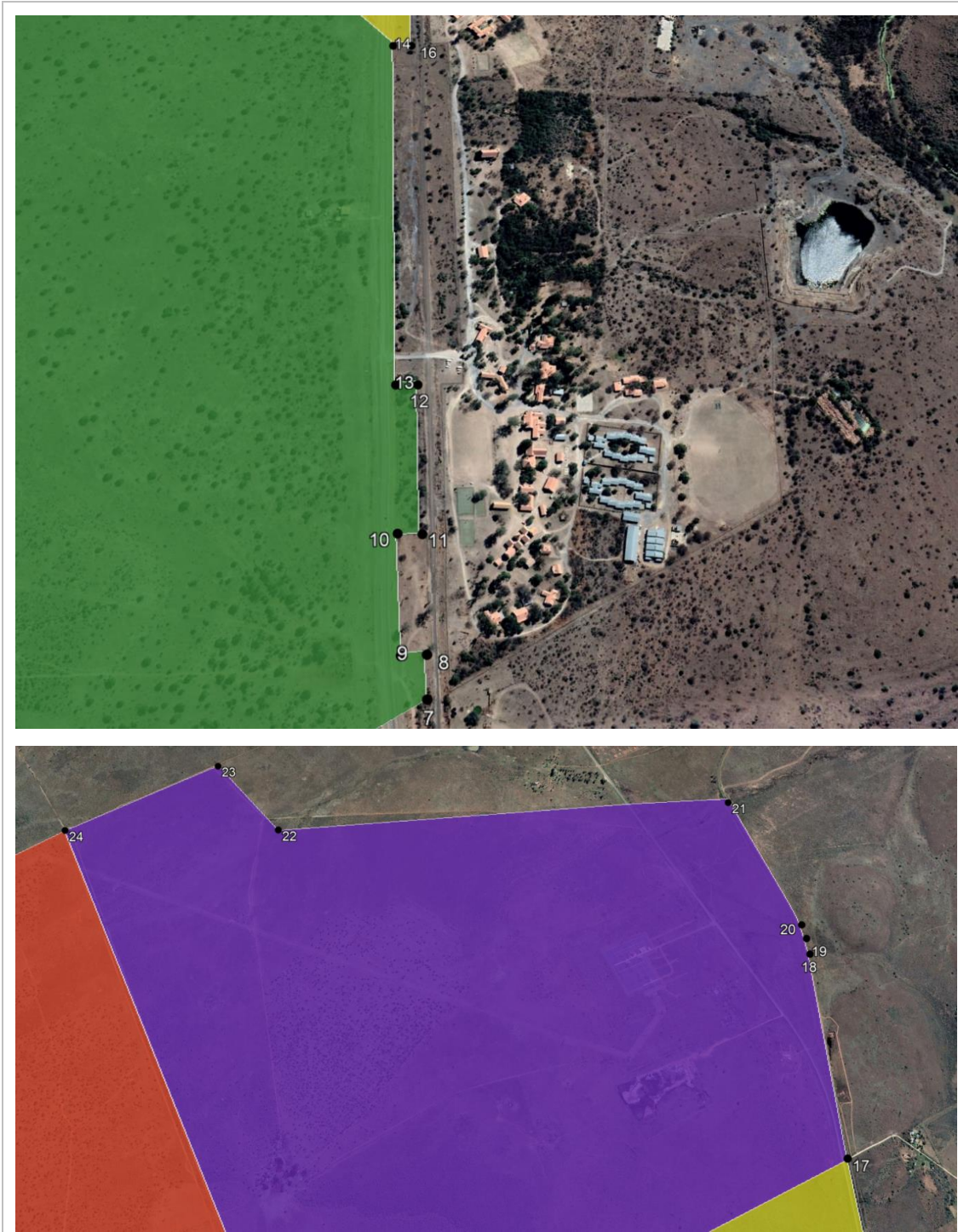
The site will be accessed via the N18 and existing access roads. The details of the properties associated with the proposed Sendawo OHPL, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in Table 1. The co-ordinates of the cadastral land parcels are included in Table 2. The coordinates of the corridor are provided in Table 3.

Table 1 – Sendawo Overhead Powerline and Associated BESS Facility and Substation Affected Farm Portions

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
Portion 1 of Farm Edinburgh 735	TOHN00000000073500001
Portion 0 of Farm Rosendal 673	TOIN00000000067300000
Portion 4 of Farm Waterloo 730	TOIN00000000073000004
Remainder of Farm Waterloo 730	TOIN00000000073000003

Table 2 – Coordinate Points of the Cadastral Land Parcel that will site the Overhead Powerline, and associated BESS Facility and Substation

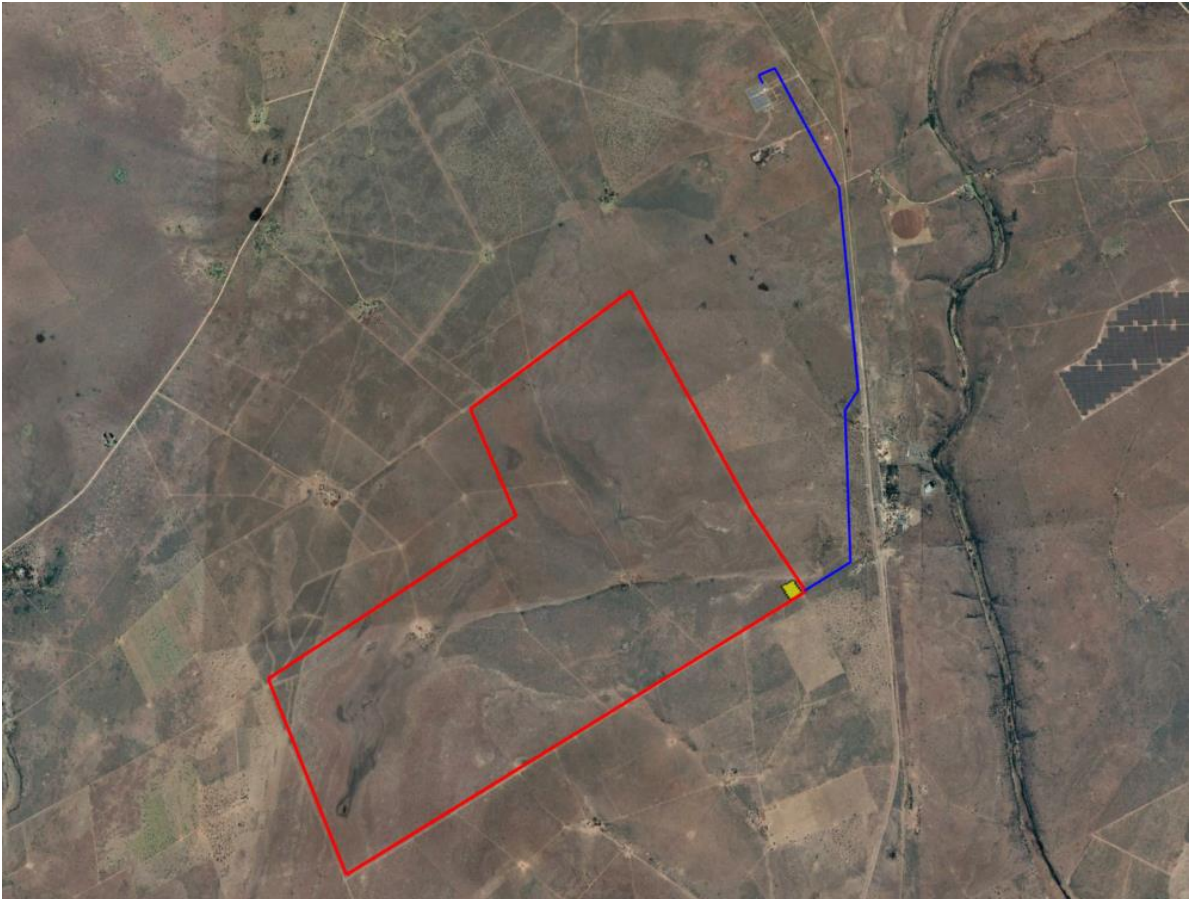
Point	Longitude	Latitude
		



Portion 1 of Farm Edinburgh 735 (Dark Blue)		
1	24°42'32.23"E	27° 2'39.67"S
2	24°42'50.92"E	27° 3'20.85"S
3	24°41'13.29"E	27° 4'16.28"S
4	24°41'44.01"E	27° 5'24.31"S

5	24°44'47.77"E	27° 3'51.40"S
6	24°43'40.24"E	27° 1'54.58"S
Portion 0 of Farm Waterloo 730 (Green)		
5	24°44'47.77"E	27° 3'51.40"S
6	24°43'40.24"E	27° 1'54.58"S
7	24°45'19.68"E	27° 3'32.81"S
8	24°45'19.63"E	27° 3'31.09"S
9	24°45'18.47"E	27° 3'31.14"S
10	24°45'18.17"E	27° 3'26.13"S
11	24°45'19.33"E	27° 3'26.16"S
12	24°45'18.98"E	27° 3'19.32"S
13	24°45'17.87"E	27° 3'19.32"S
14	24°45'17.11"E	27° 2'59.86"S
15	24°43'59.17"E	27° 1'46.99"S
Remainder of Farm Waterloo 730 (Yellow)		
14	24°45'17.11"E	27° 2'59.86"S
15	24°43'59.17"E	27° 1'46.99"S
16	24°45'18.19"E	27° 2'59.85"S
17	24°45'14.17"E	27° 1'11.93"S
Portion 0 of Farm Rosendal 673 (Purple)		
6	24°43'40.24"E	27° 1'54.58"S
15	24°43'59.17"E	27° 1'46.99"S
17	24°45'14.17"E	27° 1'11.93"S
18	24°45'14.13"E	27° 0'34.06"S
19	24°45'14.02"E	27° 0'30.82"S
20	24°45'13.52"E	27° 0'27.93"S
21	24°45'2.14"E	26°59'59.93"S
22	24°43'23.10"E	27° 0'6.72"S
23	24°43'7.66"E	26°59'50.95"S
24	24°42'36.63"E	27° 0'6.91"S

Table 3 – Sendawo Overhead Powerline Co-ordinates

Point	Longitude	Latitude
		



Overhead Powerline Development Area

Overhead Powerline Alternative 1 (Blue) (Preferred OHPL route)

Start 1	24°44'48.89"E	27° 3'48.68"S
2	24°45'8.22"E	27° 2'41.89"S
3	24°45'13.87"E	27° 2'34.82"S
4	24°45'10.17"E	27° 1'13.78"S
5	24°44'45.43"E	27° 0'24.20"S
6	24°44'38.25"E	27° 0'26.36"S
End	24°44'39.78"E	27° 0'30.40"S
Pylons		
P01	24° 44' 47.636" E	27°03'048.539"S
P02	24° 44' 54.380" E	27°03'044.887"S

P03	24° 45' 0.311" E	27°03'041.860"S
P04	24° 45' 6.887" E	27°03'038.504"S
P05	24° 45' 7.127" E	27°03'030.924"S
P06	24° 45' 7.197" E	27°03'022.362"S
P07	24° 45' 7.325" E	27°03'015.715"S
P08	24° 45' 7.453" E	27°03'09.068"S
P09	24° 45' 7.580" E	27°03'02.421"S
P10	24° 45' 7.708" E	27°02'055.774"S
P11	24° 45' 7.836" E	27°02'049.127"S
P12	24° 45' 7.981" E	27°02'041.555"S
P13	24° 45' 13.970" E	27°02'034.010"S
P14	24° 45' 13.736" E	27°02'028.556"S
P15	24° 45' 13.551" E	27°02'024.255"S
P16	24° 45' 13.266" E	27°02'017.612"S
P17	24° 45' 12.981" E	27°02'010.969"S
P18	24° 45' 12.696" E	27°02'04.326"S
P19	24° 45' 12.411" E	27°01'057.683"S
P20	24° 45' 12.126" E	27°01'051.040"S
P21	24° 45' 11.841" E	27°01'044.397"S
P22	24° 45' 11.556" E	27°01'037.753"S
P23	24° 45' 11.271" E	27°01'031.110"S
P24	24° 45' 10.986" E	27°01'024.467"S
P25	24° 45' 10.735" E	27°01'018.628"S
P26	24° 45' 10.525" E	27°01'013.735"S
P27	24° 45' 7.341" E	27°01'07.406"S
P28	24° 45' 3.253" E	27°00'059.283"S
P29	24° 45' 0.204" E	27°00'053.222"S
P30	24° 44' 57.154" E	27°00'047.161"S
P31	24° 44' 54.105" E	27°00'041.100"S
P32	24° 44' 51.056" E	27°00'035.039"S
P33	24° 44' 48.007" E	27°00'028.978"S
P34	24° 44' 45.375" E	27°00'023.746"S

P35	24° 44' 38.140" E	27°00'026.509"S
P36	24° 44' 39.834" E	27°00'030.033"S

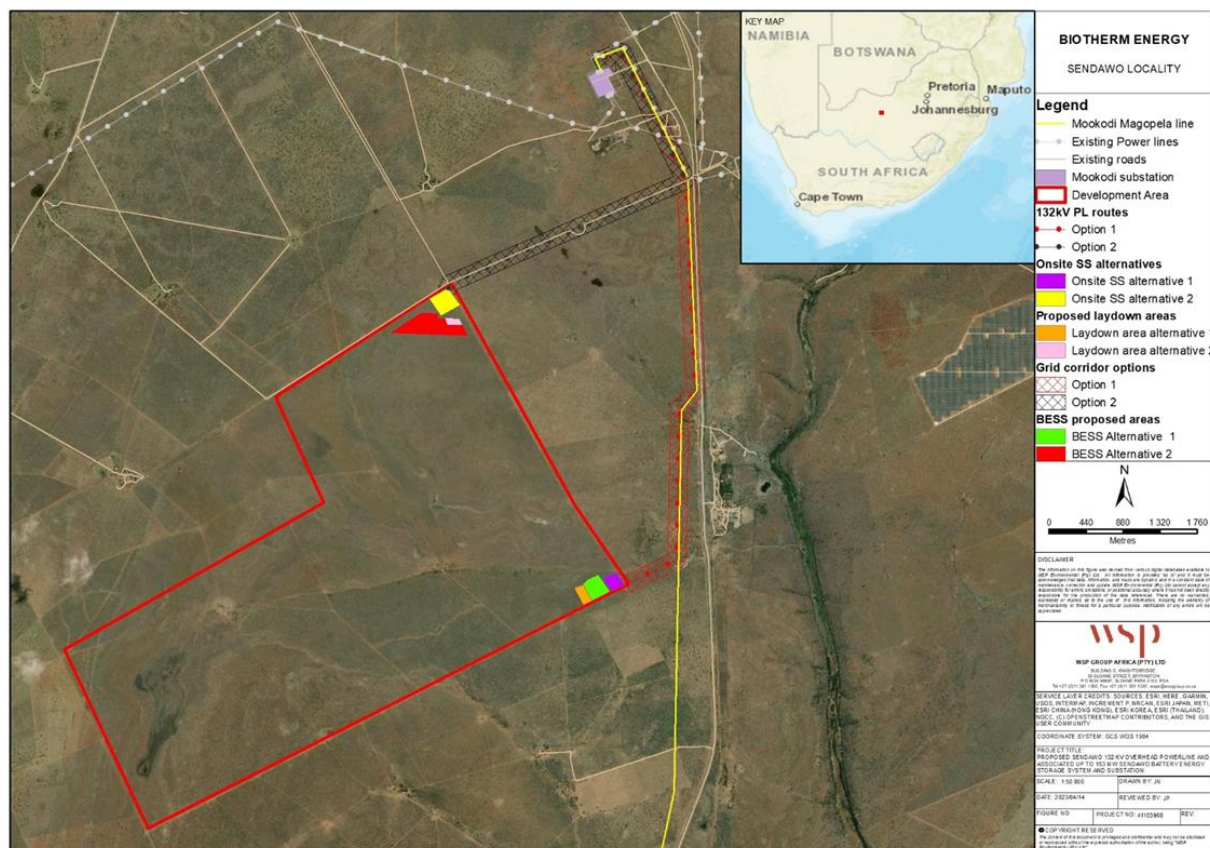


Figure 1: Locality and layout map of the Proposed Project (including the EGI corridor)

7.16 Preliminary technical specification of the overhead transmission and distribution:

Refer to Section 2 of the EMPr

The corridor has been assessed by the specialists for approval to allow for micro siting of the line routing and pylon positions once the detailed design has been completed. The project footprint within the corridor will contain the following:

- Overhead lines and pylons:
 - 132kV steel single or double structure with kingbird conductor;
 - Pylon towers will be located approximately 200 m apart;
 - 200 m corridor around the OHPL (100 m on either side of the centreline);
 - Requiring a registered servitude of approximately 45 m;
- Switching stations:
 - A high voltage substation yard to allow for multiple 132 kV feeder bays and transformers;
 - The control building, telecommunication infrastructure, oil dams(s) etc; and

- All the access road infrastructure to and within the substation.
- The onsite HV substation will be constructed with a maximum footprint of approximately 150 m x 150 m, and encloses the 22 kV/66 kV HV power transformer, a lightning mast with a maximum height of 24 m, tower sections, earthing switches, circuit breakers, surge arrestors, busbars, and other miscellaneous substation equipment, including a substation building containing MV switchgear, control and protection equipment;
- Other infrastructure:
 - Access tracks
 - Temporary laydown areas (including temporary fuel (and lubricants) and powder cement storage facilities)
 - The project will include the development of up to 153MW/612MWh Battery Energy Storage System.
 - Lightning masts with a maximum height of 24 m;

The relevant footprints and total disturbance footprint for the project are detailed in the Error! Reference source not found. below.

Table 4 – Project Footprints

Project component	Disturbance footprint (ha) (alternative 1)	Disturbance footprint (ha) (alternative 2)
Overhead Powerline (includes 40m servitude buffer)	32.4	22.1
BESS	5	12.4
Substation	2.8	5.8
Access roads and tracks (includes utilisation of new and existing access roads, and excludes OHPL maintenance track)	21.6	12
Laydown Areas	2.3	1.2
Total disturbance footprint: Temporary	2.3	1.2
Total disturbance footprint: Permanent	61.8	52.3
Total	64.1	53.5

Overhead lines and pylons

The OHPL will be a 132kV steel single or double structure with kingbird conductor. The powerline towers will either be steel lattice or monopole structures. It is anticipated that pylon towers will be located approximately 200m apart. The corridor has been assessed by the specialists for approval to allow for micro siting of tower positions.

Switching Stations

An onsite substation will be established within the extent of the authorised Sendawo SEF. The following infrastructure is proposed:

- A high voltage substation yard to allow for multiple 132 kV feeder bays and transformers;
- The control building, telecommunication infrastructure, oil dams(s) etc; and
- All the access road infrastructure to and within the substation.
- The onsite HV substation will be constructed with a maximum footprint of approximately 150 m x 150 m, and encloses the 22 kV/66 kV HV power transformer, a lightning mast with a maximum height of 24 m, tower sections, earthing switches, circuit breakers, surge arrestors, busbars, and other miscellaneous substation equipment, including a substation building containing MV switchgear, control and protection equipment;

The power from the proposed on-site substation will be evacuated via the proposed OHPL and feed into the operational Eskom 400 kV Mookodi substation.

Other Infrastructure

Access roads

The site will be accessed via the N18 for both alternatives, utilising existing access roads from the Eskom Mookodi Substation to the proposed Overhead Powerline, BESS and on-site Substation. Existing access roads and tracks (upgraded to $\pm 2-4$ m wide where needed) will be used as far as possible and new access tracks would be created where required ($\pm 2-4$ m wide).

Temporary laydown areas

Temporary laydown areas will be sited adjacent to the Battery Energy Storage System area. It is anticipated that the total area required for the temporary laydown areas is up to 2.3ha and two will be required. The temporary laydown area will include temporary fuel (and lubricants) and powder cement storage facilities for use during the construction phase.

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. 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 of the EMPr



Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources</i>	Medium to Low Sensitivity	Low Sensitivity
Animal Species Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species</i>	Medium to Low Sensitivity	Medium to Low Sensitivity
Aquatic Biodiversity Compliance Statement	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for</i>	Very High Sensitivity (OHPL 1) and	Low Sensitivity

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
	<i>Environmental Impacts on Aquatic Biodiversity</i>	Low Sensitivity (BESS and substations)	
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity (OHPL1), and Low Sensitivity (BESS and substations)	Low Sensitivity with the exception to high sensitivity archaeological sites 45521 and 45529
Civil Aviation Theme	No specialist assessment protocol identified by the Screening Tool	Medium Sensitivity	Low Sensitivity (as verified by the EAP)
Relative Defence Theme	No specialist assessment protocol identified by the Screening Tool	Medium Sensitivity	Low Sensitivity (as verified by the EAP)
Palaeontology Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity	High Sensitivity
Plant Species Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species</i>	Low Sensitivity	Low Sensitivity
Terrestrial Biodiversity Compliance Statement	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very High Sensitivity (OHPL 1) and Low Sensitivity (BESS and substations)	Medium to Low Sensitivity



Figure 3: Map of Agriculture Sensitivity of OHPL

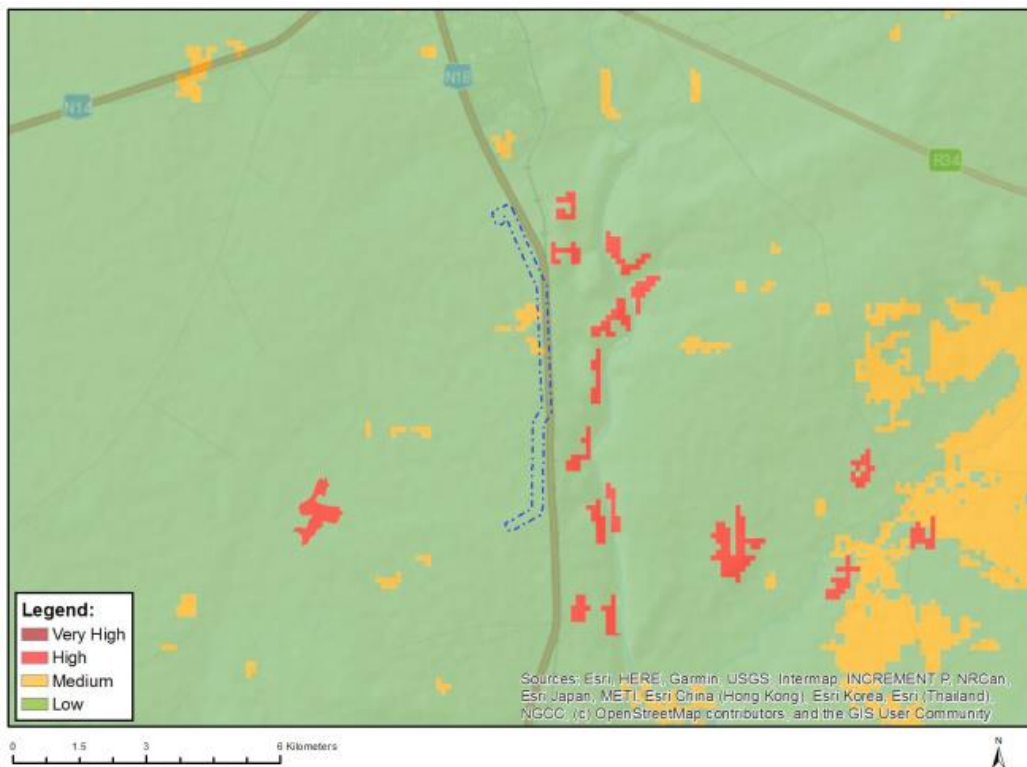


Figure 4: Map of Animal Species Sensitivity of OHPL

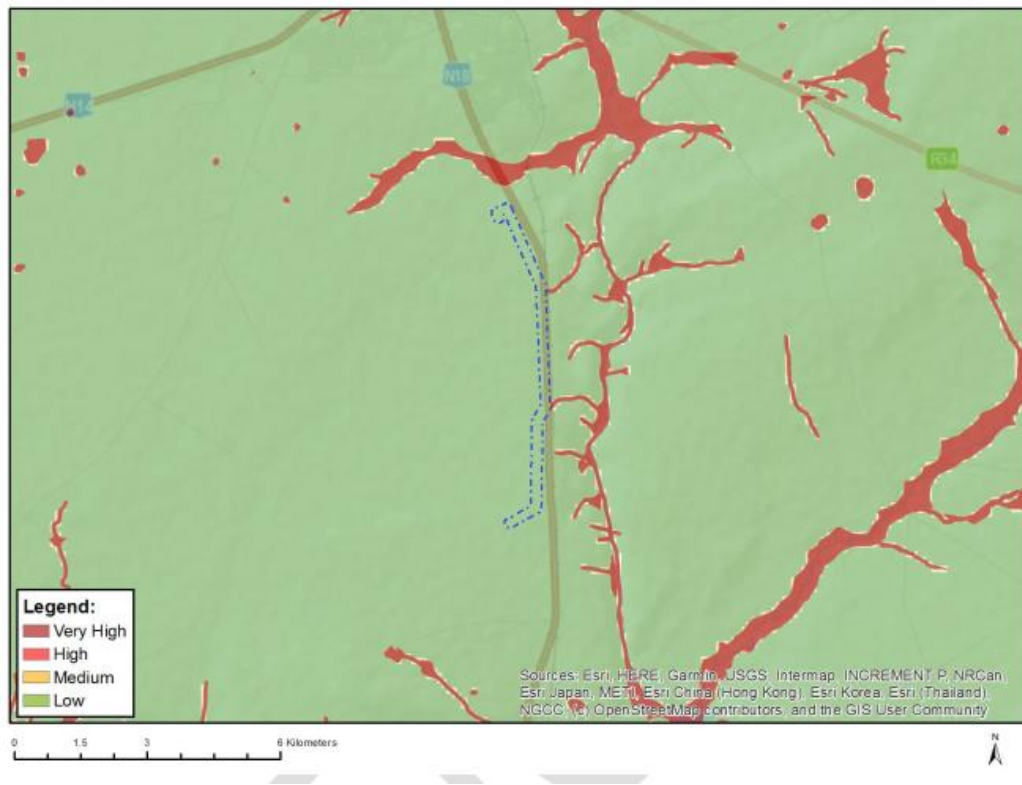


Figure 5: Map of Aquatic Biodiversity Sensitivity of OHPL

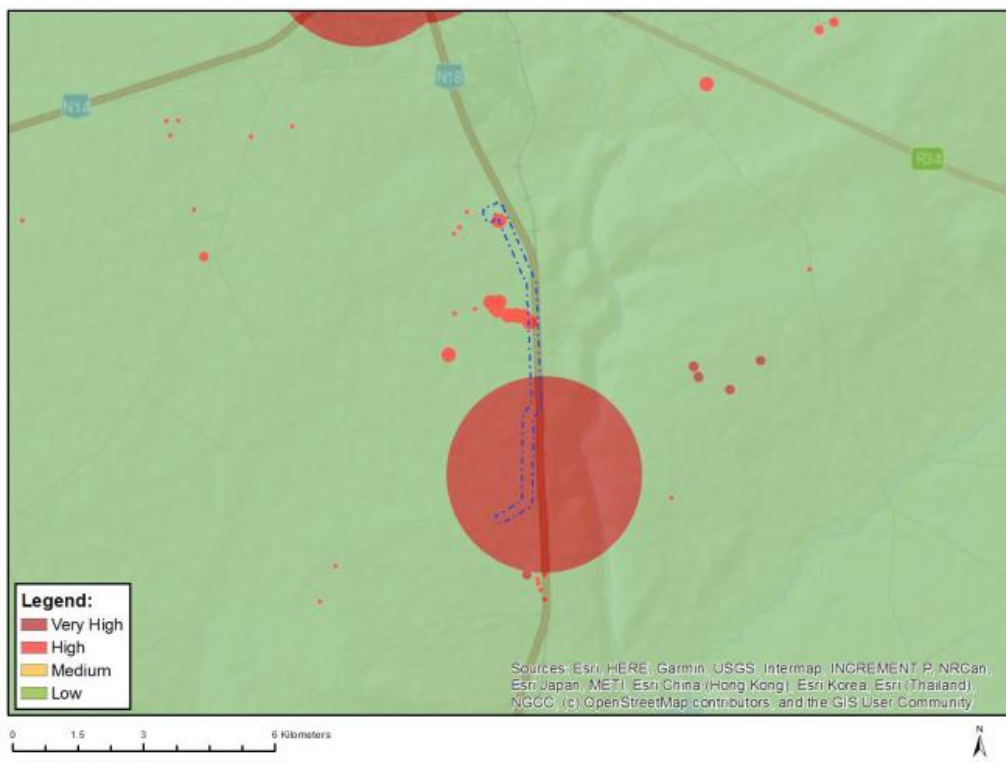


Figure 6: Map of Archaeological and Heritage Sensitivity of OHPL

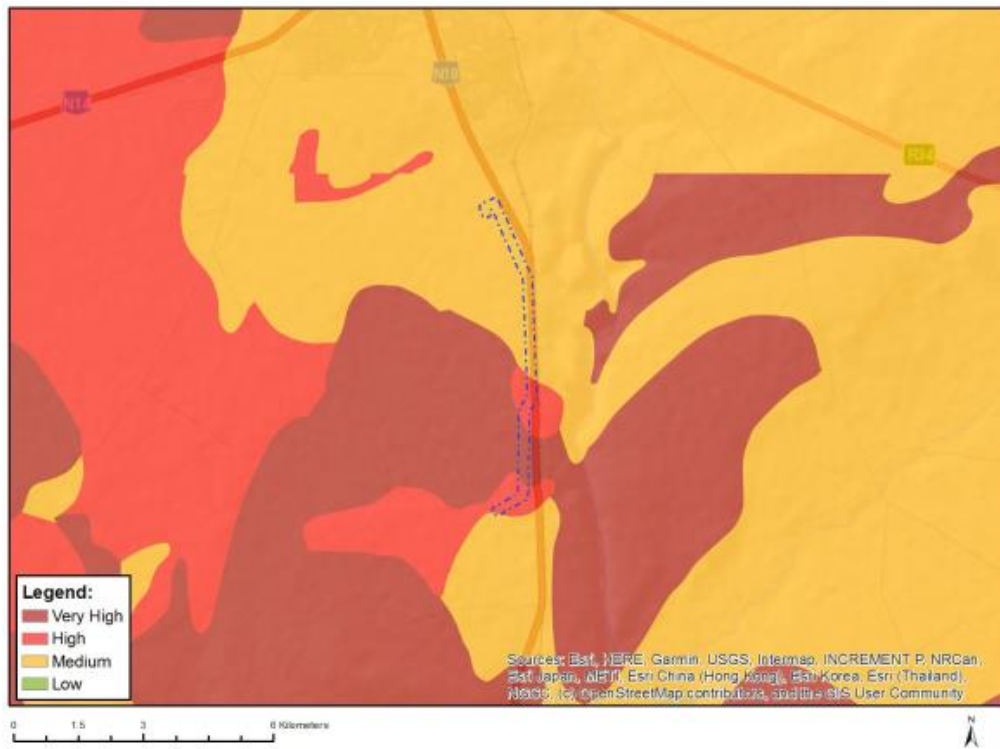


Figure 7: Map of Palaeontology Sensitivity of OHPL



Figure 8: Map of Plant Species Sensitivity of OHPL



Figure 9: Map of Terrestrial Biodiversity Sensitivity of OHPL

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 days prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.



Signature Proponent/applicant/ holder of EA

24/4/2023

Date:

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 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 EGI Corridor traverses a number of sensitive areas, with regards to Aquatic biodiversity and Terrestrial Ecology.

The OHPL alternative 1 buffer route marginally traverses an aquatic CBA, however the specialist's site visit indicated that the drainage lines are not sensitive aquatic ecosystems and in addition the N18 will Lilley act as a barrier between the drainage lines and the OHPL.

Based on the terrestrial and avifauna biodiversity studies, two shrubland habitats had a "Moderate" sensitivity and majority of the PAOI was found to be of a "moderate" sensitivity. The PAOI for the OHPL route traverse through an ESA1 and ESA2 .

In addition to the applicable mitigation measures included generic EMPr template, additional measures, have been recommended in Section 7 in the Site Specific EMPr. These mitigations were provided by the Specialists

The Specialist's details and expertise are provided in the table below. The Specialist's CV are contained in Appendix G of the BAR.

Specialist	Qualification and accreditation
Aquatic Biodiversity: Lufuno Nemakhavhani (WSP Group Africa (Pty) Ltd)	Professional Environmental Scientist: (Pr. Sci. Nat 116461) M.Sc. in Environmental Management, Potchefstroom University (cum laude)

Terrestrial Biodiversity and Avifauna: Lindi Steyn Rudolph Greffrath	PhD. Biodiversity and Conservation, University of Johannesburg Professional Environmental Scientist: (Pr. Sci. Nat 4004018/17)
The environmental Sensitivity Map is indicated in Figure 10 below	

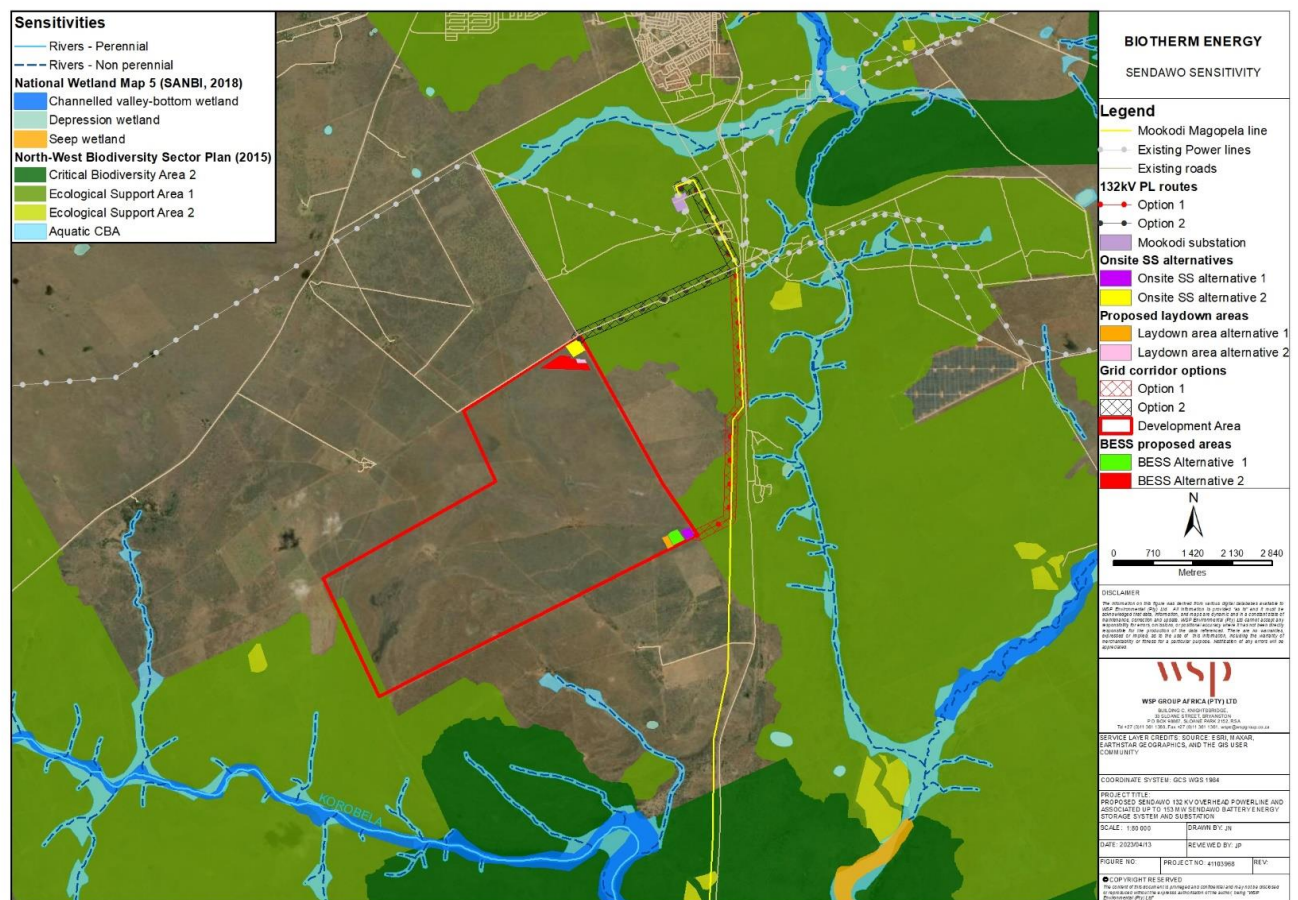


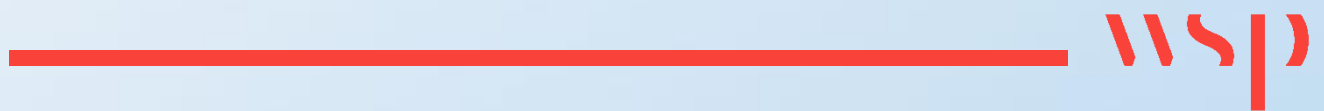
Figure 10: Environmental sensitivity map of the Sendawo OHPL and associated infrastructure

APPENDIX 1: METHOD STATEMENTS

To be prepared by the contractor prior to commencement of the activity. The method statements are **not required** to be submitted to the CA.

Appendix E

SUBSTATION GENERIC EMPR



GENERIC ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE FOR THE TRANSMISSION AND DISTRIBUTION OF ELECTRICITY





TABLE OF CONTENTS

INTRODUCTION	1
1. Background.....	1
2. Purpose.....	1
3. Objective	1
4. Scope	1
5. Structure of this document.....	1
6. Completion of part B: section 1: the pre-approved generic EMPr template	4
7. Amendments of the impact management outcomes and impact management actions.....	4
8. Documents to be submitted as part of part B: section 2 site specific information and declaration.....	5
(a) Amendments to Part B: Section 2 – site specific information and declaration	5
PART A – GENERAL INFORMATION	6
1. DEFINITIONS.....	6
2. ACRONYMS and ABBREVIATIONS	7
3. ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION	8
4. ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE	15
4.1 Document control/Filing system.....	15
4.2 Documentation to be available	15
4.3 Weekly Environmental Checklist	15
4.4 Environmental site meetings	16
4.5 Required Method Statements.....	16
4.6 Environmental Incident Log (Diary)	17
4.7 Non-compliance	17
4.8 Corrective action records	18

4.9	Photographic record	18
4.10	Complaints register	19
4.11	Claims for damages.....	19
4.12	Interactions with affected parties.....	19
4.13	Environmental audits	20
4.14	Final environmental audits.....	20
PART B: SECTION 1: Pre-approved generic EMPr template		21
5.	IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS.....	21
5.1	Environmental awareness training	22
5.2	Site Establishment development	23
5.3	Access restricted areas	24
5.4	Access roads	25
5.5	Fencing and Gate installation	26
5.6	Water Supply Management.....	28
5.7	Storm and waste water management	29
5.8	Solid and hazardous waste management.....	30
5.9	Protection of watercourses and estuaries.....	31
5.10	Vegetation clearing.....	32
5.11	Protection of fauna	34
5.12	Protection of heritage resources.....	35
5.13	Safety of the public	35
5.14	Sanitation.....	36
5.15	Prevention of disease.....	37
5.16	Emergency procedures.....	38
5.17	Hazardous substances.....	39
5.18	Workshop, equipment maintenance and storage	41
5.19	Batching plants	42
5.20	Dust emissions	43
5.21	Blasting	45
5.22	Noise	45
5.23	Fire prevention.....	46

5.24	Stockpiling and stockpile areas.....	47
5.25	Civil works	47
5.26	Excavation of foundation, cable trenching and drainage systems.....	48
5.27	Installation of foundations, cable trenching and drainage systems	49
5.28	Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)	49
5.30	Cabling and Stringing.....	51
5.31	Testing and Commissioning (all equipment testing, earthing system, system integration).....	51
5.32	Socio-economic.....	52
5.33	Temporary closure of site	52
5.34	Dismantling of old equipment	53
5.35	Landscaping and rehabilitation	54
6	ACCESS TO THE GENERIC EMPr.....	57
PART B:	SECTION 2.....	58
7	SITE SPECIFIC INFORMATION AND DECLARATION.....	58
7.1	Sub-section 1: contact details and description of the project.....	58
7.2	Sub-section 2: Development footprint site map	64
7.3	Sub-section 3: Declaration	71
7.4	Sub-section 4: amendments to site specific information (Part B; section 2).....	71
PART C:	72
8	SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES.....	72
APPENDIX 1:	METHOD STATEMENTS.....	73

List of tables

Table 1:	<i>Guide to roles and responsibilities for implementation of an EMPr</i>	<i>8</i>
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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 guidance and information and is not legally binding	Definitions, acronyms, roles & responsibilities 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

Part	Section	Heading	Content
			<p>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 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</p>

Part	Section	Heading	Content
			<p>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 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></p> <p>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.

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

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

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

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

Responsible Person(s)	Role and Responsibilities
	<p>any operation to be carried out safely;</p> <ul style="list-style-type: none"> - attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; - ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	<p><u>Role</u></p> <p>Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the following criteria:</p> <p><u>Responsibilities</u></p> <ul style="list-style-type: none"> - Be on site throughout the duration of the project and be dedicated to the project; - Ensure all their staff are aware of the environmental requirements, conditions and constraints 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

Responsible Person(s)	Role and Responsibilities
	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 procedures; 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. – 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

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<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 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; – 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

Impact management outcome: Access to restricted areas 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"> – 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 clear signage around the perimeter of any access restricted area, colour coding could be used if appropriate; and – Unauthorised access and development related activity inside access restricted areas is prohibited. 						
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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
– 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						

<p>instruction of the DPM, a gate must be installed at the approval of the landowner;</p> <ul style="list-style-type: none"> – 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 reinforced concrete sill must be provided beneath the gate; – 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. 						

5.7 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
<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, at a location approved by the project manager; – All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; – Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's 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. 						

5.8 Solid and hazardous waste management

Impact management outcome: Wastes are 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
<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 collection site must be identified and provided; – The waste collection site must be maintained in a clean and orderly manner; – Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; – Staff must be trained in waste segregation; – Bins must be emptied regularly; – General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; – Hazardous waste must be disposed of at a registered waste disposal site; – Certificates of safe disposal for general, hazardous and recycled waste must be maintained. 						

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 – 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; 						

<p>watercourse</p> <p>b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained;</p> <p>c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and</p> <p>d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.</p>						
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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 						

<p>development must be identified by the relevant specialist and completed prior to any development or clearing;</p> <ul style="list-style-type: none"> – 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 registered pest control operator, supervision of a registered pest control operator or is appropriately trained; – 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

Impact management outcome: Disturbance to fauna is minimised.						
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; – 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. 						

5.12 Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
<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. 						

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	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		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
<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: 						

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.						
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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
– 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.						
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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
– 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; – 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).						

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); – 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 						

<p>be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available;</p> <ul style="list-style-type: none"> – The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowzers; – The tanks/ bowzers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowzers (110% statutory requirement plus an allowance for rainfall); – 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 required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; 						
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<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

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
<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 fire as soon as it starts; 						

<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

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
<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

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
<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 						

<p>soil stripping is required and similarly exposed surfaces must 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

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
<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; 						

<ul style="list-style-type: none"> – 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 minimise impacts to watercourses, watercourses and water bodies; 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. 						

5.25 Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.						
Impact Management Actions	Implementation			Monitoring		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		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 adhered to and implemented strictly; Rehabilitation of the disturbed areas must be managed in accordance with Section 5.35: Landscaping and rehabilitation; All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised 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. 						

5.26 Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

<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. 						
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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 						

<p>actions included in sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage;</p> <ul style="list-style-type: none"> – 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. 						
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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. 						
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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 						

<p>Conservation of Agricultural Resources Act, No 43 of 1983</p> <ul style="list-style-type: none"> – 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; – Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be 						
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<p>adhered to and implemented strictly;</p> <ul style="list-style-type: none"> – 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:

Sendawo BESS (RF) (Pty) Ltd is the project proponent (Applicant) with regards to this application for the construction and operation of the proposed project.

Proponent:	Sendawo (RF) (Pty) Ltd
Contact Person:	Robert Dan Skjodt
Postal Address	Building 1, Leslie Ave East, Design Quarter District, Fourways
Telephone:	011 367 4641
Email:	eiaadmin@biothermenergy.com

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the BA process for the proposed project. The CV of the EAP is available in Appendix A of the Site Specific EMPr. The EAP declaration of interest and undertaking is included in Appendix B of the Site Specific EMPr.

EAP	WSP Group Africa (PTY) Ltd
Company Registration:	1999/008928/07
Contact Person:	Ashlea Strong
Physical Address:	Building C, Knightsbridge, 33 Sloane Street, Bryanston, Johannesburg
Postal Address:	P.O. Box 98867, Sloane Park 2151, Johannesburg
Telephone:	011 361 1392

Fax:	011 361 1381
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 1.2 of the EMPr

7.1.3 Project name:

Sendawo 132 kV Overhead Powerline and Associated up to 153 MW Battery Energy Storage System (BESS) Facility and Substation

7.1.4 Description of the project:

The proposed Sendawo OHPL Corridor falls within the Vryburg Renewable Energy Development Zones (REDZ) and one of the Northern Strategic Transmission Corridor; and as per Government Notice (GN) No. 145 in Government Gazette 44191 will be subject to a Basic Assessment (BA) Process in terms of NEMA (as amended) and Appendix 1 of the EIA Regulations, 2014 promulgated in Government Gazette 40772 and GN R326, R327, R325 and R324 on 7 April 2017.

BioTherm Energy (Pty) Ltd, under its Special Purpose vehicle (SPV); Sendawo BESS (RF) (Pty) Ltd (hereafter referred to as "Sendawo BESS"), proposes to construct and operate a 132kV Overhead Powerline (OHPL) and associated up to 153 MW Battery Energy Storage System (BESS) Facility and Substation (The preferred substation being alternative1) located approximately 6km South of Vryburg in the North West Province. The Proposed Project will allow for the previously authorised Sendawo Solar Energy Facilities (SEF) and proposed BESS Facility to be connected to the Eskom grid, whilst the BESS Facility will provide peak shifting power with a capacity of up to 153 MW and output of up to 612 MWh to be evacuated to the Eskom grid.

The transmission line will be a 132kV steel single or double structure with kingbird conductor. The powerline towers will either be steel lattice or monopole structures. It is anticipated that towers will be located approximately 200m to 250m apart, with a 100m corridor on either side of the centerline.

The proposed BESS Facility will utilize either of the two BESS technology options; Liquid Cooled Lithium-ion batteries; or Vanadium Redox Flow batteries (VRFB), required for applications set out in the Energy Storage Independent Power Producer's Procurement Programme (ESIPPPP).

Request for Proposal (RfP), as issued by the Independent Power Producer (IPP) office. The batteries will be charged via the Eskom grid and energy will be discharged back to the grid according to a Power Purchase Agreement (PPA) with Eskom.

7.1.5 Project location:

The proposed Overhead Powerline route will traverse a length of approximately 7.2 km. The proposed BESS, laydown and substation (The preferred substation being alternative 1) will be developed within a project area of approximately 10 hectares (ha) for alternative 1 and 19 ha for alternative 2 at the previously authorised Sendawo 1, 2 and 3, 75MW (each) PV Facility (collected referred to as the Sendawo SEF for the purpose of this report), approximately 6 km south of Vryburg, North West Province. The site will be accessed via the N18, utilising existing access roads from the Eskom Mookodi Substation to the proposed Overhead Powerline, BESS and Substation.

The site will be accessed via the N18 and existing access roads. The details of the properties associated with the proposed Sendawo OHPL, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in Table 1. The co-ordinates of the cadastral land parcels are included in Table 2. The coordinates of the corridor are provided in Table 3.

Table 1 – Sendawo Overhead Powerline and Associated BESS Facility and Substation Affected Farm Portions

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
Portion 1 of Farm Edinburgh 735	TOHN00000000073500001

Table 2 – Coordinate Points of the Cadastral Land Parcel that will site the Overhead Powerline, and associated BESS Facility and Substation



Point	Longitude	Latitude
		
Portion 1 of Farm Edinburgh 735 (Dark Blue)		
1	24°42'32.23"E	27° 2'39.67"S
2	24°42'50.92"E	27° 3'20.85"S
3	24°41'13.29"E	27° 4'16.28"S
4	24°41'44.01"E	27° 5'24.31"S
5	24°44'47.77"E	27° 3'51.40"S
6	24°43'40.24"E	27° 1'54.58"S

Table 0 – Sendawo Substation Co-ordinates

Point	Longitude	Latitude
		
		

Substation Development Area		
Substation Alternative 1 (Yellow)		
Centre Point	24°44'42.50"E	27° 3'47.86"S
1	24°44'38.25"E	27° 3'46.64"S
2	24°44'43.35"E	27° 3'44.50"S
3	24°44'46.63"E	27° 3'49.05"S
4	24°44'41.67"E	27° 3'51.57"S



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.

Appendix E: Generic EMPr Development of substation infrastructure

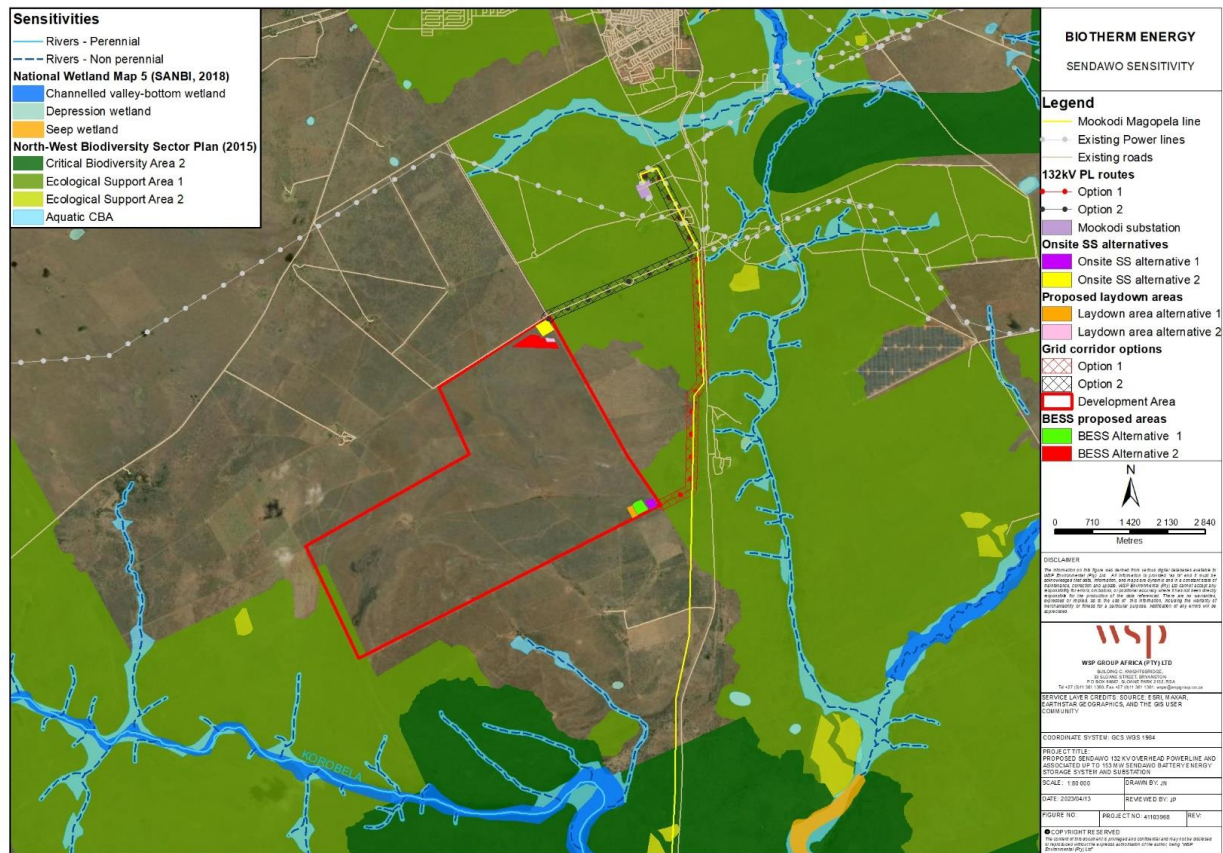


Figure 2: Environmental sensitivity map of the Sendawo OHPL and associated infrastructure

Table 4 - Assessment Protocols and Site Sensitivity Verifications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Compliance Statement	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources	Medium to Low Sensitivity	Low Sensitivity
Animal Species Compliance Statement	Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species	Medium to Low Sensitivity	Medium to Low Sensitivity
Aquatic Biodiversity Compliance Statement	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on	Very High Sensitivity (OHPL 1) and Low Sensitivity	Low Sensitivity

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
	<i>Aquatic Biodiversity</i>	(BESS and substations)	
Archaeological and Cultural Heritage Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity (OHPL1), and Low Sensitivity (BESS and substations)	Low Sensitivity with the exception to high sensitivity archaeological sites 45521 and 45529
Civil Aviation Theme	No specialist assessment protocol identified by the Screening Tool	Medium Sensitivity	Low Sensitivity (as verified by the EAP)
Relative Defence Theme	No specialist assessment protocol identified by the Screening Tool	Medium Sensitivity	Low Sensitivity (as verified by the EAP)
Palaeontology Impact Assessment	<i>Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed</i>	Very High Sensitivity	High Sensitivity
Plant Species Compliance Statement	<i>Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial plant species</i>	Low Sensitivity	Low Sensitivity
Terrestrial Biodiversity Compliance Statement	<i>Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity</i>	Very High Sensitivity (OHPL 1) and Low Sensitivity (BESS and substations)	Medium to Low Sensitivity



Figure 3: Map of Agriculture Sensitivity

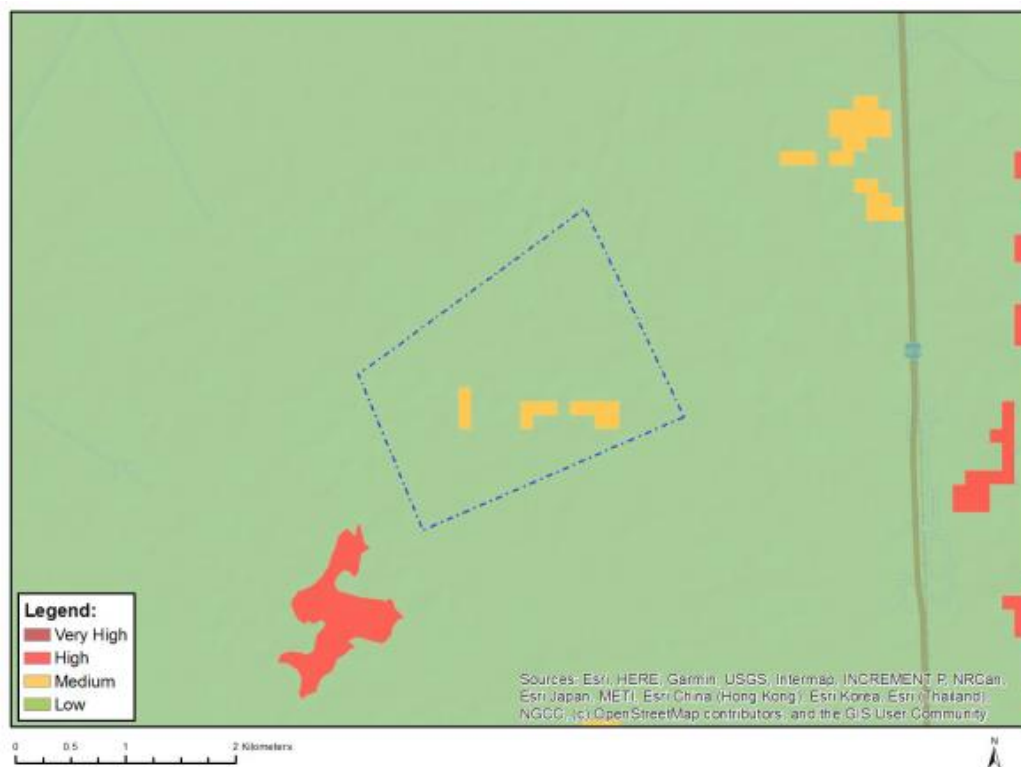


Figure 4: Map of Animal Species Sensitivity

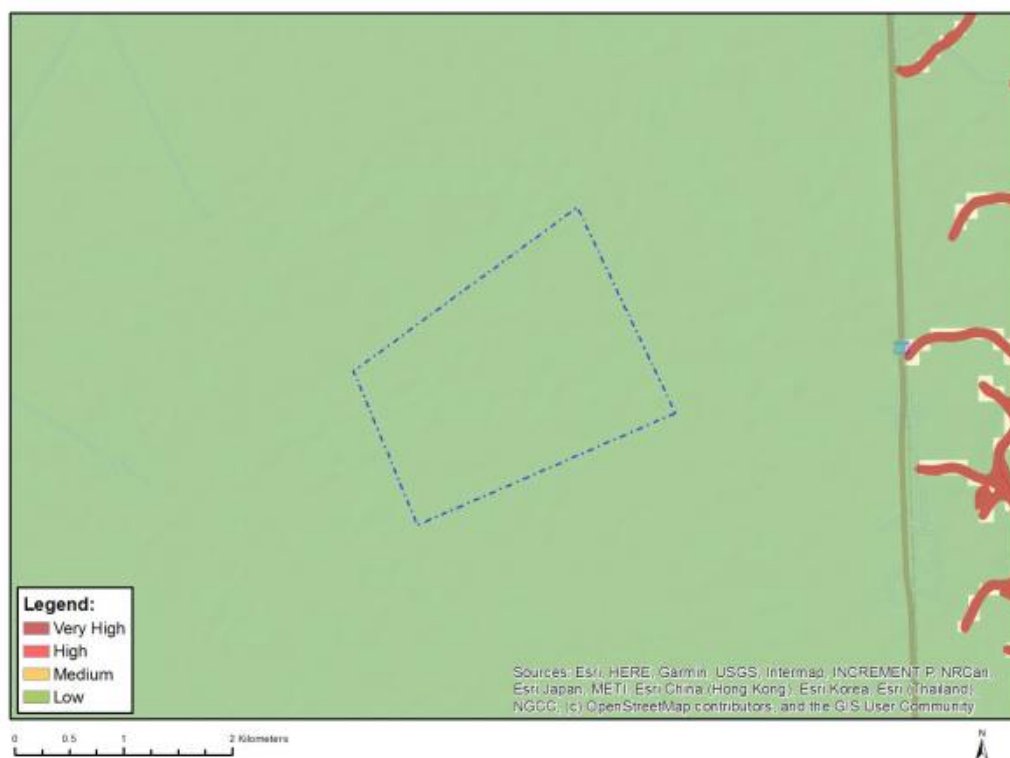


Figure 5: Map of Aquatic Biodiversity Sensitivity

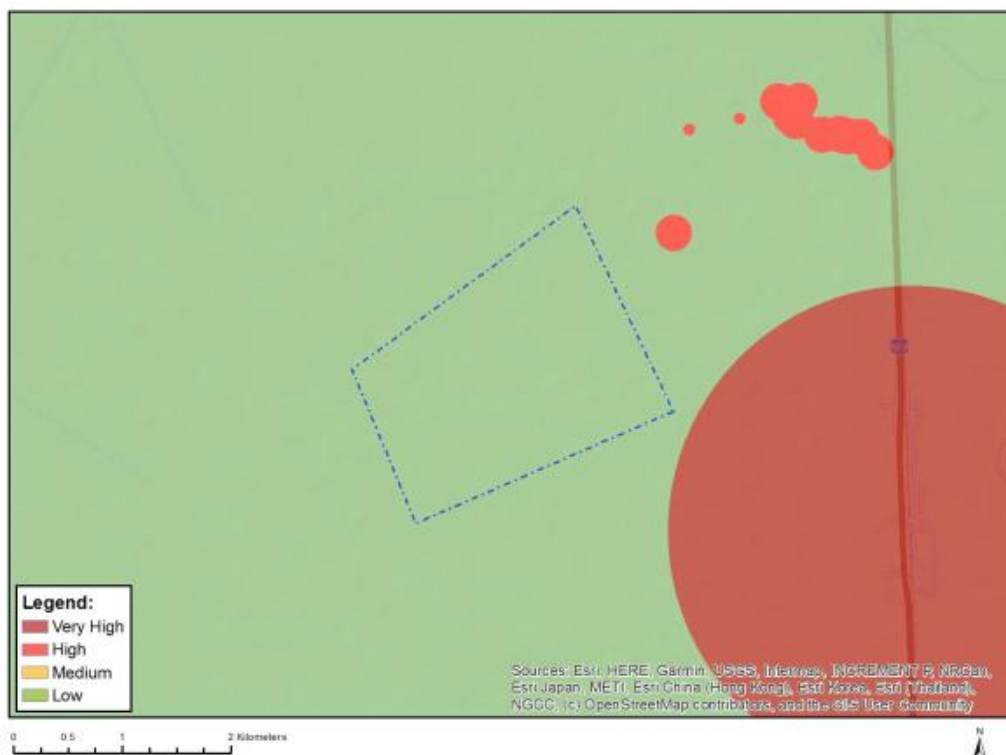


Figure 6: Map of Archaeological and Heritage Sensitivity

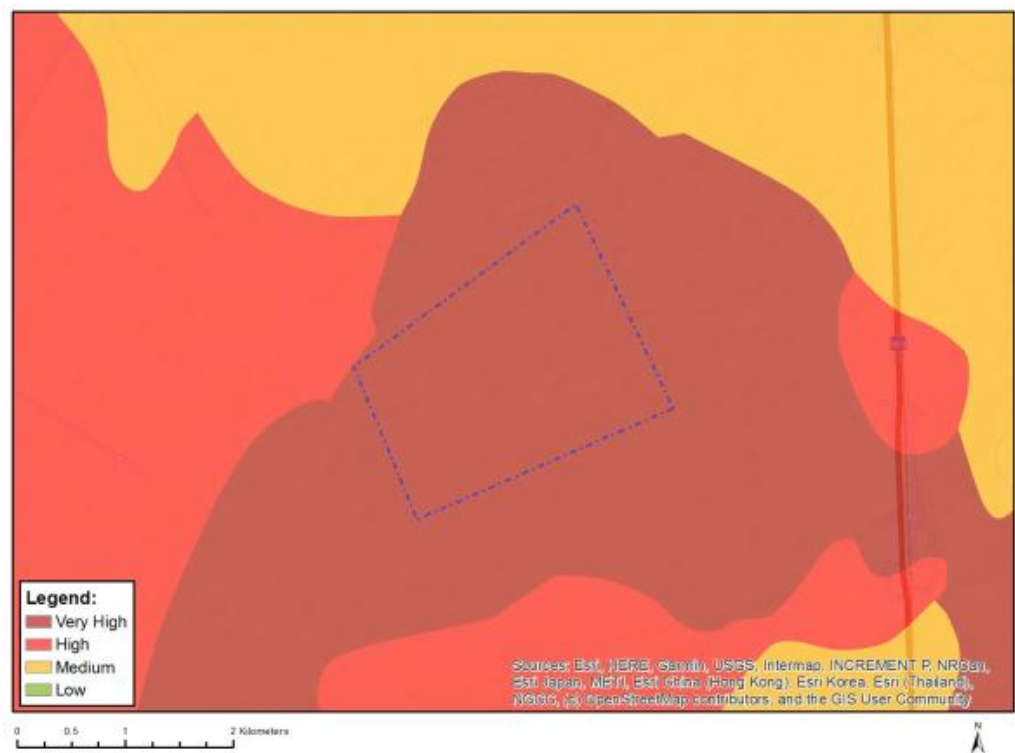


Figure 7: Map of Palaeontology Sensitivity



Figure 8: Map of Plant Species Sensitivity



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:



24/4/2023

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.

NOT REQUIRED

No Environmental Sensitivities Identified within the preferred Substation Footprint (Refer to Figure 2)

Chance find Procedure has been included in the EMPr.

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.



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