Appendix J

ENVIRONMENTAL MANAGEMENT PROGRAMME

Confidential

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd

ABO UVEMVANE WIND ENERGY FACILITY 1, LOCATED NEAR HEIDELBERG AND BALFOUR IN THE GAUTENG AND MPUMALANGA PROVINCES

Draft Environmental Management Programme (Resubmission)

RESUBMISSION REF NO. TBC
OCTOBER 2026

PUBLIC

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd

ABO UVEMVANE WIND ENERGY FACILITY 1, LOCATED NEAR HEIDELBERG AND BALFOUR IN THE GAUTENG AND MPUMALANGA PROVINCES

Draft Environmental Management Programme (Resubmission)

TYPE OF DOCUMENT (VERSION) PUBLIC

PROJECT NO. 41106304

OUR REF. NO. RESUBMISSION REF NO. TBC

DATE: OCTOBER 2026

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd

ABO UVEMVANE WIND ENERGY FACILITY 1, LOCATED NEAR HEIDELBERG AND BALFOUR IN THE GAUTENG AND MPUMALANGA PROVINCES

Draft Environmental Management Programme (Resubmission)

WSP

Building 1, Maxwell Office Park
Magwa Crescent West, Waterfall City
Midrand, 1685
South Africa

Phone: +27 11 254 4800

WSP.com

PUBLIC

QUALITY CONTROL

Issue/revision	First issue	Revision 1	Revision 2	Revision 3
Remarks	Draft EMPr	Final EMPr	Resubmission: EMPr	
Date	August 2026	October 2026	October 2026	
Prepared by	Palisa Bhengu	Palisa Bhengu	Jashmika Maharaj	
Signature				
Checked by	Jashmika Maharaj	Jashmika Maharaj	Ashlea Strong	
Signature				
Authorised by	Ashlea Strong	Ashlea Strong	Ashlea Strong	
Signature				
Project number	41106304	41106304	41106304	
Report number	01	01	01	
File reference	\\Corp.pbwan.net\za\Projects\41100xxx\41106304 - ABO Uvemvane WEF\41 PA\01-Reports\04-EIA\02 EMPr\01 Draft EMPr			

CONTENTS

GLOSSARY 15

1 INTRODUCTION 20

1.1 BACKGROUND INFORMATION 21
1.2 ENVIRONMENTAL ASSESSMENT PRACTITIONER 24
1.3 PURPOSE OF THE EMPR 24
1.4 STRUCTURE OF THE EMPR 26

2 PROJECT DESCRIPTION 28

2.1 LOCATION OF THE PROPOSED PROJECT 28
2.2 ACTIVITY DESCRIPTION 33
2.3 PROPOSED PROJECT DEVELOPMENT ACTIVITIES 34
2.4 NEED AND DESIRABILITY 37

3 ENVIRONMENTAL SENSITIVITY 51

3.1 SITE SENSITIVITY VERIFICATION SUMMARY 51
3.2 SENSITIVITY MAPPING 56
3.3 IMPACT ASSESSMENT OUTCOMES 66
3.4 APPLICABLE DOCUMENTATION 77

4 GOVERNANCE FRAMEWORK 78

4.1 NATIONAL ENVIRONMENTAL LEGAL FRAMEWORK 78
4.2 POLICIES AND PLANS 95
4.3 PROVINCIAL AND MUNICIPAL LEGAL AND REGULATORY FRAMEWORK 102
4.4 INTERNATIONAL ENVIRONMENTAL AND SOCIAL STANDARDS 104
4.5 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS 109
4.6 BIODIVERSITY MANAGEMENT PLAN (BMP) FOR VULTURES 109

4.7 ADDITIONAL PERMITS AND AUTHORISATIONS 111

5 MANAGEMENT PROCEDURES AND ADMINISTRATIVE REQUIREMENTS 113

5.1 ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES 113
5.2 ENVIRONMENTAL AWARENESS PLAN 116
5.3 MONITORING 120
5.4 NON-CONFORMANCE AND CORRECTIVE ACTION 120
5.5 DOCUMENTATION AND REPORTING 122
5.6 METHOD STATEMENTS 123
5.7 PUBLIC COMPLAINTS 123
5.8 ADAPTIVE MANAGEMENT 124

6 GENERIC ENVIRONMENTAL CONTROLS 125

7 SITE SPECIFIC ENVIRONMENTAL CONTROLS 128

7.1 CONTRACTOR LAYDOWN AREA AND SITE ACCESS 129
7.2 VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT 131
7.3 FUEL AND CHEMICAL MANAGEMENT 132
7.4 WASTE MANAGEMENT 134
7.5 HEALTH AND SAFETY 137
7.6 AIR QUALITY 141
7.7 SOIL, LAND USE AND AGRICULTURE 143
7.8 AQUATIC BIODIVERSITY 148
7.9 NOISE 151
7.10 TERRESTRIAL BIODIVERSITY 154
7.11 PLANT SPECIES 159
7.12 ANIMAL SPECIES 163
7.13 AVIFAUNA 168
7.14 ARCHAEOLOGICAL AND CULTURAL HERITAGE 173
7.15 VISUAL LANDSCAPE 174

7.16 TRAFFIC 185
7.17 SOCIO-ECONOMIC 188
7.18 BATS 193
7.19 GEOTECHNICAL 195
7.20 SAFETY HEALTH ENVIRONMENT RISK 197
7.21 BUTTERFLY HABITATS (INVERTEBRATES) 212

8 MANAGEMENT PLANS 215

8.1 EMERGENCY RESPONSE PLAN 215
8.2 WASTE MANAGEMENT PLAN 217
8.3 HAZARDOUS SUBSTANCES MANAGEMENT PLAN 219
8.4 FIRE MANAGEMENT PLAN 223
8.5 ALIEN INVASIVE PLANT MANAGEMENT PLAN 223
8.6 PLANT RESCUE AND PROTECTION PLAN 228
8.7 RE-VEGETATION AND HABITAT REHABILITATION PLAN 231
8.8 STORMWATER MANAGEMENT PLAN 233
8.9 EROSION MANAGEMENT PLAN 234
8.10 TRAFFIC AND TRANSPORT MANAGEMENT PLAN 242
8.11 FAUNA MANAGEMENT PLAN 243
8.12 AVIFAUNAL MANAGEMENT PLAN 245
8.13 SOIL MANAGEMENT PLAN 257
8.14 HERITAGE MANAGEMENT PLAN 258
8.15 VISUAL MANAGEMENT PLAN 259
8.16 ACOUSTIC MONITORING PLAN 277
8.17 GRIEVANCE MECHANISM 277
8.18 HIV/AIDS MANAGEMENT PLAN 281
8.19 SECURITY POLICY 283

9 CONCLUSION 285

TABLES

Table 1-1 – Key Technical Details for the Project 21

Table 1-2 – Details of the Environmental Assessment Practitioner 24

Table 1-3 – Legislation Requirements as detailed in Appendix 4 of GNR 326 26

Table 2-1 – Affected Farm Portions 30

Table 2-2 - Coordinate Points of the Property Boundaries for the Affected Farm Portions 32

Table 2-3 – Construction activities 34

Table 2-4 – Part 1 – Need 39

Table 2-5 – Desirability 41

Table 2-6 – Consistency of the Project and the EIA Process with the NEMA principle 46

Table 3-1 – Assessment Protocols and Site Sensitivity Verification Summary 51

Table 3-2 – Mapping criteria utilised by the specialists for the assessment 57

Table 3-3 – Buffers recommended by specialist team 58

Table 3-4 – Impact Summary (Construction Phase) 66

Table 3-5 – Impact Summary (Operation Phase) 70

Table 3-6 – Impact Summary (Decommissioning Phase) 74

Table 4-1 -Applicable National Legislation 78

Table 4-2 - Provincial and Municipal Plans 96

Table 4-3 - Provincial and Municipal Plans 102

Table 4-4 – Equator Principles Applicability to the Project 105

Table 4-5 – Additional Permits and Authorisations required for the proposed development 111

Table 5-1 – Roles and Responsibilities 113

Table 5-2 - Documentation Reporting and Compliance Requirements as per the generic EMPr 119

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 125

Table 6-2 - Activities and management measures as per generic EMPr (Part B: Section 1) 126

Table 7-1 – Structure of EMPr 128

Table 7-2 – Contractor laydown area and site access: EMPr Mitigation and Management Measures 129
Table 7-3 – Vehicle, Equipment and Machinery Management: EMPr Mitigation and Management Measures 131
Table 7-4 – Fuel and Chemical Management: EMPr Mitigation and Management Measures 132
Table 7-5 – Waste Management: EMPr Mitigation and Management Measures 134
Table 7-6 – Health and Safety: EMPr Mitigation and Management Measures 137
Table 7-7 – Air quality: EMPr Mitigation and Management Measures 141
Table 7-8 – Soil, land use and agriculture: EMPr Mitigation and Management Measures 143
Table 7-9 – Aquatic Biodiversity: EMPr Mitigation and Management Measures 148
Table 7-10 – Noise: EMPr Mitigation and Management Measures 151
Table 7-11 – Terrestrial Biodiversity: EMPr Mitigation and Management Measures 154
Table 7-12 – Plant Species: EMPr Mitigation and Management Measures 159
Table 7-13 – Animal Species: EMPr Mitigation and Management Measures 163
Table 7-14 – Avifauna: EMPr Mitigation and Management Measures 168
Table 7-15 - Archaeological and Cultural Heritage: EMPr Mitigation and Management Measures 173
Table 7-16 – Visual: EMPr Mitigation and Management Measures 174
Table 7-17 – Traffic: EMPr Mitigation and Management Measures 185
Table 7-18 – Socio-Economic: EMPr Mitigation and Management Measures 188
Table 7-19 – Bats: EMPr Mitigation and Management Measures 193
Table 7-20 – Geotechnical: EMPr Mitigation and Management Measures 195
Table 7-21 – SHE Risk: EMPr Mitigation and Management Measures 197
Table 7-22 – Invertebrates: EMPr Mitigation and Management Measures 212
Table 8-1 - Waste Management Options 219
Table 8-2 – Recommended additional monitoring measures 227
Table 8-3 – Management plan for the planning and design phase 236
Table 8-4 – Management plan for the construction phase 237
Table 8-5 – Management plan for the operational phase 239
Table 8-6 – Management plan for the decommissioning phase 240

Table 8-7 – Mitigation measures to be included in the Environmental Management Programme 246

Table 8-8 – Proposed Management Actions and Approach to Monitoring – Visual Landscape assessment 260

FIGURES

Figure 1-1 – Regional locality map for the project. 23

Figure 2-1 –Layout of the boundary of the properties associated with the proposed Project. 29

Figure 2-2 - Layout and Coordinates of the boundary of the properties associated with the proposed Project 31

Figure 2-3 – Typical Turbine Hard Standing Requirements (illustration purposes only) 34

Figure 2-4 – Current Installed Electricity Generation Capacity 38

Figure 2-5 – Proposed New Electricity Generation Capacity by 2039 39

Figure 2-6 – Load shedding hours over the years in South Africa 45

Figure 3-1 – Final Layout ABO Uvemvane WEF 1– DEIR Phase 63

Figure 3-2 – Combined Site sensitivity map for ABO Uvemvane WEF 1 (Final Layout – DEIR Phase) 64

Figure 3-3 – Combined Sensitivity Map (without Heritage Sensitivities) 65

Figure 4-1 – CBAs identified are as per the Gauteng C-Plan (2024) and the MBSP (2024) within the PAOI. 84

Figure 8-1- Waste Hierarchy 218

APPENDICES

APPENDIX A

EAP CV

APPENDIX B

EAP DECLARATION

APPENDIX C

MAPS

APPENDIX D

GENERIC EMPR - SUBSTATIONS

GENERAL SITE INFORMATION

The extent of the proposed project area, which spans two provinces and three local municipalities, necessitates consideration of multiple environmental, social and administrative contexts. While every effort has been made to present information in a clear and accessible manner, the level of detail included in this report is intended to ensure a comprehensive, transparent and balanced assessment of all relevant issues and jurisdictions.

Technical details of the proposed ABO Uvemvane Wind Energy Facility 1		
Location of Site	Approximately 9km west of the town of Balfour in the Mpumalanga Province in the Dipaleseng Local Municipality within the Gert Sibande District Municipality and approximately 14km south-east of the town Heidelberg in the Gauteng Province in the Lesedi & Midvaal Local Municipalities within the Sedibeng District Municipality.	
Description of all affected farm portions and 21-digit SG Codes	**Farm Name**	**21-Digit SG Code**
	The Remaining Extent of Portion 2 of the Farm Lagerspoort Number 406	T0IR00000000040600002
	Portion 17 (a Portion of Portion 3) of the Farm Lagerspoort Nr 406	T0IR00000000040600017
	Remaining Extent of Portion 4 of the Farm De Hoek 411	T0IR00000000041100004
	Portion 45 of the Farm Lagerspoort 406	T0IR00000000040600045
	Portion 7 of the Farm Lagerspoort Number 406	T0IR00000000040600007
	Portion 19 of the Farm De Hoek No 411	T0IR00000000041100019
	Remaining Extent of Portion 2 of the Farm Modderfontein 410	T0IR00000000041000002
	The Farm Orion No 413	T0IR00000000041300000
	Remaining Extent of Portion 5 of the Farm Lagerspoort 406	T0IR00000000040600005
	Portion 7 of the Farm Driefontein 405	T0IR00000000040500007
	Remaining Extent of Portion 9 of the Farm Malanskraal No 407	T0IR00000000040700009
	Remaining Extent of Portion 2 of the Farm Malanskraal 407	T0IR00000000040700002
	Portion 12 (a Portion of Portion 2) of the Farm Malanskraal 407	T0IR00000000040700012
	Remaining Extent of Portion 2 of the Farm Driefontein 405	T0IR00000000040500002
	Remaining Extent of the Farm Driefontein 405	T0IR00000000040500000
	Remainder of Portion 6 (Kingsmead) of the Farm Malanskraal 407	T0IR00000000040700006
	Portion 17 (a Portion of Portion 8) of the Farm Malanskraal No 407	T0IR00000000040700017

Technical details of the proposed ABO Uvemvane Wind Energy Facility 1		
	Farm Bothas Spruit Nr. 404	T0IR00000000040400000
	Portion 16 (a Portion of Portion 4) of the Farm Malanskraal No 407	T0IR00000000040700016
	Remaining Extent of Portion 13 (a Portion of Portion 2) of the Farm Malanskraal 407	T0IR00000000040700013
	Remainder of Portion 18 (a Portion of Portion 3) of the Farm Malanskraal 407	T0IR00000000040700018
	Portion 1 of the Farm Weltevreden Nr. 449	T0IR00000000044900001
Central coordinates of the site and activity location	26°40'4.00"S 28°26'1.58"E	
Total Area of Applicable Farm Portions	A preferred study area with a total combined extent of approximately 8,200 ha was identified as a technically suitable project site for the development of the WEF project, within this an affected area of approximately **6000 ha** has been assessed.	
Design Specifications		
Total Buildable Area (I.e. likely footprint area)	▪ Approximately 67.2 ha: • Turbines/ hardstands/foundations: up to 1Ha per turbine (up to 20ha) • Roads: up to 31km (approx. 18km of which are existing roads to be widened) • Electrical Infrastructure Hub: up to 7ha • Temporary Laydown Areas: 4 x laydown areas (includes concrete batching plant) totalling up to 15ha • Internal Underground Cabling: up to 31km, but nothing beyond proposed roads so has been included in road footprint • 33kV OHL/underground facility connection: Up to 0.02ha	
Export Capacity	▪ Up to 170MWac	
Technology	▪ Wind	
Number of Wind Turbines	▪ Up to 20	
Turbine Specs/ Aspects	▪ Maximum hub height 180 m; ▪ Maximum blade length 100 m; ▪ Maximum rotor diameter 200 m; ▪ Maximum capacity per turbine 10 MW; ▪ A transformer at the base of each turbine; ▪ Concrete turbine foundations up to 1 ha each; ▪ Turbine, crane, and blade hardstands (included in the abovementioned 1 ha).	
Electrical Infrastructure Hub (with collector sub-station, sub-station, and Battery Energy Storage System (BESS) infrastructure)	▪ Three (3) locations have been assessed and all three are being applied for noting that only one will be constructed based on technical feasibility to be confirmed at pre-construction stage (Up to 7ha)	

Technical details of the proposed ABO Uvemvane Wind Energy Facility 1	
Construction camp and laydown area	▪ 4 temporary laydown areas/ construction compounds (includes concrete batching), totalling up to 15 ha, would be fenced with access control.
Access Routes	▪ Five (5) existing routes; four of these are off existing unnamed farm roads (originating from the D1220 and P243/1), and one is off Lagerspoort Road from Heidelberg - Balfour Road (R23). The Details of the access would be as per the recommendations in the Transport Impact Assessment.
Internal Road Lengths	▪ Up to 31km length (approx. 18km of which are existing roads to be widened). ▪ Primary/main access roads as well as internal road reticulation (note that existing roads/disturbed areas would be used as far as possible, and for the proposed roads, a corridor of up to 12 m wide may be temporarily impacted upon during construction and be rehabilitated to up to 10 m wide after construction), inclusive of stormwater infrastructure where relevant.
Associated infrastructure	Includes the following (to be located within the proposed development footprint): ▪ Associated internal electrical reticulation/ cabling (i.e., low- and medium voltage powerlines), underground as far as is feasible, and to run within the proposed road footprint/route as far as possible; ▪ A 33kV overhead/underground line to connect the northern and southern portions of the facility; and ▪ On-site electrical infrastructure hub (up to 7ha in extent). Note there are three (3) locations assessed as options, however only 1 (one) will be constructed, consisting of: • On-site substation and associated infrastructure; • Additional step-up/ transformation /collector /switchyard infrastructure; • Auxiliary buildings, including but not limited to O&M building(s), administrative buildings, workshops, gatehouses, security buildings, control centres, offices, visitor centres, warehouses, etc; • The installation of a communications tower (maximum height 32 m) and/or lighting mast (maximum height 25 m); and • BESS.

GLOSSARY

Abbreviation	Definition
ABO	ABO Energy South Africa
AIP	Alien Invasive Plant(s)
AIS	Alien and Invasive Species
ATNS	Air Traffic and Navigation Services
BARESG	Bird Adaptation and Renewable Energy Specialist Group
BESS	Battery Energy Storage System
BBBEE	Broad-Based Black Economic Empowerment
BLSA	BirdLife South Africa
C	Construction Phase
CA	Competent Authority
CAA	Civil Aviation Authority
CARA	Conservation of Agricultural Resources Act
CBA	Critical Biodiversity Area
CIP	Copenhagen Infrastructure Partners
COP	Conference of the Parties
CSP	Concentrated Solar Power
CSIR	Council for Scientific and Industrial Research
CV	Curriculum Vitae
DLRRD	Department of Land Reform and Rural Development
DOA	Department of Agriculture
DFFE	Department of Forestry, Fisheries and the Environment
DEIR	Draft Environmental Impact Assessment Report
DM	District Municipality
DoE	Department of Energy
DoT	Department of Transport

Abbreviation	Definition
DWS	Department of Water and Sanitation
D	Decommissioning Phase
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECA	Environment Conservation Act
ECO	Environmental Control Officer
EGI	Electrical Grid Infrastructure
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EIAr	Environmental Impact Assessment Report
EMPr	Environmental Management Programme
EO	Environmental Officer
EP	Equator Principles
EPAP	Equator Principles Action Plan
EPFI	Equator Principles Financial Institution
EPC	Engineering, Procurement and Construction
ESA	Ecological Support Area
ESCO	Environmental Site Compliance Officer
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
FEIR	Final Environmental Impact Assessment Report
FPA	Fire Protection Association
GA	General Authorisation
GDARD	Gauteng Department of Agriculture and Rural Development

Abbreviation	Definition
GHG	Greenhouse Gas
GIIP	Good International Industry Practice
GN	Government Notice
GNR	Government Notice Regulation
HIA	Heritage Impact Assessment
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
I&APs	Interested and Affected Parties
IBA	Important Bird Area
ICAO	International Civil Aviation Organisation
ICASA	Independent Communications Authority of South Africa
IDP	Integrated Development Plan
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
IEP	Integrated Energy Plan
IPP	Independent Power Producer
IRP	Integrated Resource Plan
JET	Just Energy Transition
MBSP	Mpumalanga Biodiversity Sector Plan
MEC	Member of the Executive Council
MSDS	Material Safety Data Sheet
MPRDA	Mineral and Petroleum Resources Development Act
MTN	Mobile Telephone Networks
MW	Megawatt
MWac	Megawatt Alternating Current
NDP	National Development Plan
NEM:WA	National Environmental Management: Waste Act
NEMA	National Environmental Management Act

Abbreviation	Definition
NEMBA	National Environmental Management: Biodiversity Act
NEMPAA	National Environmental Management: Protected Areas Act
NEMAQA	National Environmental Management: Air Quality Act
NFA	National Forests Act
NHRA	National Heritage Resources Act
NID	Notification of Intent to Develop
NPAES	National Protected Area Expansion Strategy
NCR	Non-Conformance Register
NSR	Noise Sensitive Receptor
O	Operational Phase
O&M	Operations and Maintenance
OHSA	Occupational Health and Safety Act
PAOI	Project Area of Interest
PICC	Presidential Infrastructure Coordinating Commission
PPE	Personal Protective Equipment
PS	Performance Standard(s)
PSDF	Provincial Spatial Development Framework
PV	Photovoltaic
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RFI	Radio Frequency Interference
SABAA	South African Bat Assessment Association
SABS	South African Bureau of Standards
SACAA	South African Civil Aviation Authority
SA CARs	South African Civil Aviation Regulations
SAHRA	South African Heritage Resources Agency
SANBI	South African National Biodiversity Institute
SANDF	South African National Defence Force

Abbreviation	Definition
SANS	South African National Standard(s)
SARAO	South African Radio Astronomy Observatory
SARPs	Standards and Recommended Practices
SAREM	South African Renewable Energy Masterplan
SAWEA	South African Wind Energy Association
SCC	Species of Conservation Concern
SDGs	Sustainable Development Goals
S&EIA	Scoping and Environmental Impact Assessment
S&EIR	Scoping and Environmental Impact Reporting
SEP	Stakeholder Engagement Plan
SG	Surveyor General
SHERQ	Safety, Health, Environment, Risk and Quality
SKA	Square Kilometre Array
SWMP	Stormwater Management Plan
TB	Tuberculosis
UNDP	United Nations Development Programme
USD	United States Dollar
WBG	World Bank Group
WEF	Wind Energy Facility
WML	Waste Management Licence
WMP	Waste Management Plan
WSA	Water Services Act
WTG	Wind Turbine Generator
WUL	Water Use Licence
WULA	Water Use Licence Application

1 INTRODUCTION

All changes and additions made to the original Draft Environmental Impact Assessment Report (DEIR) have either been or made in blue font.

WSP Group Africa (Pty) Ltd (WSP) has been appointed by ABO Energy South Africa (Pty) Ltd, on behalf of ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd, 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 development of the ABO Uvemvane Wind Energy Facility 1, near Heidelberg and Balfour in the Gauteng and Mpumalanga Provinces respectively.

The proposed development is subject to a Scoping and Environmental Impact Reporting (S&EIR) Process in terms of NEMA (as amended) and Appendix 2 and 3 of the EIA Regulations, 2014 and GNR 983 (as amended), GNR 984 (as amended) and GNR 985 (as amended). The competent authority for this S&EIR Process is the national Department of Forestry, Fisheries and Environment (DFFE).

An application for EA in terms of the NEMA (Act 107 of 1998) and associated Environmental Impact Assessment (EIA) Regulations, 2014, as amended, was submitted on 23 March 2026 to the DFFE and was allocated the reference number 14/12/16/3/3/2/2803.

The Final Environmental Impact Assessment Report (FEIR) was submitted to the DFFE on 12 October 2026. Email correspondence received from the DFFE on 13 October 2026 informed the Environmental Assessment Practitioner (EAP) and Applicant that the according to the DFFE records the application had lapsed in terms of Regulation 23(1) of GNR 326, as amended, as the FEIR was due in fact due on or before Friday, 09 October 2026.

A notification was sent on 16 October 2026, to all registered Interested and Affected Parties (I&APs), stakeholders and commenting authorities to inform them that WSP will be re-submitting the application for EA for the proposed project in terms of Regulation 21(2) of GNR 326, as amended. This regulation affords the Applicant the option to re-apply and re-submit the FEIR (subject to additional public participation in terms of Regulation 21(2)(d)) to the DFFE within two years of acceptance of the Scoping Report (dated 22 June 2026).

WSP received confirmation from the DFFE on 15 October 2026 that it may proceed with submitting a new application for Environmental Authorisation (EA) in terms of Regulation 21(2). Accordingly, the Final Environmental Impact Assessment Report (EIAr) that was submitted as part of the original application (DFFE Reference No. 14/12/16/3/3/2/2803) is being re-submitted as a DEIR in support of the re-submission of the EA application (new DFFE reference number to be confirmed).

In addition, according to the DFFE, the pre-application meeting held on 25 November 2024 remains valid and the project will not require a new pre-application meeting. The correspondence confirming this is included in **Appendix E of the DEIR**.

The project will include the following main components, detailed further in **Table 1-1** below:

- Wind Turbines;
- Onsite substation;
- Internal cabling;
- Construction camp and laydown area;

- Operations & Maintenance (O&M) Building;
- Battery Energy Storage System (BESS); and
- Internal Roads.

1.1 BACKGROUND INFORMATION

ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd (the Applicant) proposes the development of ABO Uvemvane Wind Energy Facility 1 (WEF 1), (hereafter referred to as "the Project"), a commercial wind energy generation facility comprising up to 20 turbines and with a total generation capacity of up to 170 MWac in capacity, as well as associated infrastructure.

A development area (i.e., the full extent of the affected properties as well as beyond, where appropriate) has been identified for the proposed development. Within this identified development area, a development footprint has been defined in a manner which has considered the environmental sensitivities present on the affected properties and intentionally remains outside of highly sensitive areas. All affected properties in their entirety have been considered in this S&EIR process (which includes the independent specialists' assessments undertaken hereunder) and assessed in terms of the suitability from an environmental and social perspective. The location of the Project and the siting of the project infrastructure within the assessed study area have been informed by the recommendations of the specialists following their field assessments, where relevant.

It is important to note at the outset that the exact specifications of the proposed project components will be determined during the detailed engineering design phase prior to construction (subsequent to the issuing of an EA, should such an authorisation be granted), but that the information provided below (**Table 1-1**) is seen as the maximum development scenario for the proposed development.

Table 1-1 – Key Technical Details for the Project

Aspect	Details
Total Area of Applicable Farm Portions	▪ A preferred study area with a total combined extent of approximately 8,200 ha was identified as a technically suitable project site for the development of the WEF project, within this an affected area of approximately 6000 ha has been assessed.
Total Buildable Area (i.e. likely footprint area)	▪ Approximately 67.2 ha: • Turbines/ hardstands/foundations: up to 1Ha per turbine (up to 20ha) • Roads: up to 31km (approx. 18km of which are existing roads to be widened) and up to 33ha • Electrical Infrastructure Hub: up to 7ha • Temporary Laydown Areas: 4 x laydown areas (includes concrete batching plant) totalling up to 15ha • Internal Underground Cabling: up to 31km, but nothing beyond proposed roads so has been included in road footprint • 33kV OHL/underground facility connection: Up to 0.02ha
Export Capacity	▪ Up to 170MWac
Technology	▪ Wind
Number of Wind Turbines	▪ Up to 20
Turbine Specs/ Aspects	▪ Maximum hub height 180 m; ▪ Maximum blade length 100 m; ▪ Maximum rotor diameter 200 m; ▪ Maximum capacity per turbine 10 MW; ▪ A transformer at the base of each turbine; ▪ Concrete turbine foundations up to 1 ha each; ▪ Turbine, crane, and blade hardstands (included in the abovementioned 1 ha).

Aspect	Details
Electrical Infrastructure Hub (with collector sub-station, sub-station, and BESS infrastructure)	▪ Three (3) locations have been assessed and are being applied for noting that only one will be constructed based on technical feasibility to be confirmed at pre-construction stage (Up to 7ha)
Construction camp and laydown area	▪ 4 temporary laydown areas/ construction compounds (includes concrete batching), totalling up to 15 ha, would be fenced with access control.
Access Routes	▪ Five (5) existing routes; four of these are off existing unnamed farm roads (originating from the D1220 and P243/1), and one is off Lagerspoort Road from Heidelberg - Balfour Road (R23). The Details of the access would be as per the recommendations in the Transport Impact Assessment.
Internal Roads	▪ Up to 31 km length (approx. 18km of which are existing roads to be widened). ▪ Primary/main access roads as well as internal road reticulation (note that existing roads/disturbed areas would be used as far as possible, and for the proposed roads, a corridor of up to 12 m wide may be temporarily impacted upon during construction and be rehabilitated to up to 10 m wide after construction), inclusive of stormwater infrastructure where relevant.
Associated infrastructure	Includes the following (to be located within the proposed development footprint): ▪ Associated internal electrical reticulation/ cabling (i.e., low- and medium voltage powerlines), underground as far as is feasible, and to run within the proposed road footprint/route as far as possible; ▪ A 33kV overhead/underground line to connect the northern and southern portions of the facility; and ▪ On-site electrical infrastructure hub (up to 7 ha in extent). Note there are three (3) locations assessed as options, however only one will be constructed, consisting of: • On-site substation and associated infrastructure; • Additional step-up/ transformation /collector /switchyard infrastructure; • Auxiliary buildings, including but not limited to O&M building(s) administrative buildings, workshops, gatehouses, security buildings, control centres, offices, visitor centres, warehouses, etc.; • The installation of a communications tower (maximum height 32 m) and/or lighting mast (maximum height 25 m); and • BESS.

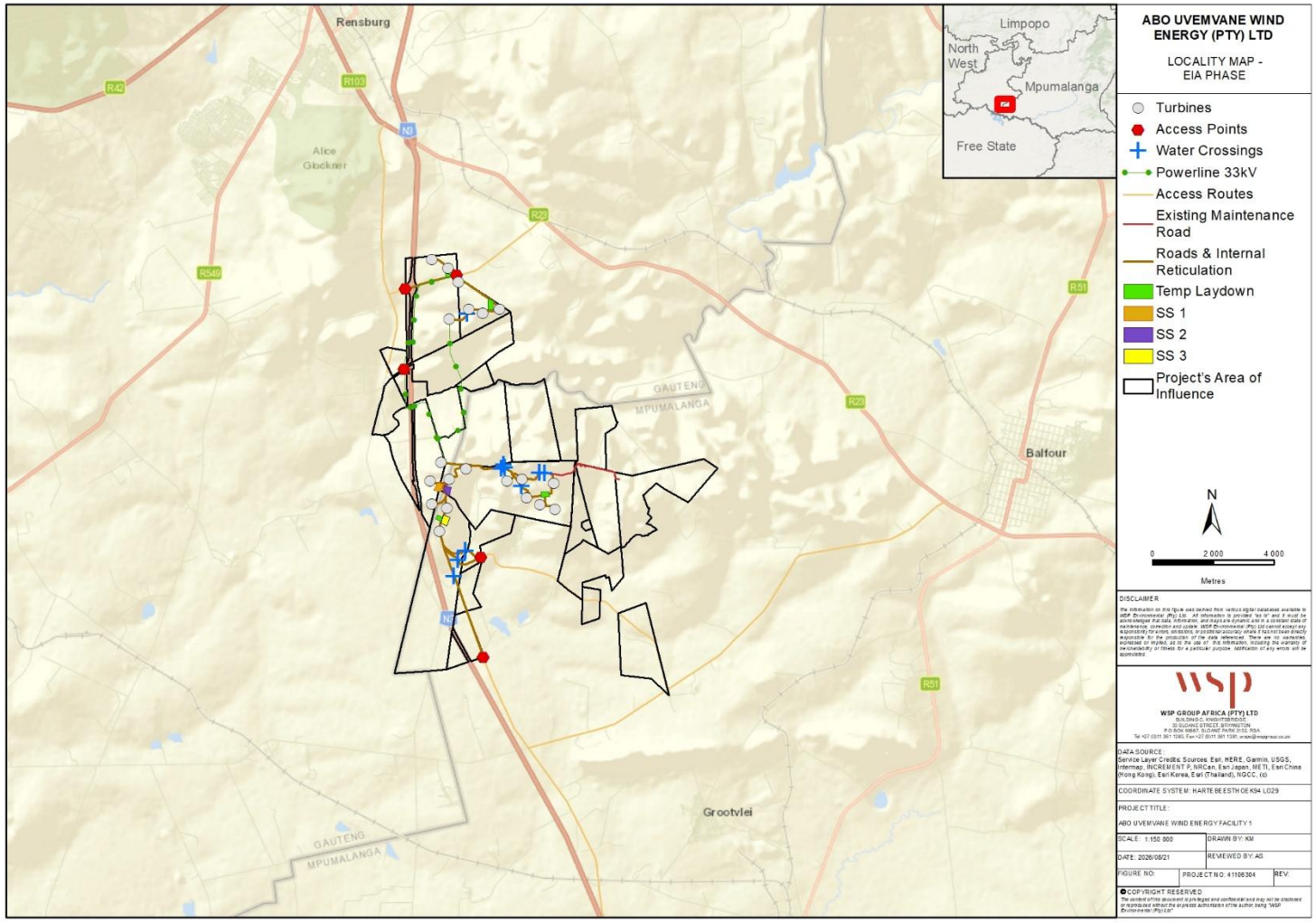


Figure 1-1 – Regional locality map for the project.

1.2 ENVIRONMENTAL ASSESSMENT PRACTITIONER

WSP Group Africa (Pty) Ltd (WSP) has been appointed in the role of Independent Environmental Assessment Practitioner (EAP) to undertake the S&EIR processes for the development of the Project. The CV of the EAP is available in **Appendix A**. The EAP declaration of interest and undertaking is included in **Appendix B**. **Table 1-2** details the relevant contact details of the EAP. In order to adequately identify and assess potential environmental impacts, a number of specialists will support the EAP.

Table 1-2 – Details of the Environmental Assessment Practitioner

Environmental Assessment Practitioner (EAP)	WSP Group Africa (Pty) Ltd
Contact Person:	Ashlea Strong
Postal Address:	Building 1, Maxwell Office Park, Magwa Cres, Midrand, 1685
Telephone:	011 361 1392
Fax:	011 361 1381
E-mail:	Ashlea.Strong@wsp.com
Qualifications:	▪ Masters in Environmental Management, University of the Free State ▪ B Tech, Nature Conservation, Technikon SA ▪ National Diploma in Nature Conservation, Technikon SA
EAPASA Registration 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 for the 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 S&EIA process.

1.3.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

To facilitate compliance to the EMPr, the applicants 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 1-3** cross-references the sections within the EMPr with the requirements as per Appendix 4 of GNR 326 of 2017.

Table 1-3 – 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 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**
(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 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** 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**
	(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	
	(ii) comply with any prescribed environmental management standards or practices;	
	(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	
	(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	

Appendix 4	Legislated Requirements as detailed in Appendix 4 of GNR 326	Relevant Report Section
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 7**
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	**Section 7**
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	**Section 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**
(m)	an environmental awareness plan describing the manner in which-	**Section 5.2**
	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	
(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 1 of GNR 326.

2.1 LOCATION OF THE PROPOSED PROJECT

The project area is located within the Dipaleseng Local Municipality (Ward 5), Lesedi Local Municipality (Ward 6) and the Midvaal Local Municipality (Ward 01), in the Mpumalanga and Gauteng Provinces **(Figure 1-1**).

The details of the property associated with the project, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 2-1**. The property boundaries associated with the proposed project are shown in **Figure 2-1**.

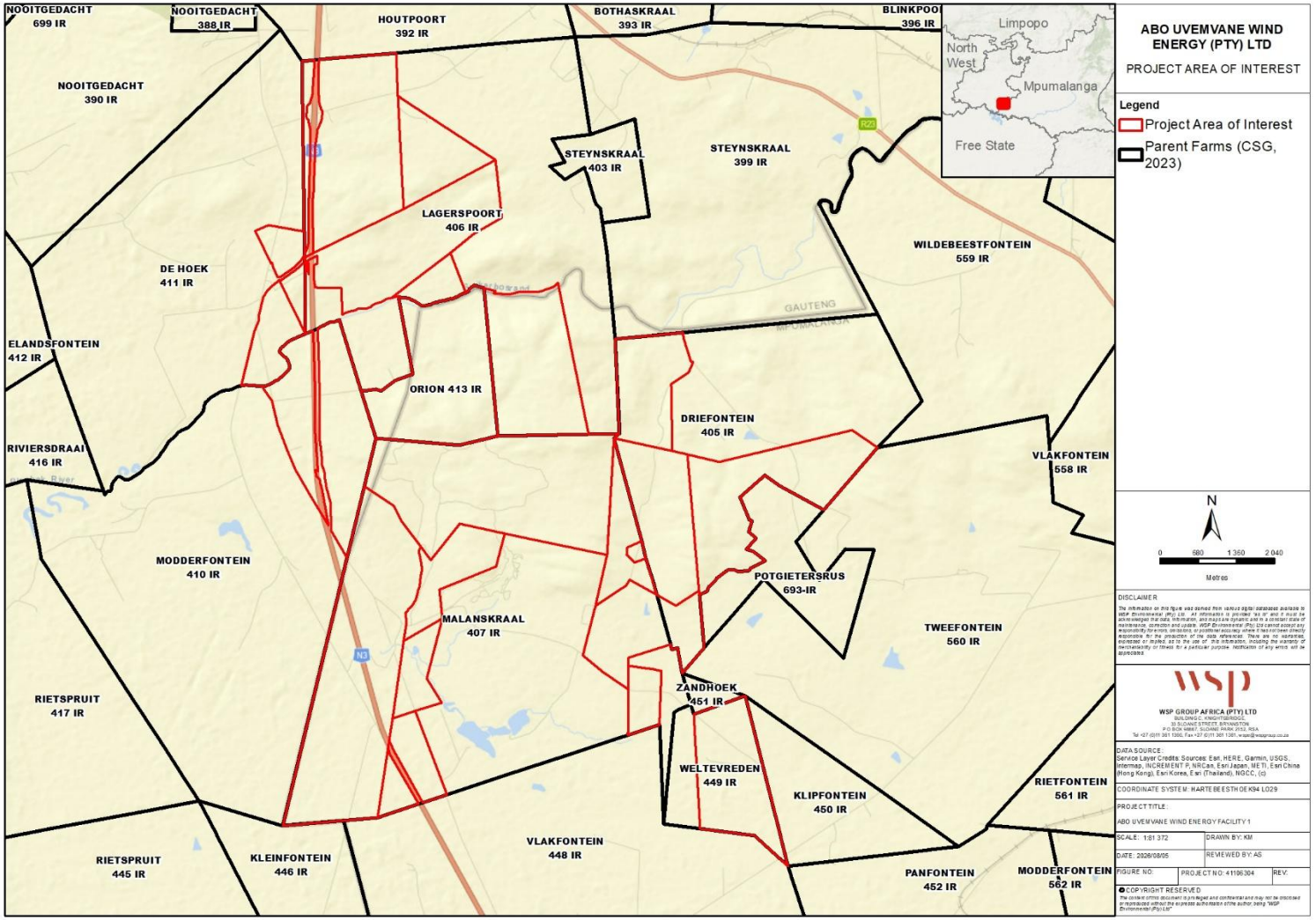


Figure 2-1 –Layout of the boundary of the properties associated with the proposed Project.

Table 2-1 – Affected Farm Portions

Farm Name	21 Digit Surveyor General Code of Each Cadastral Land Parcel
The Remaining Extent of Portion 2 of the Farm Lagerspoort Number 406	T0IR00000000040600002
Portion 17 (a Portion of Portion 3) of the Farm Lagerspoort Nr 406	T0IR00000000040600017
Remaining Extent of Portion 4 of the Farm De Hoek 411	T0IR00000000041100004
Portion 45 of the Farm Lagerspoort 406	T0IR00000000040600045
Portion 7 of the Farm Lagerspoort Number 406	T0IR00000000040600007
Portion 19 of the Farm De Hoek No 411	T0IR00000000041100019
Remaining Extent of Portion 2 of the Farm Modderfontein 410	T0IR00000000041000002
The Farm Orion No 413	T0IR00000000041300000
Remaining Extent of Portion 5 of the Farm Lagerspoort 406	T0IR00000000040600005
Portion 7 of the Farm Driefontein 405	T0IR00000000040500007
Remaining Extent of Portion 9 of the Farm Malanskraal No 407	T0IR00000000040700009
Remaining Extent of Portion 2 of the Farm Malanskraal 407	T0IR00000000040700002
Portion 12 (a Portion of Portion 2) of the Farm Malanskraal 407	T0IR00000000040700012
Remaining Extent of Portion 2 of the Farm Driefontein 405	T0IR00000000040500002
Remaining Extent of the Farm Driefontein 405	T0IR00000000040500000
Remainder of Portion 6 (Kingsmead) of the Farm Malanskraal 407	T0IR00000000040700006
Portion 17 (a Portion of Portion 8) of the Farm Malanskraal No 407	T0IR00000000040700017
Farm Bothas Spruit Nr. 404	T0IR00000000040400000
Portion 16 (a Portion of Portion 4) of the Farm Malanskraal No 407	T0IR00000000040700016
Remaining Extent of Portion 13 (a Portion of Portion 2) of the Farm Malanskraal 407	T0IR00000000040700013
Remainder of Portion 18 (a Portion of Portion 3) of the Farm Malanskraal 407	T0IR00000000040700018
Portion 1 of the Farm Weltevreden Nr. 449	T0IR00000000044900001

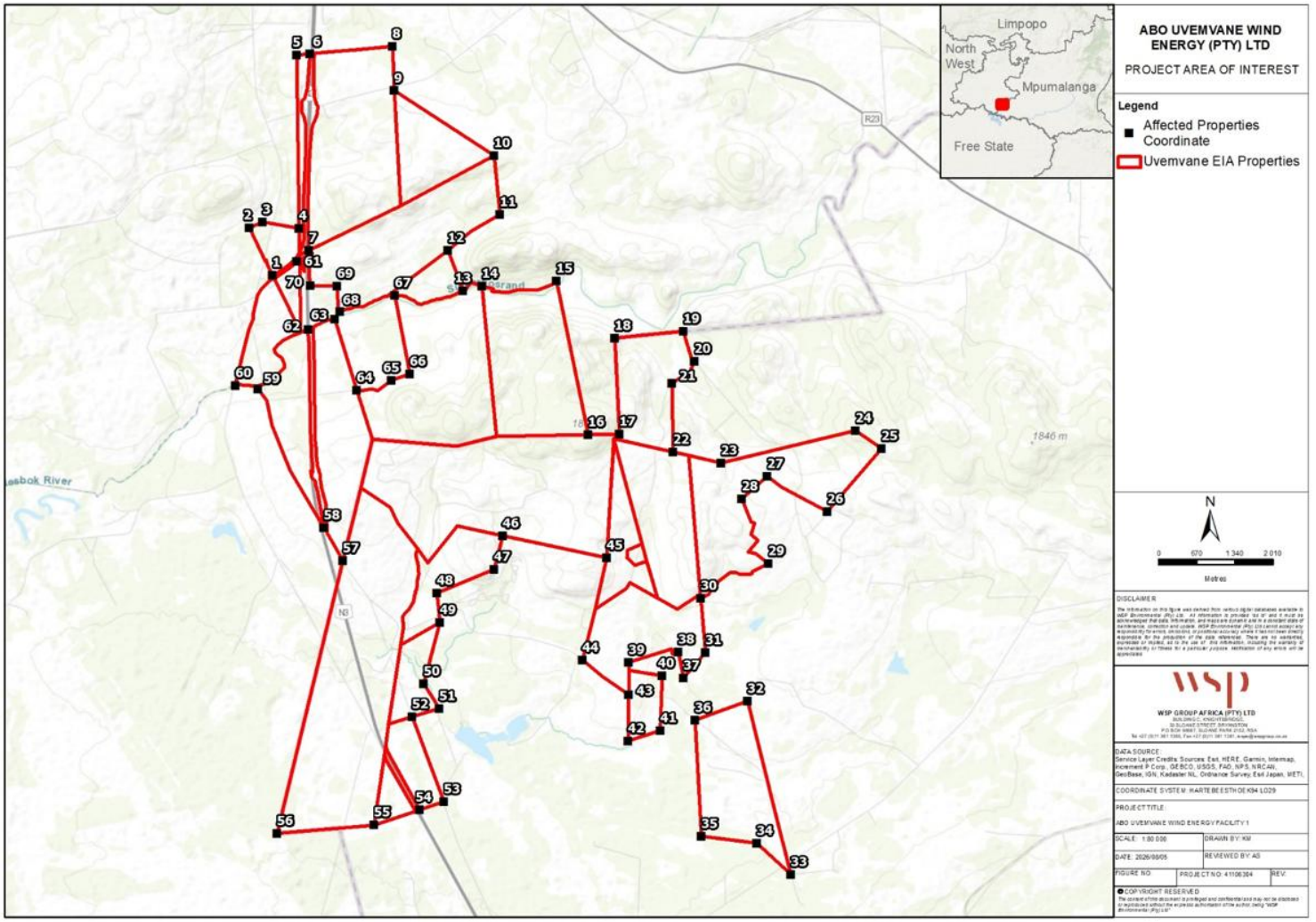


Figure 2-2 - Layout and Coordinates of the boundary of the properties associated with the proposed Project

Table 2-2 - Coordinate Points of the Property Boundaries for the Affected Farm Portions

Point	Longitude	Latitude
1	26° 37' 44.224" S	28° 22' 57.294" E
2	26° 37' 17.033" S	28° 22' 42.838" E
3	26° 37' 13.725" S	28° 22' 51.187" E
4	26° 37' 17.588" S	28° 23' 14.534" E
5	26° 35' 38.555" S	28° 23' 13.563" E
6	26° 35' 37.929" S	28° 23' 21.923" E
7	26° 37' 30.108" S	28° 23' 20.577" E
8	26° 35' 34.005" S	28° 24' 14.316" E
9	26° 35' 59.110" S	28° 24' 15.569" E
10	26° 36' 36.603" S	28° 25' 18.574" E
11	26° 37' 10.063" S	28° 25' 22.311" E
12	26° 37' 30.485" S	28° 24' 48.989" E
13	26° 37' 53.750" S	28° 24' 58.591" E
14	26° 37' 51.069" S	28° 25' 10.558" E
15	26° 37' 48.267" S	28° 25' 58.226" E
16	26° 39' 16.195" S	28° 26' 17.780" E
17	26° 39' 15.949" S	28° 26' 37.715" E
18	26° 38' 21.012" S	28° 26' 35.160" E
19	26° 38' 17.447" S	28° 27' 18.823" E
20	26° 38' 34.612" S	28° 27' 25.476" E
21	26° 38' 47.167" S	28° 27' 11.329" E
22	26° 39' 26.343" S	28° 27' 11.875" E
23	26° 39' 32.674" S	28° 27' 42.287" E
24	26° 39' 14.498" S	28° 29' 8.089" E
25	26° 39' 24.844" S	28° 29' 24.578" E
26	26° 40' 0.813" S	28° 28' 49.637" E
27	26° 39' 40.473" S	28° 28' 11.716" E
28	26° 39' 53.203" S	28° 27' 55.377" E
29	26° 40' 30.277" S	28° 28' 11.942" E
30	26° 40' 49.838" S	28° 27' 29.039" E
31	26° 41' 20.844" S	28° 27' 31.865" E
32	26° 41' 48.863" S	28° 27' 58.340" E
33	26° 43' 27.835" S	28° 28' 25.629" E
34	26° 43' 10.000" S	28° 28' 3.991" E
35	26° 43' 5.928" S	28° 27' 28.785" E
36	26° 41' 59.395" S	28° 27' 25.085" E
37	26° 41' 35.515" S	28° 27' 17.634" E

Point	Longitude	Latitude
38	26° 41' 20.602" S	28° 27' 14.716" E
39	26° 41' 26.493" S	28° 26' 42.924" E
40	26° 41' 34.094" S	28° 27' 4.190" E
41	26° 42' 5.245" S	28° 27' 2.878" E
42	26° 42' 11.268" S	28° 26' 42.169" E
43	26° 41' 44.974" S	28° 26' 42.761" E
44	26° 41' 24.796" S	28° 26' 13.479" E
45	26° 40' 26.654" S	28° 26' 29.397" E
46	26° 40' 13.801" S	28° 25' 23.202" E
47	26° 40' 32.943" S	28° 25' 17.447" E
48	26° 40' 46.243" S	28° 24' 40.992" E
49	26° 41' 3.126" S	28° 24' 42.770" E
50	26° 41' 37.930" S	28° 24' 32.483" E
51	26° 41' 52.212" S	28° 24' 42.138" E
52	26° 41' 56.682" S	28° 24' 24.909" E
53	26° 42' 45.574" S	28° 24' 44.959" E
54	26° 42' 50.103" S	28° 24' 29.482" E
55	26° 42' 58.421" S	28° 24' 0.202" E
56	26° 43' 3.108" S	28° 22' 58.656" E
57	26° 40' 27.546" S	28° 23' 41.326" E
58	26° 40' 8.779" S	28° 23' 29.202" E
59	26° 38' 49.098" S	28° 22' 47.830" E
60	26° 38' 47.086" S	28° 22' 33.384" E
61	26° 37' 36.511" S	28° 23' 12.934" E
62	26° 38' 15.301" S	28° 23' 19.954" E
63	26° 38' 9.606" S	28° 23' 37.062" E
64	26° 38' 50.091" S	28° 23' 50.813" E
65	26° 38' 44.582" S	28° 24' 12.623" E
66	26° 38' 40.937" S	28° 24' 24.489" E
67	26° 37' 55.993" S	28° 24' 15.098" E
68	26° 38' 5.395" S	28° 23' 40.090" E
69	26° 37' 50.776" S	28° 23' 38.379" E
70	26° 37' 50.414" S	28° 23' 21.539" E

2.2 ACTIVITY DESCRIPTION

The Project will be developed to allow for up to 170MWac for export from the facility. The proposed development footprint is approximately 62.7 ha and the extent of the project area is approximately 8 200 ha was identified as a technically suitable project site for the development of the WEF project, within this an affected area of approximately 6000 ha was assessed. The development footprint

includes the wind turbines, and all associated infrastructures as indicated in **Table 1-1**. **Figure 2-3** illustrates the typical turbine hard-standing requirements.

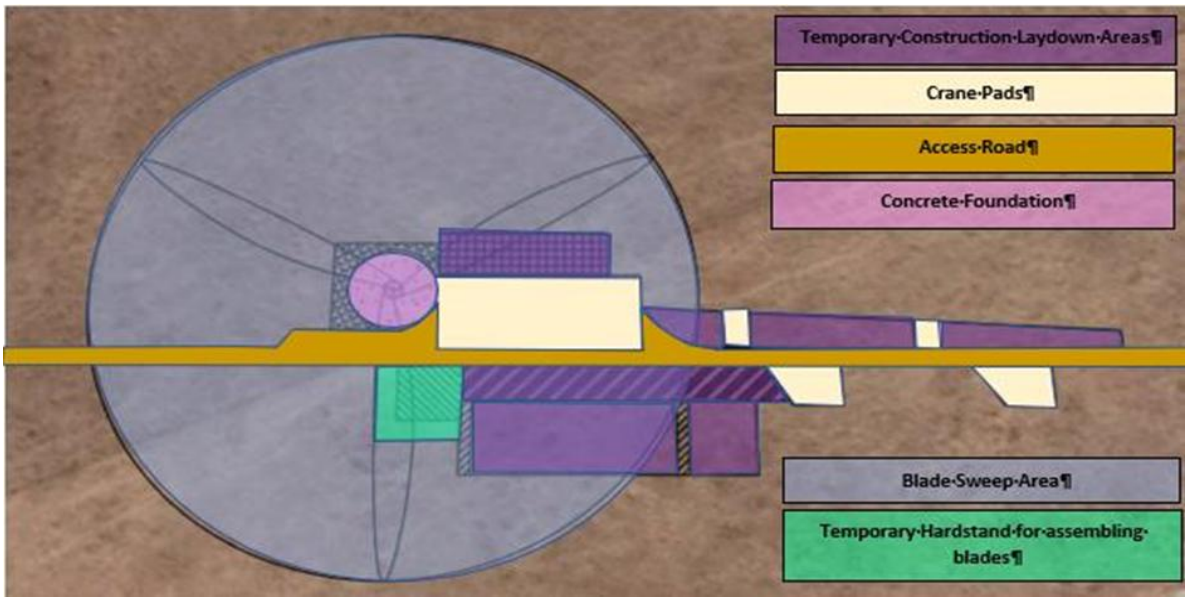


Figure 2-3 – Typical Turbine Hard Standing Requirements (illustration purposes only)

2.3 PROPOSED PROJECT DEVELOPMENT ACTIVITIES

The construction process will follow industry standard methods and techniques. Key activities associated with the construction phase are described in **Table 2-3**.

The additional EGI component of the project will be subject to separate environmental impact assessments, following the current process.

Table 2-3 – Construction activities

Activity	Description
Duration and start date	▪ Up to approximately 12-24 months, start date is dependent upon award of a bid. Construction activities could take place concurrently.
Establishment of access and internal roads	▪ Existing farm roads will be utilised as far as reasonably possible and upgraded where necessary. ▪ New internal service roads will need to be established, and these would either comprise of farm (compacted dirt/gravel) roads or be paved (see layout). Five (5) access points are proposed, four of these are off existing unnamed farm roads (originating from the D1220 and P243/1), and one is off Lagerspoort Road from Heidelberg - Balfour Road (R23). The Details of the access would be as per the recommendations in the Traffic Impact Assessment (**Section 7**). ▪ Up to 10m wide (with a corridor width of up to 12m wide that may be temporarily impacted during construction and then rehabilitated to road width), and 31 km (approx. 18km of which are existing roads to be widened) in length.
Site preparation and establishment	▪ Site establishment will include clearing of vegetation and topsoil at the footprint of each turbine, for laydown areas and along access and cable routes. The temporary laydown area will be constructed, including establishment of the construction camp (temporary offices, storage containers, concrete batching plant, concrete wind tower factory, etc).

Activity	Description
	Site establishment will also entail the installation and/or connection of services (sanitation, electricity etc). ▪ Four (4) Temporary laydown areas during the construction phase, to be fenced and access controlled and rehabilitated post-construction.
Transport of components and equipment to site	Bulk materials (aggregate, steel etc.), infrastructure components (masts, blades, tower sections etc), lifting and construction equipment (excavators, trucks, compaction equipment etc.) will be sourced and transported to site via suitable National and provincial routes and designated access roads. The infrastructure components may be defined as abnormal loads in terms of the Road Traffic Act (Act 29 of 1989) due to their large size and abnormal lengths and loads for transportation. A permit may be required for the transportation of these loads on public roads.
Excavation and earthworks	Subject to the determination of founding specifications, earthworks will be required. This is likely to entail: ▪ Excavations for foundations to a depth of approximately 4.5m, and pouring of concrete foundations of approximately 950m^3 from the batching plant. Concrete foundations will be constructed at each turbine location ▪ Levelling of the construction camp area, substation area, and O&M building area, and excavation of foundations prior to construction. ▪ Excavation of trenches for the installation of underground cables. ▪ Earthworks for access roads and crane pads will be performed as per the turbine' specific transport, delivery and erection requirements.
Construction of wind turbines, site substation and BESS	Construction of the proposed facility would entail the following: 1) Final design and micro-siting of the infrastructure within the limits of proposed development footprint based on geotechnical, topographical conditions and environmental sensitivities, and following obtaining required environmental permits. 2) Vegetation clearance, within proposed (and approved, if EA granted) development footprint, and construction of access roads (where required) 3) Establishment of laydown area for equipment 4)Transportation of materials and equipment to site, and personnel to and from site; 5) Stockpiling of top soil, where necessary 6) Excavations and Construction of foundations 7) Construction, assembly and erection of infrastructure on site 8) Rehabilitation of disturbed areas 9) Continued maintenance
Services: Water	▪ Use: – During construction phase, the proposed development may use some water for activities such as cleaning of equipment, drinking, cement mixing, etc. – Water would be used during the operation phase for staff (drinking and washing hands, food, etc) as well as for cleaning of equipment, and scheduled internal cleaning of building, and dust control on internal roads (where needed). ▪ Source: – Water would ideally be sourced from the local municipality, in terms of a Service Level Agreement established between the Municipality and the Proponent. If this is not possible, then further options, such as sourcing water from a private services provider, etc, will be investigated.

Activity	Description
	▪ Volume: – Construction: 22 000m^3 / year – Operation: 300m^3 / year ▪ Storage: – Where required, a storage tank (i.e., Jo-Jo/ conventional plastic storage tank) of up to approximately 10,000L may be used on site for water storage. ▪ Saving Measures: – Construction phase EMPr includes water-saving measures to be implemented during the construction phase. – Operationally, staff would be encouraged to use water sparingly.
Services: Sewage/ Effluent	▪ Source: – Sanitation for auxiliary buildings would be connected to the existing municipal sewage system. If the Municipality does not approve, or have capacity for, such a connection, sewage will be stored in the conservancy tank and collected either by a honey-sucker truck or by a service provider (Contractor) for treatment at a licensed disposal site. Alternatively, a standalone system would be used (i.e. porta-loos) which would be regularly serviced by an independent contractor. Note that it is not intended to make use of soakaways or on-site treatment solutions. ▪ Construction and Operation Sanitation Requirements: Volume (m^3/ year) – 1000 m^3 sewage/wastewater per year in the construction phase (i.e. 70% of water demand for water used by people) – 160 m^3 sewage/wastewater per year in the operational phase (i.e. 70% of water demand for water used by people) – Any new sewage lines (if required) would be construction within the road limits of either existing or new internal roads, noting that these would be limited as they are only necessary for servicing the auxiliary buildings.
Services: Refuse	▪ Source: – Construction phase waste such as oily rags, containers, rubble, etc would be produced. This would be managed through specifications contained in the EMPr. The Contractor would be responsible for waste management in this regard. There may be some minor quantities of hazardous substances such as paint, oils, etc. which emanate as waste from the construction phase. – Operational waste would emanate from the auxiliary buildings and would largely comprise office-type waste such as packaging, paper, food waste, as well as waste from the maintenance aspects which would comprise packaging, metals, cement, glass, etc. These wastes would also be controlled through the operational EMPr. The operational waste would either be removed by the Municipality as part of the regular service delivery in this regard, or it would be removed by a private contractor. ▪ Volume: – Construction: Estimated at 50 m^3 per month of construction. – Operation: approx. 2 x 240l wheelie bin (i.e. 0,48 m^3) per week.

2.3.1 OPERATIONAL PHASE

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

2.3.2 DECOMMISSIONING PHASE

Following the initial 20-year operational period of the WEF, the continued economic viability will be investigated. If the facility is still deemed viable, the life of the facility will be extended. The facility will only be decommissioned once it is no longer economically viable. If a decision is made to completely decommission the facility, this will be subject to a separate authorisation and impact assessment process, all the components will be disassembled, reused and recycled or disposed.

The decommissioning phase will include activities similar to that of the construction phase as indicated in **Table 2-3**.

The site will be rehabilitated and returned to its current use i.e., agriculture.

2.4 NEED AND DESIRABILITY

This section evaluates the need for, and desirability of, the proposed Project in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the Environmental Impact Assessment Regulations, 2014, as amended, and the Department of Environmental Affairs Guideline on Need and Desirability (Government Notice 792 of 2012). The assessment considers whether the Project responds to a legitimate societal need, whether the proposed location and timing are appropriate, and whether environmental, social and economic considerations have been integrated into decision-making.

The need for proposed Project is considered within a policy environment that prioritises reliable electricity supply, a diversified generation mix, lower emissions and inclusive economic development. The Project is relevant to the National Development Plan 2030, the Integrated Resource Plan 2025, the Just Energy Transition Implementation Plan 2023–2027, the South African Renewable Energy Masterplan 2025 and the Renewable Energy Independent Power Producer Procurement Programme.

- Integrated Resource Plan 2025

The Integrated Resource Plan 2025 (IRP 2025), published on 28 October 2025, is South Africa's long-term electricity planning framework. It seeks to maintain security of supply by balancing demand with adequate generation capacity while considering system cost and environmental impacts. The plan supports a diversified electricity mix and provides for substantial additional wind generation capacity through 2039.

The proposed Project is directly aligned with this policy timeframe because it would add approximately 170 MWac of wind generation capacity during the IRP 2025 planning horizon to 2039. Wind generation supports diversification of the electricity mix and produces electricity without fuel combustion during operation. The Project therefore responds to the supply-security and emissions-reduction objectives of the IRP 2025.

- National Development Plan 2030

Provides a national planning horizon to 2039, a diversified generation mix and substantial additional wind capacity. The proposed Project would contribute approximately 170 MWac of wind capacity within this period and support supply security and emissions reduction.

- Just Energy Transition Implementation Plan 2023–2027

Promotes decarbonisation together with social inclusion, skills development and economic diversification. The Project is particularly relevant to Mpumalanga's transition from a coal-dependent economy.

- South African Renewable Energy Masterplan 2025

Promotes renewable-energy deployment, localisation, industrial development, job creation and skills development. The Project may stimulate demand within the renewable-energy value chain and support local procurement.

Figure 2-4 – and **Figure 2-5 – Proposed New Electricity Generation Capacity by 2039** below provide the national electricity-system context relevant to the need for the Project. They show the current installed generation mix, the proposed new generation capacity to 2039 and the historical extent of load-shedding.

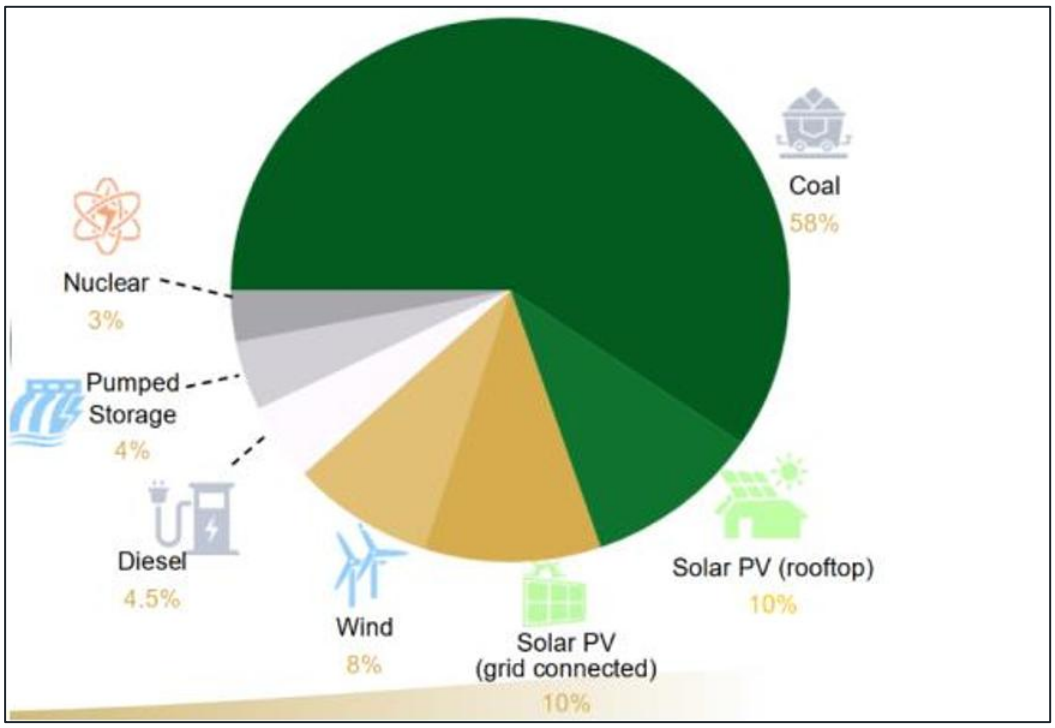


Figure 2-4 – Current Installed Electricity Generation Capacity

Source: Integrated Resource Plan 2025 infographic.

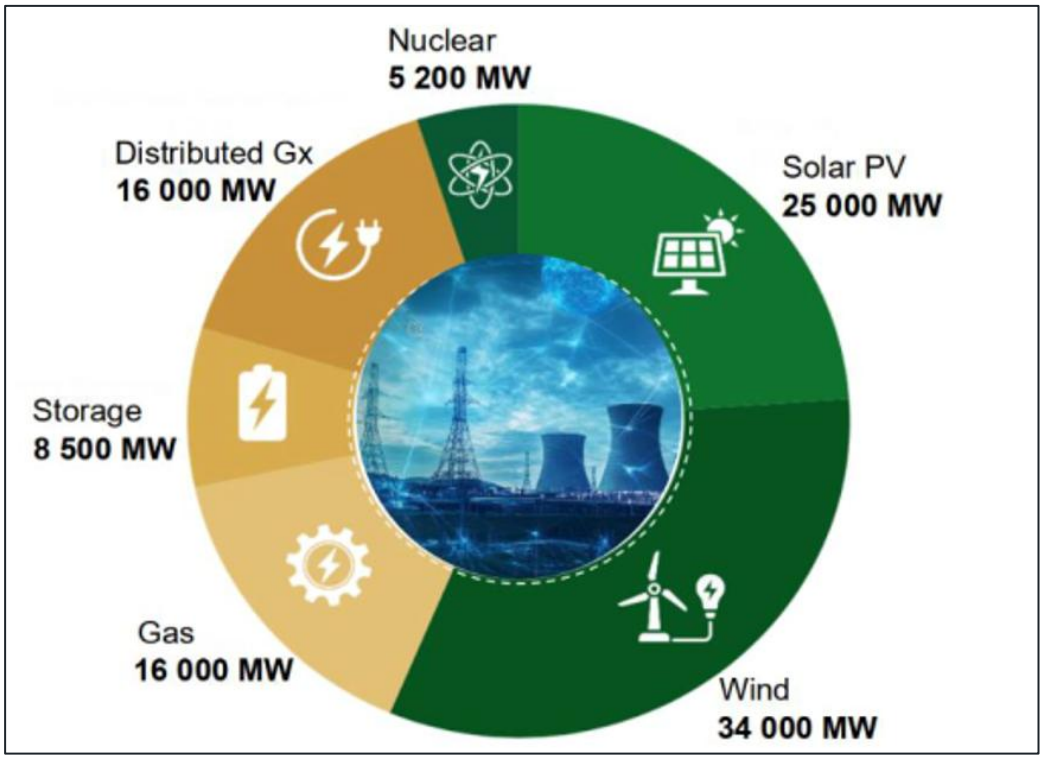


Figure 2-5 – Proposed New Electricity Generation Capacity by 2039

Source: Integrated Resource Plan 2025 infographic.

The Needs and Desirability Guidelines, in terms of the EIA Regulations, Government Notice 792 of 2012, as amended, highlights the need to consider how the Project may impact ecosystems and biological diversity; pollution; and renewable and non-renewable resources. It should also consider how the development may affect or promote justifiable economic and social development. The Need and Desirability is assessed in **Table 2-4** and **Table 2-5** respectively.

Table 2-4 – Part 1 – Need

Question	Response
Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved Strategic Development Framework (SDF) agreed to be the relevant environmental authority? Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	Yes. The applicable local planning instruments are the Dipaleseng IDP 2022-2027 (2025/26 review) and 2019 SDF review, Lesedi IDP 2021-2026 and municipal SDF, and Midvaal IDP 2022-2027 (2025/26 review) and SDF 2022-2027 (reviewed May 2023). These instruments support coordinated infrastructure, economic development and spatially responsible investment during their current planning cycles. No explicit municipal deadline requiring a renewable-energy facility by 2030 was confirmed; however, the Project's timing falls within the current municipal planning periods and the IRP 2025 national horizon to 2039. The limited permanent footprint and continuation of farming across most of the affected properties support compatibility with the rural spatial context.

Question	Response
Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	Yes. At a national level, South Africa continues to experience electricity supply constraints and the possibility of load shedding, and recognises the need to diversify its energy mix away from coal-based generation. The proposed Project will contribute approximately 170 MWac of renewable energy to the national grid, thereby supporting energy security and climate change mitigation objectives. At a local level, the project will contribute to employment creation, local procurement opportunities, skills development, and broader economic stimulation within the affected municipalities as presented and assessed in this report.
Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development? Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity cost)?	The project is designed to make use of existing infrastructure where feasible. Grid connection infrastructure will be developed in consultation with Eskom, while water, sanitation and waste services will be sourced through authorised service providers. However, the grid connection is excluded from this current EIA process. Existing roads will be upgraded where necessary to accommodate construction traffic. The traffic impact assessment has confirmed that the local traffic network can accommodate the additional traffic associated with the construction and operation of the project. The project is not anticipated to result in significant additional demand on municipal infrastructure and may contribute to local infrastructure improvements.
Is the project part of a national programme to address an issue of national concern or importance?	Yes. The Project supports national priorities relating to electricity security, climate-change mitigation, infrastructure investment, industrial development, employment and a just transition. It is aligned with the Integrated Resource Plan 2025 (published 28 October 2025; planning horizon to 2039), National Development Plan 2030, Just Energy Transition Implementation Plan 2023-2027, South African Renewable Energy Masterplan 2025 and the objectives of the REIPPPP. Furthermore, the project has been submitted for registration[1] as a Strategic Integrated Project (SIP) under SIP 9: Green Energy in Support of the South African Economy (REIPPP), which is aimed at accelerating renewable energy infrastructure

[1]The SIP registration application was submitted in March 2026 and acknowledged by Infrastructure South Africa (ISA) on 11 March 2026. The latest update received from ISA on 14 August 2026 confirmed that a date for consideration by the Validation Committee had not yet been secured and would be communicated once confirmed.

Question	Response
	development and attracting private sector investment into the energy sector. SIP 9 supports the delivery of South Africa's renewable energy procurement objectives through the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), including the current Bid Window 7 (BW7), which seeks to procure 5,000 MW of wind and solar generation capacity. The project's alignment with SIP 9 demonstrates its strategic importance in addressing national energy challenges, expanding renewable energy capacity, supporting economic growth and job creation, and advancing South Africa's just energy transition objectives.

Table 2-5 – Desirability

Question	Response
Is the development the best practicable environmental option for this land/site?	Yes. Site selection and layout optimisation considered environmental sensitivities, wind resource availability, access requirements, proximity to grid infrastructure, and landowner agreements. The current land-use of the project area is largely agricultural, including industrial agriculture activities, which could continue across most of the properties in conjunction with renewable energy generation. The site is furthermore located within a region that has historically contributed significantly to South Africa's electricity generation and where a transition away from coal-fired power generation is planned. The planned decommissioning of the Grootvlei Power Station, located less than 20 km from the site, will contribute to the need for replacement generation capacity as part of South Africa's JET Implementation Plan 2023–2027. Renewable energy developments in areas with existing grid infrastructure are therefore strategically important for maintaining energy security while reducing greenhouse gas emissions. The proximity of the site to existing grid infrastructure and the presence of numerous overhead power lines in the surrounding area make the site particularly suitable for renewable energy development. Establishing a grid connection within a landscape already characterised by electricity transmission infrastructure is generally less disruptive to the receiving environment than introducing similar infrastructure into an undeveloped area, as it limits additional habitat fragmentation, visual intrusion and land disturbance associated with new transmission corridors. Specialist studies informed the refinement of the layout, within the framework of the mitigation hierarchy, to avoid and minimise impacts on sensitive biodiversity features, wetlands, heritage resources and other

Question	Response
	environmental aspects where feasible. At has been confirmed through specialist studies that environmental impacts associated with the development alternative can be mitigated to acceptable levels of significance while resulting in positive socio-economic impacts.
Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	No material conflict has been identified with the Dipaleseng IDP 2022-2027 (2025/26 review) and 2019 SDF review, Lesedi IDP 2021-2026 and municipal SDF, or Midvaal IDP 2022-2027 (2025/26 review) and SDF 2022-2027 (reviewed May 2023). The Project supports strategic infrastructure, investment and economic-development objectives during the applicable planning cycles. It does not require wholesale conversion of the rural landscape, and agriculture can continue across most affected properties. Final land-use approvals must remain consistent with the applicable municipal spatial proposals.
Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g., as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	The Gauteng Conservation Plan (Version 4, reflected in the 2024 project mapping) and the Mpumalanga Biodiversity Sector Plan (2024) are the principal provincial biodiversity plans applicable to the site. They identify CBAs and ESAs that inform provincial and municipal spatial planning. The layout has been revised to avoid and minimise impacts on CBA 1 and CBA 2: turbines and most other infrastructure have been positioned outside CBAs, while any unavoidable small access-road intersections require specialist mitigation, rehabilitation and monitoring. Most infrastructure in the Gauteng portion is located in ESA1 rather than CBA. This demonstrates application of the mitigation hierarchy and links the Project layout directly to biodiversity-planning priorities.
Do location factors favour this land use at this place? (this relates to the contextualization of the proposed land use on this site within its broader context).	Yes. The project area has favourable wind resources, suitable topography, access to existing transportation infrastructure, proximity to electricity transmission infrastructure, and a land-use context that remains largely agricultural, including industrial agriculture. These characteristics make the site suitable for renewable energy development while enabling continued agricultural activities across most of the properties, while diversifying revenue streams for affected farming units, which has the potential to provide stability during periods of weather extremes.
How will the activity of the land use associated with the activity being applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	Potential impacts on biodiversity features, wetlands, avifauna, bats, heritage resources and visual receptors were assessed through specialist studies. Layout refinement and mitigation measures have been incorporated to avoid or minimise impacts on sensitive

Question	Response
	environmental and cultural features. Monitoring, rehabilitation and environmental management measures are proposed to further reduce residual impacts. The findings of the EIA show that all impacts on the environment can be mitigated to acceptable levels of impact significance.
How will the development impact on people's health and well-being? (E.g. In terms of noise, odours, visual character and sense of place, etc.)?	Potential impacts include changes to the visual character of the landscape, construction-related disturbances and operational noise. These impacts have been assessed and can be managed through appropriate mitigation measures to acceptable levels of significance. Positive impacts include employment opportunities, local economic stimulation, skills development and contributions to a more secure electricity supply.
Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs	No. The permanent development footprint represents a small proportion of the overall site area, allowing agricultural activities to continue over most of the project area. . The proposed activity of renewable energy generation, and the economic and employment benefits associated with the project outweigh the limited loss of land which could potentially be used for alternative uses. The principles of sustainable development require the balancing of environmental, social and economic considerations which this EIA process has considered in full alignment with the National Environmental Management Act (NEMA). The implementation of the no-go alternative will result in the positive impacts of the project being foregone.
Will the proposed land use result in unacceptable cumulative impacts?	No unacceptable cumulative impacts were identified that would preclude development. Cumulative impacts relating to biodiversity, visual character, avifauna and socio-economic factors were assessed and can be managed through mitigation, monitoring and implementation of the EMPr.

2.4.1 INTERNATIONAL, NATIONAL & LOCAL PERSPECTIVE

Renewable energy development is regarded as an important contribution to meeting international and national targets of reducing reliance on fossil fuels, such as coal, which contribute towards greenhouse gas emissions and resultant climate change. The need and desirability of the proposed project has been considered from an international, national, and regional perspective.

2.4.1.1 International Perspective

The proposed project will align with internationally recognised and adopted agreements, protocols, and conventions. This includes the Kyoto Protocol (1997) which calls for countries internationally to reduce their greenhouse gas emissions through cutting down on their reliance on fossil fuels and investing in renewable energy technologies for electricity generation. The proposed project will

therefore add capacity to the energy sector and generate electricity without greenhouse gas emissions and meet international requirements in this regard.

South Africa is also signatory to the United Nations' Development Programmes' (UNDP) Sustainable Development Goals (SDGs), particularly SGD 7 relating to affordable and clean energy. The proposed project qualifies as a clean technology that will generate up to 170 MWac of affordable energy to contribute to South Africa's energy mix.

The project will also greatly contribute to the countries' efforts to reduce their carbon emissions and play their role as part of the Paris Climate Accord. The Paris Agreement is a legally binding international treaty signed by 196 countries at the COP 21 in Paris, on the 12th of December 2015 to combat climate change. The goal of the Paris Accord is to limit global warming to well below 2 degrees Celsius, compared to industrial levels to avoid catastrophic natural disasters which are driven by the global temperature increase. Therefore, to achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate-neutral world by 2050.

At COP27 President Sameh Shoukry announced the *Sharm el-Sheikh Adaptation Agenda*[2], enhancing resilience for people living in the most climate-vulnerable communities by 2030. The cover decision, known as the Sharm el-Sheikh Implementation Plan, highlights that a global transformation to a low-carbon economy is expected to require investments of at least USD 4-6 trillion a year. The Sharm el-Sheikh Implementation Plan emphasises the urgent need for reduced global greenhouse gas emissions through the use of renewable energy, just energy transition partnerships and other cooperative actions. The Plan further highlights that this is a critical decade of action that requires rapid transformation towards renewable energy.

This renewable energy project aligns with the goals of the Sharm el-Sheikh Implementation Plan and the need to reduce greenhouse gas emissions and rapidly transform towards renewable energy.

2.4.1.2 National Perspective

The South African Government, through the IRP (2010-2030), has set a target to secure 17 800 MW of renewable energy by 2030. This is an effort to diversify the country's energy mix in response to the growing electricity demand and promote access to clean sources of energy.

The National Development Plan (NDP) is aimed at reducing and eliminating poverty in South Africa by 2030. The NDP also outlines the need to increase electricity production by 2030, with 20 000 MW of electricity capacity generated from renewable sources in order to move to less carbon-intensive electricity production. The Plan also envisages that South Africa will have an energy sector that provides reliable and efficient energy service at competitive rates, while supporting economic growth through job creation.

[2] https://unfccc.int/news/cop27-reaches-breakthrough-agreement-on-new-loss-and-damage-fund-for-vulnerable-countries

The authorisation of the project will further align with South Africa's National Climate Response White Paper which outlines the countries efforts to manage the impacts of climate change and to contribute to the global efforts to stabilize the greenhouse gases concentrations in the atmosphere.

The proposed project will pave the way for the JET in South Africa and promote the transition from a fossil fuel-based economy to a low carbon economy. The project aims towards the aforementioned national energy targets of diversification of energy supply and the promotion of clean energy. Wind energy developments contribute to reduced emissions and subsequently climate change whilst promoting industrial development and job creation. The project is also aligned with the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) and contributes to the delivery of the South African Renewable Energy Masterplan (SAREM), which aims to accelerate renewable energy deployment while driving local manufacturing, skills development, localisation, and inclusive economic growth through the renewable energy value chain. By increasing renewable energy generation capacity, reducing greenhouse gas emissions, and supporting a just energy transition, the project contributes to national efforts to address the country's energy constraints, strengthen economic competitiveness, and build a more sustainable, lower-carbon economy.

The project will also aid in overcoming possible future power cuts. In 2022, South Africa witnessed its longest recorded hours of load shedding, with the power being off for 1 949 hours between January and September 2022 as shown in **Figure 2-6**. The South African Government has taken strides to try reducing these power cuts through the implementation of bid Windows in REIPPP, but it is still expected that the country will undergo more load shedding. Over the years the construction of Solar and Wind facilities has become more cost-effective, and less time-consuming. Thus, acting as a faster and more efficient method of meeting the ever-growing demand for electricity in the country. Renewable energy is a key factor in the national energy mix and will help assist in ensuring that load shedding is prevented in South Africa.

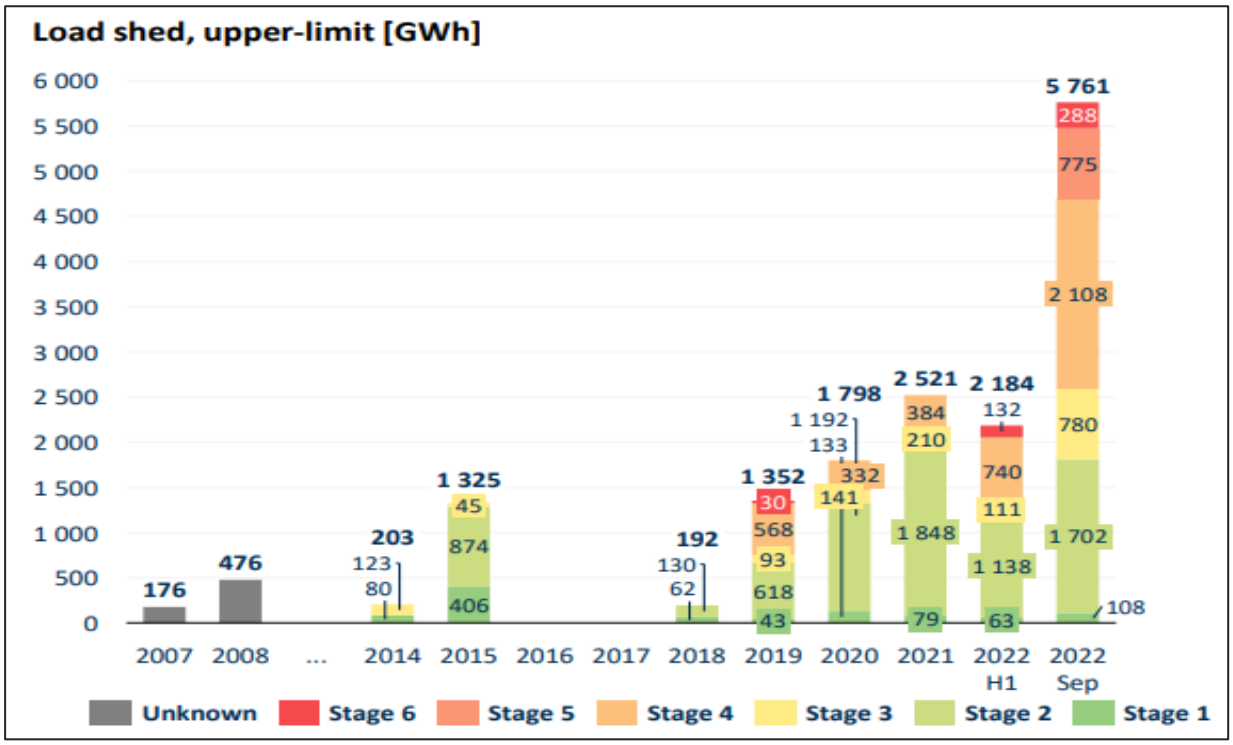


Figure 2-6 – Load shedding hours over the years in South Africa

Source: CSIR (2022)

2.4.1.3 Regional and Local Perspective

Just Energy Transition

Coal power stations and the coal mining industry play a vital component in the economic and social components of the l economy. Shifting to a low carbon economy will thus need to offset or exceed the benefits being realized by fossil fuels in the province. Thus, a key factor to ensuring the success of the JET is not only to focus on the transition from fossil fuels to renewable energy resources but to simultaneously ensure the Just Transition of jobs and skills. Locally, the Grootvlei Power Station is expected to be decommissioned by 2030 as a part of the JET plans.

The transition towards renewable energy will improve the socio-economic conditions of the Gert Sibande District Municipality and the Sedibeng District Municipality (**Appendix G.11 of the DEIR**). The Gert Sibande DM recorded an unemployment rate of 26.7% in 2017, with the majority of its residents employed in the trade and community services sector. In Sedibeng DM, the most recent IDP (2025/26) indicates an unemployment rate of approximately 55.2%, based on 2023 labour-market data. The Project will aid in solving two of the leading challenges faced by the district municipalities, namely the cost of electricity and lack of adequate employment opportunities.

The renewable industry will create job opportunities throughout the supply chain. The renewable industry will contribute to the Just transition in South Africa to ensure that there are no job losses but rather job transfers and skill exchange. For these opportunities to arise, renewable energy projects need to be approved in the Mpumalanga and Gauteng Provinces to ensure that the transition from fossil fuels to renewable energy happens gradually and takes off effectively.

2.4.2 CONSISTENCY WITH NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA) PRINCIPLES

Table 2-6 outlines the project's consistency with the NEMA Principles.

Table 2-6 – Consistency of the Project and the EIA Process with the NEMA principle

NEMA Principles	Discussion
(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.	The EIA process considered the interests of affected communities, landowners and surrounding settlements through specialist social assessments, stakeholder engagement and public participation undertaken throughout the EIA process. Project benefits and potential impacts on livelihoods, wellbeing and quality of life were assessed and mitigation measures developed where required. Refer to Section 9 and 13 of the DEIR.
(3) Development must be socially, environmentally and economically sustainable.	The EIA assessed the environmental, social and economic implications of the proposed development to ensure sustainable development principles are upheld. Mitigation measures have been incorporated into the EMPr (Appendix J of the DEIR) to minimise impacts and enhance positive outcomes. Refer to Sections 9, 11 and 12 of the DEIR.

NEMA Principles	Discussion
(4) (a) Sustainable development requires the consideration of all relevant factors including the following:	
(i) That the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;	Detailed biodiversity, avifaunal, bat and aquatic specialist studies informed the identification of environmentally sensitive areas. The project layout was refined to avoid and minimise impacts on sensitive ecological features where feasible. Refer to Sections 8, 9 and 12 of the **DEIR**.
(ii) that pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;	Potential sources of pollution and environmental degradation were identified and assessed during the EIA process. Mitigation measures relating to waste management, erosion control, hazardous substances and rehabilitation have been incorporated into the EMPr (**Appendix J**). Refer to Sections 9 and 12 of the **DEIR**.
(iii) that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;	Specialist visual and heritage impact assessments were undertaken to identify sensitive landscapes and heritage resources. The layout was refined where practicable, and mitigation measures have been proposed to reduce residual impacts. (Refer to Section 8, 9, 11 and 12 of this **DEIR**).
(iv) that waste is avoided or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner.	Waste generation associated with the construction, operation and decommissioning phases was assessed. Waste management measures and monitoring requirements have been incorporated into the EMPr (**Appendix J**) to ensure responsible handling, storage, recycling and disposal practices. Refer to Section 9 and 12 of this **DEIR**.
(v) that the use and exploitation of non-renewable natural resources is responsible and equitable, and takes into account the consequences of the depletion of the resource;	The project promotes a transition from fossil fuel-based energy generation to renewable wind energy, thereby reducing dependence on non-renewable resources and supporting long-term sustainability objectives. Refer to Sections 9 and 11 of this the **DEIR**.
(vi) that the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the level beyond which their integrity is jeopardised;	Specialist studies assessed the receiving environment and identified mitigation measures to ensure that the development does not compromise ecological functioning or environmental integrity beyond acceptable thresholds. Refer to Sections 8, 9 and 12 of the **DEIR**.
(vii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions; and	The impact assessment considered uncertainties and adopted a precautionary approach through specialist investigations, impact rating methodologies, buffer application and mitigation planning. Refer to Sections 8, 9 and 11 of the **DEIR**.
(viii) that negative impacts on the environment and on people's environmental rights be anticipated and	In line with the mitigation hierarchy, potential negative impacts on environmental and social receptors were identified, assessed and addressed through

NEMA Principles	Discussion
prevented, and where they cannot be altogether prevented, are minimised and remedied.	avoidance, mitigation, rehabilitation and monitoring measures included in the EMPr. Refer to Sections 9 and 12 of the **DEIR**.
(4) (b) Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.	An integrated assessment process was undertaken by a multidisciplinary team of specialists. Environmental sensitivities, technical constraints and socio-economic considerations informed the selection of the preferred development alternative. The no-go alternative has also been assessed. Refer to Sections 8, 9, 10 and 11 of the **DEIR**.
(4) (c) Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.	The EIA considered the distribution of project benefits and impacts across affected communities and landowners to ensure that impacts are not unfairly borne by vulnerable groups. Public participation processes were undertaken to ensure inclusive engagement. Refer to Sections 9 and 13 of the **DEIR**.
(4) (d) Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination.	The project is expected to contribute to energy security, local economic development and employment opportunities while ensuring environmental impacts are appropriately managed. Refer to Sections 9 and 13 of the **DEIR**.
(4) (e) Responsibility for the environmental health and safety consequences of a policy, programme, project, product, process, service or activity exists throughout its life cycle.	Environmental management measures have been developed for the construction, operational and decommissioning phases of the project and are contained within the EMPr. Refer to Sections 9 and 12 of the **DEIR**.
(4) (f) The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.	A comprehensive Public Participation Process was undertaken in accordance with the EIA Regulations, ensuring Interested and Affected Parties were provided with opportunities to review and comment on the project. Refer to Sections 13 of the **DEIR**.
(4) (g) Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognizing all forms of knowledge. Including traditional and ordinary knowledge.	Inputs received from stakeholders, landowners, government authorities and interested and affected parties have informed the impact assessment and project planning process. Refer to Sections 9, 11 and 13 of the **DEIR**.
(4) (h) Community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.	The project provides opportunities for employment, skills transfer, local procurement and economic development, contributing to community wellbeing and empowerment. Refer to Sections 9 and 13 of the **DEIR**.
(4) (i) The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and	The EIA process included a comprehensive assessment of environmental, social and economic impacts, together with cumulative impacts and

NEMA Principles	Discussion
evaluated, and decisions must be appropriate in the light of such consideration and assessment.	alternatives analysis, to inform decision-making. Refer to Sections 9, 10 and 11 of the **DEIR**.
(4) (j) The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected.	Occupational health and safety requirements and environmental management obligations will be implemented during all phases of the project in accordance with applicable legislation and the EMPr (Appendix J). Refer to Section 12 of the **DEIR**.
(4) (k) Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law.	Information relating to the project was made available to stakeholders throughout the EIA process, and opportunities for review and comment were provided in accordance with legislative requirements. Refer to Section 13 of the **DEIR**.
(4) (l) There must be intergovernmental co-ordination and harmonisation of policies, legislation and actions relating to the environment.	Relevant competent authorities, commenting authorities and stakeholders were consulted throughout the EIA process to support coordinated decision-making and regulatory compliance. Refer to Section 13 of the **DEIR**.
(4) (m) Actual or potential conflicts of interest between organs of state should be resolved through conflict resolution procedures.	The EIA process provides a transparent platform through which regulatory authorities can review technical findings and provide input to facilitate informed decision-making. Refer to Section 13 of the **DEIR**.
(4) (n) Global and international responsibilities relating to the environment must be discharged in the national interest.	The project contributes to South Africa's renewable energy and climate change objectives by supporting the reduction of greenhouse gas emissions and the transition to a lower-carbon energy mix. Refer to Section 9 and 11 of the **DEIR**.
(4) (o) The environment is held in public trust for the people, the beneficial use of environmental resources must serve the public interest and the environment must be protected as the people's common heritage.	The EIA process assessed impacts on environmental resources and incorporated mitigation measures to ensure that environmental resources are protected and managed in the public interest. Refer to Sections 8, 9 and 12 of the **DEIR**.
(4) (p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment.	The Applicant will be responsible for implementing all mitigation, rehabilitation, monitoring and corrective measures identified in the EMPr throughout the project lifecycle. Refer to Section 12 of the **DEIR**.
(4) (q) The vital role of women and youth in environment management and development must be recognised and their full participation therein must be promoted.	Public participation and socio-economic development opportunities associated with the project are intended to be inclusive and accessible to all sectors of the affected communities, including women and youth. Refer to Section 9 and 13 of the **DEIR**.
(4) (r) Sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands and similar systems require	Sensitive biodiversity features, wetlands and ecological corridors were identified through specialist studies and sensitivity mapping and informed the

NEMA Principles	Discussion
specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.	project layout and mitigation measures. Refer to Sections 8, 9, 10 and 12 of the **DEIR**.

3 ENVIRONMENTAL SENSITIVITY

3.1 SITE SENSITIVITY VERIFICATION SUMMARY

A summary of the DFFE screening tool, the applicable legislation as well as the specialist sensitivity verification are detailed in **Table 3-1** below.

Table 3-1 – Assessment Protocols and Site Sensitivity Verification Summary

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Agricultural Impact Assessment	Protocol for the specialist assessment and minimum report content requirements of environmental impacts on agricultural resources by onshore wind and/or solar photovoltaic energy generation facilities where the electricity output is 20 megawatts or more.	High Sensitivity	**Medium to Low** The information received from the screening tool rates the Agricultural Sensitivity theme as 'Very High' citing "Pivot Irrigation; Land capability;09. Moderate-High/10. Moderate-High" as the main reason for the very high sensitivity. This rating is disputed by this assessment due to no evidence of pivot irrigation directly in the proposed WEF 1 project area. Such cultivation does, however, occur in areas adjacent to the WEF 1 area. Areas of high sensitivity rating by the screening tool are validated for category 1 soils but disputed for the other categories due to the mentioned restrictions to sustainable crop cultivation. The low sensitivity of the mountainous terrain in the central to northern parts of the project area is validated.
Animal Species Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Animal Species	High Sensitivity	**Low to High Sensitivity** High in areas of undisturbed natural habitat. Low in areas of modified habitat (e.g., cultivated fields and stands of alien trees).
Aquatic Biodiversity Impact Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for	Very High Sensitivity	**Low to High Sensitivity** The Screening Tool indicated the site to be in an area mapped as being of

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
	Environmental Impacts on Aquatic Biodiversity		Low Aquatic Biodiversity Sensitivity but with the aquatic features mapped as very high sensitivity. This assessment found the watercourses and wetlands on the site to be of high sensitivity. Buffer zones of 50m on either side of the watercourses and 100m from the wetlands are deemed sufficient to protect these aquatic ecosystems from any impact arising from the proposed WEF. Low for the widespread area and High for the watercourses and wetlands within the site. A medium sensitivity has been applied to the adjacent buffers.
Archaeological and Cultural Heritage Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	**Very High Sensitivity** The cultural value of the broader area has significance in terms of its settler and agricultural history, with intact cultural landscape resources located within the development area. Furthermore, Significant Iron Age archaeological heritage was identified within the development area.
Avifauna Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Avifaunal Species by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 Megawatts or more	Low Sensitivity	**High Sensitivity** The Site Inspection and one year of avifaunal pre-application/pre-construction monitoring confirmed that the site is of high sensitivity for 12 SCC. No nests or breeding sites of SCC were identified on the site.
Bat Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	High Sensitivity	**High Sensitivity** The DFFE Screening Tool classified the area as a High Sensitive area for bats, and based on the desktop

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
			survey, ground truth and data obtained, the result could not be refuted. The rivers, open water and wetlands alone are highly sensitive areas, but there are also a large number of roosts in the area and mine shafts. These factors are the likely causes for the large number of bats recorded thus far during the monitoring period.
Civil Aviation Assessment	Protocol For The Specialist Assessment And Minimum Report Content Requirements For Environmental Impacts On Civil Aviation Installations	Medium Sensitivity	**Low Sensitivity** According to the DFFE Screening Tool Report, civil aviation is regarded as having medium sensitivity. due to the project being located between 8 and 15 km of other civil aviation aerodrome Therefore, a compliance statement is required as per the protocol specifications. The relevant Authorities have been included in the project stakeholder database including the Air Traffic and Navigation Services (ATNS) and the South African Civil Aviation Authority (SACAA). These stakeholders have been informed of the proposed Project, and comments have been sought from these authorities as applicable. Proof of notification of the stakeholder is included in the SER (Appendix E of the DEIR) and no comments were received to date.
Defence Assessment	Protocol For the Specialist Assessment and Minimum Report Content Requirements For Environmental Impacts on Defence installations	Medium Sensitivity	**Low Sensitivity** ABO Energy South Africa (Pty) Ltd submitted a wayleave request in terms of Section 29 of the Electronic Communications

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
			Act (Act 36 of 2005) to SANDF on 16/02/2026. Correspondence received from the DoD confirmed that the department has no objection to the proposed project ,as the project is not located in proximity to military infrastructure, will not intrude into DoD communication installation buffers, and is not situated within aviation-related buffers that could affect South African Air Force operations. Refer to the comment letter included in the SER (**Appendix D** of the **DEIR**)
Flicker Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	**Very High Sensitivity** Development is located in close proximity to verified inhabited residences / homesteads and built-up / residential areas within the study area.
Landscape/Visual Impact Assessment		Very High Sensitivity	**High Sensitivity** Development is located within the buffer of a national road and on a topographical feature. In addition, numerous inhabited homesteads, hydrological features, as well as mountains and tall hills are situated in close proximity to the project site.
Palaeontology Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	Very High Sensitivity	**Medium Sensitivity** It is anticipated that the impact of the development will mainly be **Low to Moderate** as only small sections of the development area are underlain by the sensitive Vryheid Formation.

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
Noise Assessment	Protocol for Specialist Assessment and Minimum Report Content Requirements for Noise Impacts	Very High Sensitivity	**Very High Sensitivity** There are numerous permanent or temporary residential activities within the project area. These residential activities are considered to be noise-sensitive, and the areas are considered to have a "Very High" sensitivity to noise.
Plant Species Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Plant Species	Medium Sensitivity	**Medium Sensitivity** Medium in areas of undisturbed natural habitat. Low in areas of modified habitat (e.g., cultivated fields and stands of alien trees).
RFI Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	High Sensitivity	**Low Sensitivity** ABO Energy South Africa (Pty) Ltd has engaged with SAWS and relevant telecommunications stakeholders prior to the S&IER application process regarding the proposed project. The Applicant received confirmation that the proposed project will not impact SAWS. All correspondence received to date for the project in Appendix D of the **DEIR**.
Terrestrial Biodiversity Impact Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity	Very High Sensitivity	**Very High Sensitivity** Large areas of natural habitat are present on-site, and these maintain important ecosystem processes and support many indigenous flora and fauna species. For natural habitat patches, the 'Very High' sensitivity rating for Terrestrial Biodiversity therefore is confirmed. For patches of modified habitat (cultivated fields and stands of alien trees), the

Specialist Assessment	Assessment Protocol	DFFE Screening Tool Sensitivity	Specialist Sensitivity Verification
			sensitivity rating is considered Low.
Vulture Species Assessment	Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Cape Vultures by Onshore Wind Energy Generation Facilities where the Electricity Output is 20 Megawatts or more	Medium Sensitivity	**Medium Sensitivity.** The Screening Tool's Vulture Species Theme identified the study area as of medium sensitivity for vulture species due to the area affecting between 5% - 10% of the population. The survey effort was in line with the Cape Vulture Guidelines; therefore, the Pre-application Avifaunal Monitoring Plan did not require further revision, as the collected data is deemed sufficient to represent the majority of vulture movement on site.
Traffic Impact Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	No sensitivity identified by the screening tool	N/A
Geotechnical Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed	No sensitivity identified by the screening tool	N/A
Socio Economic Assessment	Site Sensitivity Verification Requirements where a specialist Assessment is required but no Specific Assessment Protocol has been prescribed.	No sensitivity identified by the screening tool	N/A

3.2 SENSITIVITY MAPPING

A consolidated environmental sensitivity map has been compiled based on the sensitivities and buffers outlined in the following specialist studies:

- Aquatic Biodiversity;
- Terrestrial Biodiversity;
- Heritage;
- Agriculture;
- Visual

- Bats; and
- Noise.

The location of the project infrastructure (i.e., layout) was determined based on initial environmental and technical screening which considered the infrastructure locations feasible from a constructability perspective. This included several key aspects including environmental constraints and opportunities, distance to grid connection, topography, and site accessibility.

The preliminary layout (66 turbines) was assessed by the various Specialists during the Scoping Phase. During the EIA phase, the layout was further refined and reduced to 20 turbines based on the recommendations made by specialist. Due consideration was given to accommodate the identified sensitivities and mitigation measures proposed during the draft EIA phase. The recommended Layout is depicted in **Figure 3-1, Figure 3-2** and **Figure 3-3** below.

Table 3-2 – Mapping criteria utilised by the specialists for the assessment

No-Go	Areas or features that are considered of such sensitivity or importance that any adverse effects upon them may be regarded as a fatal flaw.
High	Areas or features that are considered to have high sensitivity. Development in these areas must be limited and must remain within any acceptable limits of change as determined by the specialist. Development should also comply with any other restrictions or mitigation measures identified by the specialist.
Medium	Medium sensitivity areas are considered to be developable; however, the nature of the effects should remain within any acceptable limits of change as determined by the specialist. Development should also comply with any other restrictions or mitigation measures identified by the specialist.
Low	Low sensitivity areas that are considered to be developable however specialists may still wish to define acceptable limits of change should they deem this necessary.

NO-GO AREA

Legislated “no go” areas or setbacks are areas or features that are considered of such significance that impacting them may be regarded as fatal flaw or strongly influence the project impact significance profile. Therefore, areas or features that are considered to have a high sensitivity or where project infrastructure would be highly constrained and should be avoided as far as possible are referred to as “no-go” areas. Infrastructure located in these areas are likely to drive up impact significance ratings and mitigations. The assumption is that the overhead lines could span these areas, but the towers/pylons should adhere to the buffer distances as indicated as far as possible where areas are too large to span (buffers) then these tower positions must be evaluated on a case-by-case basis prior to construction.

The following buffers have been recommended by the specialist team in **Table 3-3** below. Overall, the final assessed layout (**Figure 3-1**) has been refined through an iterative assessment process to avoid identified no-go areas and incorporate specialist-recommended buffers wherever practicable. All aquatic, heritage, avifaunal and bat-related buffers have been adhered to. Limited deviations remain within the visual sensitivity constraints (mountain terrain, N3 buffer and one remaining shadow flicker receptor). However, these were assessed by the relevant specialist, and the final layout was supported, subject to the implementation of the recommended mitigation measures.

Table 3-3 – Buffers recommended by specialist team

Specialist Assessment	Sensitivity Aspects	Recommended Buffer	DEIR Layout compliance with recommended buffers
Terrestrial Biodiversity	Wind Turbines 05, 06 and 07	Should be oriented in a manner that ensures the majority of their disturbance footprints are contained within the designated ridge buffer	Compliant. The terrestrial biodiversity specialist confirmed that the infrastructure layout has been revised to avoid and minimise impacts on sensitive biodiversity features and supported the DEIR layout subject to implementation of mitigation measures. WT05, WT06 and WT07 remain acceptable provided micro-siting ensures disturbance footprints are largely contained within the ridge buffer.
Plant Species	No flora Species of Conservation Concern (SCC) were recorded within the PAOI during the field programme. However, should any flora SCC be confirmed during the pre-construction phase, the proposed infrastructure must be re-sited outside the prescribed buffer area around the relevant Red List species, in accordance with SANBI (2026).	200m	Compliant. No flora SCC were recorded during the field survey. The DEIR layout is acceptable, subject to a pre-construction walkdown and re-siting of infrastructure should any flora SCC be identified during pre-construction surveys.
Aquatic Biodiversity	Watercourses	50m	Compliant. The aquatic specialist confirmed that the proposed layout avoids delineated aquatic features of concern and allows for a wide buffer area around watercourses
	Wetland Habitats	100m	
Archaeological and Heritage Resources	Iron Age Settlements	100m	Compliant. The heritage specialist confirmed that the EIA layout avoids identified heritage sensitivities.

Specialist Assessment	Sensitivity Aspects	Recommended Buffer	DEIR Layout compliance with recommended buffers
	Burial grounds and graves located within the area proposed for development	100m	Compliant. The DEIR layout avoids identified graves and burial-related heritage sensitivities.
	Sites with contextual historic value are graded IIIB, i.e. Malanskraal structures located at Site 065	500m	Compliant. The heritage specialist confirmed that the EIA layout avoids identified heritage sensitivities, including higher-value heritage resources.
	Sites with contextual historic value are graded IIIC	50m	Compliant. The DEIR layout avoids identified heritage sensitivities and is supported by the heritage specialist.
Avifauna Species	Within 200 m of NFEPA Rivers and Wetlands (artificial and natural)	200m	Compliant. The avifaunal specialist confirmed that the proposed layout avoids all avifaunal no-go areas, areas of high sensitivity and incorporates the recommended precautionary buffers.
	Vulture Colonies and Roosts	50km	Compliant. The specialist confirmed the layout adheres to all recommended avifaunal constraints and precautionary buffers and supported the proposed layout.
Bats Species	Water bodies, rivers, wetlands, ridges and wooded areas	200m	Compliant. The bat specialist confirmed that no turbines are positioned such that the turbine rotor sweep infringes on the applied buffered areas.
	Roosts found have been classified as small and large roosts	A 1 km and 2.5 km buffer respectively	Compliant. The specialist confirmed that all applied bat buffers have been respected by the DEIR layout.

Specialist Assessment	Sensitivity Aspects	Recommended Buffer	DEIR Layout compliance with recommended buffers
	Mine Shafts	500m	Compliant. No turbines are located within the recommended mine shaft buffers and the layout was supported by the bat specialist.
	Other associated WEF developments, such as buildings, sub-stations, roads and powerlines, developers: ▪ Roads	200m	Compliant. Associated infrastructure remains outside applicable bat constraints and the layout was supported by the specialist.
	▪ Powerlines	500m	Compliant. The bat specialist confirmed that all applicable buffers have been adhered to by the DEIR layout.
	▪ Buildings and sub-station infrastructure	500m minimum	Compliant. The specialist confirmed that the layout does not infringe the recommended bat-related infrastructure buffers
Visual	Turbines placed within the topographical feature areas identified as mountains	Potential relocation/repositioning of these turbines, if at all possible	Partially compliant. The visual specialist confirmed that four turbines remain within mountain/tall hill terrain. These turbines were retained following optimisation and balancing of other environmental and technical constraints. The specialist acknowledged that the layout had already been revised to reduce exposure.
	Shadow flicker zone of visible shadows: identified five (5) homesteads, namely Geluk, Steynskraal, dwelling south of Modderfontein, dwelling south of Sandpos and Request	No turbines should be placed within the identified shadow flicker zone of visible shadows unless otherwise agreed upon by the affected landowner, even if the landowner is located within the development site.	Partially compliant. Following refinement of the layout, only Turbine 24 remains within a shadow flicker sensitivity area affecting the Modderfontein homestead. Turbines 03, 04, 28 and 30 were removed from the DEIR layout during optimisation. The visual

Specialist Assessment	Sensitivity Aspects	Recommended Buffer	DEIR Layout compliance with recommended buffers
		This applied to five (5) turbines, namely turbines 03, 04, 24, 28 and 30	specialist noted that only Turbine 24 overlaps two sensitivity buffers.
	Turbines 01, 12, 16, 20, 22 and 24	Turbines placed within the 1km buffer associated with the N3 are carefully considered for development with a "tread-light" approach and minimum infrastructure development.	Partially compliant. The visual specialist confirmed that six turbines (01, 12, 16, 20, 22 and 24) remain within the N3 1 km visual buffer. These turbines were retained following consideration of overall project constraints, and a tread-light development approach is recommended.
	Turbine numbers 01, 03, 04, 05, 07, 09, 10, 11, 12, 16, 24 and 30.	▪ This recommendation is based on the findings of the scoping report and applied only to turbines that are located within two or more sensitive visual buffers / areas. ▪ Of note is that should landowner consent be received for turbines 03, 04 and 30 then, the above recommendation will not apply to these specific turbines.	▪ Partially compliant. Of the turbines previously identified during scoping, only Turbine 24 remains within multiple visual sensitivity buffers. The specialist acknowledged that the layout was revised substantially from the earlier layouts and reduced exposure to sensitive receptors.
Noise	When construction activities must take place near noise-sensitive developments/receptors/communities (NSR).	▪ 500m during the day; and ▪ 1,000m at night	▪ Compliant. The acoustic specialist concluded that the proposed turbine layout is acceptable from a noise perspective, provided the recommended mitigation measures are implemented and operational noise limits are complied with.
Invertebrates (Butterflies)	Confirmed Heidelberg Golden Opal (*Chrysoritis aureus*) localities and Very High sensitivity habitat.	▪ 200m	▪ Partially compliant. Potential conflict areas have been identified where the proposed layout overlaps with High Sensitivity areas and where turbine

Specialist Assessment	Sensitivity Aspects	Recommended Buffer	DEIR Layout compliance with recommended buffers
			footprints are placed in proximity to confirmed localities of threatened species (although appropriately outside a suitable buffer zone). While these are generally not regarded to be major impacts, it should nonetheless be considered with caution.

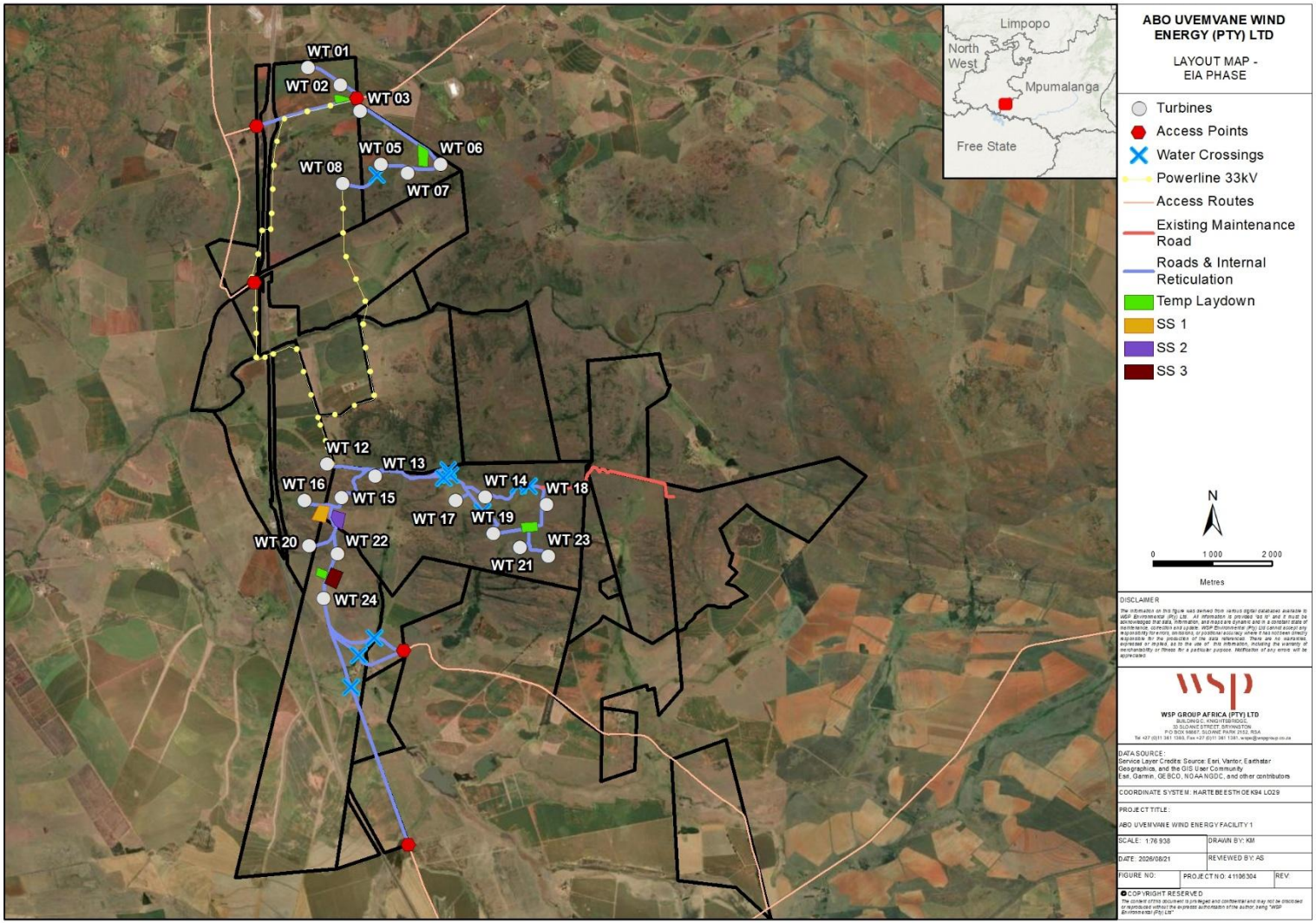


Figure 3-1 – Final Layout ABO Uvemvane WEF 1– DEIR Phase

Figure 3-2 – Combined Site sensitivity map for ABO Uvemvane WEF 1 (Final Layout – DEIR Phase)

Figure 3-3 – Combined Sensitivity Map (without Heritage Sensitivities)

3.3 IMPACT ASSESSMENT OUTCOMES

A summary of the identified impacts and corresponding significance ratings for the proposed project is provided in **Table 3-4 (Construction Phase), Table 3-5 (Operation Phase) and Table 3-6 (Decommissioning Phase)** below.

Table 3-4 – Impact Summary (Construction Phase)

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
Agriculture	Agricultural land use change.	C	(-)	Low	Very Low
	Land and soil degradation.	C	(-)	Moderate	Low
	Disruption or prevention of farming operations.	C	(-)	Low	Low
	Positive impacts project lifetime	C	(+)	Moderate	N/a
Terrestrial Biodiversity	Direct loss and disturbance of natural habitat.	C	(-)	High	Low
	Fragmentation reducing natural habitat connectivity and integrity	C	(-)	Moderate	Low
	Establishment and spread of alien invasive species	C	(-)	Moderate	Low
	Increased soil erosion and sedimentation	C	(-)	Moderate	Low
Plant Species	Direct loss and disturbance of natural habitat	C	(-)	High	Low
	Fragmentation reducing natural habitat connectivity and integrity	C	(-)	Moderate	Low
	Loss of flora of conservation concern	C	(-)	Moderate	Low
	Establishment and spread of alien invasive species	C	(-)	Moderate	Low
Animal Species	Direct loss and disturbance of natural habitat	C	(-)	High	Low
	Fragmentation reducing natural habitat connectivity and integrity	C	(-)	Moderate	Low
	Loss of fauna species of conservation concern - Mountain Reedbuck	C	(-)	Moderate	Low
	Loss of fauna species of conservation concern - Grey Rhebok	C	(-)	Moderate	Low
	Loss of fauna species of conservation concern - Serval	C	(-)	Low	Very Low
	Loss of fauna species of conservation concern - Cape Clawless Otter	C	(-)	Low	Very Low
	Loss of fauna species of conservation concern - Southern African Hedgehog	C	(-)	Low	Very Low
	Loss of fauna species of conservation concern - Vlei Rat	C	(-)	Low	Very Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
Aquatic ecosystems	Aquatic habitat disturbance /loss and short-term water quality and flow impacts.	C	(-)	Low	Very Low
Archaeology	Impacts of the proposed development to archaeological resources	C	(-)	Moderate	Very Low
Palaeontology	Impacts of the proposed development to palaeontological resources	C	(-)	Low	Very Low
Avifaunal	Displacement through disturbance	C	(-)	High	Low
	Displacement through habitat loss	C	(-)	High	Moderate
Invertebrates (Butterflies)	Direct losses of sensitive species	C	(-)	High	Moderate
	Loss of habitat/areas that are considered suitable/highly suitable for sensitive butterfly species	C	(-)	High	Low
	Persistent and exacerbated deterioration of sensitive, natural, range restricted, or untransformed habitat	C	(-)	High	Low
	Disruption of ecological processes, services, ecological functionality	C	(-)	Moderate	Low
	Increased disruption of local movement and migration patterns, ecological interaction, and ecological processes that may affect diversity patterns through loss of connectivity (increased fragmentation, barrier effects), and conservation corridor networks in the landscape	C	(-)	Moderate	Low
Bats	Habitat loss or roost disturbance	C	(-)	Moderate	Very low
Visual	Visual impacts on residents of homesteads, visitors to tourist accommodation and Protected Areas within 5km of the proposed WEF	C	(-)	High	Moderate
	Visual impact of construction activities on observers travelling along roads within 5km of the proposed WEF.	C	(-)	High	Moderate
Noise	Daytime activities noise relating to the construction of access roads	C	(-)	Low	Low
	Daytime construction traffic passing NSR	C	(-)	Low	Low
	Increase in ambient sound levels due to day-time WTG construction activities	C	(-)	Very Low	Very Low
	Increase in ambient sound levels due to night-time WTG construction activities	C	(-)	Very Low	Very Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
Traffic	Increase in development trips for the duration of the construction/decommissioning phase.	C	(-)	Moderate	Low
	Construction associated noise and dust pollution.	C	(-)	Moderate	Low
	Possible damage to road surfaces caused by construction vehicles.	C	(-)	Moderate	Low
Geotechnical	Slope stability	C	(-)	Low	Very Low
	Seismic activity	C	(-)	Moderate	Low
	Soil erosion from clearing of sites for drilling and test pitting	C	(-)	Moderate	Very Low
	Potential hydrocarbon (including oil, fuels, chemicals) spillages	C	(-)	Moderate	Very Low
	Disturbance of fauna and flora from clearing of sites	C	(-)	Low	Very Low
	Subsidence	C	(-)	High	Low
Social	Job Creation	C	(+)	Moderate	High
	Population Influx	C	(-)	Moderate	Low
	Procurement From Local Businesses	C	(+)	Low	Moderate
	Community Health, Safety and Security	C	(-)	Low	Very Low
High Level Safety, Health and Environmental Risk Assessment - Solid State Lithium-Ion BESS	Human Health - chronic exposure to toxic chemical or biological agents	C	(-)	Moderate	Low
	Human Health - exposure to noise	C	(-)	Moderate	Low
	Human Health - exposure to temperature extremes and/or humidity	C	(-)	Low	Very Low
	Human Health - exposure to psychological stress	C	(-)	Low	Low
	Human Health - exposure to ergonomic stress	C	(-)	Low	Low
	Human and Equipment Safety - exposure to fire radiation (a)	C	(-)	Moderate	Low
	Human and Equipment Safety - exposure to fire radiation (b)	C	(-)	Moderate	Low
	Human and Equipment Safety - exposure to explosion over pressures	C	(-)	Moderate	Low
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents (a)	C	(-)	Moderate	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents (b)	C	(-)	Moderate	Low
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	C	(-)	High	Low
	Human and Equipment Safety - exposure to electromagnetic waves	C	(-)	Moderate	Low
	Environment - emissions to air	C	(-)	Low	Very Low
	Environment - emissions to water	C	(-)	Low	Low
	Environment - emissions to earth	C	(-)	Low	Low
	Environment - waste of resources e.g., water, power etc	C	(-)	Low	Very Low
	Public - Aesthetics	C	(-)	Low	Low
	Investors - Financial	C	(-)	Moderate	Low
	Employees and investors - Security	C	(-)	Moderate	Low
	Emergencies	C	(-)	Moderate	Low
	Investors - Legal	C	(-)	Moderate	Low
High Level Safety, Health and Environmental Risk Assessment Vanadium Redox Flox BESS	Human Health - chronic exposure to toxic chemical or biological agents	C	(-)	Moderate	Low
	Human Health - exposure to noise	C	(-)	Moderate	Low
	Human Health - exposure to temperature extremes and/or humidity	C	(-)	Low	Very Low
	Human Health - exposure to psychological stress	C	(-)	Low	Low
	Human Health - exposure to ergonomic stress	C	(-)	Low	Low
	Human and Equipment Safety - exposure to fire radiation	C	(-)	Moderate	Low
	Human and Equipment Safety - exposure to explosion over pressures	C	(-)	N/A	N/A
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents (a)	C	(-)	Moderate	Low
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	C	(-)	High	Low
	Human and Equipment Safety - exposure to electromagnetic waves	C	(-)	Moderate	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Environment - emissions to air	C	(-)	Low	Very Low
	Environment - emissions to water	C	(-)	Low	Low
	Environment - emissions to earth	C	(-)	Low	Low
	Environment - waste of resources e.g., water, power etc	C	(-)	Low	Very Low
	Public - Aesthetics	C	(-)	Low	Low
	Investors - Financial	C	(-)	Moderate	Low
	Employees and investors - Security	C	(-)	Moderate	Low
	Emergencies	C	(-)	Moderate	Low
	Investors - Legal	C	(-)	Moderate	Low

Table 3-5 – Impact Summary (Operation Phase)

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
Agriculture	Land and soil degradation	O	(-)	Low	Very Low
	Disruption or prevention of farming operations.	O	(-)	Low	Very Low
	Positive impacts project lifetime	O	(+)	Moderate	N/a
Terrestrial Biodiversity	Establishment and spread of alien invasive species	O	(-)	Moderate	Low
	Increase in wildfires from Project workers or faulty infrastructure	O	(-)	Moderate	Very Low
Plant Species	Establishment and spread of alien invasive species	O	(-)	Moderate	Low
Animal Species	Direct impact on fauna SCC from operating wind turbines	O	(-)	Moderate	Low
	Direct impact on fauna SCC from supporting operational activities	O	(-)	Moderate	Low
Aquatic ecosystems	Aquatic habitat disturbance and degradation of the ecological condition of aquatic ecosystems; modification of low and water quality	O	(-)	Low	Very Low
Avifaunal	Displacement through disturbance	O	(-)	High	Low
	Mortality from collisions with wind turbines	O	(-)	High	Moderate
	Mortality from collisions with overhead powerlines	O	(-)	High	Moderate

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Mortality from electrocutions on electrical infrastructure	O	(-)	High	Very Low
Bats	Bat mortality	O	(-)	Very High	Moderate
	Artificial lights	O	(-)	Moderate	Very Low
Visual	Visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 5 km to the proposed WEF.	O	(-)	Very High	Very High
	Visual impact on observers travelling along the roads within 5 km of the proposed wind turbine structures	O	(-)	High	High
	Visual impact on residents of homesteads and visitors to tourist accommodation (if present) within 5-10 km to the proposed WEF.	O	(-)	High	High
	Visual impact on observers travelling along roads within 5-10 km to the proposed WEF	O	(-)	High	High
	Visual impact on residents of homesteads and visitors to tourist accommodation within 10-20 km to the proposed WEF.	O	(-)	Moderate	Moderate
	Visual impact on visitors to Protected Areas within 10-20 km to the proposed WEF.	O	(-)	Moderate	Moderate
	Visual impact on observers travelling along roads within 10 - 20km to the proposed WEF	O	(-)	Moderate	Moderate
	Residents of homesteads and visitors to tourist accommodation (if present) (located beyond the 20km radius of the proposed WEF)	O	(-)	Low	Low
	Visual impact of shadow flicker on sensitive visual receptors located outside of the development site who are located within the zone of visual shadows of a proposed turbine.	O	(-)	High	Low
	Visual impact of lighting at night on residents and visitors to homesteads, tourist accommodation and Protected Areas within 10km from the proposed WEF	O	(-)	Very High	High
	Visual impact of lighting at night on observers travelling along roads within 10km from the proposed WEF	O	(-)	Moderate	Moderate
	Visual impact of the ancillary infrastructure on observers in close proximity to the structures.	O	(-)	High	Moderate
	Visual impact of blade painting on the overall perception of the WEF by sensitive receptors especially within	O	(-)	Low	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	0-5km and potentially up to 10km radius of the wind turbine structures.				
Noise	Increases in residual noise levels due to air-borne noise from the WTG.- Daytime	O	(-)	Very Low	Very Low
	Increase in the residual noise levels due to air-borne noise from the WTG- Night-time (Average expected noise levels)	O	(-)	Moderate	Low
	Increase in the residual noise levels due to air-borne noise from the WTG- Night-time (Potential worst-case noise levels)	O	(-)	Moderate	Low
Traffic	Slight increase in trips due to permanent staff travelling from site; irregular periodical maintenance trips.	O	(-)	Low	Low
Geotechnical	Slope stability	O	(-)	Low	Very Low
	Seismic activity	O	(-)	Moderate	Low
	Soil erosion from clearing of sites for drilling and test pitting	O	(-)	Moderate	Very Low
	Potential hydrocarbon (including oil, fuels, chemicals) spillages	O	(-)	Moderate	Very Low
	Disturbance of fauna and flora from clearing of sites	O	(-)	Low	Very Low
	Subsidence	O	(-)	High	Low
Social	Job creation	O	(+)	Moderate	Moderate
	Population influx	O	(+)	Moderate	Low
	Procurement From Local Businesses	O	(+)	Low	Moderate
	Community Health, Safety and Security	O	(-)	Low	Low
	Energy Generation	O	(+)	Low	Moderate
High Level Safety, Health and Environmental Risk Assessment - Solid State Lithium-Ion BESS	Human Health - chronic exposure to toxic chemical or biological agents (a)	O	(-)	Moderate	Low
	Human Health - chronic exposure to toxic chemical or biological agents (b)	O	(-)	Moderate	Low
	Human Health - exposure to noise	O	(-)	Moderate	Low
	Human Health - exposure to temperature extremes and/or humidity	O	(-)	Low	Very Low
	Human Health - exposure to psychological stress	O	(-)	Low	Very Low
	Human Health - exposure to ergonomic stress	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to fire radiation (a)	O	(-)	High	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Human and Equipment Safety - exposure to fire radiation (b)	O	(-)	High	Low
	Human and Equipment Safety - exposure to explosion over pressures	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents (a)	O	(-)	Low	Low
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents(a)	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to electromagnetic waves	O	(-)	Moderate	Low
	Environment - emissions to air	O	(-)	Low	Very Low
	Environment - emissions to water	O	(-)	Low	Low
	Environment - emissions to earth	O	(-)	Low	Very Low
	Environment - waste of resources e.g., water, power etc	O	(-)	Low	Very Low
	Public - Aesthetics	O	(-)	Low	Low
	Investors - Financial	O	(-)	Moderate	Low
	Employees and investors – Security (a)	O	(-)	Moderate	Low
	Employees and investors – Security (b)	O	(-)	Moderate	Low
	Emergencies	O	(-)	Moderate	Low
	Investors - Legal	O	(-)	Moderate	Low
High Level Safety, Health and Environmental Risk Assessment Vanadium Redox Flox BESS	Human Health - chronic exposure to toxic chemical or biological agents (a)	O	(-)	Moderate	Low
	Human Health - chronic exposure to toxic chemical or biological agents (b)	O	(-)	Moderate	Low
	Human Health - exposure to noise	O	(-)	Moderate	Low
	Human Health - exposure to temperature extremes and/or humidity	O	(-)	Low	Very Low
	Human Health - exposure to psychological stress	O	(-)	Low	Very Low
	Human Health - exposure to ergonomic stress	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to fire radiation (a)	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to fire radiation (b)	O	(-)	Moderate	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Human and Equipment Safety - exposure to explosion over pressures	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents (a)	O	(-)	Low	Low
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents (b)	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	O	(-)	Moderate	Low
	Human and Equipment Safety - exposure to electromagnetic waves	O	(-)	Moderate	Low
	Environment - emissions to air	O	(-)	Low	Very Low
	Environment - emissions to water	O	(-)	Low	Low
	Environment - emissions to earth	O	(-)	Low	Very Low
	Environment - waste of resources e.g., water, power etc	O	(-)	Low	Very Low
	Public - Aesthetics	O	(-)	Moderate	Low
	Investors - Financial	O	(-)	Moderate	Low
	Employees and investors – Security (a)	O	(-)	Moderate	Low
	Employees and investors – Security (b)	O	(-)	Moderate	Low
	Emergencies	O	(-)	Moderate	Low
	Investors - Legal	O	(-)	Moderate	Low

Table 3-6 – Impact Summary (Decommissioning Phase)

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
Agriculture	Land and soil degradation	D	(-)	Low	Very Low
	Disruption or prevention of farming operations.	D	(-)	Low	Very Low
	Positive impacts project lifetime	O	(+)	Moderate	N/a
Terrestrial Biodiversity	Establishment and spread of alien invasive species	D	(-)	Moderate	Low
	Increased soil erosion and sedimentation	D	(-)	Moderate	Low
Plant Species	Establishment and spread of alien invasive species	D	(-)	Moderate	Low
Animal Species	Injury and mortality of fauna, including SCC	D	(-)	Moderate	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
Aquatic ecosystems	Degradation of the ecological condition of aquatic ecosystems; modification of flow and water quality	D	(-)	Low	Very Low
Avifaunal	Displacement through disturbance	D	(-)	High	Low
	Displacement through habitat loss	D	(-)	Moderate	Moderate
Visual	Visual impact of decommissioning activities on sensitive visual receptors within 5km to the proposed WEF.	D	(-)	Moderate	Moderate
Noise	Increase ambient sound levels due to air-borne noise from infrastructure decommissioning activities may	D	(-)	Very Low	Very Low
Traffic	Increase in development trips for the duration of the construction/decommissioning phase.	D	(-)	Moderate	Low
	Construction associated noise and dust pollution.	D	(-)	Moderate	Low
	Possible damage to road surfaces caused by construction vehicles.	D	(-)	Moderate	Low
Geotechnical	Slope stability	D	(-)	Low	Very Low
	Seismic activity	D	(-)	Moderate	Low
	Soil erosion from clearing of sites for drilling and test pitting	D	(-)	Moderate	Very Low
	Potential hydrocarbon (including oil, fuels, chemicals) spillages	D	(-)	Moderate	Very Low
	Disturbance of fauna and flora from clearing of sites	D	(-)	Low	Very Low
	Subsidence	D	(-)	High	Low
Social	Loss of Employment	D	(-)	Moderate	Low
	Reduced Community Investment	D	(-)	Moderate	Low
	Associated Infrastructure	D	(-)	Moderate	Low
High Level Safety, Health and Environmental Risk Assessment - Solid State Lithium-Ion BESS	Human Health - chronic exposure to toxic chemical or biological agents	D	(-)	Moderate	Low
	Human Health - exposure to noise	D	(-)	Moderate	Low
	Human Health - exposure to temperature extremes and/or humidity	D	(-)	Low	Very Low
	Human Health - exposure to psychological stress	D	(-)	Low	Low
	Human Health - exposure to ergonomic stress	D	(-)	Low	Low
	Human and Equipment Safety - exposure to fire radiation	D	(-)	Moderate	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Human and Equipment Safety - exposure to explosion over pressures	D	(-)	Moderate	Low
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents	D	(-)	Moderate	Low
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	D	(-)	N/A	N/A
	Human and Equipment Safety - exposure to electromagnetic waves	D	(-)	Moderate	Low
	Environment - emissions to air	D	(-)	Low	Very Low
	Environment - emissions to water	D	(-)	Low	Low
	Environment - emissions to earth	D	(-)	Moderate	Low
	Environment - waste of resources e.g., water, power etc	D	(-)	Low	Very Low
	Public - Aesthetics	D	(-)	Low	Low
	Investors - Financial	D	(-)	Moderate	Low
	Employees and investors - Security	D	(-)	Moderate	Low
	Emergencies	D	(-)	Moderate	Low
	Investors - Legal	D	(-)	Moderate	Low
High Level Safety, Health and Environmental Risk Assessment Vanadium Redox Flox BESS	Human Health - chronic exposure to toxic chemical or biological agents	D	(-)	Moderate	Low
	Human Health - exposure to noise	D	(-)	Moderate	Low
	Human Health - exposure to temperature extremes and/or humidity	D	(-)	Low	Very Low
	Human Health - exposure to psychological stress	D	(-)	Low	Low
	Human Health - exposure to ergonomic stress	D	(-)	Low	Low
	Human and Equipment Safety - exposure to fire radiation	D	(-)	Moderate	Low
	Human and Equipment Safety - exposure to explosion over pressures	D	(-)	N/A	N/A
	Human and Equipment Safety - exposure to acute toxic chemical and biological agents	D	(-)	Moderate	Low
	Human and Equipment Safety - exposure to violent release of kinetic or potential energy	D	(-)	High	Low
	Human and Equipment Safety - exposure to electromagnetic waves	D	(-)	Moderate	Low
	Environment - emissions to air	D	(-)	Low	Very Low
	Environment - emissions to water	D	(-)	Low	Low

Aspect	Impact Description	Phase	Character	Without Mitigation	With Mitigation
	Environment - emissions to earth	D	(-)	Moderate	Low
	Environment - waste of resources e.g., water, power etc	D	(-)	Low	Very Low
	Public - Aesthetics	D	(-)	Low	Low
	Investors - Financial	D	(-)	Moderate	Low
	Employees and investors - Security	D	(-)	Moderate	Low
	Emergencies	D	(-)	Moderate	Low
	Investors - Legal	D	(-)	Moderate	Low

3.4 APPLICABLE DOCUMENTATION

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

- DEIR for the Proposed Uvemvane WEF;
- All EIA Phase Specialist Studies;
- Generic EMPR for the development and expansion of substation infrastructure for the transmission and distribution of electricity; and
- Should the project be authorised, the EA issued by the DFFE in terms of the NEMA.

4 GOVERNANCE FRAMEWORK

4.1 NATIONAL ENVIRONMENTAL LEGAL 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.**

As per the NEMA EIA Regulations 2014, as amended, Appendix 2 of GNR 982 Section (d), the listed activities triggered by the proposal are outlined 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 underpins the international principle that everyone has the right to an environment that is not harmful to their health or well-being. This fundamental human right is effected in Section 24 of the Constitution. The Constitution cannot manage regulate environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld on 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. NEMA is the principal environmental statute which regulates environmental management and seeks to give effect to the environmental right enshrined in section 24 of the Constitution.
National Environmental Management Act (No. 107 of 1998)	NEMA provides that an Environmental Authorisation (EA) is required by any person that intends to undertake certain listed activities that are considered likely to have a detrimental impact on the environment and have been identified in Listing Notice 1 (GN R983, GG 38282 of 4 December 2014), Listing Notice 2 (GN R984, GG 38282 of 4 December 2014), or Listing Notice 3 (GN R985, GG 38282 of 4 December 2014) published under the Environmental Impact Regulations (EIA Regulations). No construction/development (broadly defined in the EIA Regulations) activities may commence without an EA being granted by the relevant competent authority (and/or where such EA has been suspended by virtue of, for example, an appeal having been lodged). 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 high biodiversity areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. 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: A S&EIR process must be followed. An EA is required and has been applied for with the DFFE.
	Activity 11(i) –

Legislation	Description of Legislation and applicability
Listing Notice 1: GNR 983	*The development of facilities or infrastructure for the transmission and distribution of electricity (i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.* *(i) outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts; or* *(ii) inside urban areas or industrial complexes with a capacity of 275 kilovolts or more;* *excluding the development of bypass infrastructure for the transmission and distribution of electricity where such bypass infrastructure is —* *(a) temporarily required to allow for maintenance of existing infrastructure;* *(b) 2 kilometres or shorter in length;* *(c) within an existing transmission line servitude; and (d) will be removed within 18 months of the commencement of development* **Description**: This activity will be triggered as the project is located outside of an urban area and includes internal grid infrastructure with a capacity of up to 33kV, onsite IPP substations including a 33/132kV step-up transformer[3], and an over the fence cable up to 132kV to connect the onsite IPP substation to the existing Eskom infrastructure.
	Activity 12(ii)(a)(c) – *The development of—* *(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more* *(a) within a watercourse* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse.* *excluding—* *(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such development occurs within an urban area; [or]*

[3] Note: The final grid connection voltage, transformer capacity, and associated electrical infrastructure specifications will be determined by Eskom's connection requirements and scope of works, as well as the findings and approvals of the separate environmental assessment process for the grid connection infrastructure.

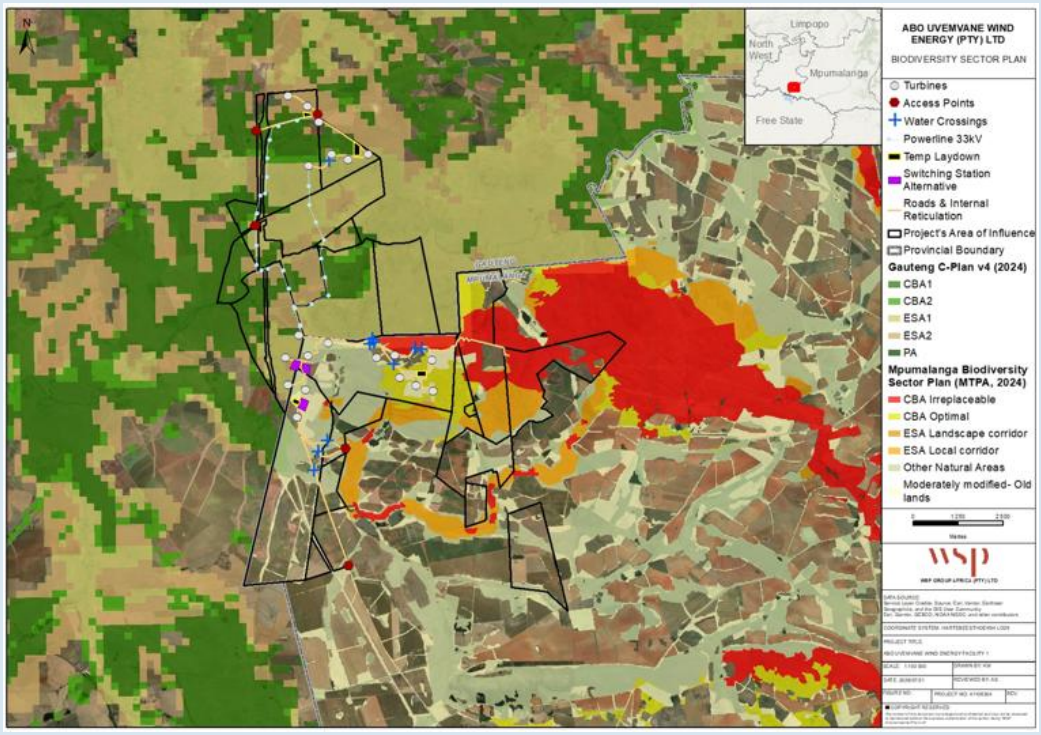
Legislation	Description of Legislation and applicability
	(ee) where such development occurs within existing roads, [or] road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared. **Description:** The Facility will require the development of internal roads and/or access roads and electrical cabling (both above and underground) within the site. The physical footprint of internal access roads and electrical cabling required to connect the various components of the Facility will either traverse the delineated watercourses on site or be located within 32m of the outer extent of the delineated watercourses on site.
	Activity 14 – *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.* **Description:** The Facility will require storage and handling of dangerous goods, including fuel, cement, and chemical storage onsite, that will be greater than 80m^3 but not exceeding 500 m^3. This activity will also be applicable in the event that Lithium-ion technology is considered preferred for the BESS.
	Activity 19 – *The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse.* *but excluding where such infilling, depositing, dredging, excavation, removal or moving—* *(a) will occur behind a development setback;* *(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;* *(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;* *(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or* *(e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.* **Description:** While the layout of the proposed wind energy facility will be designed to avoid the identified surface water features / watercourses as far as possible, internal access roads and stormwater control infrastructure, as well as electrical cabling required to connect the various components of the Facility will collectively require the excavation, infilling or removal of soil exceeding 10 m^3 from delineated watercourses on site. Based on the

Legislation	Description of Legislation and applicability
	current design assumptions, the estimated quantity of material to be excavated, infilled, or removed at the watercourse crossings is approximately 4000 m³[4].
	Activity 24(ii) – *The development of a road:* *(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or* *(ii) A road with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres* *but excluding a road—* *a) which is identified and included in activity 27 in Listing Notice 2 of 2014;* *(b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter* **Description:** Existing access roads will be used wherever possible however, the Facility will require the development of internal roads and/or access roads within the site. A corridor of up to 12 m wide may be temporarily impacted upon during construction and be rehabilitated to up to 10 m wide after construction (inclusive of stormwater infrastructure where relevant).
	Activity 28(ii) – *Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:* *(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare. excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes* **Description:** The Facility is considered commercial and/or industrial development and is located on several farm portions zoned for agricultural use outside an urban area, used for agricultural purposes. The total area to be developed for the Facility (total development footprint) is up to 67.2ha.
	Activity 48(i)(a)(c) – *The expansion of—*

[4] The estimated volume presented herein is a high-level approximation intended for environmental assessment and planning purposes only. The estimate is based on the assumed disturbance footprint within the watercourse buffer, and a nominal excavation depth of 0.5 m. Actual volumes may differ, and the final earthworks volumes will be determined during the detailed design phase through appropriate engineering surveys.

Legislation	Description of Legislation and applicability
	(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or *(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more* *where such expansion occurs—* *(a) within a watercourse;* *(b) in front of a development setback; or* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* *excluding—* *(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;* *(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;* *(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;* *(dd) where such expansion occurs within an urban area; or* *(ee) where such expansion occurs within existing roads, road reserves or railway line reserves* **Description:** Transport of large infrastructure components related to the facility will require the expansion of existing access and/or internal roads, culverts or similar drainage crossing infrastructure collectively exceeding 100 m^2 or more beyond existing road or road reserves located within delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.
	Activity 56(i)(ii) – *The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre— (i) where the existing reserve is wider than 13,5 meters; or* *(ii) where no reserve exists, where the existing road* *is wider than 8 metres;* *excluding where widening or lengthening occur inside urban areas .* **Description:** Transport of large infrastructure components related to the facility will require the widening and lengthening of existing access and/or internal roads where no reserve exists and where such road is wider than 8 metres.
Listing Notice 2: GNR 984	*Activity 1(a) –* *The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,* *excluding where such development of facilities or infrastructure is for photovoltaic installations and occurs:* *(a) within an urban area; or*

Legislation	Description of Legislation and applicability
	(b) on existing infrastructure **Description**: The proposed energy generation technology (i.e. Wind) will generate more than 20MW of electricity output from a renewable resource (estimated at 170 MWac).
	Activity 15(i) – *The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for—* *(i) the undertaking of a linear activity; or* *(ii) maintenance purposes undertaken in accordance with a maintenance management plan.* **Description**: The non-linear components of the facility will result in the clearance of at least 20ha or more of indigenous vegetation. The approximate development footprint is 42ha.
Listing Notice 3: GNR 984	***Mpumalanga:*** *The CBAs identified are as per the Mpumalanga Biodiversity Sector Plan (MBSP) formally adopted by the MEC (Member of Executive Council) for Agriculture, Rural Development, Land and Environmental Affairs in the Provincial Gazette No 2535 of 26 May 2023 (Provincial Gazette Notice 279 of 2023).* ***Gauteng:*** *The CBAs identified are as per the Gauteng Conservation Plan(C-Plan) Version 4 (2024). The Gauteng C-Plan (2024) delineations designate large areas of the Gauteng portion of the Project Area as ESAs with smaller areas designated as CBA 1 and CBA2. Triggering criteria for the Gauteng C-Plan's CBAs include Red List plant, bird and invertebrate habitats, Orange List plant habitat, bioclimatic zones, priority quaternary catchments, and primary vegetation. Most proposed Project infrastructure have been positioned, as far as possible, to avoid CBAs or align with existing disturbance footprints, portions of the proposed access road network traverse CBA patches and may result in losses and disturbances.* **Figure 4-1** *below illustrates the geographical areas applicable in terms of Listing Notice 3:*

Legislation	Description of Legislation and applicability
	 **Figure 4-1 – CBAs identified are as per the Gauteng C-Plan (2024) and the MBSP (2024) within the PAOI.**
	Activity 4 – *The development of a road wider than 4 metres with* *a reserve less than 13,5 metres.* *f. Mpumalanga* *(i) Outside urban areas:* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *C. Gauteng* *(iv).Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans* **Description:** Internal roads with a width of up to approximately 10m (a corridor of up to 12 m wide may be temporarily impacted) will provide access to each wind turbine as well as the electrical infrastructure hub. Existing roads will be used wherever possible, although new access/internal roads will be constructed where necessary. While most proposed Project infrastructure has been positioned, as far as possible, to avoid CBAs or align with existing disturbance footprints, there will be the minor development of new roads, within patches of CBAs located in Gauteng, with a footprint of approximately 0.5ha and within patches of CBA located in Mpumalanga with an approximate footprint of 0.03ha. The development

Legislation	Description of Legislation and applicability
	of new roads in Gauteng with a footprint of approximately 4ha of ESA1 and 3ha of ESA2 is also proposed.
	Activity 10 – *The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres.* *f. Mpumalanga* *i. Outside urban areas:* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *(hh) Areas within a watercourse or wetland, or within 100 metres of a watercourse or wetland;* *C. Gauteng* *(iv).Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans* **Description:** The Facility will require storage and handling of dangerous goods, including fuel, cement, and chemical storage onsite, that will be greater than 30 m^3 but not exceeding 80 m^3 within the specified geological areas. Storage contemplated above may be located within and will require vegetation clearance in sensitive areas. The storage areas may also be located within delineated watercourses on site, or within 100m of the outer extent of the delineated watercourses on site. The project area contains areas classified as Critical Biodiversity Areas (CBA) as identified in the Mpumalanga Biodiversity Sector Plan (MBSP) (2024) as well as the Gauteng Conservation Plan (C-Plan) (Version 4, 2024). However, it should be noted that only the proposed internal and access roads would fall within these sensitive areas and wind turbines will remain out of CBAs.
	Activity 12 – *The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.* *(f) Mpumalanga (ii) Within critical biodiversity areas identified in bioregional plans; or* *C. Gauteng* *(ii) Within critical biodiversity areas identified in bioregional plans* **Description:** The development of the Facility will require the clearance of indigenous vegetation in excess of 300 m^2 for turbines, access roads, hardstands, electrical infrastructure, and associated facilities. In Mpumalanga, there will be clearance of vegetation of approximately 2.5ha within CBAs. In Gauteng, there will be vegetation clearance of approximately 1.44ha within CBAs and approximately 39.42ha within ESAs.

Legislation	Description of Legislation and applicability
	Activity 14(ii)(a)(c) – *The development of—* *(ii) infrastructure or structures with a Physical footprint of 10 Square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *f. Mpumalanga* *i. Outside urban areas:* *(dd) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *b. Gauteng* *(iv) Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;* **Description:** The Facility will require the development of internal roads and/or access roads within the site. The physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various components of the Facility will either traverse the delineated watercourses on site or be located within 32 m of the outer extent of the delineated watercourses on site. There are ESAs and CBAs located across the Project Area.
	Activity 18 – *The widening of a road by more than 4 metres, or the* *lengthening of a road by more than 1 kilometre.* *f. Mpumalanga* *i. Outside urban areas:* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *c. Gauteng* *v. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;* **Description:** Transport of large infrastructure components related to the facility will require the widening of existing access and/or internal roads by more than 4 metres or the lengthening of existing access and/or internal roads by more than 1km within the Mpumalanga Province and outside urban areas. The Project area contains CBAs.
	Activity 23(ii)(a)(c) – *The expansion of—*

Legislation	Description of Legislation and applicability
	(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs — *(a) within a watercourse;* *(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;* *f. Mpumalanga* *i. Outside urban areas:* *(cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* *c. Gauteng* *(iv) Sites identified as Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans* **Description:** The Facility will require the expansion of existing internal roads and/or access roads within the site. The physical footprint of the expansion activities will either traverse the delineated watercourses on site or be located within 32 m of the outer extent of the delineated watercourses on site. There are ESAs and CBAs located across the Project Area.
Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes (GNR 320, 20 March 2020 and GNR 1150, 30 October 2020)	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). The Screening Report for the final layout was generated for the project on 28 November 2025. The following environmental themes were applicable to the project: • Agricultural Theme; • Animal Species Theme; • Aquatic Biodiversity Theme; • Archaeological and Cultural Heritage Theme; • Avian (Wind) Theme; • Bats (Wind) Theme; • Civil Aviation Theme; • Defence Theme; • Flicker Theme; • Palaeontology Theme; • Plant Species Theme; • Noise Theme; • Landscape (Wind theme); • Terrestrial Biodiversity Theme; and • Vulture Theme.

Legislation	Description of Legislation and applicability
National Environmental Management: Waste Act (59 of 2008) (NEM:WA)	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. The proposed project does not constitute a Listed Activity requiring a Waste Management Licence (WML) as defined in GNR 921. The Environmental Management Programme (EMPr) that accompanies the EIA Report, includes reasonable measures for the prevention of pollution and good international industry practice (GIIP).
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	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). 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. The biodiversity assessment identifies CBAs which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives. According to the description for the Terrestrial Assessment categories, CBAs are areas that are required to meet biodiversity targets (for biodiversity pattern and ecological process features). The management approach is that they should remain in a natural state. CBAs are areas of high biodiversity value which are usually at risk of being lost and usually identified as important in meeting biodiversity targets, except for Critically Endangered Ecosystems or Critical Linkages. Both the MBSP and the Gauteng C-plan recognise two CBA ranks, *viz*. CBA Irreplaceable and CBA Optimal under the MBSP, and CBA Irreplaceable Area and CBA Important Area under the Gauteng C-Plan. *Four regional vegetation types characterise the PAOI, of which two are threatened according to NEMBA Threatened Ecosystems (2021), namely Soweto Highveld Grassland (Vulnerable) and Tsakane Clay Grassland (Endangered). Large areas of the PAOI are also classified as CBAs and ESAs according to the delineations of the MBSP (2024) and the Gauteng C-Plan (2024).* Supplementary baseline terrestrial ecology studies were undertaken during the EIA phase to inform the assessment of impacts and will include flora and fauna surveys of the project footprint to determine the presence of flora and fauna species of conservation concern (SCC), and bird surveys of the area to define the potential risks to bird SCC. *Fauna SCC, including the Mountain Reedbuck (EN) were recorded on-site during the field programme, and habitat suitability assessments suggest that several other fauna SCC and indeed flora SCC may be present on-site. The DFFE screening tool rated the Terrestrial Biodiversity Theme for the PAOI as 'Very High' sensitivity, and the findings of this study confirm this sensitivity rating for patches of natural habitat.* 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

Legislation	Description of Legislation and applicability
	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 have been included in the EMPr. Furthermore, the Multi-species Biodiversity Management Plan for Vultures in South Africa has been developed in terms of section 43(1)(b) and (c) and 43(3)(a) and (b) of the NEMBA.
National Biodiversity Offset Guideline (2023)	The National Biodiversity Offset Guideline (2023), published under the National Environmental Management Act (NEMA), provides a nationally consistent framework for determining when biodiversity offsets are required and how they should be designed and implemented. The guideline promotes the application of the mitigation hierarchy, prioritising the avoidance, minimisation, rehabilitation and restoration of biodiversity impacts before offsets are considered as a measure of last resort. Its objective is to achieve no net loss, and where possible a net gain, of biodiversity where significant residual impacts cannot be avoided. The guideline is applicable to applications for Environmental Authorisation (EA) in terms of section 24 of NEMA and may also inform other administrative processes involving biodiversity offsetting. Biodiversity is fundamental to human well-being, economic activity and socio-economic development. The National Biodiversity Assessment (2018) recognises South Africa's biodiversity assets and ecological infrastructure as important contributors to national development priorities. Biodiversity offsetting, when appropriately applied, supports the environmental right contained in section 24 of the Constitution by promoting conservation and helping to secure ecologically sustainable development while enabling justifiable economic and social development. Where a biodiversity offset is required, the process includes identifying the need for an offset, determining offset requirements, selecting and securing an offset site, preparing the required management and implementation measures, and incorporating appropriate conditions into the EA. The proposed project was assessed against the guideline to determine whether biodiversity offset requirements apply. The revised layout demonstrates substantive application of the mitigation hierarchy through the avoidance of sensitive biodiversity features, reduction of the development footprint and alignment of infrastructure with existing disturbed corridors. Based on the terrestrial biodiversity, plant, animal and aquatic specialist assessments, all residual impacts were rated low or very low following mitigation. Accordingly, the Biodiversity Offset Technical Memo concluded that the project is not expected to trigger a biodiversity offset under the National Biodiversity Offset Guideline (2023). As stated in the Terrestrial Biodiversity Assessment (**Appendix G.2 of the DIER**), implementation of the recommended mitigation measures reduces the post-mitigation impact significance to Low. The assessment therefore concludes that no biodiversity offset is required for the proposed project and recommends that all relevant mitigation and management measures be incorporated into an integrated Biodiversity Management/Action Plan during the pre-construction phase.
National Environmental Management Protected Areas Act (No. 57 of 2003)	The purpose of the National Environmental Management Protected Areas Act (No. 57 of 2003) (NEMPAA) is to, inter alia, provide for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes. To this end, it provides for the declaration and management of various types of protected areas. 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." There are no protected areas within the study area. A significant portion of the development footprint coincides with areas that have been identified as Priority Focus Areas as part of the National Protected Area Expansion Strategy (2018) (NPAES), which is aligned with the FSBSP CBAs and ESAs. It must be

Legislation	Description of Legislation and applicability
	noted that the NPAES are focus areas for the future expansion of protected are and are not gazetted protected areas in terms of Section 50 of the NEMPAA..
National Forest Act (No. 84 of 1998)	The National Forests Act (No 84 of 1998) (NFA) was promulgated to reform the law on forests, The NFA regulates the protection of certain forests and trees. The NFA provides that a licence or exemption must be obtained in order to: ▪ cut, disturb, damage or destroy (i) any indigenous tree in a natural forest; or (ii) any protected tree; or ▪ possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any tree, or any forest product derived from (i) an indigenous tree in a natural forest; or (ii) a protected tree.
The National Water Act (No. 36 of 1998)	The National Water Act, 1998 (Act No. 36 of 1998) (NWA) provides the framework to protect water resources against over exploitation and to ensure that there is water for social and economic development, human needs and to meet the needs of the aquatic environment. The Act defines water source to include watercourses, surface water, estuary or aquifer. A watercourse is defined in the Act as a river or spring, a natural channel in which water flows regularly or intermittently, a wetland, lake or dam into which or from which water flows, and any collection of water that the Minister may declare a watercourse. Section 21 of the Act outlines a number of categories that require a water user to apply for a Water Use License (WUL) and Section 22 requires water users to apply for a General Authorisation (GA) with the Department of Water and Sanitation (DWS) if they are under certain thresholds or meet certain criteria. The list of water uses applicable to the proposed Project include: • Taking water from a water resource; • Impeding or diverting the flow of water in a watercourse; • Disposing of waste in a manner which may detrimentally impact on a water resource; • Altering the bed, banks, course or characteristics of a watercourse; The DWS will make the final decision on water uses that are applicable to the project through a pre-application meeting after which a Water Use Authorisation Application (WULA) as determined by the risk assessment will be undertaken in compliance with procedural regulations published by the DWS within General Notice 267 (GN267). These regulations specify required information per water use and the reporting structure of required supporting technical information.
Water Services Act (No. 108 of 1997)	The Water Services Act (No. 108 of 1997) (WSA) regulates the supply of water services by water services authorities and water services providers. According to section 6 of the WSA, no person may use water supply and sanitation services from a source other than a water services provider nominated by the water services authority (such as a municipality) having jurisdiction in the area in question, without the approval of that water services authority. The definition of “water services” in the WSA includes “water supply services” and “sanitation services” If it is indented that the Project will receive water from a municipal system then the Water Services Act may be triggered, i.e. if the project will require water for construction and or later operational purposes other than from a bore hole, say from the municipality, then the Municipality will have to provide a confirmation letter to this effect. The applicant is engaging the local municipalities separate to this EIA process.

Legislation	Description of Legislation and applicability
The National Heritage Resources Act (No. 25 of 1999)	The National Heritage Resource Act (Act No. 25 of 1999) (NHRA) serves to protect national and provincial heritage resources across South Africa. The NHRA provides for the protection of all archaeological and palaeontological sites, the conservation and care of cemeteries and graves by the South African Heritage Resources Agency (SAHRA), and lists activities that require any person who intends to undertake to notify the responsible heritage resources agency and furnish details regarding the location, nature, and extent of the proposed development. 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: • Section 35 (4) - No person may, without a permit issued by the responsible heritage resources authority- • destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or palaeontological site or any meteorite; • destroy, damage, excavate, remove from its original position, collect or own any archaeological or palaeontological material or object or any meteorite. • Section 38 (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as- • any development or other activity which will change the character of a site— (i) exceeding 5 000 m^2 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. 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). A Heritage Impact Assessment Report (**Appendix G.4 of the DEIR**) has been carried out by a suitably qualified specialist, revealing: • Heritage resources in the study area consist of structures and ruins older than 60 years, burial sites; • Graves and cemeteries have been identified in the vicinity; • Early Stone Age artefacts dated to more than 200 000 years ago • sensitivity according to SAHRIS, and additional studies are required for the EIA phase; • To comply with the National Heritage Resources Act, 1999 (Act No. 25 of 1999) (NHRA) and with cognisance of known heritage resources in the area, the development footprint should be subjected to a field-based Heritage Impact Assessment (HIA) of the final impact areas. The proposed project will be loaded onto the SAHRIS portal for comment by the SAHRA.
Mineral and Petroleum Resources	The aim of the Mineral and Petroleum Resources Development Act (No. 28 of 2002) (MPRDA) is to make provision for equitable access to and sustainable development of the nation's mineral and petroleum resources.

Legislation	Description of Legislation and applicability
Development Act (No. 28 of 2002)	Section 53(1) of the MPRDA provides that any person who intends to use the surface of any land in any way that may be contrary to any object of the MPRDA, or which is likely to impede any such object, must apply to the Minister of Mineral Resources (the Minister) for approval. Section 53 of the MPRDA provides a mechanism for ensuring that, inter alia, the mining of mineral resources is not detrimentally affected through the use of the surface of land and which may, for example, result in the sterilisation of a mineral resource. A Section 53 consent will be required due to the fact that the project is located on various mining right areas. The Amendment Regulations (GNR 420 of 27 March 2020) introduced a template for section 53 applications (Form Z) and the specific information that applicants will need to provide as part of a section 53 application.
Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	In South Africa, environmental noise control has been in place for three decades, beginning in the 1980s with codes of practice issued by the South African National Standards (formerly the South African Bureau of Standards, SABS) to address noise pollution in various sectors of the country. Under the previous generation of environmental legislation, specifically the Environmental Conservation Act 73 of 1989 (ECA), provisions were made to control noise from a National level in the form of the Noise Control Regulations (GNR 154 of January 1992). In later years, the ECA was replaced by the 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: 1) The minister may prescribe essential national standards – a) for the control of noise, either in general or by specific machinery or activities or in specified places or areas; or b) for determining – i. a definition of noise; and ii. the maximum levels of noise. 2) When controlling noise, the provincial and local spheres of government are bound by any prescribed national standards. 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. 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. The Noise Impact Assessment (Appendix G.8 of the DEIR) undertaken as part of the EIA aligns with this legislation.
Conservation of Agricultural Resources Act (No. 43 of 1983)	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.

Legislation	Description of Legislation and applicability
	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. 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. Rehabilitation after disturbance to agricultural land is managed by the Conservation of Agricultural Resources Act (Act 43 of 1983 - CARA). A consent in terms of CARA is required for the cultivation of virgin land. Cultivation is defined in CARA as "any act by means of which the topsoil is disturbed mechanically". The purpose of this consent for the cultivation of virgin land is to ensure that only land that is suitable as arable land is cultivated. Therefore, despite the above definition of cultivation, disturbance to the topsoil that results from construction of infrastructure does not constitute cultivation as it is understood in CARA. This has been corroborated by Anneliza Collett (Acting Scientific Manager: Natural Resources Inventories and Assessments in the Directorate: Land and Soil Management of the Department of Land Reform and Rural Development (DLRRD)). The construction and operation of the facility will therefore not require consent from the Department of Agriculture, Land Reform and Rural Development in terms of this provision of CARA.
Civil Aviation Act (No. 13 of 2009)	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). 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. The DFFE Screening Tool Report identified Civil Aviation as having Low- sensitivity for the proposed WEF. An Application for the Approval of Obstacles will also be submitted to ATNS. SACAA has been included on the project stakeholder database. They have been informed of the proposed Project, and comment will be sought from these authorities as applicable.
Occupational Health and Safety Act (No. 85 of 1993)	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.
National Energy Act (No. 34 of 2008)	The National Energy Act aims to ensure that diverse energy resources are available, in sustainable quantitates, 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.

Legislation	Description of Legislation and applicability
	The main objectives of the Act are to: • Ensure uninterrupted supply of energy to the Republic; • Promote diversity of supply of energy and its sources; • Facilitate effective management of energy demand and its conservation; • Promote energy research; • Promote appropriate standards and specifications for the equipment, systems and processes used for producing, supplying and consuming energy; • Ensure collection of data and information relating to energy supply, transportation and demand; • Provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and a sustainable development; • Provide for certain safety, health and environment matters that pertain to energy; • Facilitate energy access for improvement of the quality of life of the people of Republic; • Commercialise energy-related technologies; • Ensure effective planning for energy supply, transportation, and consumption; and • Contribute to sustainable development of South Africa's economy. 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.
Electricity Regulation Act (No. 4 of 2006)	The Electricity Regulation Act (No. 4 of 2006) (ERA) aims to: 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. 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.
Environment Conservation	The Environment Conservation Act (No 73 of 1989) (ECA) requires that any person who constructs works for the supply of light, heat or power by means of electricity, must notify electronic communications network service licensees of the proposed works; provide

Legislation	Description of Legislation and applicability
Act No 73 of 1989	such licensees with a plan of the proposed works and any further information that may be required; and comply with any requirements imposed by such licensees. Section 29(1)(b) of the ECA provides that electronic communications network service licensees (e.g.; Vodacom, MTN, ICASA…) must be notified at least 30 days prior to commencement of construction.

4.2 POLICIES AND PLANS

Table 4-2 summarised key policies and plans as an outline of the governance framework for the project.

Table 4-2 - Provincial and Municipal Plans

Applicable Policy	Description of Policy
National Development Plan 2030	The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies several enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development. Chapter 3, Economy, and Employment, identifies some of the structural challenges specific to South Africa, including an energy constraint that will act as a cap on growth and on options for industrialisation. The NDP notes that from an environmental perspective South Africa faces several related challenges. The reduction of greenhouse gas emissions and shift to a green low-carbon economy, is one of these challenges. In terms of implementation the NDP identifies three phases. The first two are of specific relevance to the proposed project. The first phase (2012–2017) notes that ensuring the supply of energy and water is reliable and sufficient for a growing economy. The second phase (2018–2023) involves building on the first phase to lay the foundations for more intensive improvements in productivity. The provision of affordable and reliable energy is a key requirement for this to take place. Chapter 4, Economic infrastructure, notes that economic infrastructure provides the foundation for social and economic development. In this regard South Africa must invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives. The plan envisages that, by 2030, South Africa will have an energy sector that promotes: ▪ Economic growth and development through adequate investment in energy infrastructure. The sector should provide reliable and efficient energy service at competitive rates, while supporting economic growth through job creation. ▪ Environmental sustainability through efforts to reduce pollution and mitigate the effects of climate change. More specifically, South Africa should have adequate supply security in electricity and in liquid fuels, such that economic activity, transport, and welfare are not disrupted. ▪ The plan sets out steps that aim to ensure that, in 20 years, South Africa's energy system looks very different to the current situation. In this regard coal will contribute proportionately less to primary-energy needs, while gas and renewable energy resources, will play a much larger role.
Integrated Resource Plan 2025	Integrated Resource Plan (IRP) 2025 is South Africa’s official national electricity planning policy, published under the Electricity Regulation Act, and gazetted in October 2025. It sets out how South Africa will meet its electricity demand over the long term, using a mix of generation technologies at the lowest overall cost, while balancing energy security, environmental impacts, and socio-economic goals. The proposed project aligns with the Integrated Resource Plan (IRP) 2025, which identifies renewable energy, including wind power, as a key component of South Africa’s future electricity generation mix to ensure security of supply and reduce greenhouse gas emissions.

Applicable Policy	Description of Policy
Integrated Resource Plan 2010 – 2030	The IRP is an electricity capacity plan which aims to provide an indication of the country's electricity demand, how this demand will be supplied and what it will cost. On 6 May 2011, the then Department of Energy (DoE) released the Integrated Resource Plan 2010-2030 (IRP 2010) in respect of South Africa's forecast energy demand for the 20-year period from 2010 to 2030. The promulgated IRP 2010–2030 identified the preferred generation technology required to meet expected demand growth up to 2030. It incorporated government objectives such as affordable electricity, reduced greenhouse gas (GHG) emissions, reduced water consumption, diversified electricity generation sources, localisation and regional development. The IRP recognises that Solar photovoltaic (PV), wind and concentrated solar power (CSP) with storage present an opportunity to diversify the electricity mix, to produce distributed generation and to provide off-grid electricity. Renewable technologies also present huge potential for the creation of new industries, job creation and localisation across the value chain.
New Growth Path	Government released the New Economic Growth Path Framework on 23 November 2010. The aim of the framework is to enhance growth, employment creation and equity. The policy's principal target is to create five million jobs over the next 10 years and reflects government's commitment to prioritising employment creation in all economic policies. The framework identifies strategies that will enable South Africa to grow in a more equitable and inclusive manner while attaining South Africa's developmental agenda. Central to the New Growth Path is a massive investment in infrastructure as a critical driver of jobs across the economy. In this regard the framework identifies investments in five key areas namely: energy, transport, communication, water, and housing.
National Infrastructure Plan	The South African Government adopted a National Infrastructure Plan (NIP) in 2012. The NIP aims to transform the South African economic landscape while simultaneously creating significant numbers of new jobs and strengthening the delivery of basic services. It outlines the challenges and enablers which needs to be addressed in the building and developing of infrastructure. The Presidential Infrastructure Coordinating Commission (PICC) was established by the Cabinet to integrate and coordinate the long-term infrastructure build. The plan also supports the integration of African economies. In terms of the plan Government will invest R827 billion over the next three years to build new and upgrade existing infrastructure. The aim of the investments is to improve access by South Africans to healthcare facilities, schools, water, sanitation, housing and electrification. The plan also notes that investment in the construction of ports, roads, railway systems, electricity plants, hospitals, schools and dams will contribute to improved economic growth.
Integrated Energy Plan	The development of a National IEP was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms of the National Energy Act, 2008 (Act No. 34 of 2008), the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the Government Gazette. The purpose of the IEP is to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development. The IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with

Applicable Policy	Description of Policy
	clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives are identified, namely: ■ Objective 1: Ensure security of supply. ■ Objective 2: Minimise the cost of energy. ■ Objective 3: Promote the creation of jobs and localisation. ■ Objective 4: Minimise negative environmental impacts from the energy sector. ■ Objective 5: Promote the conservation of water. ■ Objective 6: Diversify supply sources and primary sources of energy. ■ Objective 7: Promote energy efficiency in the economy. ■ Objective 8: Increase access to modern energy. The IEP provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and consider the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others. Based on this information the IEP then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic impacts are also analysed. The IEP is therefore focused on determining the long-term energy pathway for South Africa, considering a multitude of factors which are embedded in the eight objectives. As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios: The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term. The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy. The Resource Constrained Scenario in which global energy commodity prices (i.e. coal, crude oil and natural gas) are high due to limited supply. The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan (NDP), are met. The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of existing electricity generation capacity, the IEP indicates that existing capacity starts to decline notably from 2025, with significant plant retirement occurring in 2031, 2041 and 2048. By 2050 only 20% of the current electricity generation capacity remains. As a result, large investments are required in the electricity sector in order to maintain an adequate supply in support of economic growth.

Applicable Policy	Description of Policy
	By 2020, various import options become available, and some new coal capacity is added along with new wind, solar and gas capacity. The mix of generation capacity technologies by 2050 is considerably more diverse than the current energy mix, across all scenarios. The main differentiating factors between the scenarios are the level of demand, constraints on emission limits and the carbon dioxide externality costs. In all scenarios the energy mix for electricity generation becomes more diverse over the period to 2050, with coal reducing its share from about 85% in 2015 to 15–20% in 2050 (depending on the scenario). Solar, wind, nuclear, gas and electricity imports increase their share. The Environmental Awareness and Green Shoots scenarios take on higher levels of renewable energy. An assessment of each scenario against the eight objectives with reference to renewable energy notes while all scenarios seek to ensure that costs are minimised within the constraints and parameters of each scenario, the Base Case Scenario presents the least cost followed by the Environmental Awareness, Resource Constrained and Green Shoots scenarios respectively when total energy system costs are considered. In terms of promoting job creation and localisation potential the Base Case Scenario presents the greatest job creation potential, followed by the Resource Constrained, Environmental Awareness and Green Shoots scenarios respectively. In all scenarios, approximately 85% of total jobs are localisable. For electricity generation, most jobs result from solar technologies followed by nuclear and wind, with natural gas and coal making a smaller contribution. The Environmental Awareness Scenario, due to its stringent emission constraints, shows the lowest level of total emissions over the planning horizon. This is followed by the Green Shoots, Resource Constrained and Base Case scenarios. These trends are similar when emissions are considered cumulatively and individually by type.
Just Energy Transition Implementation Plan 2023–2027	Provides South Africa's roadmap for transitioning to a low-carbon economy while promoting energy security, economic growth, job creation, skills development, and social inclusion. The plan prioritises the expansion of renewable energy infrastructure and supports economic diversification, particularly in regions historically dependent on the coal value chain. The proposed wind energy facility supports the JET Implementation Plan by contributing renewable electricity to the national grid, reducing reliance on carbon-intensive energy sources, and supporting South Africa's decarbonisation objectives. The project will create employment opportunities during construction and operation, contribute to local economic development, and support growth of the renewable energy sector. The project is particularly aligned with the Mpumalanga Just Transition objectives through investment in alternative energy infrastructure and economic diversification within the province.
South African Renewable Energy Masterplan, 2025	SAREM aims to expand South Africa’s renewable energy and energy storage sectors to support energy security, industrialisation, localisation, job creation, skills development, and a just energy transition. The proposed wind energy facility aligns with these objectives by contributing renewable energy generation capacity, supporting the decarbonisation of the electricity sector, creating employment opportunities, and promoting investment in the renewable energy value chain.

Applicable Policy	Description of Policy
National Protected Area Expansion Strategy, 2018	The National Protected Area Expansion Strategy 2018 (NPAES) areas were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2018). According to the screening tool, there are areas within the study area that have been identified as priority areas for inclusion in future protected areas. "According to the delineations of the National Protected Area Expansion Strategy (2018), large portions of the PAOI are mapped as Priority Focus Area. These are mirrored across the portions of the PAOI that fall within Mpumalanga Province, according to the Mpumalanga's Protected Area Expansion Strategy – 20 Year Plan. Certain components of the proposed Project infrastructure fall within mapped Priority Focus Areas. Many of these components have, however, been located within patches of Secondary Grassland (old lands) rather than in areas of intact natural habitat. This positioning reduces potential negative impacts on the ecological functioning of the affected and adjacent portions of the Priority Focus Area network".
Multi-species Biodiversity Management Plan for Vultures in South Africa	The Multi-species Biodiversity Management Plan for Vultures in South Africa aims to implement comprehensive strategic conservation actions that cover the geographic ranges of all nine vulture species found in South Africa, with a particular focus on the seven resident breeding species. The plan also aims to strengthen concerted, collaborative, and coordinated international efforts to recover these populations to acceptable levels by 2033. The BMP is published at an opportune time after the publication of the White Paper on Conservation and Sustainable Use of South Africa's Biodiversity. The BMP is aligned with the goals and enablers of the White Paper. As explicitly recognised that the responsibility rests with a range of stakeholders, including, but not limited to, the State, traditional leaders, traditional health practitioners, communities, private landowners, industry, academia, non-government organisations and civil society, this BMP provides the platform to showcase and uphold what is contained in the White Paper. It is a clear demonstration of how stakeholders involved with vulture conservation are working together to ensure that all South Africans will continue to benefit from the ecosystem services provided by vultures. In terms of section 43(2) and 43(3)(c) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), the Minister has assigned the responsibility for implementation of the Multi-species Biodiversity Management Plan (BMP) for Vultures in South Africa to the National Vulture Task Force. The proposed Project has been assessed and monitored in accordance with the latest *BirdLife South Africa and Endangered Wildlife Trust Birds and Wind-Energy Best Practice Guidelines*, which provide a nationally recognised framework for identifying, assessing, and mitigating potential impacts on birds during the planning, construction, operation, and decommissioning phases of wind energy developments. These guidelines require risk-based avifaunal investigations, including pre-construction monitoring and species-specific

Applicable Policy	Description of Policy
	assessments where applicable, to inform project design, avoid sensitive habitats and flight paths, and ensure that appropriate mitigation and adaptive management measures are implemented to minimise bird mortality and disturbance.
BirdLife South Africa -Best Practice Guidelines	BirdLife South Africa (2025) best-practice guidelines provide a framework for assessing and managing impacts of wind energy facilities on avifauna. They promote early site screening to avoid high-sensitivity areas (e.g. IBAs and threatened species habitats), and a tiered assessment approach including scoping, pre-construction monitoring, impact assessment, and post-construction monitoring. The guidelines emphasise the mitigation hierarchy, prioritising avoidance and layout refinement, and require assessment of key risks such as collision, electrocution, habitat loss, and displacement. Ongoing monitoring and adaptive management are recommended, with consideration of cumulative impacts across the wider landscape to support informed decision-making. The guidelines were taken into account by the avifauna impact assessment.
The South African Bat Assessment Association	The South African Bat Assessment Association (SABAA) provides best-practice guidelines for assessing and managing impacts of wind energy facilities on bats. These guidelines emphasise pre-construction acoustic surveys and roost assessments to inform site selection and reduce risk. They require post-construction monitoring (including acoustic monitoring and carcass searches) to quantify mortality and identify high-risk periods. The guidelines highlight key risks such as collision and barotrauma, and promote mitigation measures where thresholds are exceeded. A precautionary approach, including avoidance of sensitive areas and application of adaptive management, is recommended to minimise impacts on bat populations. The guidelines were taken into account by the bat impact assessment. The proposed Project has been assessed in accordance with the *South African Bat Assessment Association (SABAA) Best Practice Guidelines for Pre-construction Monitoring of Bats at Wind Energy Facilities,* which provide the accepted methodology for evaluating bat activity, identifying sensitive habitats and roosting areas, and assessing potential collision and barotrauma risks associated with wind turbines. These guidelines inform project planning and turbine layout by requiring appropriate pre-construction monitoring and risk assessment to avoid, minimise and mitigate impacts on bat populations throughout the lifecycle of the development.
National Biodiversity Offset Guideline (2023)	The National Biodiversity Offset Guideline (2023), published under the National Environmental Management Act (NEMA), provides a nationally consistent framework for determining when biodiversity offsets are required and how they should be designed and implemented. The guideline promotes the application of the mitigation hierarchy, prioritising the avoidance, minimisation, rehabilitation and restoration of biodiversity impacts before offsets are considered as a measure of last resort. The guideline aims to achieve no net loss, and where possible a net gain, of biodiversity when significant residual impacts on biodiversity cannot be avoided. The proposed project has been assessed with reference to the guideline to determine whether biodiversity offset requirements may apply to residual impacts on sensitive biodiversity features. The revised layout demonstrates a substantive application of the mitigation hierarchy, including avoidance of sensitive biodiversity features, reduction of

Applicable Policy	Description of Policy
	the development footprint and alignment of infrastructure with existing disturbed corridors. Based on the terrestrial biodiversity, plant, animal and aquatic specialist assessments, all residual impacts were rated low or very low following mitigation. Accordingly, the Biodiversity Offset Technical Memo concluded that the project is not expected to trigger a biodiversity offset under the National Biodiversity Offset Guideline (2023).

4.3 PROVINCIAL AND MUNICIPAL LEGAL AND REGULATORY FRAMEWORK

Table 4-3 summarised key provincial and municipal plans as an outline of the governance framework for the project.

Table 4-3 - Provincial and Municipal Plans

Applicable Plan	Description of Plan
Dipaleseng Local Municipality Integrated Development Plan 2025-2026 Lesedi Local Municipality Integrated Development Plan 2021-2026 Midvaal Local Municipality Draft Integrated Development Plan 2025-2026	The plan serves as a strategic plan document for the municipality. It details the respective municipality's short-term and long-term objectives and strategies aligned with the Provincial and National Development Plan.
Gauteng Spatial Development Framework 2030 Draft Review	The GSDF 2030 Draft Review provides a provincial framework for coordinating land use, infrastructure investment, economic development, environmental management, and climate resilience to promote a more sustainable and efficient spatial form. The proposed Uvemvane WEF aligns with the framework by supporting strategic energy infrastructure development, contributing to energy security and economic growth, and incorporating environmental considerations into project planning and design.
Mpumalanga Vision 2030 Strategic Implementation Framework 2013-2030	Mpumalanga Vision 2030 provides a long-term development framework aimed at promoting economic growth, employment creation, environmental sustainability, improved service delivery, and social development within the province. The proposed Uvemvane WEF aligns with these objectives by supporting renewable energy generation, contributing to energy security, creating employment opportunities, and facilitating sustainable economic development within Mpumalanga.
Dipaleseng Local Municipality Spatial Development Framework.	The SDF is a required tool to address historically distorted, unviable, and unsustainable spatial patterns and challenges caused by apartheid planning.

Applicable Plan	Description of Plan
Provincial Biodiversity Permits	The project will be required to obtain Provincial Biodiversity Permits relating to activities relating to: ▪ carry out a restricted activity involving a specimen of a listed threatened or protected species; and ▪ carry out a restricted activity in relation to a specimen or an alien species or listed invasive species. A "restricted activity" is defined very broadly in NEMBA and almost any action in respect of a listed threatened or protected species or in respect of an alien species or listed invasive species would require a permit prior to undertaking that activity. Permits may be required in terms of the Nature Conservation Amendment Ordinance, No. 5 of 1986.
Mpumalanga Biodiversity Sector Plan (MBSP, 2024)	The MBSP has been formally adopted by the Mpumalanga Provincial Government (Provincial Gazette, 26 May 2023). The MBSP (2024) is Mpumalanga Province's official, spatial biodiversity planning tool. It identifies where biodiversity is most important and provides land-use guidance so that development, environmental authorisations, and spatial planning can take place without undermining critical ecosystems. Areas identified as CBAs and ESAs in the MBSP are treated as "sensitive areas" under the EIA Regulations (Listing Notice 3), which can trigger additional authorisation requirements
Gauteng Conservation Plan (Version 4)	The Gauteng Conservation Plan (Version 4) is a province-wide spatial biodiversity plan developed by the Gauteng Department of Agriculture and Rural Development (GDARD) using systematic conservation planning methods. The Gauteng Conservation Plan (Version 4), commonly referred to as C-Plan 2.3, is Gauteng Province's official systematic biodiversity planning tool. It identifies where biodiversity must be conserved or carefully managed and is used to guide land-use planning, environmental authorisations, and EIAs in the province.
Gauteng Provincial Environmental Management Framework (GPEMF)	The GPEMF is a spatial planning tool that guides sustainable development by identifying environmentally sensitive areas, development constraints, and preferred development zones within Gauteng. The proposed Uvemvane WEF has been assessed with reference to the GPEMF to identify environmental sensitivities and inform project planning, impact assessment, and mitigation measures. The proposed Project, south of Heidelberg falls within the area covered by the GPEMF and must be considered in the context of the framework's environmental sensitivity mapping, development zones, and spatial planning objectives to ensure environmentally sustainable development. The GPEMF provides a decision-support tool for environmental authorisation by identifying environmental opportunities and constraints within the project area, thereby informing site selection, impact assessment, specialist study requirements, and appropriate mitigation measures

4.4 INTERNATIONAL ENVIRONMENTAL AND SOCIAL STANDARDS

4.4.1 IFC PERFORMANCE STANDARDS

The IFC Performance Standards (PS) are internationally recognized guidelines for managing environmental and social risks. While this EIA focuses on meeting South African regulatory requirements under NEMA, the IFC PS are acknowledged as part of the project's future commitments to international standards, particularly for financial close.

At this stage, the EIA process is not designed to fully comply with IFC Performance Standards (PS), as these standards extend beyond what is required under South African regulations. However, the process includes specialist studies, such as social impact assessments, biodiversity assessments, and stakeholder consultations, which provide a foundation for future alignment with international standards.

Compliance with IFC PS will be addressed during later stages of the project lifecycle, should the project proceed, through the development of detailed action plans and a comprehensive Environmental and Social Management System (ESMS).

4.4.2 WORLD BANK GROUP ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES

The World Bank Group (WBG) Environmental Health and Safety (EHS) Guidelines are technical reference documents that provide guidance on managing environmental, health, and safety risks. These guidelines are relevant for international financing requirements but are not mandatory for compliance with South African EIA regulations under NEMA.

While the EHS Guidelines have not been applied during the EIA process, they provide a valuable framework for identifying and mitigating risks. Should the project progress to the financing stage, the guidelines will be reviewed and applied, along with the IFC Performance Standards, to ensure alignment with international standards.

Future alignment with the Wind Energy Guidelines (2015) and General EHS Guidelines will address key issues such as:

- Biodiversity impacts (e.g., effects on birds and bats).
- Noise, shadow flicker, and visual impacts during construction and operation.
- Community health and safety, including transportation risks.

These guidelines will be incorporated into detailed planning and mitigation measures at a later stage, as part of the project's commitment to international best practices.

4.4.3 EQUATOR PRINCIPLES

The Equator Principles (EPs) provide a globally recognized framework for assessing and managing environmental and social risks in projects. They establish a minimum standard for due diligence and promote alignment with responsible environmental and social practices. While typically adopted by

financial institutions for projects seeking international funding, the EPs are also used to guide internal standards for companies aiming to align with global best practices.

For the project, compliance with the EPs is not a requirement during the Environmental Impact Assessment (EIA) process under South African regulations. However, alignment with the EPs will be required before financial close to meet the internal standards set by Copenhagen Infrastructure Partners (CIP), as the majority shareholder in Mulilo.

Instead of conducting a full Environmental and Social Impact Assessment (ESIA), any gaps identified during the EIA process will be addressed through additional specialist studies. These studies will focus on enhancing compliance with EP standards and ensuring the project meets the requirements for financial institutions that adopt the EP framework. This approach ensures a balance between meeting South African EIA regulatory requirements and the more extensive international standards required by the EPs.

The principles emphasize areas such as stakeholder engagement, grievance mechanisms, independent monitoring, and adherence to host country laws while addressing any additional requirements under the IFC Performance Standards or World Bank Group Environmental, Health, and Safety Guidelines for non-designated countries like South Africa.

By addressing the identified gaps and incorporating EP-aligned processes before financial close, the project will ensure robust environmental and social governance throughout its lifecycle. The requirements and applicability of the EPs are outlined in **Table 4-4**.

Table 4-4 – Equator Principles Applicability to the Project

Requirement		Project Specific Applicability
Principle 1: Review and Categorisation		
Overview	When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorise such project based on the magnitude of its potential impacts and risks in accordance with the environmental and social screening criteria of the IFC. 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. The categories are: • 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	Based upon the significance and scale of the Project's environmental and social impacts, the proposed project is regarded as a Category B project i.e., a project with potential limited adverse environmental or social risks and/or impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.

Requirement		Project Specific Applicability
	and readily addressed through mitigation measures; and • Category C: Projects with minimal or no adverse environmental and social risks and/or impacts.	
Principle 2: Environmental and Social Assessment		
Overview	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 The Assessment Documentation will be an adequate, accurate and objective evaluation and presentation of the environmental and social risks and impacts, whether prepared by the client, consultants or external experts. For Category A, and as appropriate, Category B Projects, the Assessment Documentation includes an Environmental and Social Impact Assessment (ESIA). One or more specialised studies may also need to be undertaken. For other Category B and potentially C Projects, a limited or focused environmental or social assessment may be appropriate, applying applicable risk management standards relevant to the risks or impacts identified during the categorisation process. The client is expected to include assessments of potential adverse Human Rights impacts and climate change risks as part of the ESIA or other Assessment, with these included in the Assessment Documentation.	The DEIR) is the fourth deliverable from the S&EIR process undertaken for the proposed Project. The impact assessment will be undertaken during the next phase of the S&EIR process. The assessment will comprehensively assess the key environmental and social impacts and complies with the requirements of the South African EIA Regulations. In addition, an EMPr is compiled and is included in Appendix K of the DEIR.
Principle 3: Applicable Environmental and Social Standards		
Overview	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. The EPFI's due diligence will include, for all Category A and Category B Projects globally,	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 S&EIR process has been undertaken in accordance with NEMA (the host country's relevant legislation).

Requirement		Project Specific Applicability
	review and confirmation by the EPFI of how the Project and transaction meet each of the Principles. 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.	
Principle 4: Environmental and Social Management System and Equator Principles Action Plan		
Overview	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). 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.	A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in the EMPr will serve as the basis for an ESMS for the proposed Project.
Principle 5: Stakeholder Engagement		
Overview	EPFI will require the client to demonstrate effective Stakeholder Engagement as an ongoing process in a structured and culturally appropriate manner with Affected Communities Workers and, where relevant, Other Stakeholders. For Projects with potentially significant adverse impacts on Affected Communities, the client will conduct an Informed Consultation and Participation process. To accomplish this, the appropriate assessment documentation, or non-technical summaries thereof, will be made available to the public by the borrower for a reasonable minimum period in the relevant local language and in a culturally appropriate manner. The borrower will take account of and document the process and results of the consultation, including any actions agreed resulting from the consultation.	The S&EIR process includes an extensive stakeholder engagement process which complies with the South African EIA Regulations. The process includes consultations with local communities, nearby businesses, and a range of government sector stakeholders (state owned enterprises, national, provincial and local departments). 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. A Stakeholder Engagement Plan will be developed and implemented as part of the ESMS (post-EIA phase) for the construction and operational phases of the project.

Requirement		Project Specific Applicability
	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. All Projects affecting Indigenous Peoples will be subject to a process of Informed Consultation and Participation, and will need to comply with the rights and protections for Indigenous Peoples contained in relevant national law, including those laws implementing host country obligations under international law.	
Principle 6: Grievance Mechanism		
Overview	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. 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.	The EMPr will include 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. A Grievance Mechanism will be developed and implemented as part of the ESMS (post-EIA phase) for the construction and operational phases of the project.
Principle 7: Independent Review		
Overview	For all Category A and, as appropriate, Category B Projects, an Independent Environmental and Social Consultant, not directly associated with the client, will carry out an Independent Review of the Assessment Documentation including the ESMPs, the ESMS, and the Stakeholder Engagement process documentation in order to assist the EPFI's due diligence, and assess Equator Principles compliance.	This principle will only become applicable in the event that that the project is developed in the future.
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	This principle will only become applicable in the event that the project is developed in the future.

Requirement		Project Specific Applicability
	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.	

4.5 OTHER GUIDELINES AND BEST PRACTICE RECOMMENDATIONS

4.5.1 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*."

The generic EMPr for Substations is included in this Site-Specific EMPr as **Appendix D.**

4.6 BIODIVERSITY MANAGEMENT PLAN (BMP) FOR VULTURES

To substantially reduce vulture mortalities caused by existing energy infrastructure and mitigate any loss to vultures from new energy infrastructure, several strategies and actions are typically outlined in conservation plans, such as the Biodiversity Management Plan (BMP) for Vultures in South Africa. Energy infrastructure, including powerlines, wind turbines, and solar farms, poses significant threats to vultures, primarily through collision, electrocution, and habitat disruption.

Key strategies that could be included to address these threats:

4.6.1.1 Powerline Modifications and Mitigation Measures:

- Bird-Friendly Powerline Design: Modify existing powerlines to make them more visible and less dangerous to vultures. This may involve using markers or insulation that help prevent birds from colliding with the wires or getting electrocuted on the poles.
- Undergrounding of Powerlines: Where feasible, the burial of powerlines can help reduce the risk of collisions, especially in critical vulture habitats.
- Risk Mapping and Identifying High-Risk Areas: Conduct studies to identify areas with higher vulture traffic or species-specific risk zones, particularly during foraging or migration periods. Powerlines could be rerouted or buried in such areas to reduce mortality risks.
- Monitoring and Reporting: Set up systems to regularly monitor the mortality rate due to powerline collisions and electrocution. Encourage reporting of dead or injured vultures to better track incidents.

4.6.1.2 Wind and Solar Energy Infrastructure:

- Site Assessment for New Developments: Before establishing new wind or solar farms, thorough environmental assessments should be carried out to identify if the site overlaps with important vulture habitats, migration corridors, or feeding grounds. Projects should be sited in areas that minimize the risks to vultures.
- Wind Turbine Design Adjustments: For existing wind farms, implementing bird-friendly turbine designs (such as placing turbines away from known vulture flight paths or using slower-moving blades) can significantly reduce collision risks.
- Smart Infrastructure Operation: Reduce turbine speeds during times of high vulture activity or in areas with frequent vulture movement. In some cases, wind farms can install technology that detects bird activity, allowing them to temporarily shut down turbines when vultures are nearby.
- Strategic Placement of Solar Farms: Avoid placing solar farms in regions that provide critical feeding or nesting sites for vultures. Land-use planning should consider their importance to local biodiversity.

4.6.1.3 Collaboration with Energy Sector Stakeholders:

- Partnerships with Energy Companies: Work closely with energy companies to promote the design and installation of bird-safe infrastructure. This includes sharing knowledge on vulture species' behaviors and flight paths to better inform infrastructure planning.
- Vulture-Friendly Guidelines and Best Practices: Develop industry guidelines that recommend vulture-friendly practices when building and operating energy infrastructure.
- Corporate Social Responsibility (CSR): Encourage energy companies to contribute to vulture conservation efforts, such as funding research or adopting mitigation measures at their sites.

4.6.1.4 Education and Capacity Building:

- Training for Energy Sector Workers: Energy companies, utility workers, and developers should be trained to identify vulture species and the risks they face. This would allow for early detection and mitigation of potential hazards related to infrastructure.
- Public Awareness Campaigns: Increase awareness among local communities and stakeholders about the risks posed by energy infrastructure to vultures and other wildlife. Public engagement can help in reducing unintentional harm (e.g., avoiding unregulated construction of infrastructure in vulture-rich areas).

4.6.1.5 Legislation and Policy Enforcement:

- Stronger Regulations and Standards: Government authorities can play a key role by implementing and enforcing regulations to ensure that all new energy infrastructure undergoes comprehensive environmental assessments that consider vulture populations.
- Incentives for Mitigation Measures: Provide incentives (e.g., tax breaks, funding) for companies that implement vulture-safe measures in their energy infrastructure projects.

4.6.1.6 Long-Term Monitoring and Adaptive Management:

- Continued Monitoring: Long-term monitoring of vulture populations, as well as energy infrastructure, should be conducted to assess the effectiveness of mitigation measures. This will help identify any new risks and allow for adaptive management strategies.
- Collaboration with Conservation Groups: Ongoing cooperation between government bodies, environmental NGOs, and researchers can help provide up-to-date data and innovative solutions for minimizing vulture mortalities.

By taking a proactive and collaborative approach, South Africa can significantly reduce the impact of energy infrastructure on vulture populations and ensure that new developments are designed with the protection of biodiversity in mind.

4.7 ADDITIONAL PERMITS AND AUTHORISATIONS

Table 4-5 outlines the additional permits and authorisations required for the proposed development, as well as the relevant Competent Authorities responsible.

Table 4-5 – Additional Permits and Authorisations required for the proposed development

Permits/Authorisation	Legislation	Relevant Authority/Company	Status
Water Use Licence / General Authorisation	National Water Act (Act No. 36 of 1998)	Department of Water and Sanitation	In Progress
Notification Of Intent To Develop (NID) Section 38 (1) and Section 38 (8)	National Heritage Resource Act (Act No. 25 of 1999)	South African Heritage Resources Authority (SAHRA)	In Progress
Obstacle Permit	Civil Aviation Act (Act 13 of 2009)	Air Traffic and Navigation Services / Civil Aviation Authority	Submitted; Conditional Approval will be required for the facility prior to construction.
Section 53 Consent	Minerals and petroleum Resources Development Act (No. 28 of 2002)	Department of Mineral Resources and Energy & Petroleum Agency SA	Submitted; Approval will be required prior to construction.
Square Kilometre Array (SKA) Project		South African Radio Astronomy Observatory (SARAO)	Submitted
Wayleave/No Objection		Altech Netstar	Obtained

Permits/Authorisation	Legislation	Relevant Authority/Company	Status
	Electronic Communications Act (Act 36 of 2005)	Sentiv (Altron Nexus)	Obtained
		Herotel	Obtained
		Transnet Pipelines	Obtained
		SAPS	Obtained
		SAWS	Obtained
		SANDF	Obtained
		NTCSA	Obtained
		Telkom	Obtained
		Cell C	Obtained
		Vodacom	Obtained
		MTN	Submitted – renewal consultation ongoing
		Sentech	Obtained
		Neotel	Obtained

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. ABO Uvemvane Wind Energy Facility 1 (Pty) Ltd (the Project Company), will be responsible for the overall control of the project site during the pre-construction, construction, operation, decommissioning and rehabilitation phases of the project. The project company's responsibilities will include the following:

- Appointing an independent environmental control officer (ECO) for the duration of the Contract during construction and as specified by the DFFE during operation;
- Being fully familiar with the EIR, 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.

Specific roles and responsibilities for the construction phase of this project are as defined in **Table** 5-1.

While the term ECO is referenced in Specialist Reports, the ECO is an independent function, reporting to the DFFE. The term used in this EMPr for the Permit Holder's onsite compliance management function is Environmental Site Compliance Officer (ESCO).

Table 5-1 – Roles and Responsibilities

Designation	Roles and Responsibilities
DFFE	▪ Is the designated authority responsible for approving this EMPr and has overall responsibility for ensuring that the project company 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.
Holder of the EA	▪ The Holder of the EA shall take overall responsibility for the adherence to the EMPr and EA conditions.

Designation	Roles and Responsibilities
Project Manager/Engineer/Site Engineer	▪ Ensure that the project company and the relevant contractor/s are aware of all specifications, and 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 the project company. ▪ Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes. ▪ Be fully conversant with the EIR for the project, the conditions of environmental authorisation and all relevant environmental legislation.
Site Manager **(EPC Contractor)**	▪ Be fully conversant with the EIR, the conditions of environmental authorisation and the EMPr. ▪ Approve method statements (co-approval with the ESCO). ▪ Provide support to the ESCO. ▪ 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 ESCO 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)	The EO must be appointed by the Contractor / Project Manager 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 ESCO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable manner and timely manner. The EO shall be a full-time dedicated member of the Contractor's team and must be approved by the Project Company. The following qualifications, qualities and experience are recommended for the individual appointed as the EO: ▪ 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. The EO's responsibilities include, but not limited to:

Designation	Roles and Responsibilities
	▪ 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 ESCO; ▪ Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ESCO 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: • 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. 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.
ESCO	A suitably qualified ESCO must be appointed by the Holder of the EA to monitor the project compliance onsite on a full-time basis. Responsibilities of the ESCO include: ▪ Be fully conversant with the EIR, the conditions of environmental authorisation and the EMPr; ▪ Be fully conversant with all relevant environmental legislation and ensure compliance thereof; ▪ Approve method statements (co-approval with the Site Manager); ▪ Remain employed until the completion of the construction activities; and ▪ Report to the Project Manager, including all findings identified onsite. In addition, the ESCO will:

Designation	Roles and Responsibilities
	▪ Undertake monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation; ▪ Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed; ▪ Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and ▪ Ensure that activities onsite comply with all relevant environmental legislation.
ECO	▪ A suitably qualified external ECO must be appointed by the Holder of the EA to audit the project compliance in terms of the EMPr and conditions of the EA on a monthly basis, during the construction phase. ▪ The costs of the ECO shall be borne by the Holder of the EA (proof of appointment must be maintained onsite).
Contractors, Staff and Service Providers	▪ 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.

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

5.2 ENVIRONMENTAL AWARENESS PLAN

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

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

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

The project company will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. The project 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 EMPr and the environmental specifications as they apply to the project.
- Employees must undergo training for the operation and maintenance activities associated with project and have a basic knowledge of the potential environmental impacts that could occur and how they can be minimised and mitigated.
- Awareness of any other environmental matters, which are deemed to be necessary by the Environmental Officer.
- Training must include the environment, health and safety as well as basic HIV/AIDS education.

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

- **Induction:** Environmental and social awareness training will be given at induction when personnel join the company and/or return from leave. Induction training will also be given to visitors entering the site. Induction training will include, inter alia:
  - A discussion on the environment concept, what does it comprise of and how do we interact with it;
  - A description on the components and phases of the specific renewable power generation facility;
  - A general account of how the facility and its associated activities can affect the environment, giving rise to what are called environmental impacts;
  - A discussion on what staff can do in order to help prevent the negative environmental impacts from degrading the environment i.e., environmental impact management.

- **Job Specific Training:** Job specific training programmes will be developed as and when required. The programs will be based on the significant environmental and social aspects/ impacts that are identified during regular audits and site inspections. Supervisory staff will be equipped with the necessary knowledge and information to guide their employees on environmental and social aspects applicable to performing a specific task.
- **Competency Training:** The Environmental Officer will be responsible for the environmental and social competency and awareness training of Middle Management and supervisors. This training will be performed both on a one-on-one basis and through workshops and presentations. Competence and the effectiveness of training and development initiatives will be determined through the following methods:

  - Trend analysis of incidents reported; and
  - Analysis of work areas during visits and audits.

  The process to declare competency of personnel is documented in the ISO9001:2000 procedure. This plan will be amended periodically in light of operational changes, learning experienced during its implementation and other activities that can affect the risk profiles.
- **Training Records**: Training can be done either in a written or verbal format but will be in an appropriate format for the receiving audience. Persons having received training must indicate in writing that they have indeed attended a training session and have been notified in detail of the contents and requirements of the EMPr. The attendance registers must be kept on file.

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place. **Table 5-2** indicates the minimum requirements as set out in the generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity.

Table 5-2 - Documentation Reporting and Compliance Requirements as per the generic EMPr

Aspect	Refer to Generic EMPr (Part A)
Document control/Filing system	Section 4.1
Documentation to be available	Section 4.2
Weekly Environmental Checklist	Section 4.3
Environmental site meetings	Section 4.4
Required Method Statements	Section 4.5
Environmental Incident Log (Diary)	Section 4.6
Non-compliance	Section 4.7
Corrective action records	Section 4.8
Photographic record	Section 4.9
Complaints register	Section 4.10

Aspect	Refer to Generic EMPr (Part A)
Claims for damages	Section 4.11
Interactions with affected parties	Section 4.12
Environmental audits	Section 4.13
Final environmental audits	Section 4.14

Refer to: Part A, Section 4 of the Generic EMPr for the development and expansion of substation infrastructure for the transmission and distribution of electricity, attached as Appendix D.

5.3 MONITORING

The internal ESCO 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, the Holder of the EA will establish, implement and maintain a procedure to monitor and measure, on a regular basis, the key characteristics of the operations that may have a significant environmental impact. The procedure shall include the documenting of information to monitor performance, applicable operational controls and conformity with the operation's environmental objectives and targets.

The Holder of the EA 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**) 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 6**).

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

5.4.2 SPOT FINES

The ESCO and ECO shall be authorised to impose spot fines for any of the transgressions detailed below:

- Littering on site;
- Lighting of illegal fires on site;
- Any persons, vehicles or equipment related to the contractor's operations found within the designated 'no-go' areas (especially for significant cultural resources such as nearby graves etc.);
- Creating excessive dust or excess noise emanating from site;
- Possession or use of intoxicating substances or weapons on site;
- Trapping, hunting or trading of fauna and / or plants on site;
- Any vehicles being driven in excess of designated speed limits;
- Any farm gates being left open;
- Unauthorised removal and/or damage to fauna, flora or cultural or heritage objects on site; and
- Urination and defecation anywhere other than using the toilet facilities that have been provided.

These activities, along with the appropriate guidelines to determining the fines, shall be agreed to by the Holder of the EA, the Site Manager and the Contractor. Such fines will be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications and or legal obligations. The project company will inform the contractor of the contravention and the amount of the fine.

It is important to note that fines can be issued on an organisational level, as well as at an individual level. These fines will be paid to an organisation as discussed and agreed to by the Holder of the EA, Site Manager, Contractors, ESCO and ECO. Proof of payment is to be provided to the EO within 30 days of the fine being issued. Payment of a fine may not be subtracted from any moneys owed to the contractor by the client. A fine is not deemed a cost saver to the client but a measure to ensure that all construction activities are undertaken in a manner that reduces further environmental damage.

5.4.3 PENALTY FINES

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMPr, the Contractor shall be liable to pay a penalty fine. The following transgressions should be penalised:

- Hazardous chemical/oil spill;
- Damage to sensitive environments;
- Damage to cultural and historical sites;
- Unauthorised removal/damage to indigenous trees and other vegetation, particularly in identified sensitive areas;
- Uncontrolled/unmanaged erosion;
- Unauthorised blasting activities; and
- Violation of environmental authorisation conditions.

These activities, along with the appropriate guidelines to determining fines, shall be agreed to by the Holder of the EA, the Site Manager and Contractor. The fines will be calculated on a severity basis and imposed as per the merits of the case. In addition to penalties, the Site Manager has the power to remove from site any person who is in contravention of the EMPr, and if necessary, the engineer can suspend part of or all the works, as required.

5.4.4 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 ESCO and 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, the ESCO 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 METHOD STATEMENTS

Before the contractor begins each construction activity, the contractor shall give to the ESCO and Site Manager a written Method Statement setting out the following:

- The type of construction activity;
- Locality where the activity will take place;
- Identification of impacts that might result from the activity;
- Identification of activities or aspects that may cause an impact;
- Methodology and/or specifications for impact prevention for each activity or aspect;
- Methodology and/or specifications for impact containment for each activity or aspect;
- Emergency/disaster incident and reaction procedures; and
- Treatment and continued maintenance of impacted environment.

The contractor must provide such information at least two weeks in advance of any or all construction activities for review and approval. Any changes made to the Method Statement after approval shall be given to the ESCO for review and the Site Manager for approval.

The ESCO and/or Site Manager may provide comment on the methodology and procedures proposed by the contractor but shall not be responsible for the contractor's chosen measures of impact mitigation and emergency/disaster management systems.

5.7 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.

A generic grievance mechanism is detailed in **Section 8.16**.

5.8 ADAPTIVE MANAGEMENT

The mitigation measures outlined in this EMPr will be implemented as required. However, as data is collected during the operational phase of the WEF and as mitigation technologies advance, the mitigation measures will be adapted accordingly to ensure that the most appropriate and cost effective mitigation is implemented throughout the WEF's life-cycle.

It is recommended that the operational component of the EMPr is reviewed at least every five years, as it relates to avifaunal monitoring. The review of the EMPr must include stakeholder consultation.

6 GENERIC ENVIRONMENTAL CONTROLS

This section refers to construction related activities that are common to the development of the substations associated with the project as defined within the pre-approved generic EMPrs. 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 EMPr (attached as **Appendix D**). 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 EMPr					
Management Outcome:	Predefined as part of Generic EMPr					
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Predefined as part of Generic EMPr	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor	To be completed by Contractor

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements must 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 contactor 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 EMPrs is 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 and expansion of substation infrastructure, attached as Appendix D (Part B: Section 1)
Environmental awareness training	5.1
Site Establishment development	5.2
Access restricted areas	5.3
Access roads	5.4
Fencing and Gate installation	5.5
Water Supply Management	5.6
Storm and wastewater management	5.7
Solid and hazardous waste management	5.8
Protection of watercourses and estuaries	5.9
Vegetation clearing	5.10
Protection of fauna	5.11
Protection of heritage resources	5.12
Safety of the public	5.13
Sanitation	5.14
Prevention of disease	5.15
Emergency procedures	5.16
Hazardous substances	5.17
Workshop, equipment maintenance and storage	5.18
Batching plants	5.19
Dust emissions	5.20
Blasting	5.21
Noise	5.22
Fire prevention	5.23
Stockpiling and stockpile areas	5.24
Finalising tower positions	5.25

Activity	Refer to Generic EMPr for the development and expansion of substation infrastructure, attached as Appendix D (Part B: Section 1)
Civil works	5.25
Excavation (and Installation) of foundations	5.26
Installation of foundations, cable trenching and drainage systems	5.27
Assembly and erecting towers	5.25
Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)	5.28
Stringing (and cabling)	5.30
Testing and Commissioning (all equipment testing, earthing system, system integration)	5.31
Socio-economic	5.32
Temporary closure of site	5.33
Dismantling of old equipment	5.34
Landscaping and rehabilitation	5.35

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

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 project company. 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, ESCO, ECO and contractor and if unresolved the EMPr will take precedent.

The EMPr identifies various actions which are undertaken throughout the construction and operational phases of the project. Not every action will be required during the entire course of activities. Therefore, the actions identified in the EMPr have been given priority timeframes for proposed implementation. The columns in the structure of the EMPr have been described **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.

7.1 CONTRACTOR LAYDOWN AREA AND SITE ACCESS

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ 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: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Close-out on incidents. ▪ Monitoring and audit reports. ▪ Induction 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 EMPr.	▪ Holder of the EA ▪ Project Manager ▪ EO ▪ Contractor (Site Manager)	▪ Pre-Construction ▪ Construction ▪ Decommissioning
	The development footprint must be demarcated to ensure that only the demarcated areas are impacted upon. The no-go areas identified must be demarcated before the construction or decommissioning commences. This includes all wetlands and the associated buffers, and any high sensitivity areas. Label these areas as environmentally sensitive areas, keep out.		
	Contractor laydown areas, vehicle re-fuelling areas and material storage facilities to remain outside of the delineated freshwater ecosystems and the associated NEMA 32m.		
	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area and wetlands to		▪ Construction ▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	inform importance of these areas and their conservation. A signed register of attendance must be kept for proof.		
	Site clearing must be limited to the footprint of the infrastructure requirements.		▪ Construction
	Locate firefighting measures at laydown areas and vehicles, such as fire extinguishers, and make personnel aware of fire prevention and firefighting measures.		
	Firefighting equipment must be securely placed and inspected monthly.		

7.2 VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite.			
Indicator and Compliance Mechanism: ▪ 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: • 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.	▪ EO ▪ ESCO / ECO ▪ Contractor	▪ Construction ▪ Operation ▪ Decommissioning
	▪ Maintenance vehicles should stick to demarcated roads as far as practically possible to minimise soil compaction on adjacent soils.		
	▪ 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.		

7.3 FUEL AND CHEMICAL MANAGEMENT

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ 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: ▪ 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 South African National Standard (SANS) 10089-1 (2008). If storage capacity triggers licencing, those must be acquired.	▪ EO ▪ ESCO / ECO ▪ Contractor	▪ 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		
Health and Safety	▪ Display “no smoking” and “no naked flame” signs in and around the project area, as well as near the hazardous material store.	▪ EO ▪ ESCO / ECO ▪ Contractor	▪ 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.		

7.4 WASTE MANAGEMENT

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure the correct handling, storage, transportation and disposal of general waste and hazardous waste.			
Indicator and Compliance Mechanism: ▪ 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 because of construction and operational activities must be managed in accordance with a WMP (See Generic WMP in Section 8.2).	▪ EO ▪ ESCO / ECO ▪ Contractor	▪ Construction ▪ Operation ▪ Decommissioning
	▪ Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the WMP.		
	▪ Prohibit littering, burning and burying 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 to minimise littering. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ 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.		
	▪ Recover, recycle and reuse general waste as far as possible.		
Hazardous Waste Management	▪ Hazardous waste generated as a result of construction, operational and decommissioning activities must be managed in accordance with a WMP that is aligned to South African National Standard (SANS) 10234: Classification and Labelling of Chemicals − SANS 10228: The Identification and Classification of Dangerous Substances − SANS 10229: Packing of Dangerous Goods for Road and Rail Transportation.	▪ ESCO / ECO ▪ EO ▪ Contractor	▪ Construction ▪ Operation ▪ Decommissioning
	▪ The WMP must include a procedure for handling spillages.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Strict use and management of all hazardous materials used on site.		
	▪ 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 designated and appropriately demarcated and covered hazardous waste storage area must be established on a hard standing area.		
	▪ 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.		
	▪ All spills should be reported to the authorities as per the emergency preparedness and response frequencies / specifications.		

7.5 HEALTH AND SAFETY

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ 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.			
Indicator and Compliance Mechanism: ▪ 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).			
Health and Safety	▪ The construction phase will be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993, specifically the Construction Regulations.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction ▪ Operation
	▪ 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.	▪ Contractor/Operator ▪ Site Manager	▪ Construction ▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ The appointed contractor will be responsible for the development of a comprehensive health and safety protocol which must be adhered to.	▪ Contractor	▪ Construction
	▪ Emergency response plan to be in place prior to beginning construction and to include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.		
	▪ Provide and wear appropriate PPE onsite.	▪ Contractor/Operator ▪ Site Manager	▪ Construction ▪ Operation
	▪ All normal procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction begins.	▪ Contractor/Operator ▪ Site Manager	▪ Construction ▪ Operation
	▪ All necessary good hygiene practices to be in place, e.g. provision of toilets, eating areas, infectious disease controls.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ 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.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction ▪ Operation
	▪ Outside work must be stopped during thunderstorms. ▪ Lighting conductors may be required for the final installation, to be confirmed during design phase.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction ▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
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: ▪ appointment of emergency controller, ▪ emergency isolation systems for electricity, ▪ emergency isolation and containment systems for electrolyte, ▪ provision of PPE for hazardous materials response, ▪ provision of emergency facilities for staff at the main office building, ▪ provision of first aid facilities, ▪ first responder contact numbers etc	▪ Operator	▪ Operation
	▪ 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.	▪ Operator	▪ Operation
	▪ Material Safety Data Sheets (MSDSs) must be made available for all chemicals and substances on site.	▪ Site Manager ▪ Contractor ▪ Operator ▪ ESCO / ECO ▪ EO	▪ Construction ▪ Operation
Fire risk	▪ Full Process Safety Management system with all elements to be implemented to highest international best practice levels.	▪ Site Manager ▪ Contractor ▪ Operator ▪ ESCO / ECO ▪ EO	▪ Construction ▪ Operation
	▪ Suitable fire-fighting equipment on site near source of fuel, e.g. diesel tank, generators, mess, workshops etc.		
	▪ Safety integrity level rating of equipment (failure probably) with suitable redundancy if required.		
	▪ Ensure regular testing of emergency alarm systems are undertaken.		
	▪ Emergency Response plan in compliance with SANS 1514 to be compiled, e.g. plan from transport and construction phase to be		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	extended to operational phase to include the hazards of the systems containing large quantities of highly hazardous chemicals.		
Public Safety	▪ Restrict public access by employing full time security for the site.	▪ Site Manager ▪ ESCO / ECO ▪ EO	▪ Construction ▪ Operation
Decommissioning of facility	▪ End of Life shutdown procedure including a risk assessment of the specific activities involved.	▪ Operator ▪ ESCO / ECO ▪ EO	▪ Decommissioning
	▪ 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.		

7.6 AIR QUALITY

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure that impacts to air quality of the surrounding environment are minimised.			
Indicator and Compliance Mechanism: ▪ 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.	▪ EO ▪ ESCO / ECO ▪ Contractor	▪ 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.		▪ 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: ▪ 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
	▪ 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 and/or maintain appropriate freeboard on 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.		
	▪ Where possible, minimise speed limits, vehicle weights and the number of vehicles using unpaved roads.		

7.7 SOIL, LAND USE AND AGRICULTURE

Table 7-8 – Soil, land use and agriculture: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To prevent any disturbance, erosion or contamination of soil resources.			
Indicator and Compliance Mechanism: ▪ 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).			
Agricultural land use change because of construction	▪ WTG hardstands and other construction sites should be fenced off before construction commences and construction activities must be confined to the immediate footprint of the planned infrastructure. Access to the adjacent croplands or grazing rangelands should be strictly controlled to prevent unnecessary disturbance or destruction of agricultural potential.	▪ Contractor ▪ Site manager ▪ ESCO/EO ▪ ECO	▪ Pre-construction ▪ Construction
	▪ Maximum use should be made of existing access and internal roads, and the construction of new roads should be kept to a minimum. Where new roads need to be constructed, locate such roads outside of cropland boundaries to mitigate possible production losses and cropland fragmentation.		
	▪ Off-road driving should be strictly prohibited.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Land and soil degradation	▪ Ensure that soil conservation and counter-erosion measures are implemented at all construction sites i.e. berms, soil traps, hessian curtains, and storm water diversion away from areas susceptible to erosion. A system of storm water management, which will prevent erosion, will be an inherent part of the road engineering on site.	▪ Contractor ▪ EO ▪ ECO	▪ Construction
	▪ As part of storm water management, the integrity of any contour bank systems or other erosion control on nearby croplands, must be kept intact. 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.		
	▪ Ensure that dust suppression mitigation measures are implemented on construction sites		
	▪ Construction vehicles should be well maintained to prevent oil and other chemically based materials entering the area. Refuelling and/or servicing points should be well managed and if any soil is contaminated, it should be stripped and disposed of at a registered hazardous waste dumping site.		
	▪ Speed limits on project related roads must be kept to a minimum. No unnecessary off-road driving is to be allowed.		
	▪ Close and rehabilitate excavations and trenches immediately after completion of activity		
	▪ Proliferation of Alien Invasive Plants (AIP) species is expected within any disturbed areas. If observed species should be eradicated and controlled to prevent their spread beyond the construction footprint.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Alien plant seed dispersal within the top layers of the soil within construction footprint areas, which will have an impact on future rehabilitation, must be controlled. A management plan and proper follow-up strategy for the prevention of the establishment and/or further spread of new populations of such species should be developed and enforced		
	▪ Removal of all AIP species encountered in the project area must take place to comply with existing legislation (amendments to the regulations under the Conservation of Agricultural Resources Act, 1983; Section 28 of the National Environmental Management Act, 1998; NEMBA, 2004). Care should be taken with the choice of herbicides to ensure that no additional impact and loss of indigenous plant species occur due to the use of herbicides. Proper training should be given to contractors/applicators to avoid spraying non-target vegetation		
	▪ Ensure that soil conservation and counter-erosion measures are well maintained and regularly monitored for degradation or failures	▪ Developer ▪ EO	▪ Operation
	▪ Ensure that dust suppression mitigation measures are implemented on operational sites where applicable		
	▪ Operational/maintenance vehicles should be well maintained to prevent oil and other chemically based materials entering the area		
	▪ Speed limits on project related roads must be kept to a minimum. No unnecessary off-road driving is to be allowed		
	▪ Monitoring AIP populations on project related areas must be regularly done and the AIP management plan concisely followed.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Ensure that soil conservation and counter-erosion measures are well maintained and regularly monitored for degradation or failures during and after decommissioning.	▪ Contractor ▪ ESCO ▪ ECO	▪ Decommissioning
	▪ Facilitate the re-vegetation of denuded project related areas to stabilize disturbed soil against erosion.		
	▪ Ensure that dust suppression mitigation measures are implemented during the decommissioning phase.		
	▪ Vehicles involved during this phase should be well maintained to prevent oil and other chemically based materials entering the area. Refuelling and/or servicing points should be well managed and if any soil is contaminated, it should be stripped and disposed of at a registered hazardous waste dumping site.		
	▪ All waste and components generated by the deconstruction of project infrastructure must be handled with care to avoid environmental pollution. All waste / components should be removed to an approved recycling or disposal site in line with the project EMPr.		
	▪ Speed limits on project related roads must be kept to a minimum. No unnecessary off-road driving is to be allowed.		
	▪ Post-decommissioning monitoring of AIP populations on project related areas must be done and the AIP management plan developed to cover the decommissioning phase and a suitable period thereafter.		
Disruption or prevention of farming operations	▪ Plan the delivery of WTG components in collaboration with land users and avoid high activity seasons on the farm such as harvest and	▪ Contractor ▪ Site manager	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	planting season if possible. This will avoid road congestion and frustration for both the developer and local farmers.		
	▪ Ground based spraying or the use of drones for spraying are effective and provide alternative methods that can be used without implications for crop production or profitability	▪ Developer ▪ Contractor ▪ ESCO/EO	▪ Construction ▪ Operation ▪ Decommissioning
	▪ Plan the removal of project related waste and components in collaboration with land users and avoid high activity seasons on the farm such as harvest and planting season if possible. This will avoid road congestion and frustration for both the developer and local farmers.	▪ Contractor ▪ ESCO	▪ Decommissioning

7.8 AQUATIC BIODIVERSITY

Table 7-9 – Aquatic Biodiversity: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ Prevent the unnecessary destruction of, and fragmentation of the aquatic biodiversity of the area. ▪ No excess aquatic habitat within the area. ▪ Prevent contamination of wetlands.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Incident classification and reporting management procedure (to be developed). ▪ Environmental awareness programme/toolbox talks. ▪ Monitoring and audit reports.			
Disturbance of riparian/wetland vegetation	▪ A buffer of 50m from the delineated edge of larger watercourses and wetland corridors should be maintained to protect these aquatic habitats. ▪ Clearing of indigenous vegetation should be avoided and should not take place within the aquatic features and the recommended buffers. ▪ Any disturbed areas should be revegetated with suitable vegetation to minimise the risk of erosion and sedimentation of aquatic habitats following rainfall events. ▪ The existing road infrastructure should be utilised as far as possible to minimise the overall disturbance ▪ There are ten (10) watercourse crossings associated with the internal roads for the final proposed layout. Six (6) of these crossings are associated with existing informal farm roads, and three (3) new watercourse crossings are proposed. In terms of the proposed new crossings:	▪ Contractor	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	• The crossing to WT08 is over a minor seasonal watercourse in the northern section. A small low-water crossing over this small watercourse would be acceptable • There are two proposals for a crossing to WT14 and WT17. Both crossings are on a small stream, located between an upstream and downstream dam. There is an existing road crossing near the upstream point. It is recommended that this road and crossing be realigned to the new proposed road. This crossing would have less impact than the downstream one as it is close to the existing disturbance at the road and a fenceline. The downstream road alignment alternative is in a wider wetland area. • Two alternative crossings are proposed over a small watercourse to access WT 24. The downstream (southern) one aligns with an existing road over a small dam wall but will need upgrading. Use of this road alignment is preferred as the watercourse is already disturbed at this location.		
Water quality impacts (largely sedimentation)	▪ During the construction phase, proper site management must be undertaken to address on-site stormwater management and prevention of pollution measures from any potential pollution sources during construction activities, such as hydrocarbon spills. Any stormwater that does arise within the construction site must be handled appropriately to trap sediments and reduce flow velocities. Where feasible, the water supply, sanitation services, as well as solid waste management services required for the proposed project should preferably be provided by an off-site service provider.	▪ Contractor ▪ ESCO/ECO ▪ EO ▪ Site Manager	▪ Construction
Disturbance of riparian and wetland vegetation	▪ Any disturbance during the operation phase should be limited to the approved footprint and disturbance of the soil and natural vegetation cover should be avoided. ▪ With regard to the 33kV overhead/underground line to connect the northern and southern parts of the facility, disturbance of the watercourse/wetland corridor crossings must be minimised and	▪ Operator/Facility Manager	▪ Operational

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	disturbance of the wetland habitats avoided as far as possible. It may be necessary to use overhead lines where disturbance of wetland habitat cannot be avoided.		
Modification of surface water runoff	▪ Stormwater run-off infrastructure must be designed to mitigate both the flow and water quality impacts of any stormwater leaving the developed areas. The runoff should rather be dissipated over a broad area covered by natural vegetation or managed using appropriate channels and swales.	▪ Contractor ▪ Operator/Facility Manager	▪ Operational
Erosion of aquatic features and alien riparian vegetation invasion	▪ Invasive alien plant growth and signs of erosion within the project area should be monitored on an ongoing basis to ensure that the disturbed areas do not become infested with invasive alien plants. Should any erosion features develop, they should be stabilised as soon as possible.	▪ Operator/Facility Manager	▪ Operational
Disturbance of riparian vegetation	▪ During decommissioning, disturbance to the freshwater ecosystems should be limited as far as possible. Disturbed areas may need to be rehabilitated and revegetated.	▪ Contractor ▪ ESCO/ECO ▪ EO ▪ Site Manager	▪ Decommissioning
Water quality impacts (largely sedimentation)	▪ Proper site management must be undertaken to address on-site stormwater management and prevention of pollution measures from any potential pollution sources during decommissioning activities, such as hydrocarbon spills. Any stormwater that does arise within the works must be handled appropriately to trap sediments and reduce flow velocities.	▪ Contractor ▪ ESCO/ECO ▪ EO ▪ Site Manager	▪ Decommissioning
Erosion of aquatic features and alien riparian vegetation invasion	▪ Mitigation and follow-up monitoring of residual impacts (alien vegetation growth and erosion) may be required.	▪ Contractor ▪ ESCO/ECO ▪ EO	▪ Decommissioning

7.9 NOISE

Table 7-10 – Noise: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure that noise impacts to the surrounding environment are minimal or mitigated. ▪ To ensure that daytime noise levels (construction and operational phase) are less than 50 dBA (when measured over a period of at least 1 hour). If existing ambient sound levels exceed the IFC noise limits, the change in ambient sound levels should be less than 3 dBA. ▪ To ensure that night-time noise levels are less than 40 dBA (construction phase) and 45 dBA (operational phase) at locations used for residential purposes (when measured over a period of at least 1 hour). If existing ambient sound levels exceed the IFC noise limits, the change in ambient sound levels should be less than 3 dBA.			
Indicator and Compliance Mechanism: ▪ 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 levels impacting on the quality of living of Noise Sensitive Receptors (NSR)	▪ Developer to re-evaluate the noise impact once the WTG specifications are finalised and the selected WTG have a maximum PWL exceeding 110.5 dBA (re 1 pW)	▪ Developer/Holder of EA	▪ Planning phase
	▪ If noise levels, after the evaluation of the final selected WTG are higher than 45 dBA, the applicant must design a noise abatement programme (or implement appropriate mitigation measures) that will ensure that operational noise levels are less than 45 dBA at all verified NSR (to be used for residential purposes during the operational phase);		
	▪ Developer to re-evaluate the noise impact should the layout be revised (as part of an amendment process post EA) where any		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	WTG, located within 2,500 m from a confirmed NSR, are moved closer to the NSR.		
	▪ Developer to re-evaluate the noise impact should the layout be revised (as part of an amendment process post EA) where any new WTG are introduced within 2,500 m from an NSR		
	▪ Developer to re-evaluate the noise impact should the layout be revised (as part of an amendment process post EA) where the number of WTG within 2,500 m from an NSR are increased		
	▪ Developer to plan and design a noise monitoring program should the developer select to use a WTG with a PWL higher than 105.0 dBA (re 1 pW). This should may include the measurement of ambient sound levels prior to the development of the WEF, followed by noise measurements once the WEF is operational.		
Daytime operation of WTG considering a PWL of 110.5 dBA re 1 pW (relevant for the average expected and worst-case noise levels)	▪ Significance of the operational noise impact is low for scenario as conceptualised and additional mitigation measures are not required.	▪ N/A	▪ N/A
	▪ Complaints register kept on site, to register any noise complaints.	▪ Contractor	▪ Construction
	▪ Notify NSR (and/or land owner(s)) before night-time construction activities are to take place within 1,000 m from an NSR (if the structures are used for residential activities during the proposed construction period).	▪ Contractor	▪ Construction activities within 1 000 m from NSR, if NSR is used for residential purposes
Noises from WTG impacting on the quality of living of NSR	▪ Developer to conduct noise monitoring when a reasonable and valid noise complaint are received from an NSR living within 2,500 m from a WTG of the project.	▪ EO / Developer	▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Conduct active operational noise monitoring at relevant NSR if modelling suggests that the noise levels of the final layout are above 42 dBA.	▪ EO	▪ Operational
Night-time operation of WTG considering a PWL of 110.5 dBA re 1 pW (Average expected noise levels)	▪ Significance of the operational noise impact could be medium for the average expected scenario as conceptualised (use of a WTG with a PWL of 110.5 dBA re 1 pW); additional mitigation measures are required which could include a combination of the following: ▪ The developer can implement serrated trailing edges (STE) on the blades of selected WTG (WTG within 2,000m from NSR08 [WT01, WT02, WT03, WT05, WT06, WT07, WT08]); ▪ The developer to develop and implement a noise monitoring programme; and ▪ The developer can design a noise abatement programme (NAP) – operating the WTG such as WT03 and WT05 in a reduced noise mode during certain times at night, during certain wind speeds/directions or operating conditions.	▪ EO / Developer	▪ Operation
Night-time operation of WTG considering a PWL of 110.5 dBA re 1 pW (Potential worst-case noise levels)	▪ Significance of the operational noise impact could be medium for the average expected scenario as conceptualised (use of a WTG with a PWL of 110.5 dBA re 1 pW); additional mitigation measures are required which could include a combination of the following: • The developer can implement serrated trailing edges (STE) on the blades of selected WTG (WTG within 2,000m from NSR08 [WT01, WT02, WT03, WT05, WT06, WT07, WT08]); • The developer to develop and implement a noise monitoring programme; and • The developer can design a noise abatement programme (NAP) – operating the WTG such as WT03 and WT05 in a reduced noise mode during certain times at night, during certain wind speeds/directions or operating conditions.	▪ EO / Developer	▪ Operation

7.10 TERRESTRIAL BIODIVERSITY

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure that impacts to the biodiversity (fauna and flora) of the surrounding environment are ameliorated.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Environmental awareness programme/toolbox talks. ▪ Monitoring and audit reports. ▪ Biodiversity monitoring procedure (to be developed).			
Direct loss and disturbance of natural habitat	Avoidance: ▪ As far as possible, proposed Project infrastructure should be located outside of land designated CBA 1 and CBA 2 and natural habitat classified as Vulnerable and Endangered; ▪ The proposed maintenance road in the east of PAOI that intersects CBA Irreplaceable land must not be upgraded. It should be used in its current condition, with all vehicle related disturbance strictly controlled and rehabilitated to avoid negative impacts; ▪ Wind Turbines 05, 06 and 07 should be oriented in a manner that ensures the majority of their disturbance footprints are contained within the designated ridge buffer; ▪ If feasible, the existing farm roads linked to informal water crossing points 4 and 6 should be formalised and upgraded rather than constructing the proposed northern route requiring water crossing point 3; ▪ As far as possible proposed permanent Project infrastructure should be located in areas of modified habitat (i.e., Cultivated Fields and Secondary Grassland); and	Holder of the EA Project Manager EO/ECO Site manager	▪ Pre-construction ▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ It is recommended that Substation Site 2 is selected as the preferred site. This site is entirely located within Secondary Grassland (old lands). ▪ As far as possible proposed permanent Project infrastructure should be located in areas of modified habitat (i.e., Cultivated Fields and Secondary Grassland); • It is recommended that Substation Site 2 is selected as the preferred site. This site is entirely located within Secondary Grassland (old lands). ▪ All temporary construction footprints, (e.g., construction camps, laydown areas), should only be located in areas of modified habitat: • It is recommended that Temporary Laydown Area 2 should be relocated to a nearby cultivated field or confined entirely within the Secondary Grassland patch that comprises the northern portion of its current footprint; and • A pre-construction walkdown of the approved development footprints should be conducted during the wet/growing season to identify sensitive biodiversity and inform the micro-siting of Project infrastructure to already disturbed sites and other relevant management measures.		
	Minimisation: ▪ All vegetation clearing for the Project should be restricted to the proposed Project footprints only, with no clearing permitted outside of these footprints; ▪ The footprints to be cleared of vegetation should be clearly demarcated, prior to construction, to prevent unnecessary clearing outside of these areas; ▪ No heavy vehicles should travel beyond the marked/demarked work zones; ▪ Removed topsoil should be stockpiled and used to rehabilitate all disturbed areas.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Rehabilitation: A rehabilitation/ landscaping protocol should be developed and implemented to stabilise and revegetate all non-operational sites that have been disturbed by construction activities. The protocol should include: ▪ The correct stockpiling of topsoil that was cleared from development footprints during site preparation; ▪ The correct contouring of the post-construction landform to limit potential erosion; ▪ Compacted soils should be ripped and loosened to facilitate vegetation establishment; ▪ Topsoil removed during construction should be applied to all non-operational sites that were disturbed during construction and require revegetation; and ▪ Active revegetation should be conducted using grass species that are indigenous, locally-occurring and perennial.		
Fragmentation reducing natural habitat connectivity and integrity	Avoidance and Minimisation See mitigation measures for *Direct loss and disturbance of natural habitat*, and ▪ All proposed access roads and powerlines should be aligned, as far as possible, with existing linear infrastructure (roads/tracks), and wherever possible micro-sited to already disturbed sites.		
	Rehabilitation ▪ See rehabilitation measures for Direct loss and disturbance of natural habitat.		
Establishment and spread of alien invasive species	An AIS control and eradication plan must be developed for the Project that focuses on controlling and eradicating AIS occurring at sites disturbed by proposed Project activities. It is recommended that the plan should be developed with input and guidance from an invertebrate	▪ Contractor ▪ Project Manager ▪ EO/ESCO	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	specialist regarding the management of threatened butterfly species. Operationally, the plan should include: ▪ Identification of AIS management units ▪ Prioritisation of sites and species requiring control; ▪ Targets and indicators of success; ▪ Scheduling of AIS control; ▪ Species-specific control methods, using a combined approach of both chemical and mechanical control methods; and ▪ Provision for follow-up treatments, as informed by regular AIS monitoring.		
	▪ Active alien invasive species control should continue throughout the operational phase, as per the approved AIS control and eradication programme.	▪ Operator/Holder of EA ▪ EO	▪ Operation
	▪ Active alien invasive species control should continue on an annual basis during the decommissioning phase and annual follow-up control should be carried out for a five- year period following decommissioning.	▪ Operator/Holder of EA ▪ EO	▪ Decommissioning
Increased soil erosion and sedimentation	▪ All sites disturbed by construction activities should be contoured, stabilised and actively revegetated, as per the rehabilitation/ landscaping protocol; and ▪ Erosion and sedimentation prevention and control measures (e.g., brush-packing, gabions and silt-traps) should be implemented at any sites of erosion or sedimentation.	▪ Contractor ▪ EO/ESCO	▪ Construction ▪ Decommissioning
Increase in wildfires from Project workers or faulty infrastructure	▪ As a component of the pre-operational planning phase, the Project proponent should engage all relevant farmers and the local Fire Protection Association (FPA) to explore the development of a coordinated Grassland Burning Management Programme. This programme should be informed by specialist guidance concerning maintaining and protecting habitat for the threatened butterfly species.	▪ Holder of the EA/ Operator ▪ Contractor ▪ Operator/Facility manager	▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ As required, firebreaks should be maintained around infrastructure that are susceptible to faults/shorts that may cause accidental wildfires.		
	▪ Construction- and maintenance workers should be trained on the dangers of wildfire and the need to actively prevent unplanned/accidental fires.		▪ Construction ▪ Operational

7.11 PLANT SPECIES

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To minimise impact to the vegetation community ▪ To minimise impact to plant SCC			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Environmental awareness programme/toolbox talks. ▪ Monitoring and audit reports.			
Direct loss and disturbance of natural habitat	<u>Avoidance</u> ▪ As far as possible proposed permanent Project infrastructure should be located in areas of modified habitat (i.e., Cultivated Fields and Secondary Grassland); • It is recommended that Substation Site 2 is selected as the preferred site. This site is entirely located within Secondary Grassland (old lands). ▪ All temporary construction footprints, (e.g., construction camps, laydown areas), should only be located in areas of modified habitat: • It is recommended that Temporary Laydown Area 2 should be relocated to a nearby cultivated field or confined entirely within the Secondary Grassland patch that comprises the northern portion of its current footprint; ▪ A pre-construction walkdown of the approved development footprints should be conducted during both the wet/summer season	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Pre-construction ▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	and dry/winter season to identify sensitive biodiversity and inform the micro-siting of Project infrastructure to already disturbed sites and other relevant management measures.		
	Minimisation ▪ All vegetation clearing for the Project should be restricted to the proposed Project footprints only, with no clearing permitted outside of these footprints; ▪ The footprints to be cleared of vegetation should be clearly demarcated, prior to construction, to prevent unnecessary clearing outside of these areas; ▪ No heavy vehicles should travel beyond the marked/demarked work zones; ▪ Removed topsoil should be stockpiled and used to rehabilitate all disturbed areas.		
	Rehabilitation A rehabilitation/ landscaping protocol should be developed and implemented to stabilise and revegetate all non-operational sites that have been disturbed by construction activities. The protocol should include: ▪ The correct stockpiling of topsoil that was cleared from development footprints during site preparation; ▪ The correct contouring of the post-construction landform to limit potential erosion; ▪ Compacted soils should be ripped and loosened to facilitate vegetation establishment; ▪ Topsoil removed during construction should be applied to all non-operational sites that were disturbed during construction and require revegetation; and ▪ Active revegetation should be conducted using grass species that are indigenous, locally occurring and perennial.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Fragmentation reducing natural habitat connectivity and integrity	Avoidance and Minimisation See mitigation measures for *Direct loss and disturbance of natural habitat*, and ■ All proposed access roads and powerlines should be aligned, as far as possible, with existing linear infrastructure (roads/tracks), and wherever possible micro-sited to already disturbed sites. Rehabilitation ■ See rehabilitation measures for Direct loss and disturbance of natural habitat.	■ Holder of the EA ■ Project Manager ■ Holder of EA ■ EO/ECO ■ Site manager	■ Pre-construction ■ Construction
Loss of flora of conservation concern	Avoidance and Minimisation ■ Additional targeted walkdown surveys of the proposed development footprints should be conducted during the pre-construction planning phase in both the wet/summer season and the dry/winter season to confirm the presence/absence of any potentially impacted flora SCC and protected flora species; ■ Data from the walkdown surveys should then be used to inform: • Additional micro-siting requirements for proposed Project infrastructure, including avoiding a 200 m buffer around Red List species locations, as prescribed by SANBI (2026); and. • The need for, and scope of a Flora SCC Management Plan. If a plan is required, it should be developed during the pre-construction planning phase and include: ○ Species-specific management and monitoring actions for any flora SCC recorded on-site; and – Procedure for rescuing and relocating provincial Protected flora species occurring within infrastructure footprints.	■ Holder of EA ■ Contractor ■ EO/ESCO	■ Pre-construction ■ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Establishment and spread of alien invasive species	An AIS control and eradication plan must be developed for the Project that focuses on controlling and eradicating AIS occurring at sites disturbed by proposed Project activities. It is recommended that the plan should be developed with input and guidance from an invertebrate specialist regarding the management of threatened butterfly species. Operationally, the plan should include: ▪ Identification of AIS management units ▪ Prioritisation of sites and species requiring control; ▪ Targets and indicators of success; ▪ Scheduling of AIS control; ▪ Species-specific control methods, using a combined approach of both chemical and mechanical control methods; and ▪ Provision for follow-up treatments, as informed by regular AIS monitoring.	▪ Contractor ▪ ESCO/EO	▪ Construction ▪ Decommissioning
	▪ Active alien invasive species control should continue throughout the operational phase, as per the approved AIS Control and Eradication Programme.	▪ Operator/Facility manager	▪ Operation
	▪ Active alien invasive species control should continue during the decommissioning phase and annual follow up control should be carried out for a five- year period following decommissioning	▪ Contractor ▪ Operator ▪ EO/ESCO	▪ Decommissioning
	▪ To limit the potential for AIS encroachment, soil erosion and dust generation, all Project footprints and sites that were disturbed during decommissioning, should be actively rehabilitated using local-occurring perennial indigenous flora species.	▪ Operator/Facility manager	▪ Decommissioning

7.12 ANIMAL SPECIES

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ Prevent the loss of the faunal community			
Indicator and Compliance Mechanism: ▪ 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.			
Direct loss and disturbance of natural habitat	Avoidance: ▪ As far as possible proposed permanent Project infrastructure should be located in areas of modified habitat (i.e., Cultivated Fields and Secondary Grassland); • It is recommended that Substation Site 2 is selected as the preferred site. This site is entirely located within Secondary Grassland (old lands). ▪ All temporary construction footprints, (e.g., construction camps, laydown areas), should only be located in areas of modified habitat; • It is recommended that Temporary Laydown Area 2 should be relocated to a nearby cultivated field or confined entirely within the Secondary Grassland patch that comprises the northern portion of its current footprint; ▪ A pre-construction walkdown of the approved development footprints should be conducted during the wet/growing season to identify sensitive biodiversity and inform the micro-siting of Project	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Pre-construction ▪ Construction ▪ Rehabilitation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	infrastructure to already disturbed sites and other relevant management measures. Minimisation: ▪ All vegetation clearing for the Project should be restricted to the proposed Project footprints only, with no clearing permitted outside of these footprints; ▪ The footprints to be cleared of vegetation should be clearly demarcated, prior to construction, to prevent unnecessary clearing outside of these areas; ▪ No heavy vehicles should travel beyond the marked/demarked work zones; ▪ Removed topsoil should be stockpiled and used to rehabilitate all disturbed areas.		
	Rehabilitation: A rehabilitation/ landscaping protocol should be developed and implemented to stabilise and revegetate all non-operational sites that have been disturbed by construction activities. The protocol should include: ▪ The correct stockpiling of topsoil that was cleared from development footprints during site preparation; ▪ The correct contouring of the post-construction landform to limit potential erosion; ▪ Compacted soils should be ripped and loosened to facilitate vegetation establishment; ▪ Topsoil removed during construction should be applied to all non-operational sites that were disturbed during construction and require revegetation; and Active revegetation should be conducted using grass species that are indigenous, locally occurring and perennial.		
Fragmentation reducing natural	Avoidance and Minimisation:	▪ Holder of the EA ▪ Project Manager	▪ Pre-construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
habitat connectivity and integrity	See mitigation measures for *Direct loss and disturbance of natural habitat*, and ▪ All proposed access roads and powerlines should be aligned, as far as possible, with existing linear infrastructure (roads/tracks), and wherever possible micro-sited to already disturbed sites. Rehabilitation: ▪ See rehabilitation measures for Direct loss and disturbance of natural habitat.	▪ EO/ECO ▪ Site manager	▪ Construction
▪ Loss and disturbance of fauna SCC	Avoidance and Minimisation ▪ An Environmental Control Officer (ECO) should be on-site during vegetation clearing to monitor and manage any wildlife-human interactions; ▪ As appropriate, temporary barriers should be erected around construction trenches and excavations to prevent fauna becoming trapped; ▪ Any fauna species trapped in construction areas, should be safely and correctly relocated to an adjacent area of natural habitat; ▪ A low-speed limit (recommended 20-40 km/h) should be enforced on site to reduce wildlife collisions; ▪ No fauna may be intentionally killed or injured by on-site contractors and workers. Handling, poisoning, snaring and killing of on-site fauna by contractors and workers must be strictly prohibited; ▪ Access to the WEF's interior access road network should be strictly controlled to limit the potential for illegal hunters to gain easy access to the area; ▪ General noise abatement equipment should be fitted to all construction machinery and vehicles; ▪ Dust suppression using water bowsers should be undertaken on all roads and other sites where dust entrainment occurs; ▪ The rules and regulations concerning fauna should be communicated to contractors through on-site signage and awareness training; and	▪ Contractor ▪ ECO ▪ ESCO/EO	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ An incidence register should be maintained throughout all phases of the Project detailing any fauna mortalities/injuries caused by on-site activities. The register should be used to identify additional biodiversity management requirements.		
Sensory impacts on fauna SCC from operating wind turbines	Minimisation ▪ The Project proponent must keep actively informed about new research in the field of vibration impacts on fauna and potential mitigation options; and ▪ Based on the findings of new research, the biodiversity management plan for the proposed Project should be updated to include additional mitigation measures and these should be implemented on-site.	▪ Operator/Facility manager	▪ Operation
Impacts on fauna SCC from supporting operational activities	Avoidance and Minimisation ▪ No off-road driving is permitted for vehicles and mobile machinery used during operations and for maintenance purposes.	▪ Operator/Facility manager	▪ Operation
	▪ A low-speed limit (recommended 20-40 km/h) should be enforced on site to reduce wildlife collisions;		
	▪ Access to the WEF's interior access road network should be strictly controlled to limit the potential for illegal hunters to gain easy access to the area;		
	▪ No fauna may be intentionally killed or injured by on-site contractors and workers. Handling, poisoning, snaring and killing of on-site fauna by contractors and workers must be strictly prohibited;		
	▪ The rules and regulations concerning fauna should be communicated to maintenance personnel through on-site signage and awareness training.		
	Avoidance and Minimisation	▪ Operator/Facility manager	▪ Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impacts on fauna SCC from decommissioning activities.	▪ No off-road driving is permitted for vehicles and mobile machinery used during decommissioning phases activities; ▪ A low-speed limit (recommended 20-40 km/h) should be enforced on site to reduce wildlife collisions; ▪ Access to the WEF's interior access road network should be controlled to limit the potential for illegal hunters to gain easy access to the area; ▪ The handling, poisoning and killing of on-site fauna by on-site workers must be strictly prohibited; and ▪ The rules and regulations concerning fauna should be communicated to maintenance personnel through on-site signage and awareness training.		
Spread of animal diseases between livestock, wildlife, neighbouring farms and project personnel	▪ A Pre-Construction Animal Disease Biosecurity Protocol must be developed prior to the commencement of construction activities: • The protocol must include measures to minimise the risk of introducing or spreading livestock and wildlife diseases via personnel, vehicles, machinery, equipment and materials entering or leaving the site. • The protocol must include, where applicable, vehicle and equipment hygiene requirements, movement controls between farms, procedures for managing suspected disease outbreaks, awareness training for personnel, and measures to prevent unauthorised contact with livestock and wildlife. • All contractors and personnel must comply with the approved Biosecurity Protocol throughout the construction phase. • Any suspected livestock or wildlife disease incident observed during project activities must be reported to the Site Manager and ECO for appropriate action.	▪ Holder of the EA ▪ Contractor ▪ Site Manager ▪ ECO / EO	▪ Pre-construction ▪ Construction

7.13 AVIFAUNA

Table 7-14 – Avifauna: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To minimise impacts to avifauna and their habitat.			
Indicator and Compliance Mechanism: ▪ Induction training and records. ▪ Incident classification and reporting management procedure (to be developed). ▪ Avifauna Management Plan (to be developed) ▪ Environmental awareness programme/toolbox talks. ▪ Monitoring and audit reports.			
Displacement through disturbance	Disturbance can be managed and mitigated most effectively at the design stage by avoiding important nesting, roosting and foraging areas of sensitive species during site selection and layout design. The disturbance footprint can be minimised by restricting activities to the smallest possible footprint and demarcating this area, with outside areas declared no-go areas during all phases. A pre-construction avifaunal walkthrough conducted within the month prior to commencement of construction can mitigate residual impacts by identifying areas that require additional mitigation during construction and limit negative impacts on sensitive species.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Construction ▪ Operation ▪ Decommissioning
	With the above avoidance, minimisation and mitigation, the extent of the impact can be restricted to the site only, the probability can be reduced to probable, with no irreplaceable resources lost. As no breeding SCC would be affected, the magnitude of the impact would likely be low. The impact of disturbance on avifauna is rated as high negative significance without mitigation, which can be reduced to a low negative significance with mitigation	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Construction ▪ Operation ▪ Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Displacement through habitat loss	Mitigation of habitat loss from construction of the facility is mainly achieved through site selection and the avoidance of sensitive areas. Following site selection (avoidance), minimisation is only marginally possible by retaining as much of the indigenous vegetation as possible, minimising the footprint of all associated infrastructure, including buildings, electrical infrastructure and the width and length of roads. Residual impacts can be mitigated by rehabilitating as many disturbed areas as possible following construction. Before construction and decommissioning an avifaunal walkthrough can identify any active nesting and breeding sites, which must be protected until the breeding has concluded. Installed infrastructure should be of a bird-friendly design with antiperching structures installed and electricity pylons that do not offer nesting opportunities.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO Site manager	▪ Construction ▪ Operation
	The impact of displacement from habitat loss on avifauna during construction is rated as of potentially high negative significance without mitigation which can be reduced to a moderate negative impact significance with mitigation if areas with irreplaceable resources are avoided during the construction phase.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Construction ▪ Operation
Mortality from collisions with turbines	The main mitigation measure for the avoidance of collisions is the placement of turbines outside of areas likely to be frequented by collision-prone bird species (avoidance mitigation). Avifaunal pre-application monitoring in line with all applicable Best Practice Guidelines is therefore completed to inform the turbine layout. Two raptor nest surveys, a specialist site inspection and one year of avifaunal pre-construction monitoring in line with all applicable Best Practice Guidelines, were completed, and recommendations were made in the Final Monitoring & Site Sensitivity Verification Report (Annexure B of the study) to inform the design of the turbine layout for this project.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Operation
	The proposed turbine layout and its rotor-swept area avoids all areas identified as no-turbine areas, which significantly lowers the risk of	▪ Holder of the EA ▪ Project Manager	▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	collisions. One small section of the rotorswept zone of one turbine slightly protrudes into a scarp and ridge buffer, which was identified as an area in which development should be minimised, and this is deemed acceptable.	▪ EO/ECO ▪ Site manager	
	Recommended proactive minimising mitigation measures include habitat management measures, such as removing artificial rock piles used by eagle prey, minimising perching and nesting opportunities within the facility, blade patterning of all turbines, and implementing postconstruction monitoring for the lifetime of the facility.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Operation
	The painting of one turbine blade in a different colour has shown to lower collisions by raptors successfully (May et al. 2020), and this is currently being implemented retrospectively (in-situ) at one WEF in South Africa. Initial results indicate that painting a pattern on a blade is effective in South Africa, if conducted in line with the Blade Patterning Guidelines, and that patterning on all blades may be more beneficial than pattering a single blade (R. Simmons, pers.comm). As this mitigation is potentially highly effective, proactively patterning all turbine blades prior to construction, at a fraction of the cost instead of a reactive approach, is highly recommended.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Operation
	Post-construction and operational phase monitoring according to Best Practice Guidelines applicable at the time of commencement of construction is required, in order to determine what mortalities are occurring, and if any additional adaptive (reactive) management mitigation measures are required, such as curtailment of certain turbines (shutting down during certain times/seasons/conditions) or Shut-down-on-demand when flight activity by SCC is observed by observers or automated camera and/or radar devices.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Operation
	The impact of collisions with wind turbines on avifauna is rated as of potentially high negative significance without mitigation, which can be reduced to a moderate negative impact significance with mitigation.	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO	▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
		▪ Site manager	
Mortality from collisions with Overhead Powerlines	The impact could be completely avoided by burying all overhead powerlines. To minimise collisions with overhead powerlines, the length of powerlines should be the minimum distance that avoids identified no-overhead powerline buffers. To mitigate residual impacts, line markers such as dynamic and static bird flight diverters (BFDs) are being widely used with some success, and dynamic models are believed to be more likely to increase visibility for a range of species (Silva, *et al*., 2022).	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Operation
	Overhead powerlines should be placed parallel to existing infrastructure as far as practically possible, with wires as low and thick as the current Eskom Technical Standard allows (Silva, et al., 2022). Some evidence has emerged that suggests that the staggering of pylons could reduce mortality. In one study in Namibia and South Africa of 134 bustard collisions, 87.3% were confirmed as having occurred away from towers, in the intermediate and mid-span sections of the powerline (Pallett, et al., 2022). Therefore, the pylons should be staggered against existing or other proposed pylons to increase the powerline visibility, where technically possible.		
	All pylons must be of a vulture-friendly design as per Eskom Technical Standards with antiperching devices installed. A single monopole pylon that does not allow nest-building should be used where technically possible. Diagonal braces on horizontal insulators can prevent birds from perching on the monopoles and reduce the risk of collisions.		
	The impact of collisions with overhead powerlines on avifauna is rated as potentially high negative significance without mitigation which can be reduced to a moderate negative impact significance with mitigation		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Mortality from electrocutions with overhead powerlines and electrical infrastructure	The impact could be completely avoided by burying all overhead powerlines. To minimise collisions with overhead powerlines, the length of powerlines should be the minimum distance that avoids identified no-overhead powerline buffers. To mitigate residual impacts, line markers such as dynamic and static bird flight diverters (BFDs) are being widely used with some success, and dynamic models are believed to be more likely to increase visibility for a range of species (Silva, *et al.,* 2022).	▪ Holder of the EA ▪ Project Manager ▪ EO/ECO ▪ Site manager	▪ Operation
	Overhead powerlines should be placed parallel to existing infrastructure as far as practically possible, with wires as low and thick as the current Eskom Technical Standard allows (Silva, *et al*., 2022). Some evidence has emerged that suggests that the staggering of pylons could reduce mortality. In one study in Namibia and South Africa of 134 bustard collisions, 87.3% were confirmed as having occurred away from towers, in the intermediate and mid-span sections of the powerline (Pallett, *et al*., 2022). Therefore, the pylons should be staggered against existing or other proposed pylons to increase the powerline visibility, where technically possible.		
	All pylons must be of a vulture-friendly design as per Eskom Technical Standards with antiperching devices installed. A single monopole pylon that does not allow nest-building should be used where technically possible. Diagonal braces on horizontal insulators can prevent birds from perching on the monopoles and reduce the risk of collisions.		
	The impact of collisions with overhead powerlines on avifauna is rated as potentially high negative significance without mitigation which can be reduced to a moderate negative impact significance with mitigation		

7.14 ARCHAEOLOGICAL AND CULTURAL HERITAGE

Table 7-15 - Archaeological and Cultural Heritage: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure that sites/artefacts of heritage value are identified and protected.			
Indicator and Compliance Mechanism: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Incident classification and reporting management procedure (to be developed). ▪ Monitoring and audit reports.			
Impacts of the proposed development to archaeological resources	▪ The buffers recommended in table 4 of the Heritage Impact Assessment specialist report must be adhered to.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction
	▪ The identified very high sensitivity archaeology areas are not impacted by the development of any new infrastructure.		
	▪ Archaeological monitoring takes place for all construction activities located within the very high sensitivity areas identified.		
	▪ If any archaeological resources or unmarked human remains are uncovered or exposed during construction operations these must immediately be reported to SAHRA.		
Impacts of the proposed development to palaeontological resources	▪ The Chance Fossil Finds Protocol (Appendix 1 of the Heritage Impact Assessment) must be implemented throughout the construction phase, particularly in areas underlain by the Vryheid Formation.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction
	▪ Existing gravel and access roads should be used as far as possible to minimise unnecessary ground disturbance in sensitive areas.		

7.15 VISUAL LANDSCAPE

Table 7-16 – Visual: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure that the changes to the landscape character of the area are mitigated to minimise the negative impact.			
Indicator and Compliance Mechanism: ▪ Health, safety, environmental and community incident and complaints management system register. ▪ Incident classification and reporting management procedure (to be developed). ▪ Monitoring and audit reports.			
Residents of homesteads, visitors to tourist accommodation and Protected Areas	▪ Retain and maintain natural vegetation in all areas outside of the development footprint, but within the project site.	▪ EA Holder/ Site Manager ▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Planning ▪ Pre-construction ▪ Operational
	▪ Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.		
	▪ In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.		
	▪ Implement needs-based night lighting if available and considered acceptable by the CAA.		
	▪ Limit aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself).		
	▪ Limit mounting heights of lighting fixtures or alternatively use footlights or bollard level lights.		
	▪ Make use of minimum lumen or wattage in fixtures.		
	▪ Make use of down-lighters or shielded fixtures.		
	▪ Make use of Low-Pressure Sodium lighting or other types of low impact lighting.		
	▪ Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.		
	▪ Implement needs-based night lighting if available and considered acceptable by the CAA.		
	▪ Ensure that vegetation is not unnecessarily cleared or removed during the construction period.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction
	▪ Reduce the construction period through careful logistical planning and productive implementation of resources.		
	▪ Ensure that the placement of laydown areas and any potential temporary construction camps are within the areas planned in order to minimise vegetation clearing (i.e. in already disturbed areas).		
	▪ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Ensure that rubble, litter, and disused construction materials are appropriately stored and then disposed of regularly at licensed waste facilities.		
	▪ Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).		
	▪ Restrict construction activities to daylight hours whenever possible in order to reduce the visual impacts associated with lighting.		
	▪ Rehabilitate all disturbed areas immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.		
	▪ Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Operational
	▪ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as a when required.		
	▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.		
	▪ Remove infrastructure not required for the post-decommissioning use.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	Decommissioning
	▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.		
Observers travelling along roads (within 0-	▪ Retain and maintain natural vegetation in all areas outside of the development footprint, but within the project site.	▪ EA Holder/ Site Manager	▪ Planning ▪ Pre-construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
5km and potentially up to 10km of the turbines)	▪ Implement needs-based night lighting if available and considered acceptable by the CAA.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Operational
	▪ Limit aircraft warning lights to the turbines on the perimeter according to CAA requirements, thereby reducing the overall impact.		
	▪ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself).		
	▪ Limit mounting heights of lighting fixtures or alternatively use footlights or bollard level lights.		
	▪ Make use of minimum lumen or wattage in fixtures.		
	▪ Make use of down-lighters or shielded fixtures.		
	▪ Make use of Low-Pressure Sodium lighting or other types of low impact lighting.		
	▪ Make use of motion detectors on security lighting. This will allow the site to remain in relative darkness, until lighting is required for security or maintenance purposes.		
	▪ Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction
	▪ In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Ensure that vegetation is not unnecessarily cleared or removed during the construction period.		
	▪ Ensure that the placement of laydown areas and any potential temporary construction camps are within the areas planned in order to minimise vegetation clearing (i.e. in already disturbed areas).		
	▪ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.		
	▪ Ensure that rubble, litter, and disused construction materials are appropriately stored and then disposed of regularly at licensed waste facilities.		
	▪ Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).		
	▪ Restrict construction activities to daylight hours whenever possible in order to reduce the visual impacts associated with lighting.		
	▪ Rehabilitate all disturbed areas immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.		
	▪ Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Operational
	▪ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as a when required.		
	▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Remove infrastructure not required for the post-decommissioning use. ▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Decommissioning
Shadow flicker	▪ Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site. ▪ It is recommended that no homesteads should be located in the zone of visible shadows of any of the proposed turbine, unless otherwise agreed upon by the affected landowner, if the landowner is located within the development site. Proof of such agreement is required. ▪ Prior to construction, the holder of the Environmental Authorisation must retain records demonstrating that potentially affected landowners and registered I&APs were afforded an opportunity to review and comment on the findings of the Visual Impact Assessment, including shadow flicker considerations, as part of the EIA public participation process. Any shadow flicker complaints received during operation must be managed in accordance with the Visual Impact Management Plan and complaints-management procedures contained in the EMPr.	▪ EA Holder/ Site Manager	▪ Planning ▪ Pre-construction
	▪ Consider planting of screening vegetation at the affected homestead to limit the effect of shadow flicker, should it be required.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Operational
	▪ Remove infrastructure not required for the post-decommissioning use. ▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Decommissioning
Ancillary infrastructure	▪ Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site.	▪ EA Holder/ Site Manager	▪ Planning ▪ Pre-construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.		
	▪ In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.		
	▪ Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Operational
	▪ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as a when required.		
	▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.		
	▪ Remove infrastructure not required for the post-decommissioning use.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Decommissioning
	▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.		
Blade painting (sensitive receptors especially within 0-5km and potentially up to 10km radius of the turbines)	▪ Apply blade painting only where justified by avifaunal risk assessments and in accordance with SACAA-approved patterns and the SAWEA/BLSA/BARESG guidelines.	▪ EA Holder/ Site Manager	▪ Planning ▪ Pre-construction
	▪ As far as possible, limit blade painting to one blade per turbine or simple broad bands (e.g., two broad stripes or ¾ solid blade) rather than multiple		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	thin stripes to reduce visual clutter. If multiple blades are patterned, use asymmetrical placement to preserve avian conspicuity without repeating pattern symmetry that increases human noticeability.		
	▪ Commit to consistent pattern application across the facility (or defined subsets) to avoid patchwork appearance and public confusion.		
	▪ Prioritise painting on turbines located in low-sensitivity visual zones (i.e. behind ridgelines, out of primary viewer corridors) and avoid (or apply minimal treatment to) turbines sited on visually exposed ridgelines or within close proximity (<1–2 km) to sensitive receptors unless avifaunal risk compels it.		
	▪ Specify durable, non-reflective paints formulated for turbine use (UV-stable, abrasion resistant) to avoid patchiness, gloss/shine changes or uneven weathering that would attract visual attention.		
	▪ Ensure the application of blade painting is undertaken during the manufacturing process and not as an after application during the construction phase.		
	▪ Apply paint under controlled conditions with trained applicators, measured coverage, documented pattern placement, to ensure uniform visual appearance across turbines and avoid visible inconsistencies.		
	▪ Apply paint patterns uniformly and consistently across turbines to avoid irregular visual effects. ▪ Use non-reflective, durable paint finishes to prevent glare, fading, or patchiness that may increase visibility.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Construction
	▪ Implement post-construction monitoring to evaluate both avifaunal effectiveness and public perception of painted blades. It is suggested that this is implemented via two complementary monitoring programmes: (a) avifaunal collision monitoring to quantify mortality reduction (as specified by the avifaunal specialist), and (b) visual perception monitoring	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Operational

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	(stakeholder surveys/photo points) to assess community responses and any unforeseen visual intrusion. Use agreed metrics (e.g., raptor fatalities, local resident perception scores).		
	▪ Use monitoring results to adjust paint coverage (e.g., reduce/alter patterns where visual impacts are unacceptable or expand where avifaunal benefit is insufficient). Maintain decision-making records (trigger thresholds, remedial actions).		
	▪ Schedule periodic repainting to maintain uniform colour/contrast and avoid patchy or faded blades that increase attention. Use non-gloss finishes to avoid glare.		
	▪ Keep local communities and stakeholders informed of monitoring outcomes and any planned adjustments to painting strategy to maintain public confidence and transparency.		
	▪ Remove infrastructure not required for the post-decommissioning use.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Decommissioning
	▪ Restore the site to pre-construction conditions, ensuring no residual long-term visual impacts linked to painted blades.		
on sensitive visual receptors within 5km to the proposed WEF	▪ Reduce the decommissioning period through careful logistical planning and productive implementation of resources.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Decommissioning
	▪ Plan the placement of laydown areas and temporary equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) where possible.		
	▪ Restrict the activities and movement of workers and vehicles to the immediate site and existing access roads.		
	▪ Ensure that rubble, litter, and disused materials are appropriately stored and then disposed of regularly at licensed waste facilities.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Reduce and control dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).		
	▪ Restrict activities to daylight hours whenever possible in order to reduce the visual impacts associated with lighting.		
	▪ Remove infrastructure not required for the post-decommissioning use of the site.		
	▪ Rehabilitate all areas as per the rehabilitation plan undertaken. Consult an ecologist regarding rehabilitation specifications.		
	▪ Monitor rehabilitated areas post-decommissioning and implement remedial actions as required.		
Sense of place	▪ Retain/re-establish and maintain natural vegetation in all areas outside of the development footprint/servitude, but within the project site.	▪ EA Holder/ Site Manager	▪ Planning ▪ Pre-construction
	▪ Existing roads should be utilised wherever possible. New roads should be planned taking due cognisance of the topography to limit cut and fill requirements. Construction/upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.		
	▪ In terms of onsite ancillary buildings and structures, it is recommended that it be planned so that the clearing of vegetation is minimised. This implies consolidating this infrastructure as much as possible and making use of already disturbed areas rather than undisturbed sites wherever possible.		
	▪ Ensure that the maintenance of the turbines and ancillary structures and infrastructure must be undertaken to ensure that the facility does not degrade, therefore aggravating the visual impact.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO	▪ Operational

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Roads must be maintained to forego erosion and to suppress dust, and rehabilitated areas must be monitored for rehabilitation failure. Remedial actions must be implemented as a when required.	▪ EO	
	▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.		
	▪ Remove infrastructure not required for the post-decommissioning use.	▪ Site Manager ▪ Contractor ▪ ESCO / ECO ▪ EO	▪ Decommissioning
	▪ Rehabilitate all areas. Consult an ecologist regarding rehabilitation specifications.		

7.16 TRAFFIC

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To ensure that the traffic impacts of the project are mitigated and managed.			
Indicator and Compliance Mechanism: ▪ 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			
Increase in Development Trips	▪ Stagger component delivery to site.	▪ Site Manager ▪ Contractor	▪ Construction ▪ Decommissioning
	▪ Stagger the construction phase.		
	▪ Use of licensed quarries in close proximity to the site to decrease the impact on the surrounding network if possible.		
	▪ Staff and general trips to occur outside of peak traffic periods as much as possible.		
	▪ Monitoring and maintenance of haulage routes.		
	▪ Maintenance of internal roads.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Provide several access points to the site to split constriction vehicle trips and reduce the risk of congestion at a single access.		
	▪ Maintenance and repairs of any road sections of the district roads being used by construction vehicles.		
	▪ Any road surface damage needs to be closely monitored to decide on the responsible party to repair it.		
Noise and dust pollution	▪ Stagger component delivery to site.	▪ Site Manager ▪ Contractor	▪ Construction ▪ Decommissioning
	▪ Stagger the construction phase.		
	▪ Use of licensed quarries in close proximity to the site to decrease the impact on the surrounding network if possible.		
	▪ Staff and general trips to occur outside of peak traffic periods as much as possible.		
	▪ Monitoring and maintenance of haulage routes.		
	▪ Maintenance of internal roads.		
	▪ Provide several access points to the site to split constriction vehicle trips and reduce the risk of congestion at a single access.		
	▪ Maintenance and repairs of any road sections of the district roads being used by construction vehicles.		
	▪ Any road surface damage needs to be closely monitored to decide on the responsible party to repair it.		
	▪ Stagger component delivery to site.	▪ Site Manager	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Possible damage to road surfaces caused by construction vehicles	▪ Stagger the construction phase. ▪ Use of licensed quarries in close proximity to the site to decrease the impact on the surrounding road network if possible. ▪ Staff and general trips to occur outside of peak traffic periods as much as possible. ▪ Monitoring and maintenance of haulage routes. ▪ Maintenance of internal roads.	▪ Contractor	▪ Decommissioning

7.17 SOCIO-ECONOMIC

Table 7-18 – Socio-Economic: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ■ 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: ■ 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.			
Job creation	■ Preparation and implementation of a Stakeholder Engagement Plan (SEP) and Grievance Mechanism before and during construction.	■ Contractor ■ Site manager	■ Construction
	■ Where reasonable and practical, the project should apply a 'locals first' policy, especially for semi and un-skilled jobs. The majority of skilled positions, however, are likely to be filled by individuals from outside the area due to the low skill levels in the area.		
	■ Communities near the Project should be given special consideration regarding the benefits arising from it, as they will be most affected.		
	■ The engineering, procurement, and construction contractor should prefer appropriate subcontractors in the surrounding communities, followed by those in the municipal area and those outside the province.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ Resources required during construction should be sourced, preferably from local businesses. Accommodation needed for contractors should favour local guesthouses and hotels.		
	▪ Wherever possible, the hiring process should promote gender equality and women's employment.		
	▪ The proponent should liaise with the municipality regarding establishing a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies, etc.) before the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.		
	▪ Where reasonable and practical, the Project should apply a 'locals first' policy, especially for semi and low-skilled jobs. The majority of skilled positions, however, are likely to be filled by individuals from outside the area due to the low skill levels in the area.		
	▪ Communities near the Project should be given special consideration regarding the benefits arising from it, as they will be most affected.	▪ Operator	▪ Operation
	▪ The proponent should liaise with the municipality regarding establishing a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., maintenance companies, catering companies, waste collection companies, security companies, etc.) before the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.		
The influx of job seekers	▪ A community awareness campaign will be implemented in the surrounding communities to sensitise community members to traffic safety risks and infectious disease awareness.	▪ Contractor ▪ Site manager ▪ Operator	▪ Construction ▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ As part of onboarding workers, training should be provided on preventing GBV, Sexual Assault (SEA) and Sexual Harassment (SH).		
	▪ The Project must engage with communities using a dedicated community liaison officer and have an effective SEP, including a grievance mechanism for communities to access and lodge complaints.		
	▪ Local employment should be a priority for the construction contractor to lessen the number of workers away from their homes.		
	▪ Training programmes must be implemented to enable local participants to take advantage of employment opportunities.		
	▪ No recruitment should occur at the Project gate to prevent informal settlements around the Project site.		
	▪ Increased security in the Project area should be provided to regulate access to the site and prevent informal settlements.		
Procurement from local business	▪ The Project could partner with local suppliers through procurement programmes to develop local suppliers.	▪ Contractor ▪ Operator ▪ Project manager	▪ Construction ▪ Operation
	▪ Procurement programmes should prioritise local procurement for locally available goods and services.		
Loss of agricultural land	▪ The Project should limit construction infrastructure during planting and harvesting season.	▪ Contractor	▪ Construction
	▪ Disturbed areas should be rehabilitated post-construction phase.		
	▪ Preparation and implementation of a SEP before and during the construction phase.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ The Project should agree with the local farmers in the area on how they will be compensated for damages. An agreement should be entered into before the construction phase starts.		
	▪ All farm gates must be closed after passing through.		
	▪ Contractors appointed by the Project should provide daily transport for low and semi-skilled workers to and from the site.		
	▪ The Project should hold contractors liable for compensating farmers and communities in full for any losses or damage to farm infrastructure that can be linked to construction workers.		
	▪ The Project should implement a Grievance Mechanism that provides locals with an effective and efficient mechanism to address issues related to the Project.		
Income generation for affected landowners	▪ The loss of high-quality agricultural land should be avoided and minimised where possible	▪ Holder of the EA ▪ Project manager ▪ EO/ESCO	▪ Construction
Community health, safety and security	▪ The Project should employ security personnel onsite during construction to implement security. The Project should include monthly health talks and coordinate health and safety campaigns to educate personnel and the community on general health, safety and security issues.	▪ Contractor ▪ ESCO ▪ Site manager	▪ Construction ▪ Operation
	▪ The proponent and the contractor should implement an HIV/AIDS and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase.		
	▪ The contractor should transport workers to and from the site daily.		
	▪ The contractor should supervise and manage the entrance and exit of the construction site to ensure no interaction with communities at the site.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	▪ No construction workers, except security personnel, should be permitted to stay overnight on the site.		
Energy generation	▪ The power generated from the proposed project should be used to provide for homes, farms, and businesses in the surrounding communities.	▪ Operator	▪ Operation
	▪ The proposed Project should be used to encourage more renewable sources of energy.		
Loss of employment	▪ Timely and adequate consultation with employees dependent on the Project for employment should occur.	▪ Contractor ▪ EO ▪ Project manager	▪ Decommissioning
	▪ Assisting employees seeking alternative employment at other wind power plants or related facilities.		
	▪ Training, educating and re-skilling employees to equip them with skills that could benefit them in other industries should occur.		
Reduced community investment	▪ Engage local and regional government concerning the decommissioning phase.	▪ Holder of EA ▪ Project manager	▪ Decommissioning
	▪ Develop alternative projects which can support the local economy.	▪ Holder of EA/Operator	
Associated infrastructure abandonment	▪ An end-of-life shutdown procedure must be undertaken, including a risk assessment of the activities involved.	▪ Operator/Holder of EA	▪ Decommissioning
	▪ End-of-life, which is affected by temperature and time, cycles, etc., should be predefined, and monitoring should be in place to determine if it has been reached.		
	▪ The proponent shall develop exit strategies for all its community development initiatives.		

7.18 BATS

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

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ To minimise bat mortality, injury and disturbance associated with the Project.			
Indicator and Compliance Mechanism: ▪ 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. ▪ Bat Management Plan (to be developed). ▪ Health and safety protocol (to be developed). ▪ Employment records and community engagement local enterprise development records.			
Habitat loss or roost disturbance	▪ No construction of new roads in sensitive areas and avoid upgrading of existing roads in sensitive areas. ▪ If upgrading of existing roads is to go ahead a bat specialist must be present during the construction of these to ensure that the impact is kept to a minimum and construction must be done during the winter months.	▪ Site Manager ▪ Contractor ▪ Developer ▪ ECO	▪ Construction ▪ Operation ▪ Decommissioning
Bats mortality	▪ Hub height at maximum as stated in the project description ▪ Blade length at minimum as stated in the project description	▪ Developer ▪ EO	▪ Operation
	▪ Automated smart curtailment must be employed as mitigation measure, and the devices must be deployed in such a manner to provide maximum coverage across the WEF. These devices must be installed prior to the	▪ Contractor ▪ Developer ▪ ECO	▪ Post EA Authorisation/ Design

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	facility becoming operational. No devices are currently recommended, but should be based on the technology available at the time of installation. The final technology selection, system design and deployment requirements must be implemented in accordance with the recommendations of the post construction monitoring plan, applicable specialist recommendations and any conditions of Environmental Authorisation, taking into account the most appropriate technology available at the time of detailed design and installation.		▪ Planning/ Pre-construction
	▪ Post-construction monitoring in consultation with a bat specialist including carcass searching and acoustic monitoring.	▪ Contractor ▪ Developer ▪ ECO ▪ Bat Specialist	▪ Planning/ Pre-construction
Artificial lightning	▪ Use only minimal compulsory civil aviation lighting	▪ EO	▪ Operation
	▪ Use non-UV emitting lights		
Bat Buffers	▪ Water bodies, rivers, wetlands, ridges and wooded areas must be given 200 m buffers as they are seen as areas that are of Medium Sensitivity to bats, and No-Go buffers have been applied around all confirmed roosts which are considered as High sensitivity features (Figure 31). Roosts found have been classified as small and large roosts and will require a 1 km and 2.5 km buffer respectively. The mine shaft has been given a No-Go buffer of 500 m, but the shaft must be inspected continuously throughout the construction and pre-construction phase to ensure that it is not used by other species of bats in the future. As the guidelines regarding the buffer sizes and shapes are stringent and well defined, it is important that all applied buffers be respected and followed when considering final facility layout. No part of the wind turbine, including the blade tips must encroach into these buffer zones. The buffers zones can be measured on a map during the preparation of report sensitivity maps or on the ground. The applied buffer zones are measured from the ground all the way to the full length of the turbine sweep and it includes all parts of the turbine, tower and rotor sweep.	▪ Site Manager ▪ Contractor ▪ Developer ▪ ECO	▪ Pre-Construction ▪ Construction

7.19 GEOTECHNICAL

Table 7-20 – Geotechnical: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ 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: ▪ 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.			
Slope instability	▪ Avoid steep slopes areas, as far as practicably possible. ▪ Design cut slopes according to detailed geotechnical analysis and adopt appropriate support mechanisms.	▪ Holder of EA ▪ Contractor	▪ Construction ▪ Operation ▪ Decommissioning
Seismic activity	▪ Design according to expected peak ground acceleration. ▪ Ensure the proposed development meets the minimum requirements for infrastructure in a seismic zone.		
Soil erosion from clearing of sites for drilling and test pitting	▪ Rehabilitation of affected areas (such as revegetation). ▪ Construction of temporary berms and drainage channels to divert surface water. ▪ Minimize earthworks and fills. ▪ Use existing road network and access tracks. ▪ Correct engineering design and construction of gravel roads and water crossings. ▪ Control stormwater flow. ▪ Dust suppression measures for wind erosion.	▪ Holder of EA ▪ Contractor ▪ Site manager ▪ EO/ESCO	▪ Construction ▪ Operation ▪ Decommissioning

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Potential hydrocarbon (including oil, fuels, chemicals) spillages	▪ Vehicle and construction machinery repairs to be undertaken in designated areas with proper soil protection (i.e. on impermeable surfaces or with the use of drip trays).	▪ Contractor ▪ Site manager ▪ ECO ▪ ESCO	▪ Construction ▪ Operation ▪ Decommissioning
	▪ Spill kit to be maintained on site, spills and contaminated soils to be collected and disposed appropriately.		
	▪ Frequent checks and conditional monitoring.		
Disturbance of fauna and flora from clearing of sites	▪ Limit excavations to developmental/decommissioning areas.	▪ Contractor ▪ Site manager ▪ ESCO/ECO	▪ Construction ▪ Operation ▪ Decommissioning
Subsidence	▪ Geophysical studies (approximately 4 to 6 weeks): During the planning and pre-construction phase, conduct geophysical studies to map the extent of the mine. This may be followed by drilling to confirm the structural layout of the shaft. Undertake numerical modelling and monitoring to assess the associated risks and potential effects on the surface.	▪ Holder of EA ▪ Project manager ▪ Geotechnical specialist	▪ Planning ▪ pre-construction
	▪ Numerical modelling and monitoring to assess the risk and effects on the surface.	▪ Holder of the EA ▪ Project manager ▪ ESCO	▪ Construction ▪ Operation ▪ Decommissioning
	▪ No structures within a 100m radius of the mine shaft.		
	▪ Spill kit to be maintained on site, spills and contaminated soils to be collected and disposed appropriately.		
	▪ Frequent checks and conditional monitoring	▪ ESCO/EO ▪ ECO	

7.20 SAFETY HEALTH ENVIRONMENT RISK

Table 7-21 – SHE Risk: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ Identification of the likely hazards and hazardous events related to the operation of the BESS installation.			
Indicator and Compliance Mechanism: ▪ 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.			
Human health	The construction phase must be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993 specifically the Construction Regulations.	▪ Project Manager ▪ EO ▪ Contractor (Site Manager) ▪ ECO	▪ Construction
	SHEQ policy must be in place.		
	A detailed construction Risk Assessment prior to work		
	SHE procedure in place.		
	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		
Exposure to noise	Health Risk Assessment to determine if equipment noise exceeds 85dB at workstation and 61dB at boundary of the site	▪ Project Manager ▪ EO ▪ Contractor (Site Manager)	▪ Construction
	Employees to be provided with hearing protection if working near equipment that exceeds the noise limits.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Ensure continuous noise does not exceed 85dB within the facilities or at any other location on site or 61 dB at the site boundary, e.g., emergency generator, air compressor etc.	▪ Developer ▪ EO	▪ Operation
	Employees to be provided with hearing protection if working near equipment that exceeds the noise limits.		
Exposure to temperature extremes and/or humidity	Construction site facilities to comply with Occupational Health and Safety Act 85 of 1993 specifically the thermal, humidity, lighting and ventilation requirements of the Environmental Regulations for Workplaces	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	Adequate potable water for employees to be provided during all phases of the project. Bore hole, bowser and tank or small water treatment plant may be required to provide potable water for the BESS installation staff during all phases of the project		
	Building and container facilities to comply with Occupational Health and Safety Act 85 of 1993 specifically the thermal, humidity, lighting and ventilation requirements of the Environmental Regulations for Workplaces.	▪ Developer ▪ EO	▪ Operation
	Ensure containers are temperature controlled as required to remain within the optimal battery operating temperature range.		
	Lighting to be provided inside any buildings, inside the containers, possibly linked to the door opening and outdoors where necessary		
	Adequate potable water to be provided during all phases of the project		
	Suitable lighting to be provided including emergency lighting for safe building exit in the event of power failure		
	PPE for operations and maintenance staff to be suitable for the weather conditions.		
Exposure to psychological stress	Adopt all mitigation measures as listed in the Social Impact Assessment study	▪ Project Manager ▪ EO ▪ Contractor	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Staff rotation to other activities within the site may be necessary	▪ EO ▪ Developer	▪ Operation
	Performance monitoring of inspections / maintenance tasks in particular will be necessary.		
	Adopt all mitigation measures as listed in the Social Impact Assessment study.		
Exposure to ergonomic stress	Training in lifting techniques to be conducted.	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	Ensure that despite the isolated location all the necessary equipment is available (and well maintained) during construction. Otherwise employees may revert to unsafe practices. Isolated location, maintenance of construction equipment to ensure safe operation is critical. Ensure this is in place prior to project beginning		
	First aid provision on site		
	If equipment is at height (see OHS Act General Safety Regulation 6), ensure suitable safe (electrically and physically) ladders / harnesses etc. are available	▪ EO	▪ Operation
	Working at height procedure to be in place.		
Exposure to fire radiation	Fuels stored on site in dedicated, demarcated and bunded areas.	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	Suitable fire-fighting equipment on site near source of fuel, e.g., diesel tank, generators, mess, workshops etc.		
	▪ The company responsible for the facility at this stage is to have: • Emergency plan to be in place prior to commencement of construction. • Fuel spill containment procedures and equipment to be in place. • Hot-work permit and management system to be in place.		
	Solid state battery design includes abuse tests such as drop test, impact, rapid discharge etc		
	Propagation tests for systems, e.g., heat insulating materials between cells/modules.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Factory acceptance test prior to prior to leaving manufacture. Batteries are usually stored at 50% charge to prolong life but may be shipped fully discharged. This level of detail must be understood so as to assess the risk during transport and storage		
	The company responsible for the battery installation must ensure suitably competent transport companies are appointed. The company responsible for transportation must ensure: Compliance with National Road Traffic Act regulation 8 dangerous goods		
	Port Authorities must be alerted to the overall project and the hazardous nature of the contents of battery containers being imported. Note. If, as per one of the typical suppliers (Tesla) indications, the containers are classified as IMDG Class 9 the containers will not receive any special care in the ports and may be stored next to flammables. Port emergency response in particular need training on mitigating battery hazards.		
	▪ Prior to bringing any containers into the country, the company responsible for the battery installation (possibly via appointed contractors) must ensure that an emergency response plan is in place for the full route from the ship to the site. Drivers trained in the hazards of containerized batteries. • The Emergency plan must determine and address: • What gases would be released in a fire and are there inhalation hazards. • What initial fire extinguishing medium must 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. • Must the container be left unopened or opened. • PPE to be specified including possible exposure to chemicals and fumes as well as radiate heat. • Containment of residues/water/damaged equipment.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	• 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).		
	Grass cutting and fire breaks around the BESS installations to prevent veld fires	▪ EO	▪ Operation
	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.		
	Testing as part of commissioning of each unit and the overall system. Abuse tests conducted by supplier		
	BMS must check individual cell voltage as well as stack, module, container, system voltages/current etc. BMS tripping the cell and possibly the stack/building unit or module/rack/container, if variations in voltage. Diagnostics easily accessible. Diagnostics able to distinguish cell from stack or cell from module faults. Protective systems are only as good as their reliability and functionality testing is important, e.g., testing that all battery trips actually work		
	Fire resistant barrier between the batteries and the PCS side if in the same container, or separate containers		
	Suitable ingress protection level provided for electrical equipment, e.g., IP55 - 66. If air cooling into container, suitable dust filters to be provided. Smoke detectors linked to BMS & alerts in control room		
	Effects of battery aging to be considered. Solid state battery life starts to be impacted above 40˚C and significant impacts above 50˚C with thermal runaway starting at 65-70˚C. BMS trips system at 50˚C		
	Temperature monitoring to be in place		
	Regular infrared scanning. Data needs to be stored for trend analysis		
	Data indicates an event frequency of 0.001 per installation and with 100 units this would mean an event once 10 years, i.e. a low probability event		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Prior to commencement of cold commissioning, emergency plan from transport and construction phase to be extended to operational phase and to include the hazards of the electrically live system		
	Procedure to address solid state container must be in place		
	A planned fire response to prevent escalation to an explosion or an environmental event must be in place		
	Suitable supply of fire extinguishing medium and cooling medium		
	Consider fire water for cooling equipment adjacent to BESS units.		
	Ensure procedures in place for clean up after event Lingering HF and other toxic residues in the soil and on adjacent structures.		
	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.		
	Modern lithium container design put the PCS in another part of the container with a fire rated wall separating it from the battery. Alternately the PCS is another container altogether.		
Exposure to explosion over pressures	During transport this is only likely to happen due to possible inappropriate emergency response, e.g., opening containers when they may be the type that must be left to burn out. For simplicity one transport route would be preferable. The route needs to be assessed in terms of responding local services, rest places for drivers, refuelling if required, break down services available etc.	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	Once an import route has been chosen, e.g., Richards Bay or Durban and along N2/N3/N11 etc, then the appointed transport company must 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.		
	Electrical equipment will be specified to suit application.	▪ EO	

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Emergency response plan and employee training referred to above is to be in place	▪ Developer	▪ Operation
	Undertake a hazardous area classification of the inside of the container to confirm the rating of electrical equipment, due to possible leaks of electrolyte or generation of flammable gases under thermal runaway. Emergency response plan and employee training referred to above is critical		
	Suitable training of selected emergency responders who may be called out to the facilities is critical		
Exposure to acute toxic chemical and biological agents	All necessary good hygiene practices to be in place, e.g., provision of toilets, eating areas, infectious disease controls.	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others.	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	Awareness training for persons on site, safety		
	Induction to include animal hazards		
	First aid and emergency response to consider the necessary anti-venom, anti-histamines, topical medicines etc		
	Due to isolated locations some distance from town, the ability to treat with anti-venom and extreme allergic reactions on site is critical to mitigate the impacts		
	Appointed transport company to ensure transport in accordance with Regulation 8 of the National Road Traffic Act 93 of 1996, Dangerous Goods.		
	The applicant is not permitted to transport prescribed goods in manner not consistent with the prescriptions, e.g., consignor and consignee responsibilities and prescription found in SANS 10228/29 and international codes for battery transport etc		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Transport in sealed packages that are kept upright, protected from movement damage etc. Additionally transported material must be packaged to ensure no short-circuiting during transportation		
	Transport to prevent excessive vibration considerations as battery internal may be damaged leading to thermal run-away during commissioning		
	Pre-assembled containers will most likely be supplied. These will be fitted with the necessary protective measures by the supplier considering marine and road transport as well as lifting, setting down etc.		
	Route selection to consider possible incidents along the way and suitable response, e.g., satellite tracking, mobile communication, 24/7 helpline response		
	Standard dangerous goods requirements for Hazmat labels, Trem cards, driver trained in the hazards of the load.		
	All necessary good hygiene practices to be in place, e.g., provision of toilets, eating areas, infectious disease controls.	▪ Developer ▪ EO	▪ Operation
	Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others.		
	Awareness training for persons on site, safety		
	Induction to include animal hazards		
	First aid and emergency response to consider the necessary anti-venom, anti-histamines, topical medicines etc		
	Due to isolated locations some distance from town, the ability to treat with anti-venom and extreme allergic reactions on site is critical to mitigate the impacts		
	Acid resistant PPE (e.g., overalls, gloves, eyeglasses) to be specified for all operations in electrolyte areas		
	All operators/maintenance staff trained in the hazards of chemicals on site.		
	Batteries contained, modules contained and all inside a container that acts as bund		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Standard dangerous goods requirements for Hazmat labels		
	All operators/maintenance staff trained in the hazards		
	PPE to be increased (e.g., full-face shield, aprons, chemical suits) for operations that involve opening equipment and potential exposure, e.g., sampling, maintenance		
chronic exposure to toxic chemical or biological agents	The operation and maintenance phase must be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993.	▪ Developer ▪ EO	▪ Operation
	SHEQ policy in place.		
	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.		
	SHE procedure in place, e.g., PPE specified, management of change, integrity monitoring. SHE appointees in place		
	Training of staff in general hazards on site.		
	All necessary health controls/ practices to be in place, e.g., ventilation of confined areas, occupational health monitoring if required and reporting programs in place.		
	▪ Emergency response plan for full operation and maintenance phase to be in place prior to beginning commissioning and to include aspects such as: • appointment of emergency controller, • emergency isolation systems for electricity, • emergency isolation and containment systems for electrolyte, • provision of PPE for hazardous materials response, • provision of emergency facilities for staff at the main office building, • provision of first aid facilities, • first responder contact numbers		
	Solid state batteries sealed, individual batteries in modules which are also sealed, pre-packed in the container		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Maintenance procedures must in place should equipment need to be opened, e.g., pumps drained and decontaminated prior to repair in workshop etc.		
	PPE will be specified for handling battery parts and other equipment on site		
	Training of staff in hazards of chemicals on site.		
	Possible detectors with local alarms if regulated occupational exposure limits are exceeded etc prior to entry for inspection of battery containers		
	Labelling of all equipment.		
	Confined space entry procedures if entering tanks.		
	There need to be careful thought given to procedures to be adopted before entering into the BESS or a container particularly after a BMS shutdown where there may be flammable or toxic gases present, a fire etc.		
	Safety Data Sheets (SDSs) to be available on site		
	Operating manuals to be provided including start-up, shutdown, steady state, monitoring requirements		
	Maintenance manuals with make safe, decontamination and repair procedures		
	Proposed maintenance schedules e.g., checklists for weekly, monthly, annual etc		
	Provided portable equipment for calibration and for testing/verification of defective equipment, e.g., volt/current meters, infrared camera		
Exposure to violent release of kinetic or potential energy	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	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	SHEQ policy in place.		
	A detailed construction Risk Assessment prior to work		
	SHE procedure in place		
	PPE to be specified.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	SHE appointees in place.		
	Contractors safety files in place and up to date		
	SHE monitoring and reporting programs in place		
	Standard construction site rules regarding traffic, reversing sirens, rigging controls, cordoning off excavations etc		
	Civil and building structures to adhere to National Building Regulations and building Standards Act 103 of 1977 SANS 10400 and other relevant codes, and other constructions such as roads, sewers etc also to relevant SANS standards		
	All normal procedures for working at heights, hot work permits, confined space entry, cordon off excavations etc to be in place before construction begins		
	Emergency response plan to be in place before construction begins.		
	Apart from pumps, no major moving parts during operation.	▪ EO ▪ Developer	▪ Operation
	Maintenance equipment to be serviced and personnel suitably trained in the use thereof.		
	Traffic signs, rules etc in place on site.		
	All normal working at heights, hot work permits, confined space entry, cordon off unsafe areas/works etc to be in place		
	Emergency response plan must be present on site		
	Civil design to take seismic activity into account.		
Exposure to electromagnetic waves	Standard maintenance of condition of electrical equipment and safe operating instructions. Ability to shut off power to systems in use on site.	▪ Project Manager ▪ EO ▪ Contractor ▪ ECO	▪ Construction
	If persons are decanting fuels or dealing with other highly flammable materials care must be taken regarding possible static discharge, installations to be suitably designed and maintained.		
	Lightning strike rate in the study area is very high. Outside work must be stopped during thunderstorms.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Lighting conductors may be required for the final installation, to be confirmed during design phase.		
	Ability to shut off power to systems in use on site		
	Codes and guidelines for electrical insulation	▪ EO ▪ Developer	▪ Operation
	Suitable PPE to be specified.		
	Low voltage equipment (e.g., batteries) separated from high voltage (e.g., transmission to grid).		
	Ensure trained personnel and refer to guideline – IEE 1657 – 2018		
	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		
	Software must be kept as update to date as reasonably practicable		
	Consider suitably located Emergency stop buttons for the facility and the other equipment on site		
	PPE to consider static accumulation for entering the facility, and particularly the battery containers especially after a high temperature shut down where there could possibly be flammable materials		
	The procedures for responding to alarm and auto shut down on containers, needs to consider that there may be a dangerous environment inside and how to protect personnel who may enter to respond		
	Lightning strike rate in proposed development area is very high. All outside work must be stopped during thunderstorms.		
	Lighting conductors may be required for the installation, to be confirmed during design		
Emissions to air	Use dampening on roads etc. as per normal construction practices.	▪ Contractor ▪ ECO	▪ Construction
	Use specified PPE (dust masks) for specific construction work.		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Container could be treated as entering a confined space and similar procedures could be in place, e.g., do not enter alone, gas testing prior to entering, ensure adequate ventilation	▪ EO ▪ Developer	▪ Operation
Emissions to water	Normal construction site practices for preventing and containing fuels/paint/oil etc spills must be practiced	▪ Contractor ▪ ECO ▪ EO	▪ Construction ▪ Operation
	Bunding under any temporary tanks, curbing under truck offloading areas and sealed surfaces (e.g., concrete) under truck parking area is particularly important		
	Spill clean-up procedures to be in place before commencing construction		
	Sewage and any kitchen liquids - containment and suitable treatment/disposal e.g. septic tank and soak away system		
	Waste management plan to be in place e.g., liquid waste treatment or suitable removal and disposal will be provided.		
	The National Environment Management Act (NEMA) has a list of substances with Reportable spill quantities, ensure compliance with this.		
Emissions to earth	There will be packaging materials that will need to be disposed of after the entire system is connected and commissioned as well as after regular maintenance	▪ Contractor ▪ ECO	▪ Construction ▪ Operation
	There will need to be waste segregation (e.g., electronic equipment, chemicals) and management on the site		
waste of resources e.g., water, power etc	Water usage to be monitored on site during construction	▪ Contractor ▪ ECO	▪ Construction ▪ Operation
	Handling protocols to be provided by battery supplier.		
	End of Life plan needs to be in place before any battery containers enter the country as there may be damaged battery unit from day 1.		
	Water management plan and spill containment plans to be in place.		
	Adopt all mitigation measures as listed in the Visual Impact Assessment study		
	Investigate end of Life plan for solid state batteries - reuse / recovery / reconditioning.	▪ Contractor ▪ ECO	▪ Operation

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
		▪ EO	
Financial risk	Design by experienced contractors using internationally recognized and proven technology. Project management with deviation monitoring.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction ▪ Operation
Security risk	Fencing around electrical infrastructure to SANS standard and Eskom Guidelines.	▪ Contractor ▪ ECO ▪ Site manager	▪ Construction ▪ Operation
	The hazardous nature of the electrical and battery equipment must be clearly indicated – e.g., Skull and Cross Bones or other signs		
	Isolated location both helps and hinders security		
	Night lighting to be provided both indoors and outdoors where necessary		
cyber security	Cyber security needs monitoring.	▪ Developer ▪ EO	▪ Operation
	Remote access to system needs to be negotiated and controlled		
	Password controls, levels of authority etc. Protection of the National Electricity Grid from Cyber-attacks accessing through the BESS		
	Cyber emergency procedures – must be in place prior to commissioning		
Security risk and Emergencies	Emergency procedures need to be practiced prior to commencement of construction.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction ▪ Operation
	If batteries are stored at 50% charge, thermal runaway can happen while in storage on site waiting for installation. In addition, if involved in an external fire thermal run away can happen even with uncharged batteries. Except during shipping, ideally the units must 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		
	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		

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
	Storage of spare batteries (e.g., in stores on site or elsewhere) also needs to consider possible thermal runaway.	▪ Eo ▪ Developer	▪ Operation
	Escape doors must swing open outwards and not into the container. Doors must be able to be hooked open when persons are inside the container, i.e. they must not be automatically self-closing.		
Legal impacts	Use only internationally reputable battery suppliers who comply with all known regulations/guideline at the time of purchasing.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction ▪ Operation
	Ensure only state of the art battery systems are used and not old technologies prone to fires/explosions etc..		
Fires, explosions, toxic smoke, large spills, traffic accidents, equipment/structural collapse.	Emergency procedures need to be practiced prior to commencement of construction.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction
	If batteries are stored at 50% charge, thermal runaway can happen while in storage on site waiting for installation. In addition, if involved in an external fire thermal runaway can happen even with uncharged batteries		
	Except during shipping, ideally the units must 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		
	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 runway event on a truck with a container that stops in a small town for driver refreshments		

7.21 BUTTERFLY HABITATS (INVERTEBRATES)

Table 7-22 – Invertebrates: EMPr Mitigation and Management Measures

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
Impact Management Outcome: ▪ 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: ▪ 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.			
Direct impacts - Direct losses of sensitive species (Threatened, Near Threatened, Rare, Declining or Protected species) during the construction phase.	▪ Mitigation will entail avoiding losses of, and providing protection buffers around highly sensitive habitat, limiting development to areas of lower sensitivity. Extent of impact should be limited to areas of lower sensitivity. ▪ Ensuring absence of sensitive species through final walkdown and periodic monitoring.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction
Direct impacts - Loss of habitat/ areas that are considered suitable/ highly suitable for sensitive butterfly species, including habitat losses occurring because of the removal of vegetation within development footprints,	▪ Only minor and localised losses are anticipated considering the proposed design. Habitat types of elevated sensitivity/importance on a local/regional scale were already excluded from the development since the scoping phase. General mitigation measures include preventing, or strict control of construction/operational activities within/proximal to these parts of the landscape, while development and implementation of biodiversity monitoring and mitigation programme will guide activities. ▪ Implementation of biodiversity monitoring and mitigation programme.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
access and maintenance roads, underneath powerlines, within tower footprints, etc.			
Indirect Impact - Persistent and exacerbated deterioration of sensitive, natural, range restricted, or untransformed habitat that may be present in the immediate or near vicinity to the development footprints, road fringes (fringe effects), specifically relating to habitat types considered suitable/ highly suitable for sensitive butterfly species. This also refers to effects such as increased dust (e.g., loss of nectar sources), and contamination of water and soils through rubble, petroleum fuels, pollutants, etc.	▪ Sensitive areas should be excluded from the development, also with reference to the implementation of a suitable buffer around these areas. No construction/ operational activity should be allowed within these areas.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction
	▪ Losses of (sensitive, untransformed) habitat outside development footprints should be avoided.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction
	▪ Decline in habitat status of surrounding areas should be avoided through containment of activities.	▪ Contractor ▪ ECO ▪ Developer	
	▪ Erosion and pollution prevention.		
	▪ Restrict development to footprint areas only.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction
	▪ Development and implementation of biodiversity monitoring and mitigation programme.		
Indirect Impact - Disruption of ecological	▪ Ensure continued and normal ecological functionality of remaining natural habitat surrounding the development. Ensure that no unintended impacts occur, e.g. changed fire regimes.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction

Activity/Aspect	Impact Management Actions/Measures	Responsible Person	Priority Timeframe
processes, services, ecological functionality	▪ Minimise disruption of ecological functions, e.g. surface water flow, prevent erosion and fires, ensure continued ecological corridor functionality.		
Increased disruption of local movement and migration patterns, ecological interaction, and ecological processes	▪ Ensuring minimal loss of high sensitivity areas, natural habitat. ▪ Ensure ecological connectivity and functionality. Develop and implement a biodiversity monitoring programme. ▪ Employ immediate and comprehensive rehabilitation of impacts outside development footprints.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction
Biodiversity Management Plan	▪ A Biodiversity Management Plan (BMP) must be developed for the Heidelberg Copper Butterfly and associated grassland habitat prior to the start of construction. ▪ As part of the BMP, a fire management plan must establish a controlled, mosaic burning regime designed to maintain open Highveld grassland structure, preventing both excessive fire frequency and woody shrub/bush encroachment. ▪ An active Alien Invasive Plant (AIP) eradication program must be developed to target invasive flora that threaten *Clutia pulchella* host plant stands and larval habitats. ▪ A monitoring programme must be developed. This should include annual or biennial population and habitat surveys to be conducted during the peak flight season (January–February) throughout the operational lifespan of the WEF to track population trends and evaluate BMP effectiveness.	▪ Contractor ▪ ECO ▪ Developer	▪ Construction ▪ Operation

8 MANAGEMENT PLANS

Several 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) (Section 8.1);
- Waste Management Plan (Section 8.2);
- Hazardous Substance Management Plan (Section 8.3);
- Fire Management Plan (Section 8.4);
- Alien Invasive Plant Management Plan (Section 8.5);
- Plant Rescue and Protection Plan (Section 8.6);
- Re-vegetation and Habitat Rehabilitation Plan (Section 8.7);
- Stormwater Management Plan (Section 8.8);
- Erosion Management Plan (Section 8.9);
- Traffic and Transport Management Plan (Section 8.10);
- Fauna Management Plan (Section 8.11);
- Avifaunal Management Plan (Section 8.12);
- Soil Management Plan (Section 8.13);
- Heritage and Palaeontological Management Plan (Section 8.14);
- Grievance Mechanism (Section 8.16);
- HIV/AIDS Management Plan (Section 8.18); and
- Security Policy (Section 8.19).

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 Emergency Response Plan (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, the project company (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 the project company, 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 EMPr.

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.

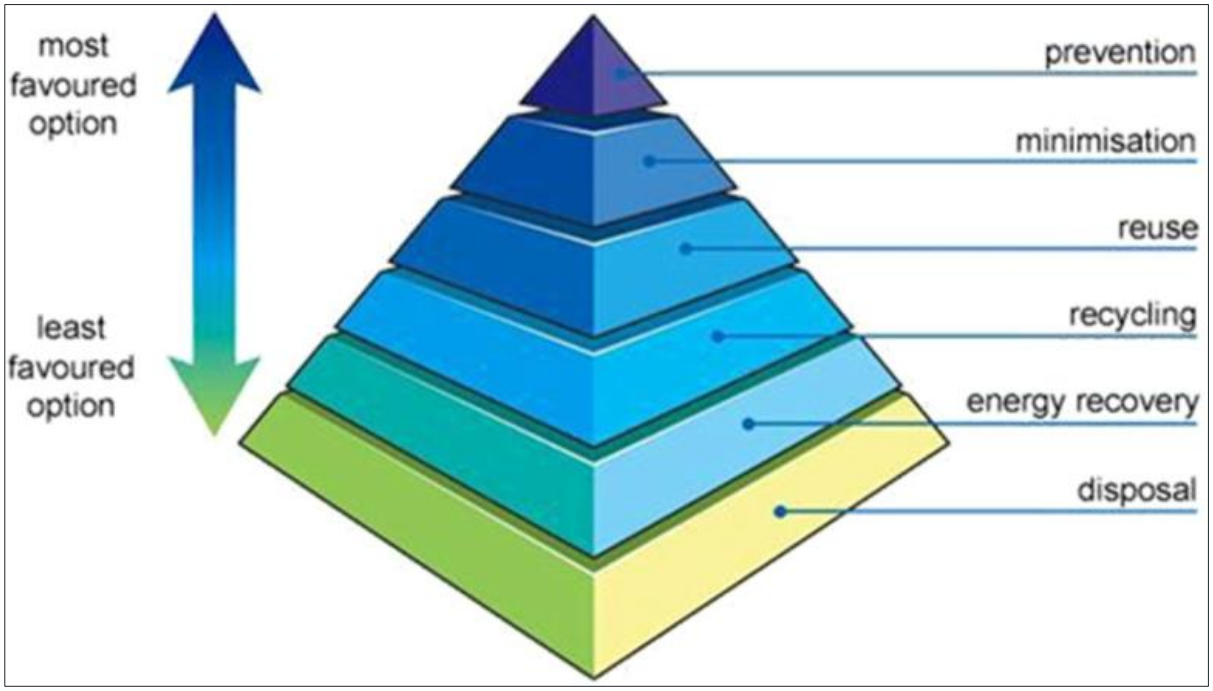


Figure 8-1- Waste Hierarchy

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	▪ Fuel and oil spillages can be a source of contamination of water sources and the soil. Management options include: • 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	▪ PPE can be contaminated during handling of hydrocarbons. Management options include: • 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	▪ General waste (inorganic matter) can be disposed of as per normal and form part of the municipal waste management system. Management options include: • 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	▪ Food waste is generated as site personnel take their meals on the construction site. Management options include: • 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 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 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 MSDSs files and applicable regulations and safety instructions.
- Chemical and hydrocarbon storage facilities shall be covered to prevent rainfall ingress into secondary containment units and well-ventilated
- Any storage and disposal permits/approvals which may be required must be obtained, and the conditions attached to such permits and approvals will be compiled with.
- An effective monitoring system must be put in place to detect any leakage or spillage of all hazardous substances during their transportation, handling, installation and storage.

SPILL AND LEAK MANAGEMENT AND PREVENTION

- In the event of a major spill or leak of contaminants, the relevant authorities 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 MSDSs 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.

8.5.1 APPROACH

Alien Invasive Species (AIS) establishment and colonisation can be highly dynamic. New sites can be rapidly colonised, and new alien species can abruptly emerge and become problematic. It is therefore

important that the AIS Control and Eradication Plan be viewed as a dynamic management framework, that in all likelihood, will need to be revised and updated during the various phases of the Project based on-site conditions and the findings of regular monitoring.

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.

8.5.2 MECHANICAL CONTROL

- Mechanical control involves the physical removal of the alien plants. Hand pulling is highly effective against young seedlings that are shallow rooted and that occur in low densities (Coetzee, 2005);
- For larger or mature plants, the physical cutting back or felling (cut stump) of the plant is most effective. This can be done using machetes, axes, brush cutters or saws. In many instances, felled plants will coppice, so it is important that follow-up cutting back is coupled with the application of herbicide to kill any re-growth (Coetzee, 2005). The application of herbicide on cut stumps immediately after felling is an effective means of preventing coppicing;
- Ring-barking is also effective against mature alien trees. This method relies on the removal of bark, including the cambium layer, around the trunk of a tree using an axe or a saw. The ring-barked area should also be treated with an herbicide (Coetzee, 2005); and
- Frilling is similar to complete ringbarking and involves severely damaging the bark of a tree. Repeated cuts are made into a section of bark with an angled strike of an axe or slasher. The resulting ‘frill’ is then treated with an herbicide (Coetzee, 2005).

8.5.3 CHEMICAL CONTROL

Chemical control involves the application of a suitable herbicide in order to kill the target plant. Herbicides are classed as follows:

- Contact herbicides are those that affect the plant part directly sprayed with the herbicide (Bromilow, 2010);
- Systemic herbicides are those that get absorbed by the plant and are transported throughout the plant’s tissues. Systemic herbicides may have a long residual action - acting for months to years, or short residual action - acting over a couple of days (Bromilow, 2010); and
- Selective herbicides target specific plant species or plant groups (dicotyledonous vs monocotyledonous plants), while non-selective herbicides will harm or kill any plant they come into contact with (Bromilow, 2010).

All herbicide mixtures should be prepared and used in strict compliance with the manufacturer’s instructions. The chemical concentrate (herbicide) will generally be added to water or a hydrocarbon solvent at a concentration recommended by the manufacturer for a specific application. Many herbicides are toxic to humans and wildlife so they must be handled and used responsibly, and with the requisite personal protective equipment (PPE).

Liquid herbicides are typically applied using a suitable water sprayer or paint brush, to which a dye is often added to distinguish plants that have been treated. Herbicide is sprayed or painted directly onto the foliage or exposed stumps and stem notches of the target plants.

Alternatively, herbicides can also be applied to the soil in the form of pellets. These are gradually broken down, assimilated into the soil and eventually taken up by plant roots. Another application method, specific to larger plant specimens, involves the insertion of an herbicide plug into the base of a target plant.

8.5.4 SCHEDULING

General considerations for the implementation of AIS control:

- AIS control should commence during the Project's construction phase;
- AIS control should be conducted during the middle of the wet/growing season (i.e., November to January) to ensure the emergence/visibility of most plants, but ideally prior to mass plant seeding and dispersal;
- All plants growing at a particular site should be treated/controlled, before moving to the next site;
- After the initial control phase, annual follow-up treatments should be conducted. These should be:
    - Informed by the findings of monitoring;
    - Conducted during the middle of the wet/growing season;
    - Target new emergent seedlings and/or any coppice growth.

Scheduling is largely contingent on available funds. However, considering the relatively small size of the anticipated disturbance footprints and the likely dominance of small herbaceous species, it is expected that AIS control can be implemented across all management units during the first two years of roll-out. Thereafter, the scheduling of where to implement control should be determined based on the findings of monitoring.

8.5.5 RESPONSIBILITIES, MONITORING AND REPORTING

- Appointment of Implementation Officer:

The implementation of the AIS Control and Eradication Plan can either be outsourced to a suitably experienced service provider or conducted internally. If the decision is taken to implement the plan internally, it is important that a trained, experienced individual be appointed to manage or oversee the implementation process. It is envisaged that the AIS Implementation Officer should have the following attributes:

- Experience in managing teams of workers;
- Practical knowledge in the use of clearing equipment, such as axes, slashers, saws, as well as in the mixing and application of herbicides;
- Basic understanding of plant identification, with particular training in recognising AIS;
- Ability to conduct monitoring and draft monitoring reports; and
- Ability to refine or adapt treatment methods to improve effectiveness.

- Recommended AIS Monitoring Programme:

Monitoring is a critical component of AIS management. By gauging the efficacy of control methods, monitoring can be used to compare historic and current control methods, highlight the need/

desirability of modifying or improving control methods, and identify new sites of infestation or emergent alien species. It is therefore recommended that:

- Monitoring should be conducted on an annual basis and during the mid- to late wet/growing season;
- The AIS Implementation Officer or an Environmental Control Officer (ECO) should be responsible for conducting monitoring;
- Monitoring should focus on:
- Treated areas to determine the efficacy of control actions and highlight the need for follow-up treatments;
- Areas that have been or are being disturbed by earth works, as this is where alien species establishment is most likely; and
- Riparian/wetland habitat.

- Status Reporting and Plan Adaptation

Data collected during monitoring should be presented in annual monitoring reports. The reports should include the following information, at a minimum:

- Comparisons with previous monitoring data;
- Identification of future target sites for AIS control;
- Recommendations to improve control actions; and
- A photographic record of treated areas to use for long term comparisons.

8.5.6 MONITORING PLAN

8.5.6.1 Extracted from the Agricultural potential report

- All erosion control and water storm water management systems and infrastructure are to be monitored in and out of the rainy season. Maintenance requirements are to be set, executed and monitored on a continual basis.
- Monitoring of the potential establishment and spread of Alien Invasive Plants (AIP's) must be done during all phases of the project on a bi-annual basis. Post treatment monitoring of AIP control measures should happen as often as such control is applied. Revisit controlled sites at least twice a year to monitor the re-emergence of any treated AIPs.

8.5.6.2 Extracted from the Terrestrial Biodiversity specialist report

Table 8-2 – Recommended additional monitoring measures

Ref. No.	Category	Method for monitoring	Time period	Frequency of monitoring	Mechanism for monitoring compliance	Responsible person
1. Construction and Operational Phases						
1.1	Alien invasive species	▪ Annual on-site alien invasive species monitoring should be conducted. Monitoring should focus on: • All sites disturbed during the construction phase; • Wetland areas adjacent to construction sites; and ▪ Monitoring should assess species type and density, and these data should inform the scope of ongoing alien invasive species control.	Wet/growing season	Annual	Annual Monitoring Report	Project Manager
2. Decommissioning Phase						
2.1	Alien invasive species	▪ Alien invasive species monitoring should be conducted on an annual basis during decommissioning and annually for a five-year period following decommissioning. Monitoring should focus on: • All sites disturbed during decommissioning; • Watercourses adjacent to development sites; and ▪ Monitoring should assess species type and density, and these data should inform the scope of ongoing alien invasive species control.	Wet/growing season	Annually during decommissioning and for a five-year period after decommissioning	Annual Monitoring Report	Facility Manager

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 EMPr to reduce the impact of the development of the project on listed and protected plant species and their habitats, and to provide guidance on search and rescue of species of conservation concern.

8.6.1 PROTECTED FLORA SPECIES OCCURRING ON-SITE AND THE PERMIT APPLICATION PROCESS:

- Prior to vegetation clearing, the ECO for the Project should traverse on foot the marked development footprint in a grid-like fashion. All protected plants occurring within the footprint and that will be impacted by vegetation clearing should be identified and their number (population size) and co-ordinates recorded;

8.6.2 RESCUE AND RELOCATION PROCEDURE:

The following points summarise the key steps to manually rescue protected plants from the development footprints and relocate them to a safe adjacent location:

- Individual plants that require rescuing should be extracted from the ground using a gardening pick and a shovel. Efforts should be made to minimise damage to plant roots and or bulbs during the extraction process;
- Rescued plants should then be replanted in newly excavated holes at nearby/adjacent locations of similar habitat (e.g., plants rescued from wetland habitat, should be relocated to adjacent areas of wetland habitat);
- The soil/rock medium at the bottom of each newly excavated planting hole should be loosened prior to planting to facilitate root penetration; and
- Where possible, each relocated plant should also be watered immediately after out-planting to promote acclimation and survival.

8.6.3 RECORD KEEPING:

- It is recommended that a record of all relocated protected plants should be kept in order to monitor plant survival and thereby inform improvements to any future relocation process;
- Information that should be documented in the record include:
  - Species name;
  - Number of relocated plants;
  - Co-ordinates of relocated plants; and
  - Date of relocation.

8.6.4 MITIGATION AND MANAGEMENT MEASURES:

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 ESCO.
- 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 EMPr 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 or 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.

8.7.1 TIMEFRAMES FOR IMPLEMENTATION:

- Rehabilitation actions should be implemented during the rainy season, as soon as the construction phase ends, and all construction vehicles and equipment have been removed from the site;
- After initial rehabilitation and revegetation efforts, it may be necessary to implement periodic follow-up or remedial treatment at certain sites during the operational phase of the Project in order to improve vegetation cover and stability. The need for this, should be informed by monitoring; and
- During the decommissioning phase of the Project, it will also be necessary to conduct rehabilitation and revegetation at all sites where Project infrastructure has been dismantled and removed.

8.7.2 RECOMMENDED REHABILITATION MEASURES:

- Topsoil Stripping and Stockpiling:
  - During the construction phase, topsoil should be stripped from the development footprints and stockpiled locally, i.e., adjacent to construction footprints;
  - To ensure the continued viability of the seedbank contained within stripped topsoil, the topsoil stockpiles should not exceed 1.5 m in height and should not be compacted; and
  - If required, topsoil stockpiles should be kept clear of AIS.
- Site Stabilisation and Preparation:
  - During rehabilitation, all compacted soils at disturbed sites should be ripped or disced to loosen the soil, increase water infiltration, promote seed penetration and enhance germination potential;
  - All disturbed sites should also be correctly contoured and stabilised to reduce erosion potential. At sites where there is a high potential for erosion, such as steep slopes, additional anti-erosion measures, such as the placement of geotextiles, should be considered to bind soil and encourage vegetation growth; and
  - Stripped topsoil should then be evenly applied across disturbed sites to provide a productive growth medium.

8.7.3 ACTIVE REVEGETATION OF DISTURBED SITES

- To facilitate the timeous establishment of suitable vegetation cover, it is recommended that active grass seeding be conducted;
- A grass seed mix should be broadcast across the top soil layer and lightly integrated into the top soil layer; and

- To facilitate spreading/broadcasting of seed across the disturbed area, it is recommended that the grass seed mixture should be blended with a spreading agent, such as river sand, bran, or a mixture of agricultural lime and granular fertilizer, at a ratio of 1:1. It is important that seed and spreading agent are blended evenly to ensure a uniform mix of seed in the material.

8.7.4 RECOMMENDED REHABILITATION MONITORING PROGRAMME

The ongoing monitoring of rehabilitated sites is important to assess the effectiveness of the implemented rehabilitation measures and to inform revisions or improvements thereof. It is recommended that monitoring should be conducted on an annual basis during the mid- to late wet/growing season until such a time as monitoring indicates that rehabilitation has been successful. Monitoring should focus on all rehabilitated sites, with a focus on:

- Vegetation coverage;
- General species composition (indigenous vs alien/exotic species and pioneer vs subclimax and climax species);
- Presence of listed AIS; and
- Evidence of erosion.

The findings of monitoring should guide any revisions or improvements of the rehabilitation procedures.

8.7.5 PERFORMANCE TARGETS

Key performance targets at each site where rehabilitation has been implemented include:

- No substantive erosion or areas denuded of vegetation cover;
- Viable self-sustaining vegetation coverage of locally occurring indigenous grasses; and
- Minimal- to no establishment of listed AIS.

8.7.6 MITIGATION AND MANAGEMENT MEASURES:

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 EMPr 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.

8.9.2 MANAGEMENT PLAN FOR PLANNING AND DESIGN PHASE – AGRICULTURAL POTENTIAL

Table 8-3, Table 8-4 and **Table 8-5** address various EMPr inputs for the planning, construction, operational and decommissioning phases of the proposed project.

Table 8-3 – Management plan for the planning and design phase

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of development sites.	Design an effective system of storm water run-off control, where it is required – i.e. any points where run-off water might concentrate. The system must effectively collect and safely disseminate any run-off water from all project surfaces and prevent any potential down-slope erosion.	Include the storm water run-off control system in the engineering designs of the project.	Once-off during the design phase.	Holder of the EA.

Table 8-4 – Management plan for the construction phase

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of development sites.	Implement an effective system of storm water run-off control, where it is required - i.e. any points where run-off water might concentrate. The system must effectively collect and safely disseminate any run-off water from all project surfaces and prevent any potential down-slope erosion.	Undertake a periodic site inspection to verify and inspect the effective construction and maintenance of the storm water run-off control system. Record the occurrence of any erosion on site or down-slope for re-design and corrective action to be implemented.	After any heavy rainfall events but at least every 2 months during the construction phase.	Environmental Control Officer (ECO)
Erosion	Ensure that vegetation clearing does not pose a high erosion risk.	Maintain vegetation cover where possible and facilitate re-vegetation of denuded areas to stabilize disturbed soil against erosion.	Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	Every 4 months during the construction phase	Environmental Control Officer (ECO)

Topsoil loss	Ensure the minimization of topsoil loss.	Where an activity will mechanically disturb deeper soil levels, topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation the stockpiled topsoil must be used as soon as possible after stripping and be evenly spread over the disturbed surface.	Record GPS positions of all occurrences of subsoil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area and counter erosion measures are implemented.	As required, whenever areas are disturbed.	Environmental Control Officer (ECO)

Table 8-5 – Management plan for the operational phase

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of operational sites.	Effectively maintain the storm water run-off control system.	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or down-slope. Immediate reparations must be done if any part of the storm water control system should fail.	Bi-annual monitoring; immediate action in the event of failure.	Facility Environmental Manager
Erosion	Rehabilitate and re-vegetate denuded areas to stabilise soil against erosion.	Re-seed rehabilitated surfaces with locally indigenous grass and other herbaceous species.	Undertake a periodic site inspection to record the successional progress of all rehabilitated surfaces.	Bi-annually	Facility Environmental Manager

Table 8-6 – Management plan for the decommissioning phase

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Aspect: Protection of soil resources					
Erosion	Ensure that soil disturbances and existence of hard surfaces do not cause erosion on or down-slope of decommissioned infrastructure.	Effectively maintain the storm water run-off control system during and after decommissioning.	Undertake a periodic site inspection to verify and inspect the effectiveness and integrity of the storm water run-off control system and to specifically record the occurrence of any erosion on site or down-slope. Immediate reparations must be done if any part of the storm water control system should fail.	Every 2 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.	Environmental Control Officer (ECO)
Erosion	Ensure that vegetation clearing does not pose a high erosion risk.	Maintain vegetation cover where possible and facilitate re-vegetation of denuded areas to stabilize disturbed soil against erosion.	Undertake a periodic site inspection to record the occurrence of and re-vegetation progress of all areas that require re-vegetation.	Every 4 months during the decommissioning phase, and then every 6 months after completion of decommissioning, until final sign-off is achieved.	Environmental Control Officer (ECO)

Impact	Mitigation / management objectives and outcomes	Mitigation / management actions	Monitoring		
			Methodology	Frequency	Responsibility
Topsoil loss	Ensure the minimization of topsoil loss.	Where an activity will mechanically disturb deeper soil levels, topsoil should first be stripped from the entire surface to be disturbed and stockpiled for re-spreading during rehabilitation. During rehabilitation the stockpiled topsoil must be used as soon as possible after stripping and be evenly spread over the disturbed surface.	Record GPS positions of all occurrences of subsoil disturbance (e.g. excavations). Record the date of topsoil stripping and replacement. Check that topsoil covers the entire disturbed area and counter erosion measures are implemented.	As required, whenever areas are disturbed then every 6 months after completion of decommissioning, until final sign-off is achieved.	Environmental Control Officer (ECO)

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 Common Collector Substation and 400kV grid connection project.

8.11.1 PRINCIPLE FOR MANAGING IMPACTS ON FAUNA

8.11.1.1 SNAKE FIND AND HANDLING:

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

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

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

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

8.11.1.2 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-though over the area accompanied by the EO or ECO. The objective is to identify any sensitive habitats including potential for species of conservation interest

(i.e. to consider the presence of any rare species of fauna, but establish possible risk of snake bites; etc.) that may be directly or indirectly affected by the proposed works.

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

LIMIT THE DEVELOPMENT FOOTPRINT

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

LIMIT DISTURBANCE

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

8.11.2 INSPECTIONS AND MONITORING

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

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

8.11.3 TRAINING

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

Examples of Toolbox Talks include:

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

8.12 AVIFAUNAL MANAGEMENT PLAN

All impacts on avifauna can be mitigated to an acceptable level of very low, low and moderate environmental impact significance through the implementation of the mitigation hierarchy of avoidance, minimisation and mitigation of residual impacts. Based on the above, the proposed development is not expected to result in unacceptable negative impacts on avifauna and can be authorised if the recommended mitigations are included in the project-specific Environmental Management Programme as per the wording in **Table 8-7** below.

Table 8-7 – Mitigation measures to be included in the Environmental Management Programme

Impact Management Action	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
Demarcate disturbance footprint during construction, to the minimum practically possible to minimise disturbance and habitat loss. All areas outside of the disturbance footprint are No Go areas.	▪ Developer's Project Manager (DPM) / Developer Site Supervisor (DSS) / Developer Environmental Officer (dEO) / Contractor / ▪ Contractor's Environmental Officer (cEO)	Demarcate disturbance footprint with construction tape or other appropriate effective means. Implement a strict low speed limit and control noise, dust and pollution.	Pre-construction phase	▪ Environ-mental Control officer (ECO) ▪ cEO	Before commencement and monthly throughout construction phase. Ongoing through operation.	Disturbance footprint is clearly demarcated and areas outside of disturbance footprint are undisturbed. Speed limit is clearly marked and enforced across disturbance area.
Keep vegetation clearing within the development footprint to the minimum practically possible to minimise habitat loss. Indigenous vegetation which does not interfere with the development must be left undisturbed.	▪ DSS ▪ dEO ▪ Contractor ▪ cEO	Demarcate clearance footprint with construction tape or other appropriate effective means	Construction phase	▪ ECO ▪ cEO	Before commencement and monthly throughout construction phase	Areas of indigenous vegetation are demarcated and undisturbed.
Breeding sites of any avian species as identified by an avifaunal specialist within the disturbance footprint must be kept intact and disturbance to breeding birds must be avoided.	▪ DPM ▪ dEO/cEO ▪ Avifaunal specialist	Identified nests and breeding site no-go areas must be demarcated and indicated on a map. Avifaunal specialist to undertake an avifaunal walkthrough of the development footprint and nest search of the PAOI to identify any new SCC	▪ Design phase ▪ Once-off within 4 weeks prior to commencement of Construction. ▪ Once-off within 4 weeks prior to commencement of Decommissioning.	▪ DPM ▪ ECO ▪ cEO	Monthly during construction phase. Monthly during decommissioning phase.	The Preferred Layout as per the EIA Report is authorised. Avifaunal walkthrough report is kept on file. Map of breeding sites is displayed on site. Documentary/ photographic evidence of complying with any

Impact Management Action	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		breeding sites. This must be conducted within one calendar month prior to commencement of construction. All recommended additional mitigation measures as a result of the walkthrough must be implemented, which may include monitoring of active SCC nests during the construction phase. Identified breeding sites must be clearly indicated on a map of the site and all staff must be made aware of these areas.				additional mitigation measures recommended by the specialist in the walk-through report are provided.
Avifaunal specialist to train ECO, cEO/dEO in the identification of SCC potentially occurring on site.	▪ ECO ▪ cEO/dEO ▪ Avifaunal contractor	Avifaunal specialist to undertake 1 hour training session with ECO and cEO/dEO on site prior to construction and prior to decommissioning activities.	▪ Once-off prior to commencement of construction/ decommissioning phases	▪ ECO ▪ cEO	Monthly during construction phase	Register of training sessions kept on file.
Breeding sites of SCC must be left intact and undisturbed.	▪ cEO/dEO ▪ ECO ▪ Avifaunal specialist	Should SCC be found breeding within the disturbance footprint prior to or during construction or decommissioning, all work within 1 km of the breeding site must be halted until an avifaunal specialist has	▪ Pre-construction, construction and decommissioning phase	▪ dEO / cEO ▪ ECO	Ongoing Monthly	Avifaunal walkthrough report is kept on file. All breeding sites of SCC are clearly demarcated as per the instruction of the avifaunal specialist

Impact Management Action	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		been contacted and issued further instructions. Any resulting recommendation by the avifaunal specialist to protect the breeding SCC must be implemented. Breeding sites of SCC are to be clearly demarcated as per the instruction of the avifaunal specialist.				with photographic evidence provided. An avifaunal specialist's recommendation is on file for each breeding site. Documentary / photographic evidence of complying with any additional mitigation measures recommended by the avifaunal specialist is provided.
Minimise risk of avian mortalities	DPM	The Preferred Layout as per the EIA Report is authorised. Any layout amendments are signed off by an avifaunal specialist. An avifaunal specialist is to be appointed as the project's consulting specialist for the implementation of post-authorisation mitigation measures, prior to the commencement of construction. The Avifaunal Post-Construction Monitoring and Management Plan as	▪ Design / pre-construction, construction, operational and decommissioning phases	ECO	Once-off Monthly until compliance is reached, bi-annually thereafter.	The authorised layout is constructed. Documentary / photographic evidence of compliance. Avifaunal specialist statement on file signing off on any sections of unburied low and medium voltage powerlines. Post-construction Monitoring Reports are on file.

Impact Management Action	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		per Annexure E of the EIA Phase Avifaunal Impact Assessment is to be fully implemented prior to the commissioning of turbines, including blade patterning, observer-based shut-down-on-demand (SDOD), livestock/wildlife carcass management, and the covering of water reservoirs. Post-construction monitoring as per Annexure E must start prior to the commissioning of turbines and include a search for existing carcasses in all search plots. Minimise outdoor lighting needed to operate the substation / switching station to the maximum extent practicable. Minimise perching opportunities on pylons by installing anti-perching devices, or other deterrents wherever possible. All electrical infrastructure is to be of bird-friendly insulated design in line with the latest Eskom				

Impact Management Action	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		Technical Standards with a phase-phase and phase-earth clearance of at least 1.8 m, with any exposed electrical infrastructure within the substations also of a bird-friendly insulated design, and with bird perches installed on monopole pylons where technically feasible. Powerline cables are to be as thick and low as permissible by Eskom's Technical Standards. All internal powerlines (other than the 132 kV grid connection powerlines) must be buried. If this is technically impossible, the project's appointed avifaunal specialist must be consulted and must sign off on the length and design of the overhead section(s). All powerlines must be monitored and maintained by the operator as per Annexure E. All fencing must be of a single-fence design to avoid avian species getting				

Impact Management Action	Implementation			Monitoring		
	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Person	Frequency	Evidence of Compliance
		trapped between double-fencing. Reduce the number of rock piles during construction to the possible minimum and remove artificial rock piles following construction. Pylons on all adjacent powerlines (new and existing) are staggered as much as technically possible.				

8.12.1 AVIFAUNAL POST-CONSTRUCTION MONITORING AND MANAGEMENT PLAN

Post-construction monitoring is conducted in order to determine the actual impacts of the operational development on avifauna, and if any additional (adaptive) mitigation measures are required to minimise actual impacts, and to inform future assessments (Jenkins, et al., 2015).

Post-construction monitoring consists of three parts: (1) flight activity monitoring (repeating pre-construction monitoring), (2) identifying and describing impact receptors and (3) quantifying bird mortalities.

Post-construction monitoring must be initiated prior to the commencement of operations and must be in place and start in the week of commissioning of the operational phase. An avifaunal specialist consultant must be appointed as the project's consulting specialist prior to construction for the implementation of post-construction monitoring and consultation.

The post-construction monitoring plan may require to be updated by the appointed specialist in order to always align with the latest published Birdlife SA Guidelines (Jenkins, et al., 2015) and information available at the time.

1. Flight Activity Monitoring

   Flight activity monitoring must repeat pre-construction monitoring for a period of at least two years, in order to determine the impact of disturbance and displacement on avian species. The same methodology is to be used as during pre-construction monitoring, including survey locations, timing and annual effort. Refer to Annexure B of the EIA Phase Avifaunal Impact Assessment Report for the survey details. As per the Best Practice Guidelines (Jenkins, et al., 2015), in order to provide comparable results and avoid observer bias, the surveys should be conducted under the same environmental conditions and by the same observer teams, as far as practically possible, even if the avifaunal specialist has changed. A determination by the appointed specialist must be made within one month following the final survey in the second year, if activity monitoring is to continue, or at which interval it will be repeated.

2. Identifying and Describing Impact Receptors
   Since the construction and operation of the development could change avifaunal habitats (impact receptors), these require to be mapped within the Project's Area of Influence (PAOI) with changes monitored, by the project's appointed avifaunal specialist. Changes must be monitored once a year at the same time every year, using the same approach used during the reconnaissance survey. Refer to Annexure B of the EIA Phase Avifaunal Impact Assessment Report for details.
3. Quantifying Avian Mortalities

   The primary aims of monitoring fatalities are to (a) Estimate the number and rate of fatalities at a WEF, (b) describe the species composition of fatalities (as well as the age and sex where possible), (c) record and document the circumstances and site characteristics surrounding avian fatalities at turbines and ancillary infrastructure of the WEF (this could aid in understanding the cause of fatalities, and hence possible mitigation), and (d) mitigate impacts by informing final operational planning and on-going management (Jenkins, et al., 2015).

3.1 Carcass Searching

A team of carcass searchers must be employed and trained prior to the commissioning date of the facility. A team with trained detection dogs is to be used, if available. The search area must have a

minimum radius of 75% of the turbine tip height, i.e. if a 280 m turbine is built, the search area must be at least 210 m wide. The search area should remain the same size throughout the lifetime of the turbine and should be searched by means of transects, no further than 10 m apart if visibility is good. In taller vegetation this distance should be decreased. The transect distance can be adjusted by the dog handler if detection dogs can be used. Human carcass searchers must walk transects slowly and methodically and search for carcasses, feathers, body parts and injured birds. If it is only possible to search a subset of the search area, this must be clearly mapped and recorded. A difference in visibility within a search area must also be clearly mapped for each turbine. Every turbine should be searched at least every two weeks. This interval must be adjusted based on the results of scavenger removal trials. 30% of all turbines (selected randomly) must be searched in an interval that is shorter than the average scavenger removal time. Overhead powerline corridors, and guyed masts must be searched every month. Surveying the WEF and its grid connection for fatalities must continue for the lifetime of the facility.

To accurately estimate the actual fatality rates the efficiency of carcass searching has to be determined by the means of conducting searcher efficiency trials (the probability of a carcass being detected), and scavenger removal trials (the rate at which scavengers remove carcasses), and then combining the data to estimate fatality rates. These must be repeated twice a year to account for season for the duration of on-going carcass searching. Separate estimates are to be made for small birds, medium-sized birds, large birds (excluding raptors) and for small, medium-sized, and large raptors.

When a bird carcass / remains / feathers are found, it must be photographed from several angles and distances, and a fatality data sheet must be filled in as far as possible. Fatality data sheets are to include fields for a unique carcass ID number, the exact GPS location the carcass was found, the date and time of the find, and the carcass' species, age, and sex as far as determinable. The carcass is then to be placed in a sample bag with a label of the unique carcass ID on the inside and the outside of the bag, and frozen as soon as logistically possible. The photograph and assumed species ID are to be sent to the team leader / line manager who must be trained or experienced enough to be able to ID SCCs potentially occurring on the site. If there is any doubt about the species ID, the photographs are to be sent to the project's appointed avifaunal specialist within 24 hours of the find occurring. The handling of the carcass must be minimised as far as practically possible, and gloves are to be used by the handlers at all times. All fatalities of zero threshold SCC (Critically Endangered, Endangered and Vulnerable species) must be reported to the avifaunal specialist within 24 hours of the find occurring. A weekly fatality report is to be sent to the avifaunal specialist of the project, detailing if any fatalities were found.

The provincial authority must be contacted by the avifaunal specialist if any SCC mortalities occur in order to obtain permits for collection and storage, if required, and to confirm if the carcasses may be used in searcher efficiency and scavenger removal trials on the site and on other sites.

Any injured birds found on site are to be contained in a cardboard box, if possible, and the provincial authority must be contacted immediately to confirm that the injured animal can be taken to the next veterinary clinic / bird rehabilitation centre or dealt with as per their instruction. The area surrounding the location must be photographed and searched for evidence of the cause of death.

Should a carcass be found incidentally outside of the regular carcass searching protocol the staff member is to inform the team leader / line manager, fill in an Incidental Find Sheet, take photographs and not handle, remove or disturb the carcass. Incidental Find Sheets must include the same fields

as the regular find sheets but be marked as Incidental Finds and left in place with a separate unique Incidental Fatality ID number. If no active monitoring is taking place at the time of the incidental find, then the carcass is to be identified, labelled and frozen as per the above specifications.

3.2 Searcher efficiency trials

Bird carcasses of different size classes (small, medium and large) and similar colours to birds occurring on the site must be obtained and placed randomly around the search area without the carcass searcher's knowledge. The carcass description, and GPS location must be recorded. One separate trial must be conducted for each individual carcass searcher/dog. The proportion of carcasses found by carcass searchers/dogs indicates their relative efficiency. All carcasses not found on the search day must be located on the same day to distinguish between search error and scavenger removal.

3.3 Carcass persistence / scavenger removal trials

To determine at what rate carcasses are removed by scavengers, carcasses of similar size and colour to priority species are to be placed randomly within the search areas, with the location and description of the carcass recorded. A minimum of 20 carcasses should be used. The site area is to be checked daily for 7 days with any changes in the presence, location and condition of the carcasses recorded. Carcass locations are then to be visited weekly for a month or until the carcass has been removed, whichever comes first. Scavenger removal trials must be conducted in summer and in winter (i.e., twice per monitoring year).

GenEST software (Dalthorp, et al., 2018) is to be used to calculate fatality rate estimates every six months, and the results must inform the frequency at which individual turbines are searched. If fatalities are very low or zero, then Evidence of Absence software (Dalthorp, Huso, & Dail, Evidence of absence (v2.0) software user guide, 2017) must be used.

3.4 Reporting

Reports on the results of activity monitoring (if applicable) and fatality monitoring are to be compiled quarterly by the project's appointed avifaunal specialist and include the details of carcasses found, the species, the date found, the carcass' conditions (e.g. fresh, decomposed, feathers only), age class and sex (if possible), the nearest turbine number, GPS location and proximity to relevant impact receptors (e.g. nests). The quarterly reports must be submitted to the Competent Authority within two months by the avifaunal specialist, following the final day of monitoring being reported on. An annual post-construction monitoring report is to be compiled by the appointed specialist on activity monitoring (if any), habitat monitoring and fatality monitoring, which answers the following questions, as per the Best Practice Guideline update (in preparation):

a) *Has the habitat available to birds in and around the WEF changed?*
b) *Has the abundance of birds and/or species composition changed?*
c) *Have the distributions and/or movements of priority species changed?*
d) *Is there evidence that the breeding success at focal nest sites may have changed? (The status of all focal sites must be reported on).*
e) *Where the answer is yes to any of the above four questions, what is the nature of the observed changes? (Compare these changes before (during) and after construction).*
f) *What is the nature, and likely drivers, of any changes observed?*

g) *What is the likely demographic and ecological significance of any observed changes in bird populations at the site (including consideration of the magnitude and direction of change) at both the local and broader population scale?*
h) *What are the collision rates and total number of bird fatalities at the WEF? (Collision rates should be reported per MW (nameplate capacity) and per turbine for different size classes of birds. Data should be reported in both raw and corrected formats, and the GPS locations of carcasses must be included).*
i) *What is the species and, as far as possible, age and sex composition of fatalities?*
j) *What proportion of fatalities is likely to be due to collisions with wind turbines?*
k) *Are there any factors (e.g. site characteristics and proximity to wind turbines) that may contribute to these fatalities?*
l) *Is additional monitoring and/or mitigation necessary and if so, what needs to be done? (Refer to the impact management outcomes and actions in EMPr).*

The post-construction monitoring report should include a comparison of the predicted and observed impacts, as this may provide useful insights for future impact assessments.

The annual report must discuss predicted versus observed impacts, if additional mitigations are required to minimise observed impacts (adaptive mitigation), an assessment of any existing adaptive mitigation measures (if applicable), and the need for and scope of any further post-construction monitoring, as well as any required amendments to the EMPr, based on post-construction monitoring results or any new information. Annual Reports are to be submitted to the Competent Authority, the Provincial Authority, BirdLife SA, the Endangered Wildlife Trust and VulPro (if vultures were impacted) within two months of the last day being reported on.

8.12.2 AVIFAUNAL MITIGATION MANAGEMENT

Blade Patterning is to be implemented on all blades on all turbines with patterns and colours in line with the latest version of the Birdlife SA Blade Patterning Guideline during construction.

Observer-led Shut-Down-On-Demand (SDOD) must be implemented according to BirdLife South Africa's Handbook for all Critically Endangered, Endangered and Vulnerable species recorded or potentially occurring, including Cape Vulture and White-backed Vulture. The species list must be reviewed before commissioning, annually and in response to recorded fatalities. The SDOD requirement can be reviewed after a minimum of two years of operations by an avifaunal specialist. SDOD must be fully implemented, tested and operational before commissioning. Annual reviews of the species list and applicable PBR values must not delay immediate action required by the zero-fatality response thresholds for Critically Endangered and Endangered species.

Fatality thresholds for Priority Species are determined as zero for all species listed as Critically Endangered, Endangered and Vulnerable, as it is assumed that the PBR for these species has already been exceeded. The fatality threshold for adaptive management to be implemented is set at 0.05 of the conservatively calculated PBR for all other species for the 20-turbine facility. If the fatality threshold is exceeded, adaptive mitigation measures such as curtailment or technology-based SDOD must be implemented within the shortest, realistic timeframe possible, as determined by the avifaunal specialist in consultation with the respective service provider / operator. Financial allowances for continued SDOD, curtailment at certain times/conditions and the potential addition of technology-based SDOD must be made for the lifetime of the facility.

The Bird Flight Diverters (BFDs) on all overhead powerlines must be assessed annually, and in response to any recorded fatality. BFDs with LEDs or nighttime visibility features must be used to protect night-flying species such as flamingos. Maintenance of any defective or missing BFDs must

be completed within one calendar month. The monitoring and maintenance of BFDs and any bird-friendly infrastructure such as anti-perch devices on the WEFs grid connection infrastructure must remain the responsibility of the WEF operator, even after the line is handed over to Eskom. Access agreements with Eskom must be made in advance if required to allow for carcass searching and BFD maintenance.

Due to the presence of Secretarybird (Endangered) in the area, all suitable thorn trees in an area of 3 km surrounding all turbines must be checked for Secretarybird nests every second month, for the lifetime of the facility, by the carcass searching team. Secretarybirds change nest locations every 3 – 5 years and could appear on suitable thorn trees at any time, which would require adaptive mitigation measures to be applied during their breeding period. The appointed avifaunal specialist must identify suitable trees, map these, and train the carcass searching team to conduct the searches. Should a nest be located, 1 km surrounding the tree must be cordoned off as far as practically possible, and the avifaunal specialist must be contacted within 72 hours for further instructions.

A livestock / wildlife carcass management programme must be established and fully implemented prior to the commissioning of any turbines to avoid attracting vultures and other avian scavengers and must include the following:

- Train all staff to identify vultures flying and roosting and instruct all persons on site to report all sightings of vultures, including the number of birds, their location and behaviour (flying straight or circling, flight direction, perched on powerline, perched on ground, feeding). If smartphones are on hand, a pin location of the vulture should be taken.
- If vultures are sighted on the ground or circling it is likely that they are attracted by one or more existing livestock / wildlife carcasses. A dedicated patrol team must immediately search the area where the birds were seen to locate and remove the carcasses.
- Daily patrols of the site must be conducted to search for any animal carcasses, as well as for vultures, which indicate the presence of carcasses. These can be incorporated into normal SDOD and carcass searching protocols on the site.
- Lambing/calving must be restricted to certain birthing areas as far away from any turbines as practically possible (minimum of 2 km). Birthing areas must be monitored several times a day, so that any carcasses and offal can be removed immediately, and any vultures can be kept away from any food source.
- All concrete water reservoirs (excluding troughs) within the WEF site are to be covered to prevent drowning events. No new open water reservoirs may be created without covers.
- All located animal carcasses and offal must be immediately removed if possible, or covered with branches, tarpaulin or plastic immediately and sufficiently to stop any vultures from being able to reach it as a temporary measure, and the site manager must be informed immediately.
- The operator is responsible for any carcass to be removed immediately, either by the operator or the owner of the farm or the owner of the livestock.
- All livestock/wildlife carcasses must be disposed of entirely and safely as soon as possible. Burning of carcasses is required for carcasses with suspected death by rabies, anthrax infections, and for animals treated with Non-Steroidal Anti-Inflammatory Drugs (NSAID). If the animal was shot with lead, the head/body must be removed and destroyed. If the animal was treated with antibiotics within 72 hours of dying the liver and kidneys must be removed and destroyed. If the carcass was dipped within 72 hours of dying, the carcass must be skinned or burned.
- If burial on site is required, this should only be done for remains if the above is adhered to. Burial holes should be dug sufficiently deep (approximately 3 meters deep for mature cattle) and covered

with rocks to stop other scavenging animals digging up the carcass and making it accessible for vultures in the future.

- If vultures are found feeding on a carcass, the birds should be kept away from the carcass, without causing injury or distress to the bird(s), and a person is to stay with the carcass until such time that it has been removed.
- No vulture restaurants are to be created within 10 km of the nearest turbine.

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 MANAGEMENT PLAN

The purpose of this document is to provide a response guideline which must be followed should archaeological sites, palaeontological sites or graves become exposed during ground altering activities within the proposed project area. 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 procedure is only required if fossils are seen on the surface and when drilling/excavations commence.
- When excavations begin the rocks and discard must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, plants, insects, bone or coal) must be put aside in a suitably protected place. This way the project activities will not be interrupted.
- Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.

- If there is any possible fossil material found by the environmental officer then a qualified palaeontologist must be sub-contracted to conduct a site visit to inspect the selected material and check the dumps where feasible.
- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.

8.15 VISUAL MANAGEMENT PLAN

Key mitigation measures for the different phases of the project are identified in Section 12 of the visual impact assessment. **Table 8-8** below provides a summary of the mitigation measures and the proposed methods for monitoring the implementation.

Table 8-8 – Proposed Management Actions and Approach to Monitoring – Visual Landscape assessment

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
PLANNING AND DETAILED ENGINEERING DESIGN PHASE (PRE-CONSTRUCTION PHASE)					
Direct visual impact of the proposed WEF due to the presence of the turbine structures and associated infrastructure.	Optimal planning of infrastructure to minimise the visual impact.	▪ Retain/re-establish and maintain natural and / or cultivated vegetation in all areas outside of the development footprint/servitude, but within the project site, both during the construction and operational phase.	▪ Review site layout plans and landscaping/ rehabilitation plans to confirm retention of vegetation outside the footprint.	▪ Once-off, early in the planning phase	▪ Project Developer ▪ Design Consultant ▪ Engineering, Procurement and Construction (EPC) Contractor
		▪ Make use of existing roads wherever possible and plan the layout and construction of roads and infrastructure with due cognisance of the topography to limit cut and fill requirements.	▪ Review engineering design drawings and road layout plans to confirm use of existing roads and minimised earthworks.	▪ Once-off, early in the planning phase	▪ Project Developer ▪ Design Consultant ▪ EPC Contractor
		▪ Plan all ancillary buildings, laydown areas, temporary construction equipment camps, and ancillary infrastructure in such a way that clearing of vegetation is minimised (i.e. where possible, use already disturbed areas and consolidate	▪ Review site layout drawings, method statements, and design minutes to confirm consolidation and avoidance of undisturbed areas.	▪ Once-off, early in the planning phase	▪ Project Developer ▪ Design Consultant ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		ancillary buildings and structures as much as possible). ▪ Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas.			
Direct visual impact of the proposed WEF due to the presence of turbines and their potential resultant shadow flicker impacts.		▪ It is recommended that no homesteads should be located in the zone of visible shadows of any of the proposed turbines. Turbines located within this zone should either be removed or relocated. Should this not be possible, the below homestead-specific measures apply. ▪ **Homesteads located within the development site:** No homesteads should be located in the zone of visible shadows of any turbine, unless otherwise agreed upon by the affected landowner, if the landowner is located within the development site. Proof of such agreement is required. Should no agreement be acquired, the turbine is to be removed or relocated. ▪ **Homesteads located outside the development site:** ➢ <u>Proof of engagement:</u> The EAP/Applicant must provide	▪ Review turbine layout plans to confirm no turbines are sited within the zone of visible shadows of any homestead or obtain proof of turbine relocation/removal where applicable. ▪ <u>For homesteads within the development site:</u> Obtain proof of landowner agreement/consent, or proof of turbine removal/relocation where no agreement was reached. ▪ <u>For homesteads located outside the development site:</u> Obtain and retain documented proof of engagement with the affected landowner, including proof of	▪ Once-off, early in the planning phase ▪ Ongoing, as required, until any objection is resolved or the public participation process concludes	▪ Project Developer ▪ EAP / Applicant ▪ Design Consultant

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		documented proof of a concerted and meaningful effort to specifically contact the affected landowner, informing them of the potential shadow flicker impacts identified through this desktop-level assessment and the resultant implications thereof. This documentation must demonstrate that the I&AP was afforded sufficient opportunity to review and comment on the anticipated impacts, in line with standard public participation requirements, and must include proof of acknowledgment of receipt of this notification by the I&AP. ➢ Formal objection received: Engagement and negotiation: Should the I&AP associated with the homestead in question formally object to the anticipated shadow flicker impacts, the EAP/Applicant should facilitate a direct engagement process with the affected I&AP to discuss the concerns raised, with the	acknowledgment of receipt of notification by the I&AP. ▪ Where a formal objection is received: Retain records of the engagement and negotiation process and the mitigation measures offered and discussed with the I&AP. ▪ Where escalation occurs: Obtain and review the site-specific shadow flicker modelling report and its assessment against the internationally recognised thresholds. ▪ Retain records of any operational curtailment schedules or automated shutdown system specifications implemented as mitigation. ▪ Retain a full record of any unresolved objections and mitigation measures considered and rejected, as submitted as part of the environmental authorisation application.		

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		intention of reaching a mutually acceptable resolution. As a first step, the Applicant should offer and discuss lower impact, less operationally intensive mitigation options with the I&AP, which must include, either individually or in combination, the following: (a) *Vegetative or structural screening:* Establishment of appropriate vegetative buffers (e.g. fast-growing indigenous tree or shrub species) or artificial screening structures between the turbine and the affected dwelling, where topography and land use allow, to physically interrupt the line of sight. (b) *Dwelling-level physical mitigation:* Where appropriate and agreed with the affected party, modifications to the dwelling itself, such as window treatments, blinds, tinting, or changes to the	▪ Confirm that the I&AP was informed, in writing, of their right of appeal in accordance with NEMA and its associated regulations.		

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		orientation of window use in affected rooms, to reduce the visual effect of the flicker indoors. (c) *Review of layout alternatives:* Assessment of the feasibility of micro-siting or minor layout adjustments to that specific turbine's position, or alternatively the removal of the turbine completely. (d) *Financial or in-kind compensation:* Negotiated compensation to the affected I&AP for the residual impact, in line with any applicable landowner agreements or compensation frameworks. ➢ Escalation should negotiations break down: Should the I&AP and Applicant be unable to reach agreement through the measures above, and the objection pertaining to shadow flicker remains unresolved, undertake a site-specific, detailed shadow			

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		flicker model for the specific turbine in question, based on the actual turbine specifications, receptor coordinates, and local sun path data, to accurately quantify the predicted duration, frequency, and timing of shadow flicker at the receptor, as this has not yet been determined at the time of this assessment. ➢ Compliance with recognised international thresholds: Assess the outcome of the modelling against the internationally recognised benchmark of no more than 30 hours of shadow flicker per year, or 30 minutes in any given day, as referenced in the World Bank Group's EHS Guidelines and adopted widely across international wind energy guidance, to confirm whether the predicted impact warrants further, more intensive mitigation. ➢ Operational curtailment: Should the modelling confirm that predicted impacts exceed the above thresholds, and the less			

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		intensive measures already offered remain insufficient to resolve the objection, consider programmed shutdown of the turbine during the specific dates and times identified as giving rise to shadow flicker at the affected receptor, informed by the results of the specific shadow flicker modelling. ➢ Automated shadow flicker shutdown technology: As an alternative or supplement to fixed curtailment, install sensor-based or software-driven control systems that automatically detect flicker-triggering conditions (sun angle, rotor alignment, and clear sky conditions) and temporarily shut down or adjust the turbine in real time, minimising unnecessary downtime compared to fixed curtailment schedules. ▪ Recording of unresolved objections: Should no resolution be reached through the application of the above measures, the objection, along with a			

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		full record of the engagement process and mitigation measures considered and rejected, must be documented and submitted as part of the environmental authorisation application, for consideration by the competent authority. ▪ Right of appeal: The I&AP should be informed of their right to raise their concerns through the formal public participation and appeals process associated with the environmental authorisation, in accordance with NEMA and its associated regulations, should they remain unsatisfied with the outcome of direct engagement.			
Direct visual impact of the proposed WEF due to the presence of turbine lighting at night.	Minimise night-time lighting impacts through sensitive design and specification.	Consult a lighting engineer, as well as the CAA in the design and planning of turbine lighting to ensure the correct specification, technology and placement of lighting on the turbines of the WEF. The following is recommended: ▪ Install aircraft warning lights that only activate when the presence of an aircraft is detected, if available and permitted by the CAA.	▪ Review and obtain permission from the CAA to confirm inclusion of mitigation measures, where possible.	▪ Once-off, early in the planning phase	▪ Project Developer ▪ Design Consultant ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		▪ If possible, limit aircraft warning lights for the proposed WEF to the turbines on the outer perimeter of the WEF, thereby reducing the overall requirement and impact (i.e. fewer warning lights can be utilised to delineate the facility as one large obstruction, thereby lessening the potential visual impact) (CAA regulations/conditions permitting).			
Direct visual impact of the proposed WEF due to the presence of general facility lighting at night.		Consult a lighting engineer in the design and planning of lighting to ensure the correct specification and placement of lighting and light fixtures for the WEF and the ancillary infrastructure. The following is recommended: ▪ Shield the sources of light by physical barriers (walls, vegetation, or the structure itself). ▪ Limit mounting heights of fixtures or use footlights or bollard lights. ▪ Make use of minimum lumen or wattage in fixtures. ▪ Make use of down-lighters or shielded fixtures.	▪ Review lighting design report and electrical specifications to confirm inclusion of mitigation measures.	▪ Once-off, early in the planning phase	▪ Project Developer ▪ Design Consultant ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		▪ Make use of Low-Pressure Sodium lighting or other low impact lighting. ▪ Make use of motion detectors on security lighting, so allowing the site to remain in darkness until lighting is required for security or maintenance purposes.			
Direct visual impact of the proposed avifaunal specialist blade painting recommendations.	Ensure blade painting is implemented only where justified and in a visually consistent manner.	▪ Apply blade painting only where justified by avifaunal risk assessments and in accordance with SACAA-approved patterns and the SAWEA/BLSA/BARESG guidelines. ▪ As far as possible, limit blade painting to one blade per turbine or simple broad bands (e.g., two broad stripes or ¾ solid blade) rather than multiple thin stripes to reduce visual clutter. If multiple blades are patterned, use asymmetrical placement to preserve avian conspicuity without repeating pattern symmetry that increases human noticeability. ▪ Commit to consistent pattern application across the facility (or defined subsets) to avoid patchwork appearance and public confusion.	▪ Review blade paining design report and specifications to confirm inclusion of mitigation measures.	▪ Once-off, early in the planning phase	▪ Project Developer ▪ Design Consultant ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		▪ Prioritise painting on turbines located in low-sensitivity visual zones (i.e. behind ridgelines, out of primary viewer corridors) and avoid (or apply minimal treatment to) turbines sited on visually exposed ridgelines or within close proximity (<1–2 km) to sensitive receptors unless avifaunal risk compels it. ▪ Specify durable, non-reflective paints formulated for turbine use (UV-stable, abrasion resistant) to avoid patchiness, gloss/shine changes or uneven weathering that would attract visual attention. ▪ Ensure the application of blade painting is undertaken during the manufacturing process and not as an after application during the construction phase. ▪ Apply paint under controlled conditions with trained applicators, measured coverage, documented pattern placement, to ensure uniform visual appearance across turbines and avoid visible inconsistencies.			

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
CONSTRUCTION PHASE					
Visual impact of general construction activities, and the potential scarring of the landscape due to vegetation clearing and resulting erosion.	Minimal visual intrusion by construction activities and intact vegetation cover outside of immediate construction work areas.	▪ Ensure that vegetation is not unnecessarily cleared or removed during the construction period.	▪ Conduct site inspections and maintain a photographic record of the construction footprint.	▪ Ongoing during active clearing	▪ ECO ▪ EPC Contractor
		▪ Reduce the construction period through careful logistical planning and productive implementation of resources.	▪ Review the construction schedule, method statements, and progress reports.	▪ Monthly	▪ Project Developer ▪ EPC Contractor
		▪ Ensure that the placement of laydown areas and temporary construction equipment camps are located in their planned areas, ensuring minimal vegetation clearing.	▪ Conduct site inspections to confirm the placement.	▪ Monthly	▪ ECO
		▪ Restrict the activities and movement of construction workers and vehicles to the immediate construction site and existing access roads.	▪ Conduct spot checks/ visual inspections to ensure strict control over the behaviour of staff in order to restrict activities to within demarcated areas.	▪ Weekly	▪ ECO ▪ EPC Contractor
		▪ Ensure that rubble, litter, and disused construction materials are appropriately stored and then disposed of regularly at licensed waste facilities.	▪ Obtain and retain proof of waste disposal slips (or waybills) on file. ▪ Monitor waste disposal slips via site audits and record non-compliance.	▪ Ongoing ▪ Weekly	▪ ECO ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		▪ Construction/ upgrade of roads should be undertaken properly, with adequate drainage structures in place to forego potential erosion problems.	▪ Conduct an inspection of road works and review engineering drawings.	▪ Monthly during road construction	▪ ECO ▪ EPC Contractor
		▪ Reduce and control construction dust using approved dust suppression techniques as and when required (i.e. whenever dust becomes apparent).	▪ Conduct site inspections to monitor the implementation of suitable dust suppression techniques. ▪ Ensure that continuous observation is undertaken. ▪ Take remedial action as and when required.	▪ Ongoing	▪ ECO ▪ EPC Contractor
		▪ Restrict construction activities to daylight hours in order to reduce the visual impacts associated with lighting.	▪ Review construction schedule.	▪ Monthly	▪ ECO ▪ EPC Contractor
		▪ Rehabilitate all disturbed areas, construction areas, servitudes etc. immediately after the completion of construction works. If necessary, an ecologist should be consulted to assist or give input into rehabilitation specifications.	▪ Inspect rehabilitated areas and maintain a photographic record. ▪ Review the appointed ecologist's reports.	▪ Monthly during rehabilitation, then quarterly for at least 1 year.	▪ ECO ▪ EPC Contractor ▪ Suitably qualified ecologist
Visual impact of blade painting during construction.	Minimise irregular or inconsistent visual effects from painted blades, as well as the	▪ Apply paint patterns uniformly and consistently across turbines to avoid irregular visual effects.	▪ Inspect turbine blades upon delivery to site to confirm paint quality and consistency.	▪ Once-off, during blade component delivery.	▪ ECO ▪ EPC Contractor /

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
	visual intrusion of onsite blade painting construction activities.	▪ Use non-reflective, durable paint finishes to prevent glare, fading, or patchiness that may increase visibility.			Quality Control Officer
OPERATIONAL PHASE					
Visual impact of facility degradation (including operational wind turbines) and vegetation rehabilitation failure.	Well maintained and neat facility.	▪ Maintain the general appearance of the facility as a whole, including the turbines, servitudes and the ancillary structures, buildings and infrastructure to ensure that the facility does not degrade.	▪ Conduct site maintenance inspections. ▪ Maintain and repair degraded infrastructure. ▪ Keep maintenance logs.	▪ Monthly ▪ As required ▪ Ongoing	▪ Facility Manager
		▪ Maintain roads and servitudes to forego erosion and to suppress dust.	▪ Conduct road condition inspections. ▪ Review the road maintenance records.	▪ Monthly ▪ Quarterly	▪ Facility Manager
		▪ Monitor rehabilitated areas for rehabilitation failure or concerns and implement remedial action as and when required.	▪ Compare vegetation establishment on rehabilitated areas to surroundings natural vegetation by keeping a photographic record.	▪ Monthly during rehabilitation, then quarterly for at least 1 year.	▪ ECO ▪ Suitably qualified ecologist
Visual impact of potential shadow flicker impacts.	Limit shadow flicker impacts of concern.	▪ Consider planting of screening vegetation at the affected homestead (i.e., Modderontein) to limit the effect of shadow flicker, should it be required.	▪ Inspect the planted screening, if required.	▪ Once-off and annually for establishment, if required.	▪ ECO ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
Visual impact of blade painting.	Maintain visually consistent and acceptable painted blades while ensuring avifaunal effectiveness.	▪ Implement post-construction monitoring to evaluate both avifaunal effectiveness and public perception of painted blades. It is suggested that this is implemented via two complementary monitoring programmes: (a) avifaunal collision monitoring to quantify mortality reduction (as specified by the avifaunal specialist), and (b) visual perception monitoring (stakeholder surveys/photo points) to assess community responses and any unforeseen visual intrusion. Use agreed metrics (e.g., local resident perception scores).	▪ Undertake and implement visual perception monitoring via structured stakeholder surveys, photographic monitoring from fixed viewpoints, and public complaints log review.	▪ Annually for first 3 years, then every 2–3 years or when patterns are altered.	▪ Facility Manager ▪ ECO ▪ Independent Avifaunal Specialist
		▪ Use monitoring results to adjust paint coverage (e.g., reduce/alter patterns where visual impacts are unacceptable or expand where avifaunal benefit is insufficient). Maintain decision-making records (trigger thresholds, remedial actions).	▪ Review avifaunal mortality statistics and stakeholder perception reports against predefined trigger thresholds (e.g., specified avifaunal collision rates, or significant stakeholder dissatisfaction). Maintain a record of remedial actions and decisions.	▪ Annual review of monitoring data; ad hoc review when thresholds are exceeded.	▪ ECO ▪ Facility Manager
		▪ Keep local communities and stakeholders informed of monitoring	▪ Record stakeholder engagement (minutes,	▪ Annually, more	▪ ECO

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
		outcomes and any planned adjustments to painting strategy to maintain public confidence and transparency.	newsletters, feedback forms). Share monitoring results and planned adjustments in public forums, website updates, or community liaison meetings.	frequent updates when adjustments to painting strategy are made.	▪ Facility Manager
	Well maintained and neat facility.	▪ Schedule periodic repainting to maintain uniform colour/contrast and avoid patchy or faded blades that increase attention. Use non-gloss finishes to avoid glare.	▪ Physical inspections of blade surfaces for fading, patchiness, or glare. Compare with original colour/contrast specifications.	▪ Every 5 years (aligned with turbine servicing), or earlier if monitoring identifies deterioration.	▪ Facility Manager
DECOMMISSIONING PHASE					
Visual impact of residual visual scarring and vegetation rehabilitation failure.	Only retain the infrastructure required for post decommissioning use of the site and rehabilitate vegetation in all disturbed areas.	▪ Remove infrastructure not required for the post-decommissioning use of the site. This may include the turbines, substations, ancillary buildings, masts etc.	▪ Conduct site inspections and maintain a photographic record of the decommissioning process.	▪ Once-off per infrastructure removal	▪ ECO ▪ EPC Contractor
		▪ All rehabilitated areas should be monitored following decommissioning, and remedial actions implemented as and when required.	▪ Inspect rehabilitated areas and maintain a photographic record. ▪ Review the appointed ecologist's reports.	▪ Monthly during rehabilitation, then quarterly for at least 1 year.	▪ ECO ▪ EPC Contractor

Impact	Mitigation/ Management Outcome	Impact Management Action	Monitoring		
			Method	Frequency	Responsibility
					▪ Suitably qualified ecologist
Residual visual impact of blade painting post-decommissioning.	Restore site to pre-construction conditions and remove any long-term blade painting impacts.	▪ Remove all turbine blades with painted surfaces. ▪ Ensure site rehabilitation eliminates any residual visual scarring, or colour impacts from blades.	▪ Conduct site inspections and maintain photographic records of blade removal and rehabilitation.	▪ Once-off during decommissioning	▪ EPC Contractor ECO Facility Manager

8.16 ACOUSTIC MONITORING PLAN

Environmental Noise Monitoring can be divided into two distinct categories, namely:

- Passive monitoring – the registering of any complaints (reasonable and valid from NSR
- living within 2,500m from any WTG of the Uvemvane WEF) regarding noise; and
- Active monitoring – the measurement of noise levels at identified locations.

Since potential noise levels would be higher than 42 dBA (which is 7 dB higher than the 35 dBA night-time rating level) active noise monitoring is recommended. Noise monitoring may be required for any WTG with a PWL exceeding 105.0 dBA (re 1 pW). The developer should investigate the noise complaint as per the guidelines in sub-section 12.1 and 12.2 of the acoustic assessment. These guidelines should be used as a rough guideline as site-specific conditions may require that the monitoring locations, frequency or procedure be adapted.

8.16.1 MEASUREMENT LOCALITIES AND FREQUENCY

For active monitoring, it is recommended that ambient sound levels be measured at NSRs 08, 07, 18, 23 & possibly NSRs 15, 06, 14 and 09 before the development of the WEF, with the measurements repeated after the first year of operation. The procedures are described in the sub-section below. In addition, should there be a valid and reasonable noise complaint, once-off noise measurements must be conducted at the location of the person that registered a valid and reasonable noise complaint. If any of these NSR locations are not used for residential purposes, noise monitoring at these locations is not required.

8.16.2 MEASUREMENT PROCEDURES

If required, noise level measurements should be collected considering the requirements of SANS 10103:2008 (or an internationally recognised method such as ISO 1996, IEC 61400-11 or ETSU R97, considering the limitations of measuring the noise from WTG). When a noise complaint is being investigated, measurements should be collected during a period or in conditions similar to when the receptor experienced the disturbing noise event. It should be noted that the correct protocol should be selected to ensure quality data, with:

- SANS 10103 or ISO 1996 are recommended for use to measure noise levels due to construction activities (low wind conditions); and
- IEC 61400-11 or ETSU-R97 are recommended for use to measure operational noise levels (where increased winds may influence the measurements). Measurements done in terms of SANS 10103 or ISO 1996 would report elevated noise levels due to wind-induced noises impacting on the measurement.

8.17 GRIEVANCE MECHANISM

8.17.1 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.

While the general principles for grievance redress during construction are as above, a project-specific external stakeholder grievance mechanism shall be implemented.

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 regard 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.

8.17.2 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.

8.18 HIV/AIDS MANAGEMENT PLAN

Should the project be developed, an HIV/AIDS plan will be developed, however for input into this EMPr, a generic and high-level management plan has been compiled.

8.18.1 OBJECTIVES OF THIS PLAN

The overall objectives of the HIV/AIDS management plan are:

- Create awareness around HIV/AIDS amongst onsite personnel;
- Mitigate and manage the spread of HIV/AIDS onsite; and
- Provide support for staff who have HIV/AIDS

8.18.2 GUIDING PRINCIPLES

1. Non- discrimination: The respect of human rights and dignity of persons infected or affected by HIV/ AIDS requires equality between individuals living with HIV/AIDS and those without. No

employee will be discriminated against on the basis of his or her real or perceived HIV positive status. This includes access to training and promotion.

2. Job Security: Employees with HIV infection or AIDS will not be dismissed on the grounds of their status. Persons with AIDS-related illnesses should be able to work for as long as medically fit in available, appropriate work (reasonable accommodation).
3. Confidentiality: All persons with HIV or AIDS have the legal right to privacy. No employee or applicant for a job shall be required to disclose HIV-related personal information. Nor should co-workers be obliged to reveal such information about fellow workers. Company management and medical staff as well as union leaders and officials are bound by strict confidentiality about a person's status.
4. Voluntary Counselling and Testing (VCT): No HIV/AIDS testing will be required for job applicants or for persons already in employment. Individuals are encouraged to know their HIV status through testing. Testing must be voluntary, confidential and with the informed and written consent of the person concerned. Professional pre- and post-testing counselling services must be available.
5. Treatment and Care : Workers infected with HIV and suffering from AIDS and their dependents are entitled to the same health services as those with other diseases. Treatment with antiretroviral drugs must be available when VCT is advocated. Dependents of workers who have died from AIDS or AIDS-related diseases must have access to the same care as those who have died from other diseases or industrial accidents.
6. Gender Equality : The gender dimensions of the epidemic are recognised by the social partners. Gender discrimination at the workplace is ruled out. Sexual harassment and the exploitation of dependency of women is an offence.
7. Occupational Health and Safety : The work environment must be healthy and safe. Tools which bear the danger of injuries such as cuts should not be shared between workers. In case of accidents which involve blood and body fluid emissions, first aid must be exercised with the use of protective barriers, such as gloves and masks, which prevent direct contact with blood or other body fluids.
8. Prevention and Behaviour Change : Employees with HIV and AIDS shall not be unfairly discriminated against in the allocation of employee benefits. With regard to sick leave, HIV and AIDS related illness will be treated no different from other chronic or life threatening conditions. Health and social security schemes run by the company shall give the same benefits to those with HIV and AIDS as to any other worker. The same applies to separation allowance, retirement schemes and pension benefits.
9. Prevention and Behaviour Change : HIV infection is preventable. The parties will promote prevention efforts at the workplace, within families and in the wider community. Because it is within the power of each individual to avoid HIV infection, it is expected that employees take responsibility of their own health. They are urged to avoid risky behaviour such as unprotected sexual intercourse and the injection of drugs through shared needles.

8.18.3 IMPLEMENTATION

The plan will be implemented onsite through the following:

1. This HIV/AIDS management plan shall be made known and explained to all employees through the distribution of the text as a brochure in the appropriate languages and through meetings.

2. The implementation of this plan includes information and education activities aimed at communicating correct information about HIV/AIDS and eradicating myths in order to eliminate stigma and discrimination.
3. The project company will organise and if necessary and appropriate with the participation of health professionals, regular awareness and prevention programmes about HIV/AIDS during working time.
4. As condoms and femidoms are an effective barrier to sexually transmitted infections and HIV transmission, condoms and femidoms will be made available at no cost on the construction site.
5. Meetings, information and training activities should be included in an action programme with an implementation plan for a defined period of time. This should include material to be acquired or produced. The company should make provisions in its budgetary process to include the cost of activities and materials.
6. Disputes or grievances arising from the application of the principles of this policy and its implementation are dealt with by the HIV/AIDS Committee and/or in established dispute resolution or grievance procedures.

8.19 SECURITY POLICY

A generic high-level security policy has been compiled for the drafting of this EMPr. Should the project be developed further, a site-specific policy will be produced.

This procedure shall be applicable to all staff working within the project area to comply with the relevant regulations and international standards.

The project company's overarching objective is to protect the people and assets in a way that minimises conflict and respects the human rights of its diverse stakeholders, avoids creating or worsening conflict and address security threats in as peaceful a way as possible. The project company has adapted the IFC Performance Standards and supporting World Bank Group Environmental, Health and Safety Guidelines as the overarching standards associated with human rights, labour force management, vulnerable groups and stakeholder engagement to guide it towards achievement of appropriately high levels of environmental and social performance throughout the Project's life cycle.

A security company must be employed to guard the site and monitor access and must be registered with the Private Security Industry Regulatory Authority (PSIRA). The company should be utilised for the project life-cycle, alternatively different companies can be used for the construction, operations and decommissioning phases. The choice is at the discretion of the Holder of the EA.

The following guiding principles have been developed for site security:

- All access roads shall be gated to restrict access to the general public. Gates will be required to be kept locked when construction is occurring or when turbine maintenance is not occurring.
- The Contractor, prior to arriving on site, will assess any risks posed by its security arrangements to people within and outside the Project site.
- No firearms allowed on site or in vehicles transporting staff to / from site (unless used by security personnel).
- The Operations and Maintenance Building ("O&M building") shall be locked at all times when Project personnel are not inside.

- The security arrangements must take account of the principles of proportionality and good international practice in relation to hiring, rules of conduct, training, equipping, and monitoring of security;
- The contractor and Holder of the EA:
  - is required to make reasonable inquiries to ensure that those providing security are not implicated in past abuses; and
  - Ensure that the security company is adequately trained in the use of force and appropriate conduct, and they act within the applicable law.
- A grievance mechanism for affected communities shall be provided to express any concerns about security arrangements.

The project company has adapted the United Nations Basic Principles on the use of Force and Firearms and Voluntary Principles on Security and Human Rights.

9 CONCLUSION

ABO Uvemvane WEF 1 is proposing the development of the 170 MWac WEF, located near Heidelberg and Balfour in the Gauteng and Mpumalanga Provinces respectively. This S&EIA process considered the biophysical location of the proposed development, as well as a feasibility assessment by the proponent, which inter alia served to identify site options that would be optimal for energy production and 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. The 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, employment opportunities and local economic development.

Avoidance has been demonstrated, resulting in a reduced footprint that considered all specialist inputs including the avoidance of critical no-go areas. Furthermore, stringent mitigation measures have been proposed.. The project will be required to commit to Environmental Duty of Care and any contraventions subject to suitable consequences.

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. It is understood that the applicant commits to implementing the mitigation measures outlined in the EMPr.

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 S&EIA process, this EMPr and management plans 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.

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

Appendix A

EAP CV

Public

Ashlea Strong

Environmental Planning & Advisory, Principal Associate

CAREER SUMMARY

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

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

9 years with WSP

19 years of experience

Area of expertise

Auditing

ESIR

Energy

Infrastructure

Mining

Training

Waste Management

Language

English – Fluent

Afrikaans - Fluent

EDUCATION

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

ADDITIONAL TRAINING

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

PROFESSIONAL MEMBERSHIPS

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

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 Gird 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 Photovoltatic (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 Brinkerhoff 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.

S**ANRAL, 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.

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

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.

UNIVERSITEIT VAN DIE VRYSTAAT

UNIVERSITY OF THE FREE STATE

HIERMEE WORD VERKLAAR DAT DIE THIS IS TO CERTIFY THAT THE

Magister in Omgewingsbestuur
Magister in Environmental Management

TOEGEKEN IS AAN
HAS BEEN CONFERRED UPON

ASHLEA-ROBYN STRONG

Met effek vanaf with effect from
1 Februarie / February 2006

NADAT AAN DIE STATUTE EN REGULASIES VAN DIE UNIVERSITEIT VOLDOEN IS. AS BEWYS DAARVAN PLAAS ONS ONS ONDERSKEIE HANDTEKENINGE EN DIE SEëL VAN DIE UNIVERSITEIT HIERONDER.

IN ACCORDANCE WITH THE STATUTES AND REGULATIONS OF THE UNIVERSITY. AS WITNESS OUR RESPECTIVE SIGNATURES AND THE SEAL OF THE UNIVERSITY BELOW.

VISEKANSELIER/VICE-CHANCELLOR

DEKAAN/DEAN

REGISTRATEUR/REGISTRAR

BLOEMFONTEIN
2006-04-25
2003049109

Environmental Assessment Practitioners Association of South Africa

Registration No. 2019/1005

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 April 2026

Expires: 31 March 2027

Chairperson

Registrar

SAQA
SOUTH AFRICAN QUALIFICATIONS AUTHORITY

Appendix B

EAP DECLARATION

APPENDIX 6C
DECLARATION OF EAP AND UNDERTAKING UNDER OATH OR AFFIRMATION

I, **Ashlea Strong**, declare that –

a) I act as the independent, registered in terms of EAPASA, environmental assessment practitioner in this application;
b) I have expertise in conducting environmental impact assessments, including knowledge of the Act, EIA Regulations and any guidelines that have relevance to the proposed activity;
c) I will comply with the Act, EIA Regulations and all other applicable legislation;
d) I am aware that I must be registered with Environmental Assessment Practitioners Association of South Africa (EAPASA) in terms of Regulation 14 of Section 24H Registration Authority Regulations, 2016, as amended.
e) I am aware that a candidate EAP may only assist the registered EAP and work under the supervision of a registered EAP (regulation 14(6) in the S24H Registration Authority Regulations, 2016, as amended) such as myself. I take full responsibility for the work conducted.
f) I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
g) I will take into account, to the extent possible, the matters listed in Regulation 13 of the EIA Regulations and Regulation 14 of S24H of Section 24H Registration Authority Regulations, 2016, as amended, when preparing the application and any report relating to the application;
h) I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
i) I will perform all obligations as expected from an environmental assessment practitioner in terms of the EIA Regulations and S24H of NEMA ; and
j) I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act and EIA Regulations and Regulation 18 and 20 of S24H Registration Authority Regulations, 2016, as amended.

Disclosure of Vested Interest (delete whichever is not applicable)

k) I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the EIA Regulations;
~~l) I have a vested interest in the proposed activity proceeding, such vested interest being:~~
Click or tap here to enter text.

Signature of the registered environmental assessment practitioner

WSP Group Africa (Pty) Ltd
Name of company:

~~Click or tap to enter a date.~~ 2026
Date

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 registered Environmental Assessment Practitioner

WSP Group Africa (Pty) Ltd
Name of Company

22 October 2026
Date

Signature of the Commissioner of Oaths

22 October 2026
Date

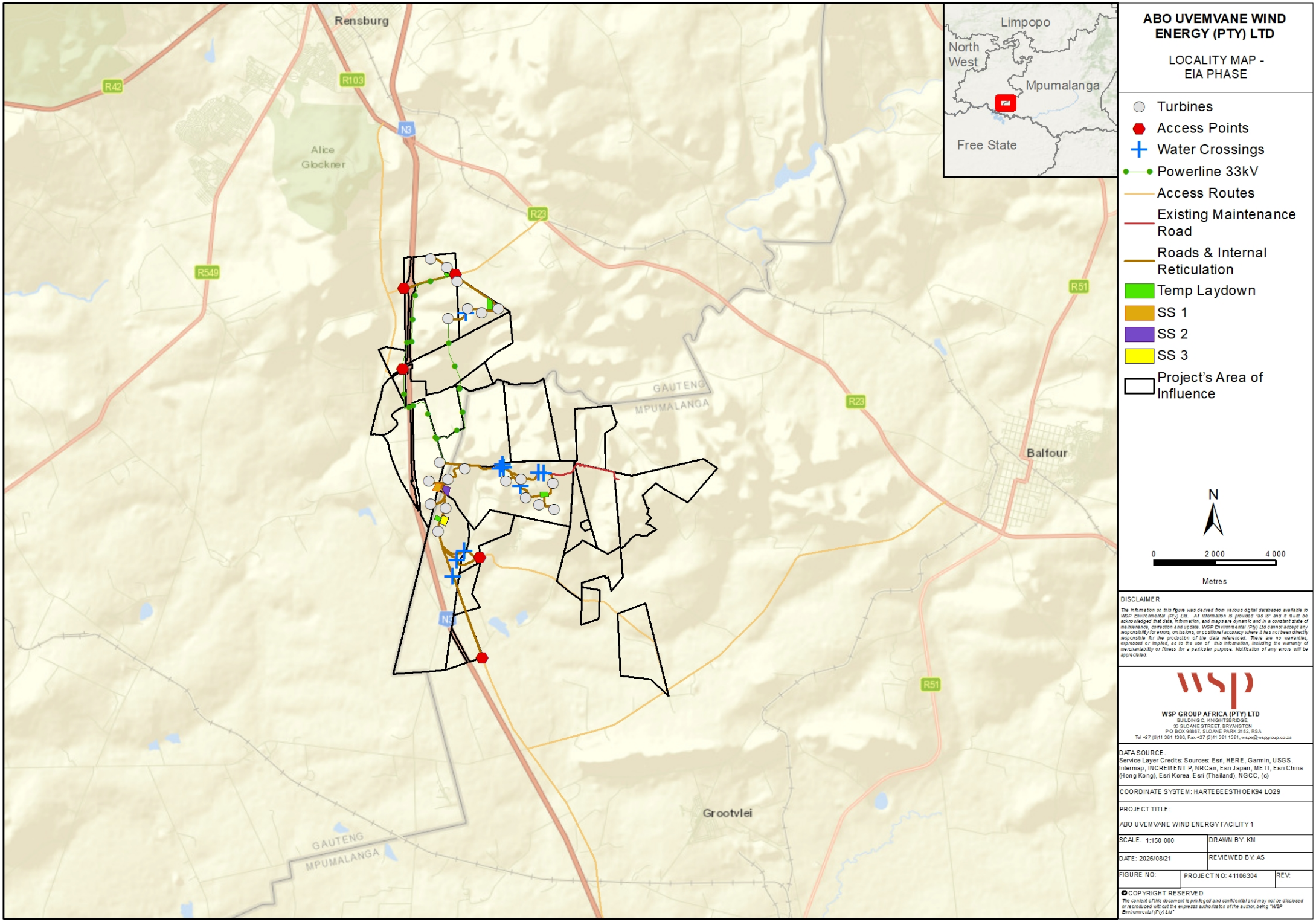
COMMISSIONER OF OATHS (RSA)
Meetha Vallabh
Chartered Accountant (SA)
SAICA membership number: 20003298

Building 1, Maxwell Office Park, Magwa Crescent West,
Waterfall City, Midrand, 1685 South Africa

Appendix C

MAPS

Public



ABO UVEMVANE WIND ENERGY (PTY) LTD

LOCALITY MAP - EIA PHASE

- Turbines
- Access Points
- Water Crossings
- Powerline 33kV
- Access Routes
- Existing Maintenance Road
- Roads & Internal Reticulation
- Temp Laydown
- SS 1
- SS 2
- SS 3
- Project's Area of Influence

N

0 2 000 4 000

Metres

DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

WSP GROUP AFRICA (PTY) LTD
BUILDING C, KNIGHTSBRIDGE,
33 SLOANE STREET, BRYANSTON
P O BOX 98867, SLOANE PARK 2152, RSA
Tel +27 (0)11 361 1380, Fax +27 (0)11 361 1381, wspe@wspgroup.co.za

DATA SOURCE:
Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c)

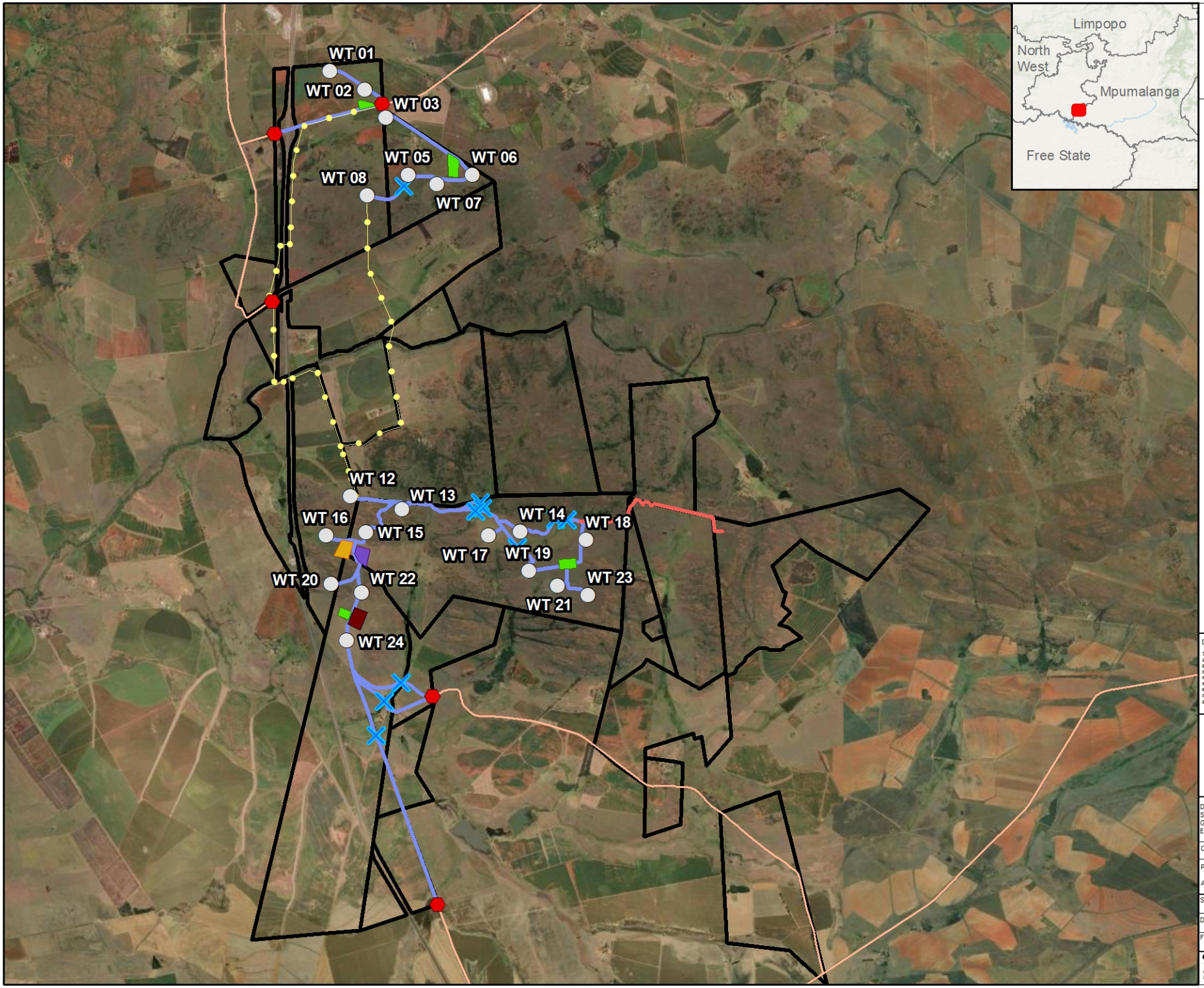
COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:

ABO UVEMVANE WIND ENERGY FACILITY 1

SCALE: 1:150 000	DRAWN BY: KM
DATE: 2026/08/21	REVIEWED BY: AS
FIGURE NO:	PROJECT NO: 41106304 REV:

COPYRIGHT RESERVED
The content of this document is privileged and confidential and may not be disclosed or reproduced without the expresss authorisation of the author, being "WSP Environmental (Pty) Ltd"



ABO UVEMVANE WIND ENERGY (PTY) LTD

LAYOUT MAP - EIA PHASE

- Turbines
- Access Points
- Water Crossings
- Powerline 33kV
- Access Routes
- Existing Maintenance Road
- Roads & Internal Reticulation
- Temp Laydown
- SS 1
- SS 2
- SS 3

N

0 1 000 2 000

Metres

DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

WSP GROUP AFRICA (PTY) LTD
BUILDING C, KNIGHTSBRIDGE,
33 SLOANE STREET, BRYANSTON
P O BOX 98867, SLOANE PARK 2152, RSA
Tel +27 (0)11 361 1380, Fax +27 (0)11 361 1381, wspe@wspgroup.co.za

DATA SOURCE:
Service Layer Credits: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

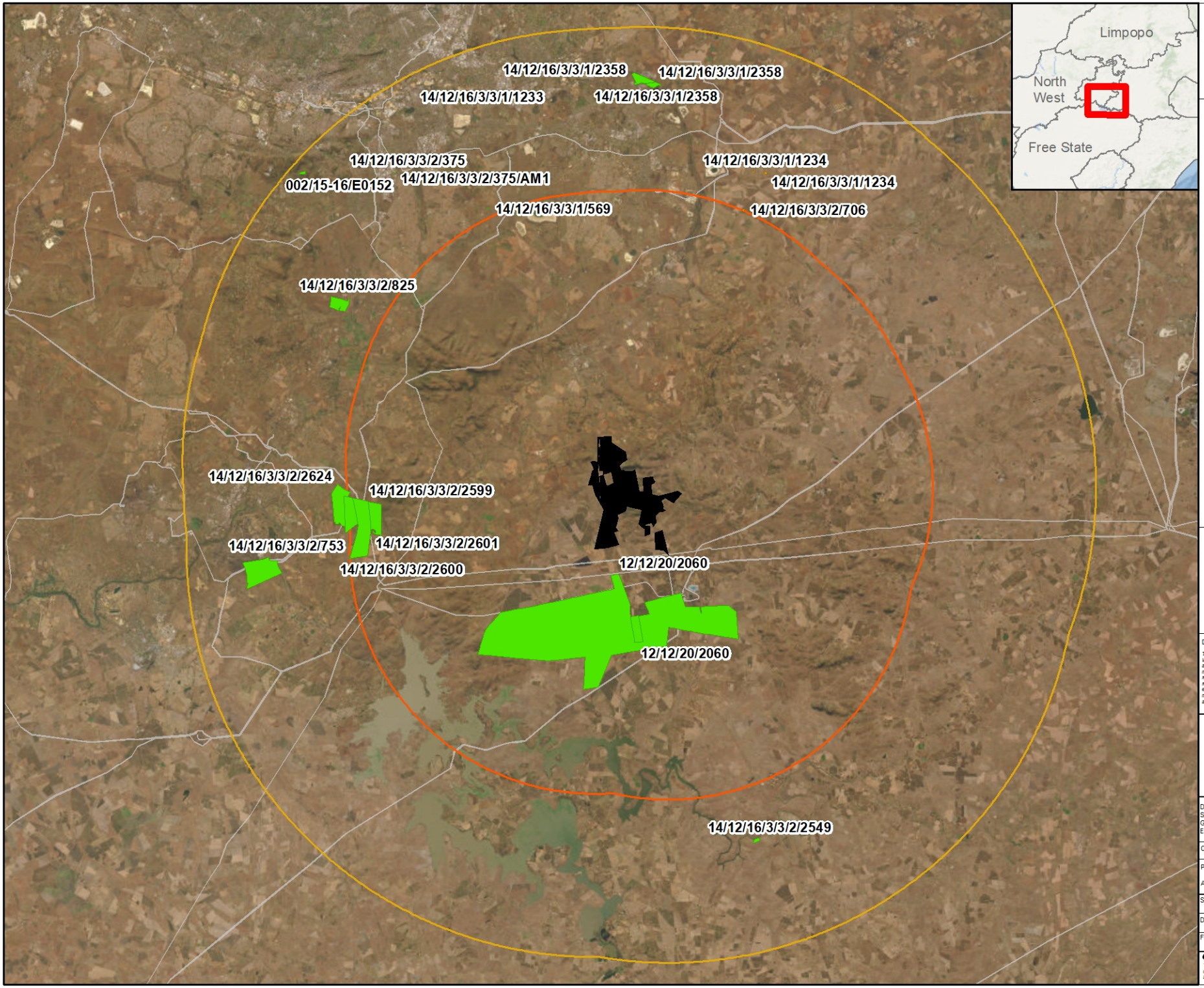
PROJECT TITLE:

ABO UVEMVANE WIND ENERGY FACILITY 1

SCALE: 1:76 938	DRAWN BY: KM
DATE: 2026/08/21	REVIEWED BY: AS

FIGURE NO:	PROJECT NO: 41106304	REV:

© COPYRIGHT RESERVED
The content of this document is privileged and confidential and may not be disclosed or reproduced without the expresss authorisation of the author, being "WSP Environmental (Pty) Ltd"



ABO UVEMVANE WIND ENERGY FACILITY (PTY) LTD

CUMULATIVE MAP

Legend

- Uvemvane Site Boundary
- Eskom Powerlines

Distance (km)

- 30
- 50

REEA (2026, Q1)

- Approved
- In process

N

0 2 900 5 800 8 700 11 600 14 500

Metres

DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

WSP GROUP AFRICA (PTY) LTD
BUILDING C, KNIGHTSBRIDGE,
33 SLOANE STREET, BRYANSTON
P O BOX 98867, SLOANE PARK 2152, RSA
Tel +27 (0)11 361 1380, Fax +27 (0)11 361 1381, wspe@wspgroup.co.za

DATA SOURCE:
Service Layer Credits: Source: Esri, Vantor, Earthstar Geographics, and the GIS User Community
Esri, Garmin, GEBCO, NOAA NGDC, and other contributors

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:
ABO UVEMVANE WIND ENERGY FACILITY

SCALE: 1:600 000	DRAWN BY: KM
DATE: 2026/08/18	REVIEWED BY: AS
FIGURE NO:	PROJECT NO: 41106304 REV:

COPYRIGHT RESERVED
The content of this document is privileged and confidential and may not be disclosed or reproduced without the expresss authorisation of the author, being "WSP Environmental (Pty) Ltd"

ABO UVEMVANE WIND ENERGY FACILITY 1 (PTY) LTD

COMBINED SENSITIVITY MAP - EIA PHASE

- Turbines
- Roads & Internal Reticulation
- Powerline 33kV
- Temporary Laydown Areas
- Electrical Infrastructure Hub Options
- Project's Area of Influence
- Mine Shaft
- Built-Up Residential 2km
- Homestead Farm Dwelling 1km
- Protected

Avifaunal Constraints

- Uvemvane Steep slopes 100m buffer
- Optimal & Important CBA
- Woodland buffer

0 1 000 2 000 3 000

Metres

DISCLAIMER

The information on this figure was derived from various digital databases available to WSP Environmental (Pty) Ltd. All information is provided "as is" and it must be acknowledged that data, information, and maps are dynamic and in a constant state of maintenance, correction and update. WSP Environmental (Pty) Ltd cannot accept any responsibility for errors, omissions, or positional accuracy where it has not been directly responsible for the production of the data referenced. There are no warranties, expressed or implied, as to the use of this information, including the warranty of merchantability or fitness for a particular purpose. Notification of any errors will be appreciated.

WSP GROUP AFRICA (PTY) LTD
BUILDING C, KNIGHTSBRIDGE,
33 SLOANE STREET, BRYANSTON
P O BOX 98867, SLOANE PARK 2152, RSA
Tel +27 (0)11 361 1380, Fax +27 (0)11 361 1381, wspe@wspgroup.co.za

DATA SOURCE:
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI,

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:
ABO UVEMVANE WIND ENERGY FACILITY 1

SCALE: 1:90 000	DRAWN BY: KM
DATE: 2026/10/07	REVIEWED BY: AS
FIGURE NO:	PROJECT NO: 41106304 REV:

COPYRIGHT RESERVED
The content of this document is privileged and confidential and may not be disclosed or reproduced without the expresss authorisation of the author, being "WSP Environmental (Pty) Ltd"