APPENDIX

I ENVIRONMENTAL MANAGEMENT PROGRAMME

MUKONDELELI WIND ENERGY FACILITY (RF) (PTY) LTD

MUKONDELELI WIND ENERGY FACILITY

ENVIRONMENTAL MANAGEMENT REPORT

MDARDLEA REFERENCE: 1/3/1/16/1G-265)

16 MARCH 2023

FINAL

MUKONDELELI WIND ENERGY FACILITY

ENVIRONMENTAL MANAGEMENT REPORT

MUKONDELELI WIND ENERGY FACILITY (RF) (PTY) LTD

TYPE OF DOCUMENT (VERSION)
FINAL

PROJECT NO.: 41104073
DATE: MARCH 2023

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This Environmental Management Programme Report (Report) for the proposed Mukondeleli Wind Energy Facility was prepared by WSP Group Africa (Pty) Ltd on behalf of MUKONDELELI WIND ENERGY FACILITY (RF) (PTY) LTD, as part of the application process for Environmental Authorisation.in accordance with the professional services agreement.

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

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

DOCUMENT DESCRIPTION

APPLICANT

Mukondeleli Wind Energy Facility (RF) (Pty) Ltd

PROJECT NAME

Proposed Mukondeleli Wind Energy Facility, Mpumalanga, South Africa

MDARDLEA REFERENCE NUMBER

1/3/1/16/1G-265 (NEAS No. MPP/EIA/0001099/2022)

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TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

1 INTRODUCTION

1.1.1 BACKGROUND AND TERMS OF REFERENCE

The proponent is proposing the development of an area of approximately 3 650ha, with a maximum export capacity of up to 300MW. The proposed project will be operated under a Special Purpose Vehicle (SPV), and the Project Applicant is Mukondeleli Wind Energy Facility (RF) (Pty) Ltd.

In terms of the National Environmental Management Act (Act 107 of 1998, as amended) (NEMA) and the 2014 Environmental Impact Assessment (EIA) Regulations promulgated in Government Notice (GNR) 982, as amended, the proposed project requires a S&EIA process. In order for the proposed project to proceed, it will require an Environmental Authorisation (EA) from the Competent Authority (i.e. the Mpumalanga Department Agriculture, Rural Development, Land and Environmental Affairs (MDARDLEA)).

This EMPr was compiled as part of the S&EIA process and must be read in conjunction with the final Environmental Impact Report (EIR) in support of the EA application.

1.2 DETAILS OF THE 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 1-1** 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 1-1: Details of the Environmental Assessment Practitioner

ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	**WSP GROUP AFRICA (PTY) LTD**
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STATEMENT OF INDEPENDENCE

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

1.3 ENVIRONMENTAL MANAGEMENT PROGRAMME STRUCTURE

APPENDIX 4	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 982	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;	**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 1.4
(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 1.4 Section1.5 **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 1.6 Section 3 Section 6
	(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 6
	(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	
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6

APPENDIX 4	LEGISLATED REQUIREMENTS AS PER THE NEMA GNR 982	RELEVANT REPORT SECTION
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 6
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 4.1 Section 6
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 6
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 4.4 Section 6
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	Section 4.3, 4.4 and 4.5
(m)	an environmental awareness plan describing the manner in which-	Section 4.2
	(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

1.4 PROJECT DESCRIPTION

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

1.4.1 PROJECT LOCATION

The proposed Mukondeleli WEF is located approximately 8km south of Secunda in the Gert Sibande District Municipality and the GMM Local Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa.

The proposed Mukondeleli WEF is not located within one of the promulgated Renewable Energy Development Zones (REDZ). Furthermore, only four renewable energy projects are located within a 55km radius of the site, namely:

- The authorised Tutuka 65.9 MW Solar Photovoltaic (PV) Energy Facility and its associated infrastructure (Ref: 14/12/16/3/3/2/754) located 23km southwest of the site;
- The authorised Forzando North Coal Mine Solar PV Facility, 9.5MW, (Ref: 14/12/16/3/3/1/452) is located 55km northwest of the site; and
- The proposed Impumelelo WEF to be located southeast of the site.
- The proposed Vhuvhili Solar Energy Facility (NEAS No. MPP/EIA/0001063/2022) located approximately 10km east of the site.

The locality of the Mukondeleli WEF is included in **Figure 1-1**. The Mukondeleli WEF project site, along with the main components, is indicated in **Figure 1-2**. The details of the properties associated with the proposed

Mukondeleli WEF, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in **Table 1-2.**

Table 1-2: Mukondeleli WEF Affected Farm Portions

FARM NAME	21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL
Portion 0 of the Farm Knoppies No. 314	T0IS00000000031400000
Portion 1 of the Farm van Tondershoek No. 317	T0IS00000000031700001
Portion 2 of the Farm van Tondershoek No. 317	T0IS00000000031700002
Portion 2 of the Farm Brandwacht No. 316	T0IS00000000031600002
Portion 2 of the Farm Bosjesspruit No. 291	T0IS00000000029100002
Portion 3 of the Farm Brandwacht No. 316	T0IS00000000031600003
Portion 4 of the Farm Brandwacht No. 316	T0IS00000000031600004
Portion 5 of the Farm Brandwacht No. 316	T0IS00000000031600005
Portion 5 of the Farm Tweefontein No. 321	T0IS00000000032100005
Portion 6 of the Farm Bosjesspruit No. 291	T0IS00000000029100006
Portion 7 of the Farm van Tondershoek No. 317	T0IS00000000031700007
Portion 8 of the Farm van Tondershoek No. 317	T0IS00000000031700008
Portion 11 of the Farm van Tondershoek No. 317	T0IS00000000031700011
Portion 8 of the Farm Bosjesspruit No. 291	T0IS00000000029100008
Portion 9 of the Farm Knoppiesfontein No. 313	T0IS00000000031300009
Portion 9 of the Farm Bosjesspruit No. 291	T0IS00000000029100009
Portion 10 of the Farm Bosjesspruit No. 291	T0IS00000000029100010
Portion 11 of the Farm Bosjesspruit No. 291	T0IS00000000029100011
Portion 12 of the Farm Bosjesspruit No. 291	T0IS00000000029100012
Portion 12 of the Farm van Tondershoek No. 317	T0IS00000000031700012
Portion 13 of the Farm Brandwacht No. 316	T0IS00000000031600013
Portion 13 of the Farm Bosjesspruit No. 291	T0IS00000000029100013
Portion 14 of the Farm Bosjesspruit No. 291	T0IS00000000029100014

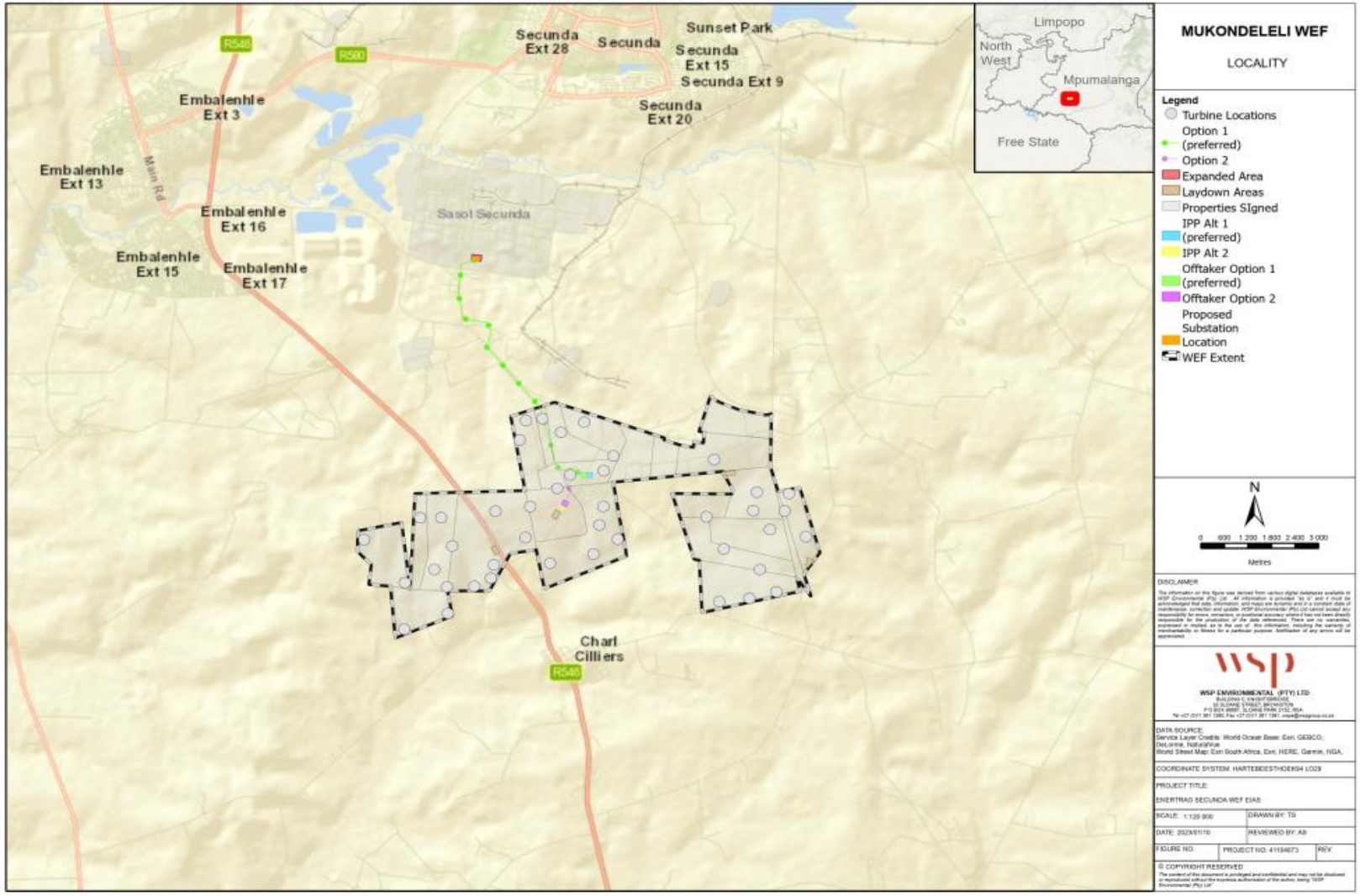


Figure 1-1: Locality map for the proposed Mukondeleli WEF, near Secunda in the Mpumalanga Province, showing the location and proximity of the respective projects to each other

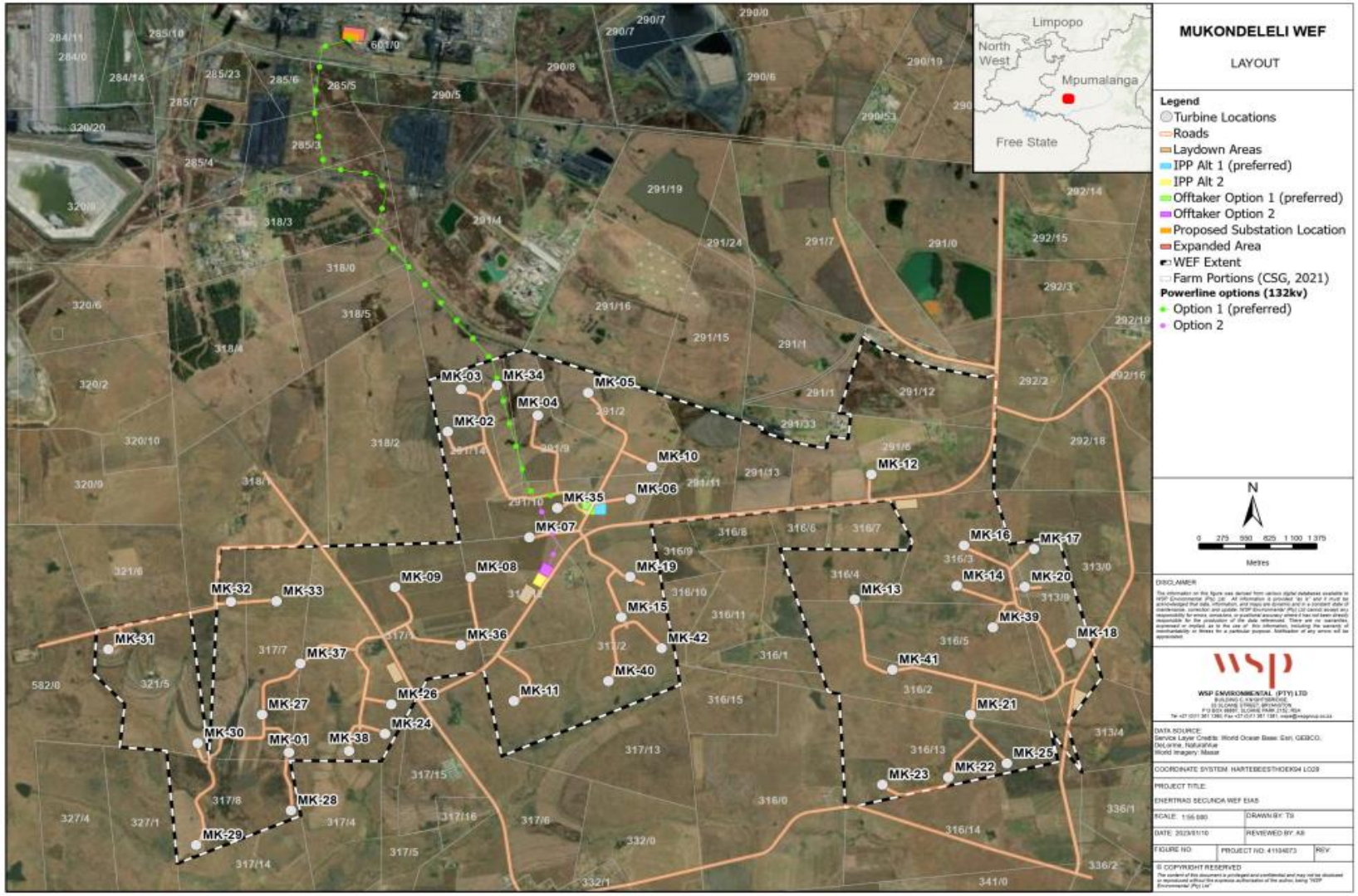


Figure 1-2: Proposed Mukondeleli WEF and associated main components

1.4.2 ACTIVITY DESCRIPTION

The proposed Mukondeleli WEF will be developed with an installed capacity of up to 300 MW for export from the facility. The proposed Mukondeleli WEF will comprise the following key components, as outlined in **Table 1-3**:

Table 1-3: Technical summary of the proposed Mukondeleli WEF and associated infrastructure

TECHNICAL DETAILS OF THE PROPOSED MUKONDELELI WEF FACILITY

Export Capacity	Up to 300 MW
Number of Turbines	Up to 42
Development Footprint (Buildable Area)	Approximately 100 ha
Project Area (Assessed Area)	Approximately 3600 ha
Turbine hub height	Up to 200m
Rotor diameter	Up to 200m
Turbine foundation	25m diameter x 3m deep
Permanent hard standing area for each wind turbine	Approximately 1 500m² per turbine. **Figure 1-3** illustrates the typical hardstanding requirements for the construction of each turbine (it should be noted that the figure below is for illustration purposes only – the exact layout and specification of the hardstanding will be determined once the design phase has been completed).
Onsite substation and Battery Energy Storage System (BESS)	— Combined footprint of up to 4ha — Storage capacity will be up to 300MW / 1200 megawatt-hour (MWh) with up to four hours of storage — Lithium Battery (Lithium Iron Phosphate, Lithium Nickel Manganese Cobalt oxides) or Vanadium Redox Flow Technologies. Specific BESS technology to be determined following EPC procurement prior to construction. — Main components include the batteries, power conversion system and transformer which will all be stored in various rows of containers — BESS components will arrive on site pre-assembled.
Operations and Maintenance Building Infrastructure	Operations and maintenance (O&M) building infrastructure will be required to support the functioning of the WEF and for services required by operations and maintenance staff. The O&M building infrastructure will be in close proximity to the site substation and will include: — Operations building of approximately 200m^2; — Workshop and stores area of approximately 300m^2; and — Refuse area for temporary waste storage and conservancy tanks to service ablution facilities.
Construction Camp Laydown, batching plant, concrete wind tower factory, laydown areas	— Construction camp laydown and concrete batching plant footprint of up to 3ha; — Concrete wind tower plant of approximately 10ha (if necessary), comprising amongst others, a concrete storage area, batching plant, electrical infrastructure and substation, generators and fuel stores, gantries and loading facilities, offices, material stores (rebar, concrete, aggregate and associated materials), mess rooms, workshops, laydown and storage areas, sewage and toilet facilities, offices and boardrooms, labour mess and changerooms, mixers, moulds and casting areas, water and settling tanks, pumps, silos and hoppers, a laboratory, parking areas, internal and access roads; — Temporary laydown area of up to 4.5ha for the storage of equipment, materials, fuels, cement, chemicals etc; and

	— Sewage: conservancy tanks and portable toilets.
Access road	Via R546
Length of internal roads	To be determined based on the final layout
Width of roads	Up to 10m, including turning circle/bypass areas of up to 20m. The roads and cables will be positioned within a 20m wide corridor.
Height of fencing	Up to 3m high
Specifications of onsite switching stations, transformers, invertors, onsite cables etc	The medium voltage collector system will comprise of cables up to and including 33kV that run underground, except where a technical assessment suggest that overhead lines are required, within the facility connecting the turbines to the onsite substation
Other associated infrastructure	Lighting, lightning protection, telecommunication infrastructure, storm water channels, water pipelines, offices, operational control centre, Operation and Maintenance Area / Warehouse / workshop, Ablution facilities, a gate house, control centre, offices, warehouses, security building, a visitor's centre; and substation building

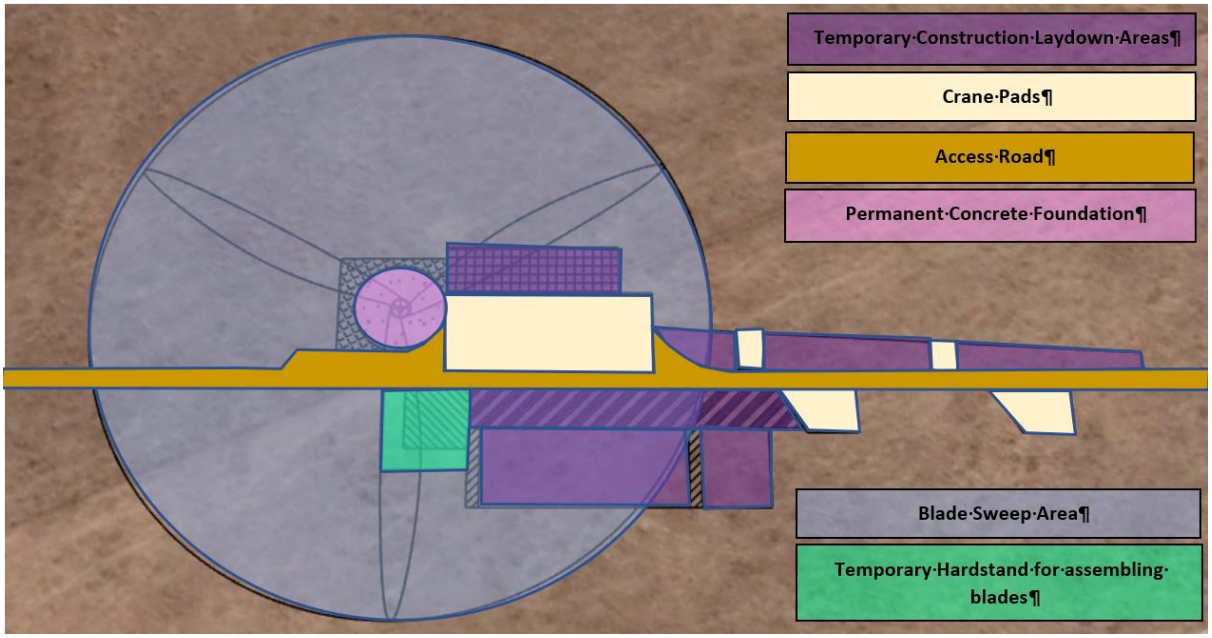


Figure 1-3: Typical Turbine Hard Standing Requirements (illustration purposes only)

The proposed development footprint (buildable area) is approximately 100ha (subject to finalisation based on technical and environmental requirements), and the extent of the project site is approximately 3650 ha. The development footprint includes the turbine positions and all associated infrastructures as outlined above.

1.4.3 PROJECT DEVELOPMENT PHASES

CONSTRUCTION PHASE

The construction phase will follow industry standard methods and techniques associated with WEF developments, and will consist of the following key activities:

— Site establishment will include clearing of vegetation and topsoil at the footprint of each turbine (approximately 1 ha per turbine), for laydown area and access routes. The temporary laydown area will be constructed, including establishment of the construction camp (temporary offices, storage containers,

concrete batching plant, concrete wind tower plant etc). Site establishment will also entail the installation and/or connection of services (sanitation, electricity etc).

- 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.
- Subject to the determination of founding specifications, earthworks will be required. This is likely to entail:
  - Excavation of foundation holes to a depth of approximately 4.5m and pouring of concrete foundations of approximately 2500m^3 from the batching plant. Concrete foundations will be constructed at each turbine location. Please note these dimensions may be larger as required by the geotechnical conditions.
  - Concrete foundation will be constructed to support a mounting ring.
  - 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. A large lifting crane(s) will be required to lift the turbine sections (nacelle, blades) into place.
- A large lifting crane(s) will be required to lift the turbine sections (nacelle, blades) into place. The lifting crane/s will be brought on site and will be required to move between the turbine site. Cranes of varying sizes may be required depending on the size of the components.
- An IPP substation will be constructed on the site. The wind turbines will be connected to the IPP substation via underground or overhead (if required) up to 33kV electrical cables. The BESS will typically require the placement of multiple containers to house the BESS components.
- Ancillary infrastructure will include construction site office, temporary laydown area and workshop area for contractor's equipment.
- Once all construction is completed on site and all equipment and machinery has been removed from the site, the site will be rehabilitated.

OPERATIONAL PHASE

The operational phase includes the following activities:

- The generation of wind energy from the facility; and
- Periodic inspections and maintenance of the WEF.

DECOMMISSIONING PHASE

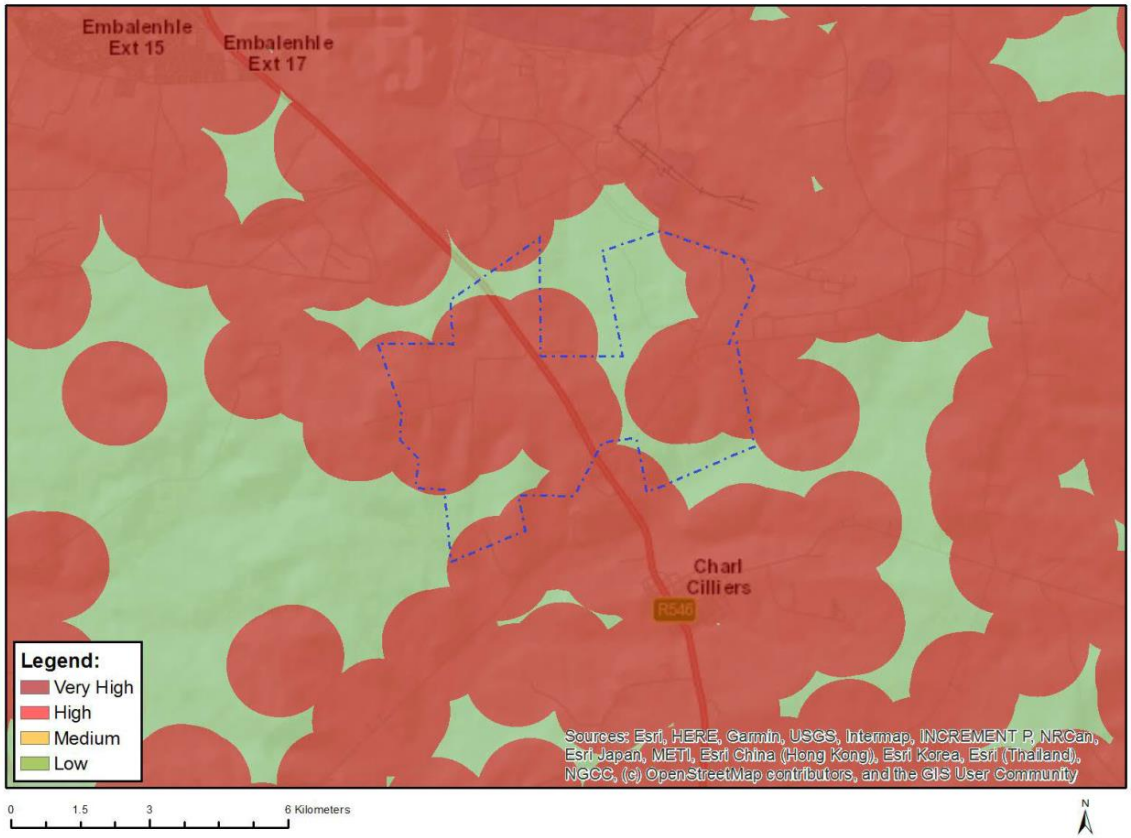
The proposed facility is expected to be operational for approximately 25 years. Should it be decided not to extend beyond the 25 years lifespan, the facility will be decommissioned. The decommissioning phase includes the activities associated with the removal/dismantling of the WEF and associated infrastructure when no longer necessary. This would entail returning the land to its pre-construction state.

1.5 ENVIRONMENTAL SENSITIVITY

1.5.1 NOISE SENSITIVITY

Based on the DFFE Screening Tool, the site contains areas of Very High sensitivity due to the presence of potential temporarily or permanent inhabited residences. The remaining area within the development footprint is deemed to be of low sensitivity **(Figure 1-4**).

MAP OF RELATIVE NOISE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Area of low sensitivity
Very High	Potential temporarily or permanently inhabited residence

Figure 1-4: DFFE Screening Tool outcome for the Noise theme

Potential noise-sensitive developments, receptors and communities (NSR) were identified using tools such as Google Earth® up to a distance of 2 000 m (recommendation SANS 10328:2003) from WTG locations. Two potential receptors (that could include a number of people and animals) was identified, highlighted in **Figure 1-5**. Other noise-sensitive areas are indicated in green polygons. Also indicated on this figure are generalized 500, 1 000 and 2 000 m buffer zones. Generally, noises from wind turbines:

- could be significant within 500 m, with receptors staying within 500 m from operational WTG subject to noises at a potentially sufficient level to be considered disturbing;
- are normally limited to a distance of approximately 1,000m from operational wind turbines (subject to WTG layout, as the WTG cumulatively contribute to noise levels with 2,000m from WTG). Night-time ambient sound levels could be elevated and the potential noise impact measurable; and
- likely to be audible up to a distance of 2,000m at night. Noises from the WTG are of a low concern at distances greater than 2,000m, although the sound of the WTGs may be audible at greater distances during certain metrological phenomena (sound levels are generally very low at distances greater than 2,000m

The potential noise-sensitive areas illustrated on **Figure 1-6.**

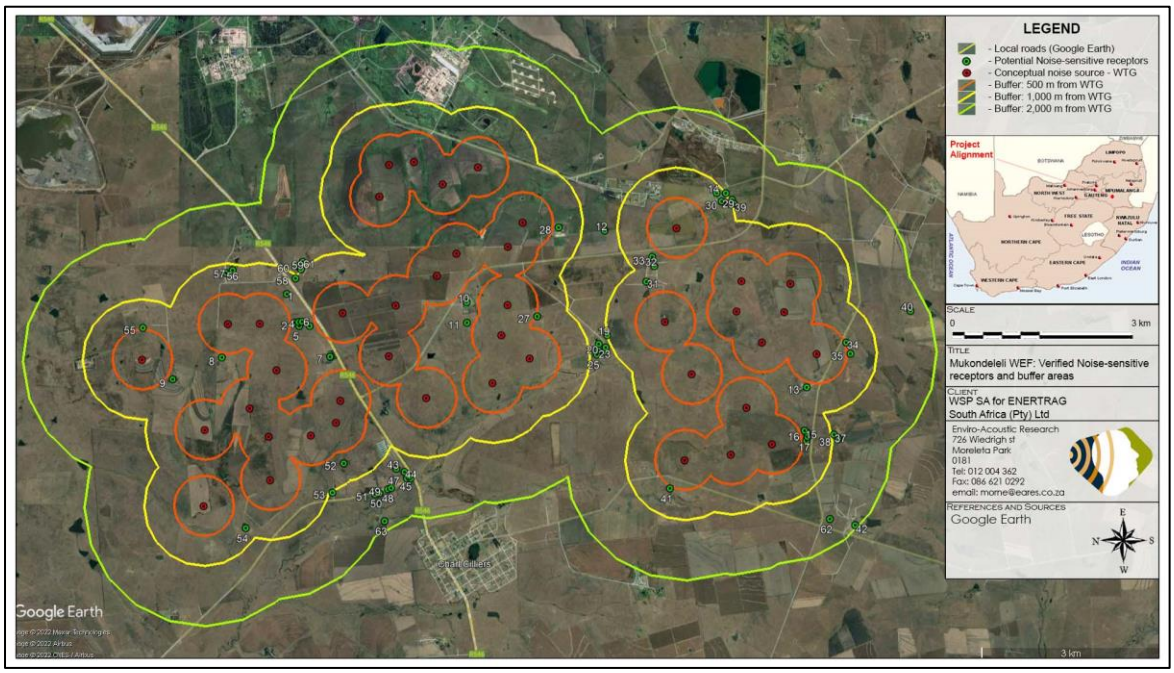


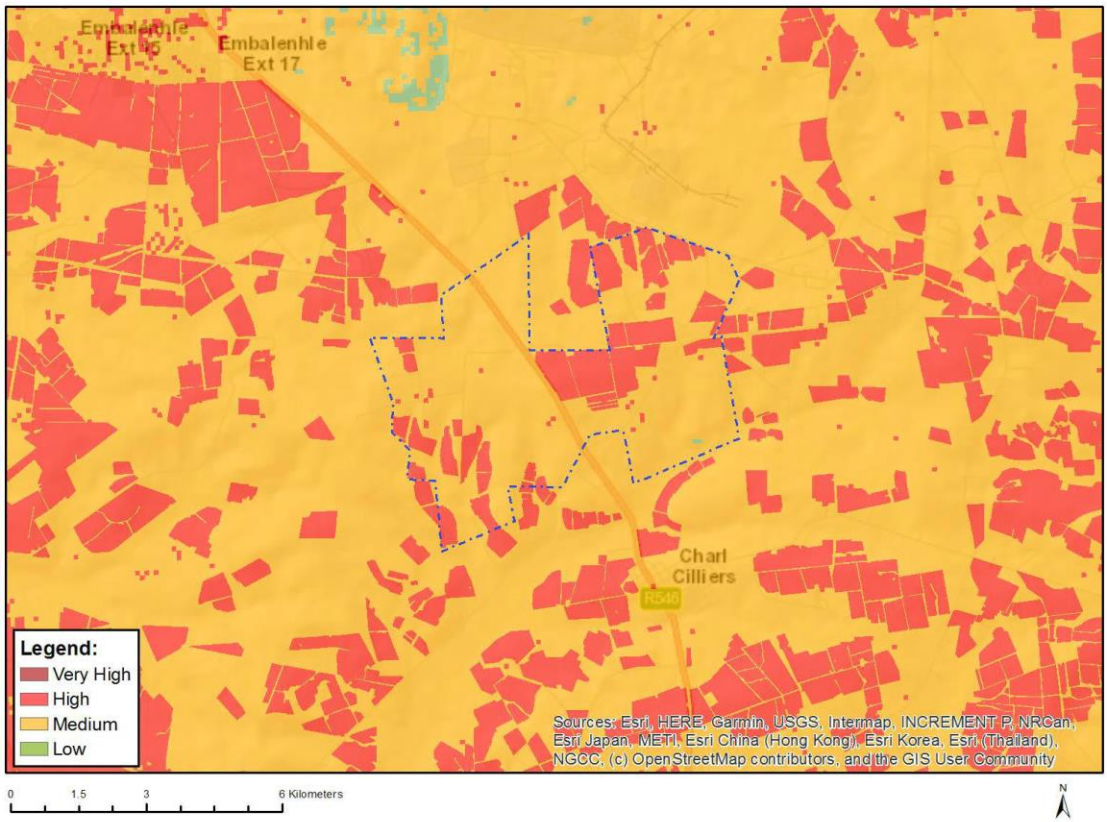
Figure 1-5: Study area and potential noise-sensitive receptors close to the Mukondeleli WEF

Figure 1-6: Study area and potential noise-sensitive areas identified by the online screening tool

1.5.2 AGRICULTURAL SENSITIVITIES

Based on the DFFE Screening Tool, the site contains areas of both High and medium sensitivity **(Figure 1-7).**

MAP OF RELATIVE AGRICULTURE THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;09. Moderate-High/10. Moderate-High
High	Annual Crop Cultivation / Planted Pastures Rotation;Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate
Low	Land capability;01. Very low/02. Very low/03. Low-Very low/04. Low-Very low/05. Low
Medium	Land capability;06. Low-Moderate/07. Low-Moderate/08. Moderate

Figure 1-7: DFFE Screening Tool outcome for the Agricultural Theme

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

It is important to recognise that the agricultural sensitivity of land, in terms of a particular development, is not only a function of the screening tool sensitivity, but is also a function of the severity of the impact which that development poses to agriculture. This is not recognised in the screening tool classification of sensitivity. The agricultural impact of wind farms is completely constrained by their very small agricultural footprint and the

screening tool sensitivity of the land actually has very little influence on the significance of the agricultural impacts of a wind farm.

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

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

The land capability of the site on the screening tool is predominantly 8, but varies from 5 to 9. The small scale differences in land capability across the project area are not very accurate or significant at this scale and are more a function of how the land capability data is generated by modelling, than actual meaningful differences in agricultural potential on the ground. Values of 5 translate to a low agricultural sensitivity, values of 6 to 8 translate to a medium agricultural sensitivity, and values of 9 translate to a high agricultural sensitivity. However, there are only a few, isolated pixels across the site that are of a land capability value of 9, and they are therefore not very significant.

In reality the soils (and therefore the land capability) vary in a fairly complex pattern across the landscape, which is not reflected at the scale of the land capability data and cannot practically be achieved through soil mapping. The most reliable indication of soil cropping potential is historical land use. The suitable versus the unsuitable soils have been identified over time through trial and error. In an agricultural environment like the one being assessed, all the suitable soils are generally cropped, and uncropped soils can therefore fairly reliably be considered to have limitations that make them unsuitable for crop production.

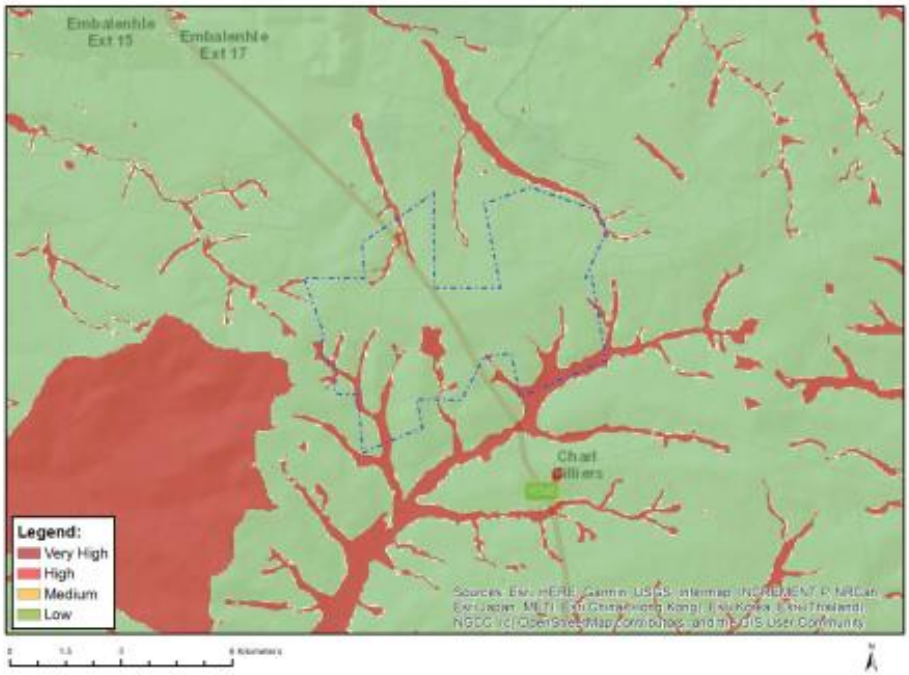
The allocation of high sensitivity to parts of the site are because these parts are classified as cropland in the data set used by the screening tool. However, that data set is outdated. On this site, the extent of cropland has only slightly reduced since the data set for the screening tool was obtained. The suitability for cropping changes with a changing agricultural economy. Slightly poorer soils that may have been cropped with economic viability in the past, are abandoned as cropland because they become too marginal for viable crop production in a more challenging agricultural economy with higher input costs.

This site sensitivity verification verifies those parts of the site that are indicated as cropland as being of high agricultural sensitivity and the rest of the site as being of medium agricultural sensitivity.

1.5.3 AQUATIC SENSITIVITIES

Based on the DFFE Screening Tool, the site contains areas of Very High sensitivity due to the presence of wetlands and estuaries. The remaining area within the development footprint is deemed to be of low sensitivity **(Figure 1-8**).

MAP OF RELATIVE AQUATIC BIODIVERSITY THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

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

Figure 1-8: DFFE Screening Tool outcome for the aquatic biodiversity theme

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

The desktop assessment conducted by DWS indicated that the sub quaternary reaches surrounding the study site are largely natural (B) to moderately modified (C). The site verification indicated that the wetlands are moderately (C) to seriously modified (E) whilst the aquatic macroinvertebrates indicated that the aquatic ecosystems are mostly seriously/critically (E/F) modified. Therefore, the wetland and aquatic ecosystems surrounding the study site are more impacted than expected.

Based on the field assessments, the wetland delineation and buffer indicate that the current layout encroaches on the wetlands as well as their respective buffer areas. Although the wetland and aquatic ecosystems are impacted, they still fulfil important ecosystem services and also form part of national and provincial conservation targets. It is therefore recommended that the layout plans should be updated to remove the footprint of the WEF out of the wetlands and buffer areas. No site alternatives were provided to the specialists for consideration.

Based on the above outcomes, the Aquatic specialist agrees with the environmental sensitivities identified on site. The findings have been informed by a site visit undertaken by the Specialist in 1st to 4th of February 2022.

In conclusion, the DFFE Screening Tool identified two sensitivity ratings within the development footprint, namely, very high and low. Although there is some overlap with the findings on site and the Screening Tool's outcome, the development footprint contains various sensitivities (very high, and low) that were identified following the undertaking of the site visit and spatial input considerations.

The environmental sensitivity input received from the aquatic ecology specialist has been considered and appropriate layout and development restrictions were implemented within the development footprint to ensure that the impact to aquatic ecology is deemed acceptable by the aquatic ecologist.

Based on the Species Environmental Assessment Guideline (SANBI, 2020) wetlands and specialised habitats should be assessed based on their Site Ecological Importance (SEI). The SEI is outlined in **Table 1-4** and illustrated in **Figure 1-9**.

Table 1-4: Ecological Importance of all wetland areas recorded on the study site

HABITAT	CONSERVATION IMPORTANCE (CI)	FUNCTIONAL INTEGRITY (FI)	BIODIVERSITY IMPORTANCE	RECEPTOR RESILIENCE	SITE ECOLOGICAL IMPORTANCE
Wetland Area	High – Confirmed occurrence of wetlands within the development footprint	Medium – Some historical impacts and AIS recorded	Medium – Based on CI and FI	Very Low – Wetlands are not easily restored without significant rehabilitation. Many species are dependent on functional wetland habitat.	Based on BI – Medium and RR – Very Low = High

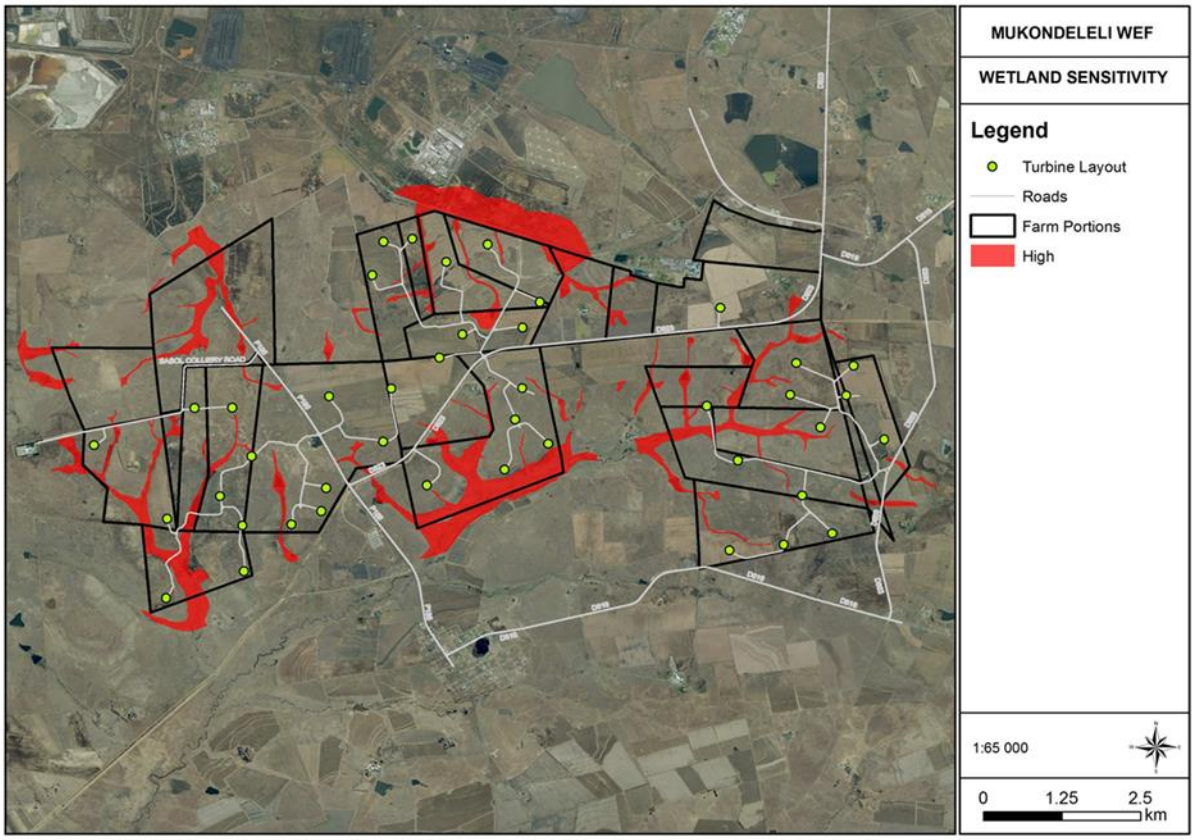


Figure 1-9: Wetland sensitivity based on the Site Ecological Importance (SANBI, 2020) for the proposed Mukondeleli WEF study area.

1.5.4 TERRESTRIAL BIODIVERSITY SENSITIVITIES

The biodiversity theme sensitivity as indicated in the DFFE Screening Tool was derived to be Very High (**Figure 1-10**). This is due to presence on site of Vulnerable Ecosystem, CBAs and Protected Areas Expansion Strategy. The theme indicates the entire study area as being in the Very High sensitivity category.

MAP OF RELATIVE TERRESTRIAL BIODIVERSITY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

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

Figure 1-10: DFFE Screening Tool outcome for the terrestrial biodiversity theme

This theme considers the presence of protected areas, National Protected Area Expansion Strategy (NPAES), CBAs, ESAs and National Freshwater Ecosystem Priority Areas (NFEPAs).

The study area is not located in a protected area nor does it fall in an area earmarked for the NPAES (NPAES 2010). It is also not earmarked in the 5-year plan of the Mpumalanga PAES (data supplied by M. Lötter, MTPA). The background study confirms that the Soweto Highveld Grassland vegetation type on site is listed as

'Vulnerable'. Our background study indicated that although there are CBAs present on site, our sensitivity analysis rated most of these areas as being of low sensitivity. Nevertheless, wind turbines should preferably not be located within the area demarcated as CBA.

There are ESA Landscape corridors and ESA Local corridors indicated on site, but the presence of the WEF would not impact negatively on them.

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

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

The above information was used in conjunction with methodology to calculate Site Ecological Importance, described in the Terrestrial Biodiversity Assessment report. A map of habitat sensitivity on site in relation to project infrastructure was provided by the terrestrial specialist (**Figure 1-11** and **Figure 1-12**). The proposed infrastructure in relation to sensitivities is as follows:

- Access routes: The access route from the R346 is acceptable if it follows existing roads
- Wind Turbines (42): Some turbines, e.g. Turbines MK28 & MK37, were located within areas demarcated as CBA1s while turbines MK11, MK24, MK26, MK36 and MK39 are located in a CBA2 area. No turbines were located in Mpumalanga Highveld Wetlands, e.g. channeled valley-bottom wetlands, but turbine MK16 occurs within an areas demarcated as seep. The current layout of the wind turbines avoided the areas with shallow soils on rocky sheets (Habitat 1 –medium sensitivity) or within or near watercourses (Habitat 7 – high sensitivity)
- On-site switching station E (SS E): The substation site falls partly within an area demarcated as CBA1 and its location should be reconsidered (micro-sited). The substation site also falls in an area demarcated as a seep. The site location is however acceptable in terms of our sensitivity findings for the habitats on site i.e. low sensitivity based on the criteria used.
- On-site switching station F (SS F): The substation site falls partly within an area demarcated as CBA1 and CBA2 and its location should be reconsidered (micro-sited). The substation site also falls in an area demarcated as a seep. The site location is however acceptable in terms of our sensitivity findings for the habitats on site i.e. low sensitivity based on the criteria used.
- Construction camp and batching plants: The four proposed site locations are acceptable in terms of our sensitivity findings for the habitats on site.
- Temporary laydown areas: The four proposed site locations are acceptable in terms of our sensitivity findings for the habitats on site.

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

- 1. Threatened status of the regional vegetation types wherein the proposed site is situated.
- 2. Percentage of IUCN threatened (red-listed) plant species per habitat.
- 3. Number of protected tree species per habitat.
- 4. Percentage of provincially protected plant species per habitat.
- 5. Presence of endemic plant species per habitat or site (endemic to vegetation type).
- 6. Conservation value of plant community (habitat).
- 7. Species richness per habitat or per sample plot (number of plant species).
- 8. Degree of connectivity and/or fragmentation of the habitat, i.e. high connectivity and low fragmentation infers a low rating.
- 9. Soil erosion potential.

— 10. Resilience (this is a measure of the ability of a particular habitat to recover after an impact, i.e. high resilience infers low rating).

Overall, the grassland on shallow soils (rocky sheets) (Habitat 1 – medium sensitivity) and drainage lines (including dams) (Habitat 7 – high sensitivity) were more sensitive than the other habitats on site. Habitats 6, 8, 9 & 10 are man-made habitats with a low sensitivity rating, e.g., cropland, planted pasture, plantations, wind breaks, diggings and dams.

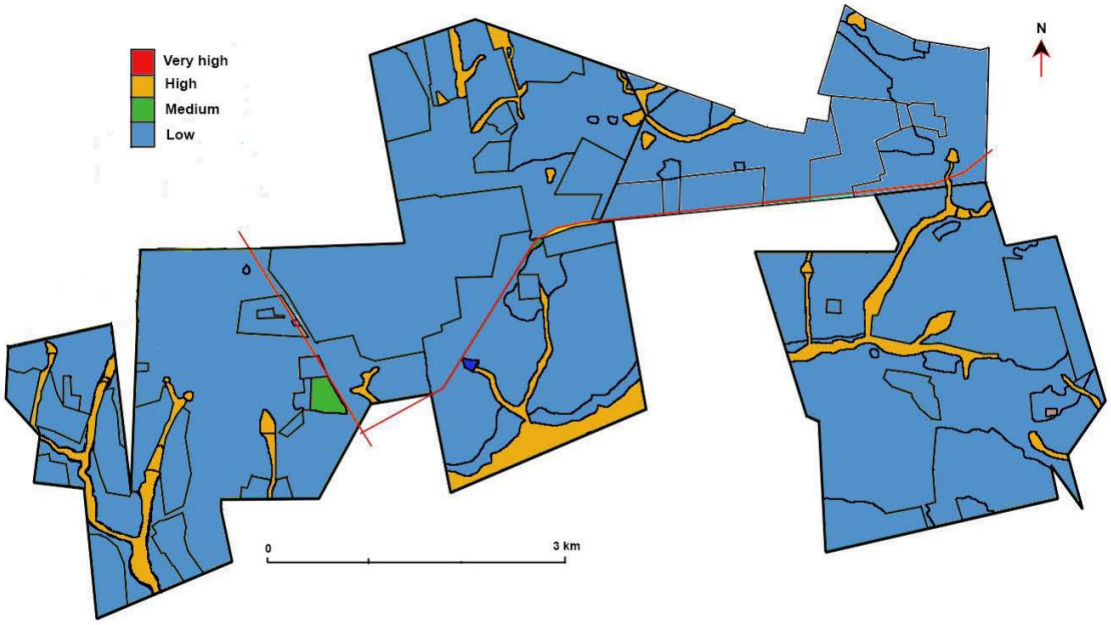


Figure 1-11: Sensitivity map of the Mukondeleli site.

Figure 1-12: Current layout of the infrastructure in the Mukondeleli site in relation to habitat sensitivity on site (Ekotrust, 2022) (Key: Pink squares SS E = switching station E; White squares SS F = switching station F; Yellow rectangles = construction and batching sites; Pink squares = laydown areas; and Turquoise = Main roads)

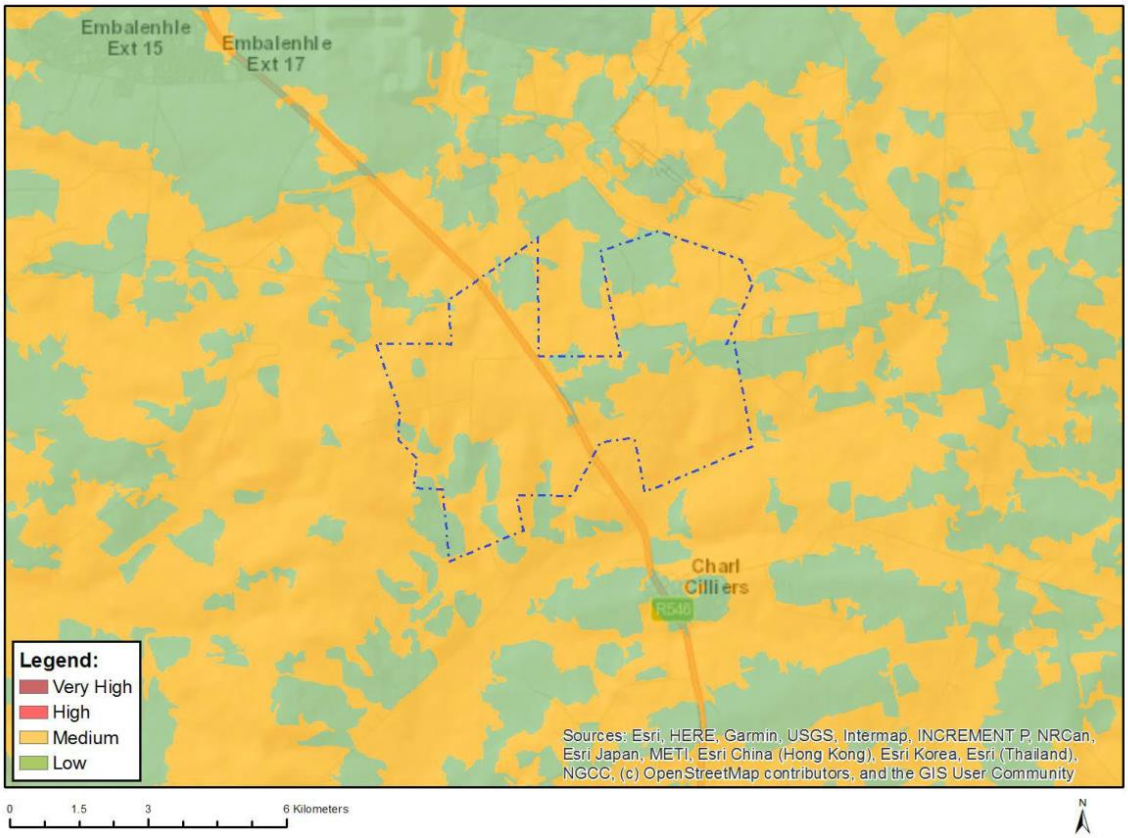
The wind turbines avoided the medium and high sensitive areas. Some of the proposed internal roads would cross some of the drainage lines, however roads should be aligned so that transformation within the CBAs and sensitive wetlands is minimised. Along the watercourses, buffers are applicable to the development. A buffer zone of 32 m is usually applied to drainage lines, but the aquatic specialists may apply wider buffer zones along these habitats.

Apart from the drainage lines, with high sensitivity, the CBAs did not emerge as being highly sensitive according to the criteria used in the habitat sensitivity model that was applied. However, other criteria were used for delineating CBAs in Mpumalanga. The areas mapped as FEPAs were largely incorporated into the CBAs and likewise did not emerge as being highly sensitive in the sensitivity model that was applied.

1.5.5 PLANT SPECIES SENSITIVITY

The Screening Tool rated the sensitivity of the Plant Species Theme as medium (**Figure 1-13**) and highlighted two species with an IUCN status of Vulnerable as being of concern.

MAP OF RELATIVE PLANT SPECIES THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
		X	

Sensitivity Features:

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

Figure 1-13: DFFE Screening Tool outcome for the Plant Species Theme

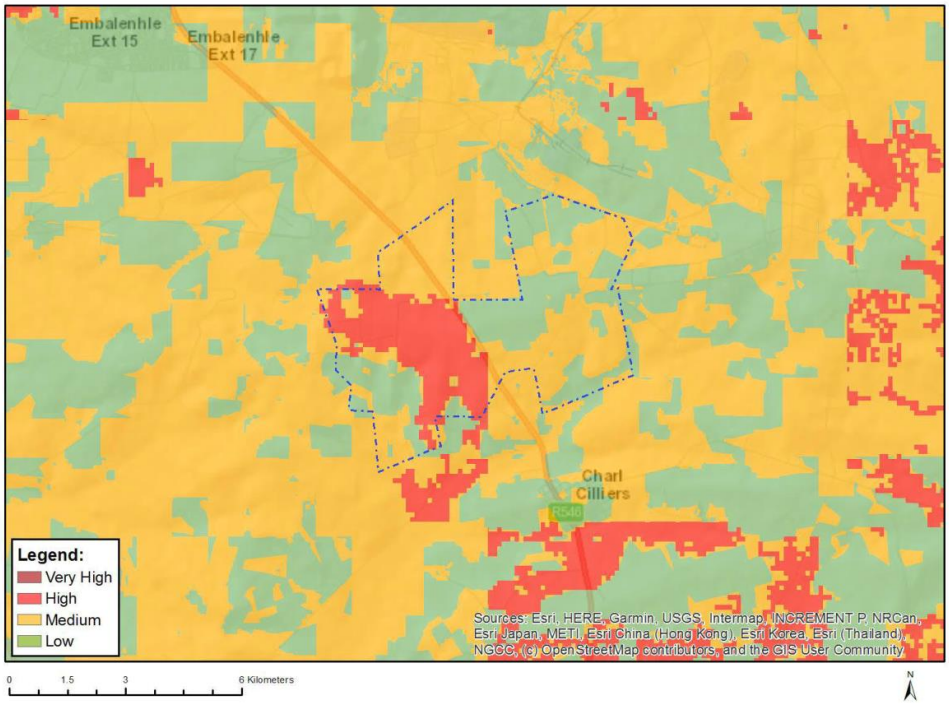
Our field survey and application of a sensitivity model indicated that most of site had a low sensitivity. None of the SCC highlighted by the screening tool were recorded on site.

- Sensitive species 691 occurs in damp depressions in shallow soil over rock sheets. This type of habitat occurs on a small area on site, but the species was not encountered during the vegetation survey.
- The habitats on site do not present suitable habitat for sensitive species 1252 because of a lack of wooded habitat.
- A low sensitivity rating is recommended for the Plant Species Theme

1.5.6 ANIMAL SPECIES SENSITIVITY

The Screening Tool rated the sensitivity of the Animal Species Theme as high (**Figure 1-14**).

MAP OF RELATIVE ANIMAL SPECIES THEME SENSITIVITY



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

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

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

Figure 1-14: DFFE Screening Tool outcome for the Animal Species Theme

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

The Maquassie Musk Shrew *Crocidura maquassiensis* was not listed in the ADU mammal species list or the MNCA (1998) lists for the Mpumalanga province. It was not recorded on site during the survey. The Maquassie Musk Shrew depends on wetlands as suitable habitat in savanna and grasslands. Although it has a wide inferred extent of occurrence, it appears to be patchily distributed. The main threats are the loss or degradation of moist, productive areas such as wetlands and rank grasslands within suitable habitat.

Crocidura maquassiensis has not been reported from Mpumalanga Province post-1999 and thus there is a very low probability for it to occur on site.

Overall sensitivity of animal theme (avifaunal and bat components excluded) is thus rated as medium. However, if the suggested mitigation measures are followed the animal SCC should not be negatively affected.

1.5.7 AVIFAUNAL SENSITIVITY

Based on the DFFE Screening Tool[1], Animal Species theme, relevant to the Mukondeleli WEF, the project area is classified as **Low, Medium and High Sensitivity** (**Figure 1-14**), based on the potential presence of several SCC namely Grey Crowned Crane (Globally and Regionally Endangered), Martial Eagle (Globally and Regionally Endangered), Southern Bald Ibis (Globally and Regionally Vulnerable), White-bellied Korhaan (Regionally Vulnerable), Secretarybird (Globally Endangered and Regionally Vulnerable) and Wattled Crane (Globally Vulnerable and Regionally Critically Endangered). The high sensitivity classification is linked to the potential occurrence of Secretarybird (Globally Endangered, Regionally Vulnerable). The Medium sensitivity is linked to African Marsh Harrier (Globally Least Concern, Regionally Endangered), Caspian Tern (Globally Least Concern, Regionally Vulnerable), White-bellied Bustard (Globally Least Concern, Regionally Vulnerable), and Secretarybird

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

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

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

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

- **Very high sensitivity all infrastructure exclusion zones: 100m buffers around dams and pans, and 32m buffers around drainage lines and associated wetlands**
  Wetlands and pan/dam edges are important breeding, roosting and foraging habitat for a variety of Red List priority species, most notably for Blue Crane (Globally Vulnerable, Regionally Near Threatened) African Marsh Harrier (Globally Least Concern, Regionally Endangered), and Caspian Tern (Globally Least

[1] The avifaunal wind theme in the screening tool is only applicable to projects in a Renewable Energy Development Zone (REDZ)

Concern, Regionally Vulnerable). Turbine blade swept area should not fall within these buffer zones. Road and grid line crossings across these features should be restricted to what is unavoidable.

- **High sensitivity limited development zone: High sensitivity grassland**
  Grassland on shallow soils, rocky grassland, and natural grassland. Development in the remaining high sensitivity grassland in the project site must be limited as far as possible. Where possible, infrastructure must be located near margins, with shortest routes taken from the existing roads. The grassland is vital breeding, roosting and foraging habitat for a variety of Red List priority species, including several SCC. These include Blue Crane (SA status near-threatened), Blue Korhaan (Global status near -threatened), Black-winged Pratincole (Global and SA status Near-threatened), Secretarybird (Global status Endangered, SA status Vulnerable), Pallid Harrier (Global and SA status Near-threatened), Lanner Falcon (SA status Vulnerable).

Figure 1-15 indicates the avifaunal sensitivities identified in the course of the study, from a wind energy perspective.

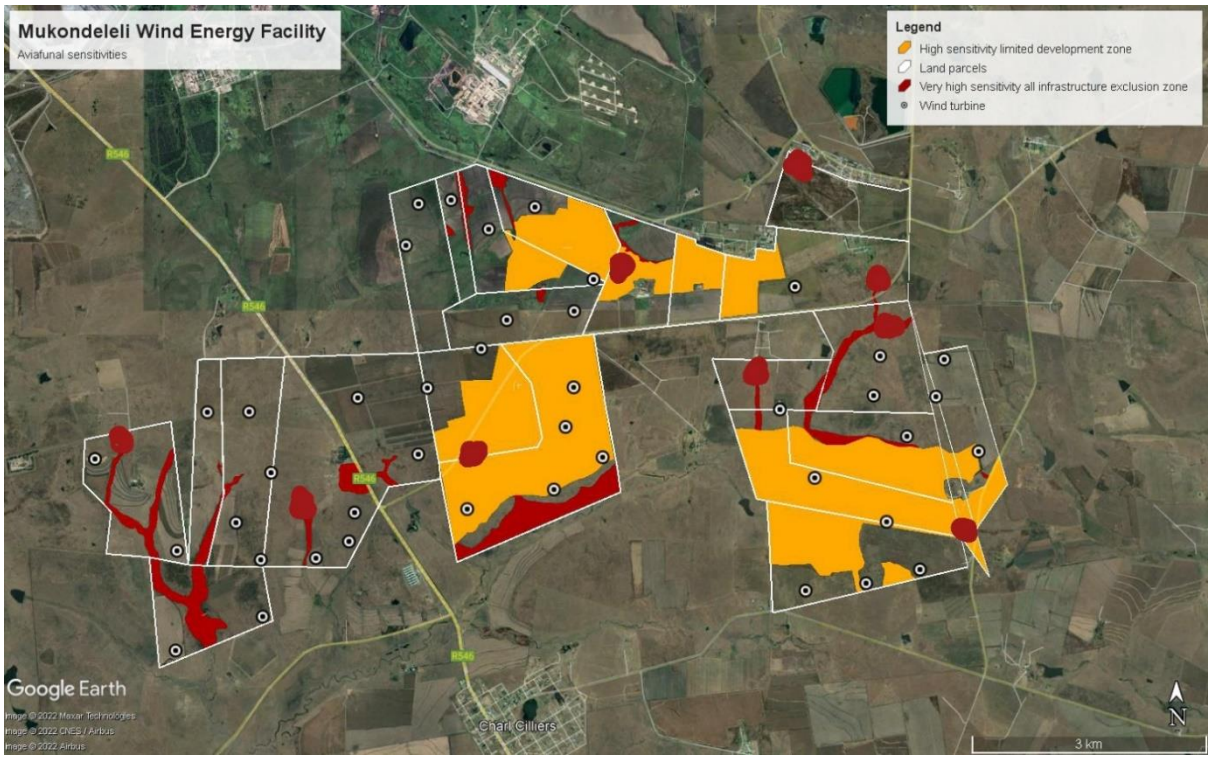
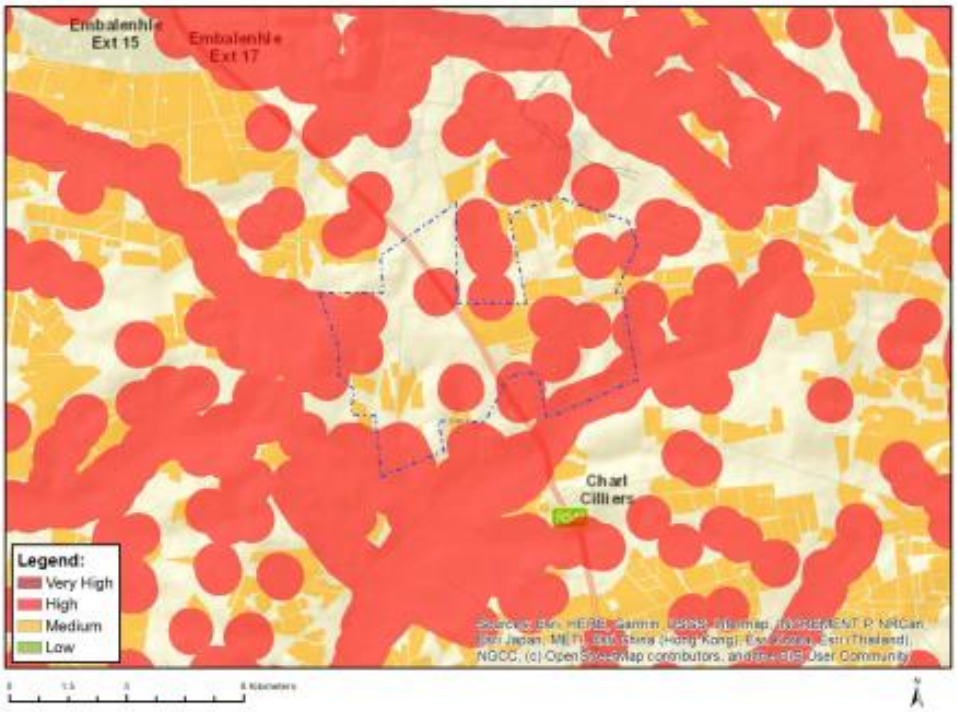


Figure 1-15: Avifaunal sensitivity zones (Chris van Rooyen Consulting, 2022)

1.5.8 BAT SENSITIVITY

The DFFE Screening Tool denotes areas of the Mukondeleli WEF site as High sensitivity with regards to with regards to being within 500m of a river and within 500m of a wetland; a "Medium sensitivity" is also denoted with regards to the presence of croplands (**Figure 1-16**)

MAP OF RELATIVE BATS (WIND) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 500 m of a river
High	Wetland
High	Within 500 m of a wetland
Medium	Croplands

Figure 1-16: DFFE Screening Tool outcome for the bats (wind) theme

The Bat Specialist used Google Earth satellite imagery and verifications during site visits were used to spatially demarcate areas of the site with high and medium sensitivities relating to bat species ecology and habitat preferences, where high sensitivities and their buffers are no-go zones for turbines and turbine blade overhang. In other words, no turbine blades may intrude into high sensitivity buffers. Medium sensitivities indicate areas of probable increased risk due to seasonal fluctuations in bat activity, but turbines are allowed to be constructed in medium sensitivity areas.

Figure 1-17 depicts the sensitive areas of the site, based on features identified to be important for foraging and roosting of the species that are most likely to occur on site.

During the Scoping Phase a total of 10 turbines were intruding into high bat sensitivity buffer. The EIA Phase turbine layout is respecting the bat sensitivity map and turbine positions were adjusted by the applicant to avoid high bat sensitivity buffers. Therefore, no turbines are intruding into any high bat sensitivity buffers with the EIA Phase layout.

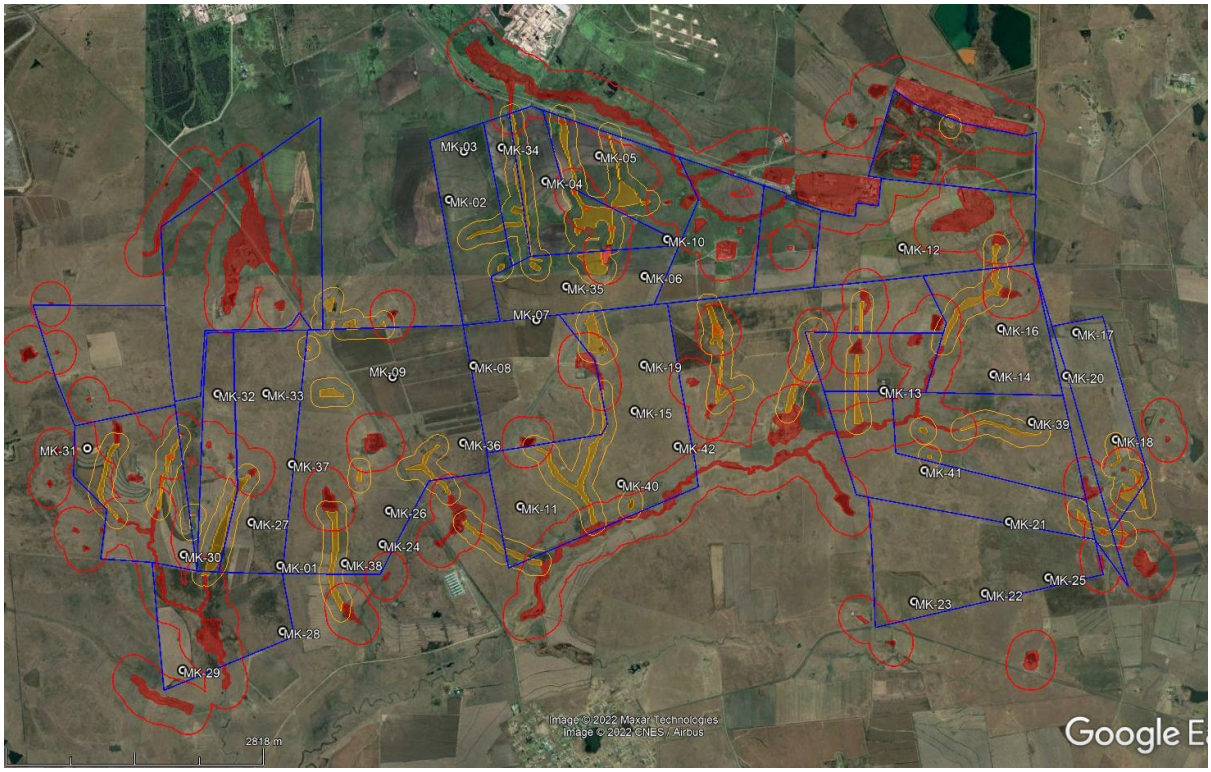
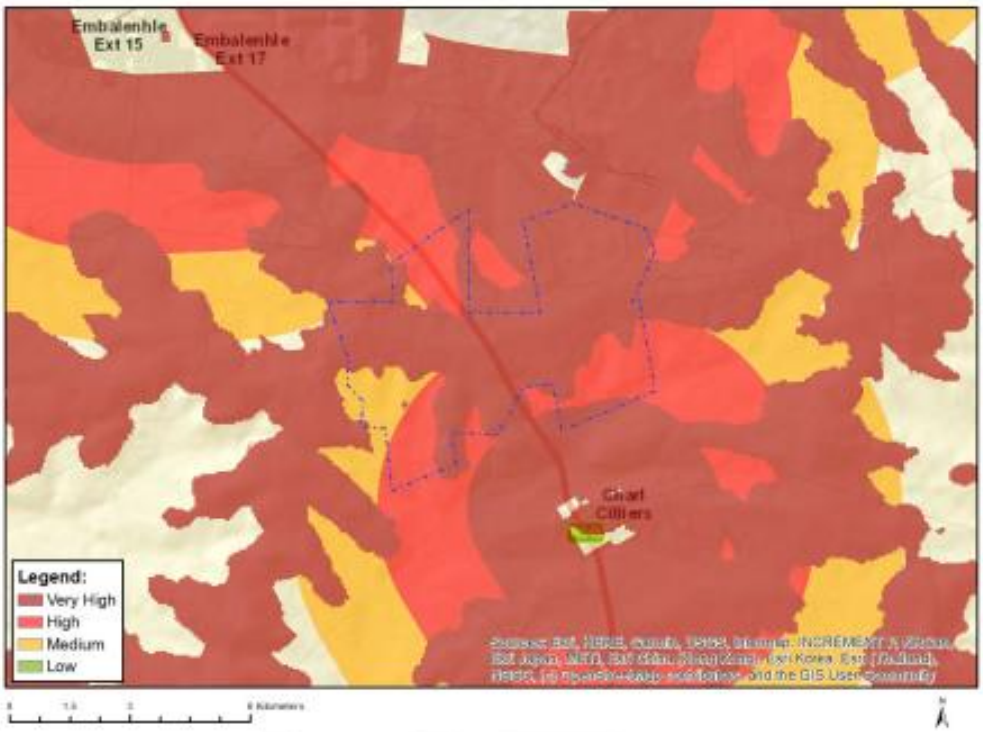


Figure 1-17: Bat sensitivity map of the site. Site area indicated in a blue boundary. Sensitivity polygons are provided in .kml format with this report. Shaded red = high sensitivity; Red line = 200m high sensitivity buffer; Shaded orange = moderate sensitivity; Or

1.5.9 VISUAL SENSITIVITY

In assessing the visual sensitivity of the proposed Mukondeleli WEF project area, consideration was given to the Landscape and Flicker Themes of the National Environmental Screening Tool. The Landscape Theme of the National Environmental Screening Tool identifies areas of very high sensitivity in respect WEF development in the Mukondeleli WEF project area (**Figure 1-18**). According to the Screening Tool, the project area is associated with "mountain tops and high ridges" and this factor has resulted in areas of "Very High" landscape sensitivity in the central and south and north-eastern sectors of the site.

MAP OF RELATIVE LANDSCAPE (WIND) THEME SENSITIVITY



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
High	Slope between 1:4 and 1:10
High	Between 2 and 4 km of a town or village
Medium	Between 4 and 6 km of a town or village
Very High	Mountain tops and high ridges
Very High	Within 2 km of a town or village

Figure 1-18: Relative Landscape Sensitivity within the Mukondeleli WEF project area (April 2022)

The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area. Under this theme, potential flicker receptors have been identified on the site, or within 1 km of the site boundary. Buffers demarcated around these receptors have been assigned a "very high" sensitivity rating (**Figure 1-19**).

MAP OF RELATIVE FLICKER THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

Sensitivity	Feature(s)
Low	Area of low sensitivity
Very High	Potential temporarily or permanently inhabited residence

Figure 1-19: Flicker Sensitivity within the Mukondeleli WEF site (March 2022)

The Screening Tool is however a very high level, desktop assessment and as such the results of the study must be viewed against the findings of the field investigation as well as factors affecting visual impacts such as:

- the presence of visual receptors;
- the distance of those receptors from the proposed development;
- the likely visibility of the development from the receptor locations; and
- the degree of landscape transformation and / or degradation already present

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

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

Based on the criteria in the matrix (**Table 1-5**), the visual sensitivity of the area is broken up into a number of categories, as described below:

i. High - The introduction of a new development such as a WEF be likely to be perceived negatively by receptors in this area; it would be considered to be a visual intrusion and may elicit opposition from these

ii. Moderate – Receptors are present, but due to the nature of the existing visual character of the area and likely value judgements of receptors, there would be limited negative perception towards the new development as a source of visual impact.

iii. Low - The introduction of a new development would not be perceived to be negative, there would be little opposition or negative perception towards it.

The table below outlines the factors used to rate the visual sensitivity of the study area. The ratings are specific to the visual context of the receiving environment within the study area

Table 1-5: Environmental factors used to define visual sensitivity of the study area

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

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

KEY

LOW				MODERATE						HIGH
10	20	30		40	50	60	70	80	90	100

Based on the above factors, the total score for the study area is 32, which according to the scale above, would result in the area being rated as having a LOW visual sensitivity. It should be stressed however that the concept of visual sensitivity has been utilised indicatively to provide a broad-scale indication of whether the landscape is likely to be sensitive to visual impacts and is based on the physical characteristics of the study area, economic activities and land use that predominates. An important factor contributing to the visual sensitivity of an area is the presence, or absence of visual receptors that may value the aesthetic quality of the landscape and depend on it to produce revenue and create jobs and this has been factored into the sensitivity rating above.. However, no formal protected areas, and very few leisure-based tourism activities or sensitive receptor locations were identified in the study area.

During the Scoping Phase of the EIA process, all project specialists were requested to indicate environmentally sensitive areas within the WEF project area. The aim of this exercise was to demarcate any areas that should be precluded from the WEF development footprint. From a visual perspective, sensitive areas would be those where the establishment of wind turbines would result in the greatest probability of visual impacts on potentially sensitive visual receptors.

Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (I.e., at a maximum height of 300m) would be visible from many of the identified potentially sensitive receptors in the study area and as such, no areas on the site are significantly more visible than the remainder of the site. However, the visual prominence of a very tall structure such as a wind turbine would be exacerbated if located on higher ridges or relatively higher-lying plateaus on the site. From a visual perspective therefore, it would be preferred if wind turbines are not located on the highest ridges within the WEF development area, although it is understood that these locations are often the most suitable in terms of wind yield. While these ridges could be seen as areas of potentially high visual sensitivity, the study area as a whole is rated as having a low visual sensitivity, and as such, the sensitivity rating would be reduced to “Medium”. Hence the ridges are not considered to be “no go areas”, but rather should be viewed as zones where turbine placement would be least preferred.

From a visual perspective, another concern is the direct visual impact of the turbines on any farmsteads or receptors located on, or within 500m of the application site. Accordingly, a 500m zone of potential visual sensitivity has been delineated around the existing residences on the application site and also around any receptors located within 500m of the site boundary. In addition, it is recommended that sensitivity zones are applied along certain roads, specifically a 500m zone on either side of the R546 Main Road and a 300m zone on either side of the D823 and D863 district roads which traverse the WEF project area.

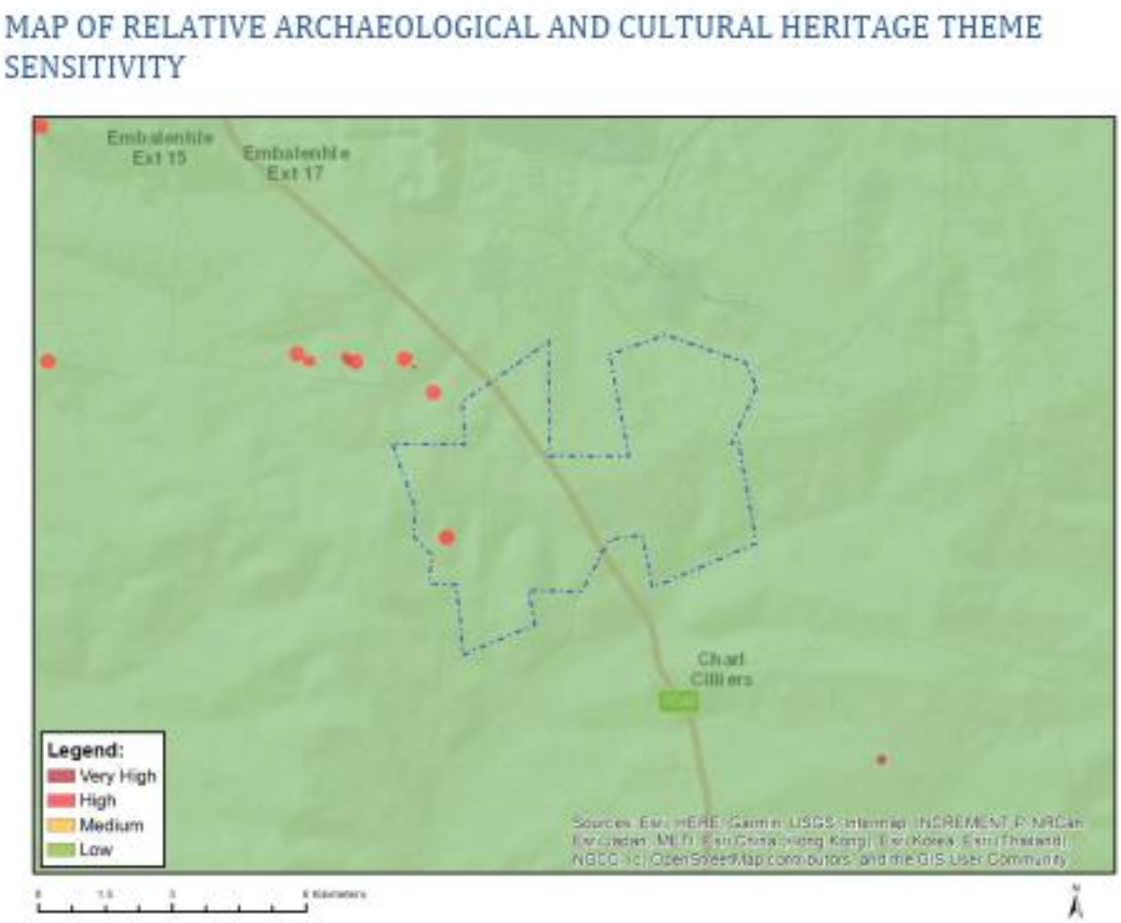
Limiting the development of wind turbines in these areas will reduce visual impacts and prevent significantly adverse impacts of flicker on the local residents and on passing motorists, although the full extent of these impacts can only be determined by way of a Flicker Impact Assessment. At this stage however, the visual sensitivity zones are not considered “no go” areas, but rather should be viewed as zones where development should preferably be limited. It should be stressed that these zones apply to turbine development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of the WEF as a whole and as such the associated on-site infrastructure has been excluded from the sensitivity analysis.

Although the Screening Tool identifies significant areas of very high landscape and flicker sensitivity within the Mukondeleli WEF project area, the site sensitivity verification exercise conducted in respect of this VIA did not indicate the presence of mountaintops, high ridges or any significantly steep slopes. This assessment, confirmed by the field investigation, showed the presence of low ridges and plateaus in a largely undulating landscape. The sensitivity analysis above has recognised these ridges and identified the higher ridges as zones where development would be least preferred.

The presence of receptors, either on the Mukondeleli WEF application site, or within 1km of the site boundary, was confirmed by the site sensitivity verification exercise. However, an assessment of receptor locations using Google Earth showed that there were no receptors present at some of the locations identified by the National Screening Tool. The remaining (confirmed) receptors were factored into the sensitivity analysis, together with a 500m buffer which is considered sufficient to reduce any adverse effects of shadow flicker. It should be noted that most of the affected receptors are not expected to be sensitive to the proposed development due to the fact that they are located within the WEF project area and it is assumed that the relevant land owners support the proposed project.

1.5.10 HERITAGE SENSITIVITY

Based on the DFFE Screening Tool the Mukondeleli WEF site is classified as Low sensitivity with regards to the archaeological and cultural heritage theme, with the exception of one small area of high sensitivity in the west that appears to be associated with a farmstead where heritage resources were found (**Figure 1-20**).



Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
	X		

Sensitivity Features:

Sensitivity	Feature(s)
High	Within 150m of a Grade IIIa Heritage site
Low	Low sensitivity

Figure 1-20: DFFE Screening Tool outcome archaeological and cultural heritage theme sensitivity

The site visit showed that in fact the majority of the site is of low sensitivity but that a number of small areas (where heritage resources were found) considered to be of medium to high sensitivity. **Figure 1-21** shows the areas considered to be sensitive from a heritage point of view. Medium to high cultural significance site (orange and red) can be considered high sensitivity while low cultural significance sites can be considered as being of medium sensitivity.

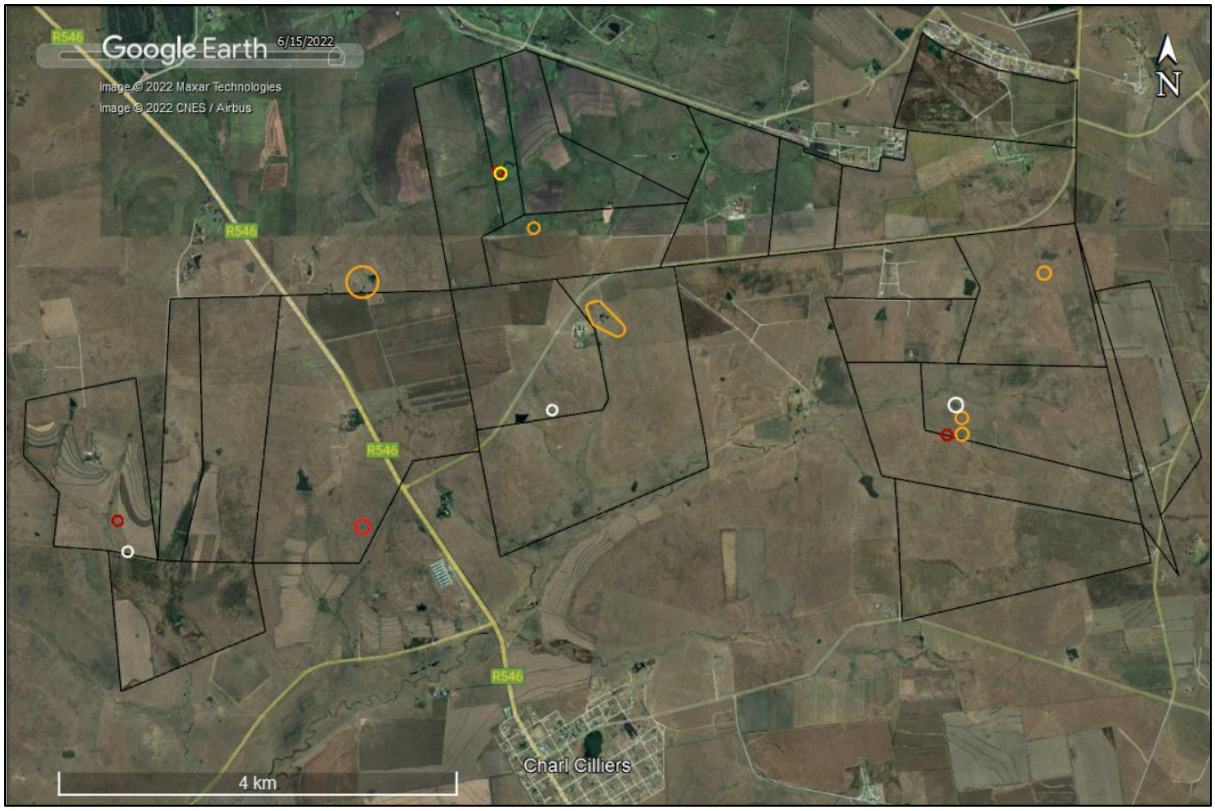


Figure 1-21: Grade map of the study area showing the locations of all sites found. They are coloured as follows: Graded IIIA = dark red, GPA = orange, GPB = yellow and GPC = white.

1.5.11 PALAEONTOLOGY SENSITIVITY

Based on the DFFE Screening Tool the Mukondeleli WEF site is classified as Very High Sensitivity with regards to the palaeontology theme, due to the occurrence of features with Very High Palaeontological sensitivity (**Figure 1-22**).

MAP OF RELATIVE PALEONTOLOGY THEME SENSITIVITY

Very High sensitivity	High sensitivity	Medium sensitivity	Low sensitivity
X			

Sensitivity Features:

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

Figure 1-22: DFFE Screening Tool outcome palaeontology theme sensitivity

The palaeontological sensitivity of the area under consideration is presented in **Figure 1-23**. The site for development mainly is in the Jurassic dolerite but there are a few outcrops of the Vryheid Formation.

The **Vryheid Formation** lies on the uneven topography of pre-Karoo or Dwyka Group rocks in the northern and northwestern margins, but lies directly on the Pietermaritzburg Formation in the central and eastern part. The lithofacies show a number of upward-coarsening cycles, some very thick, and they are essentially deltaic in origin. There are also delta-front deposits, evidence of delta switching, and fluvial deposits with associated meandering rivers, braided streams, back swamps or interfluves and abandoned channels (Cadle et al., 1993; Cairncross, 1990; 2001; Johnson et al., 2006). Coal seams originated where peat swamps developed on broad abandoned alluvial plains, and less commonly in the backswamps or interfluves. Most of the economically important coal seams occur in the fluvial successions (ibid). In the east (Mpumalanga and northern KwaZulu Natal), the Vryheid formation can be subdivided into a lower fluvial-dominated deltaic interval, a middle fluvial interval, and an upper fluvial-dominated deltaic interval again (Taverner-Smith et al., 1988).

Since dolerite is an igneous (volcanic) rock, it does not preserve any fossils. In fact, the dolerite usually destroys any fossils in its near vicinity that were present in the sediments through which it has intruded.

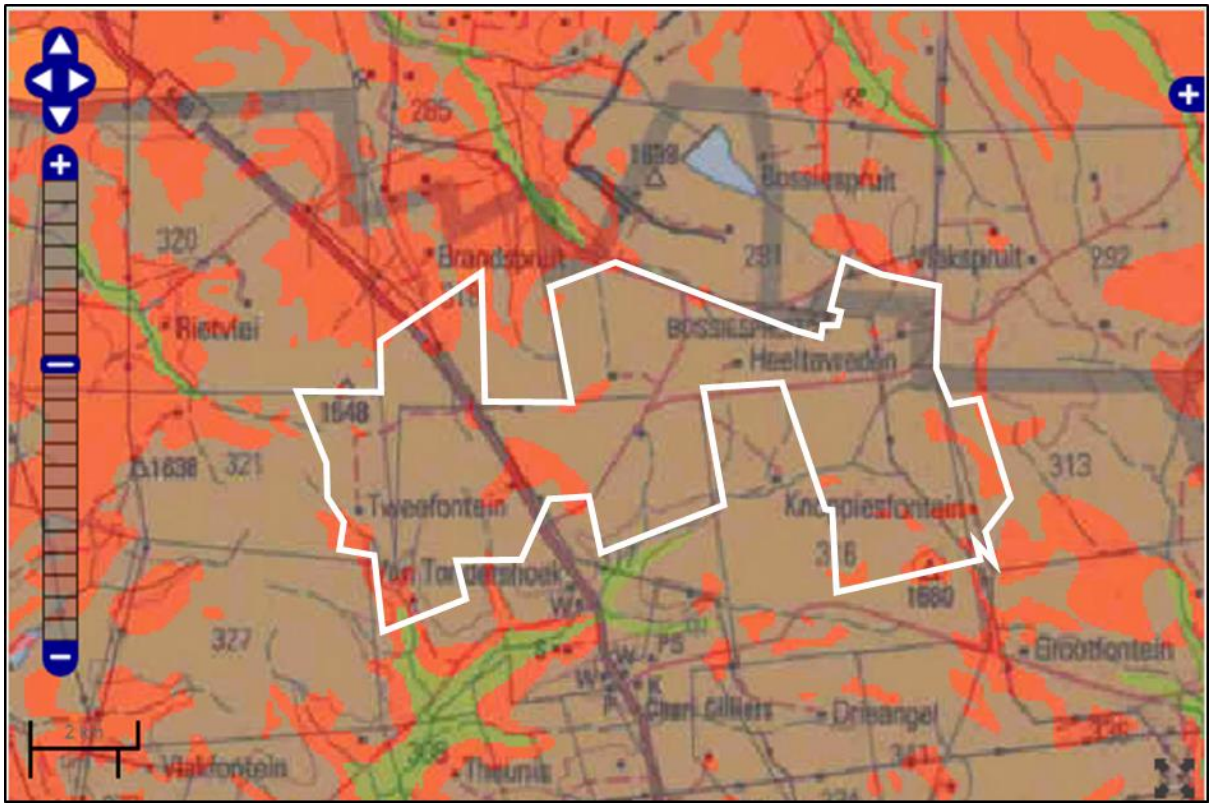


Figure 1-23: SAHRIS palaeosensitivity map for the site for the proposed Mukondeleli WEF (within the white polygon. Background colours indicate the following degrees of sensitivity: red = very highly sensitive; orange/yellow = high; green = moderate; blue = low; grey = insignificant/zero.

1.6 SENSITIVITY MAPPING

A consolidated environmental sensitivity map (**Figure 1-24** and **Figure 1-25**) has been compiled based on the sensitivities and buffers outlined in the specialist studies.

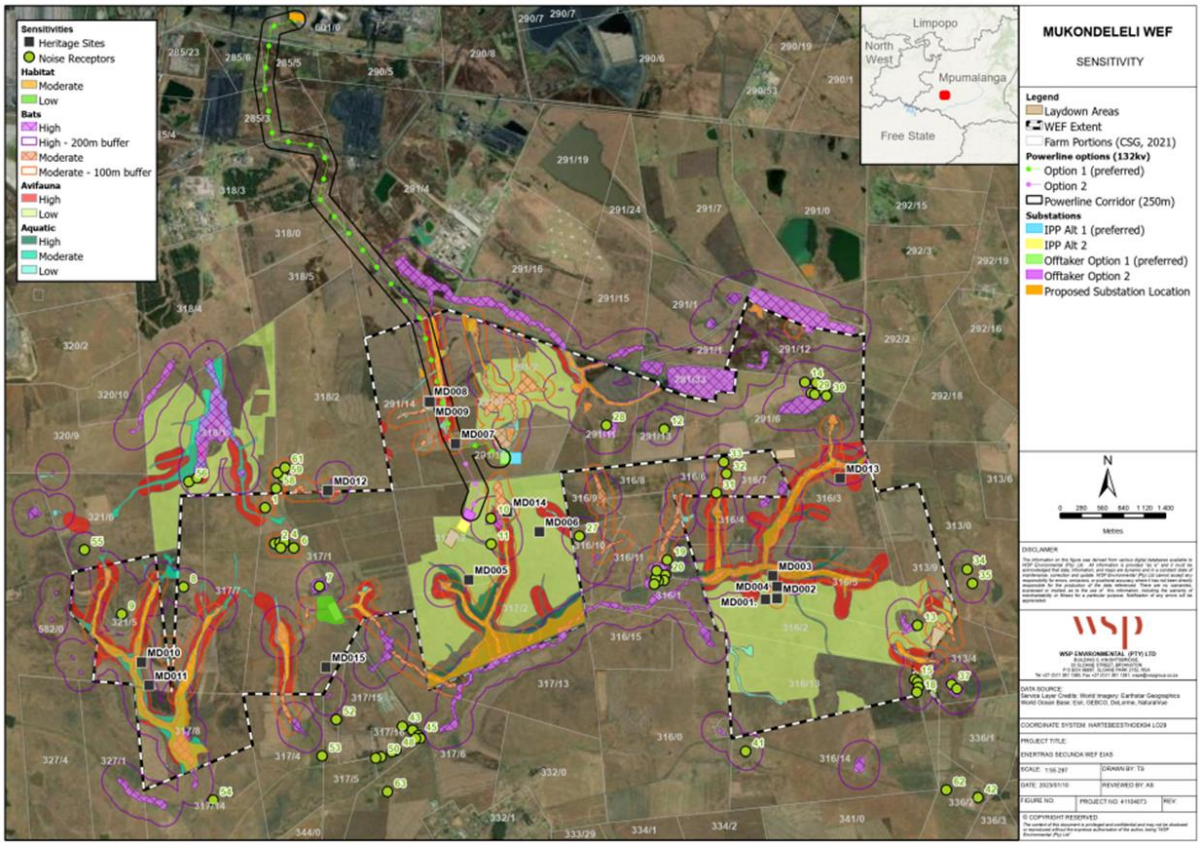


Figure 1-24: Combined Environmental Sensitivity Map

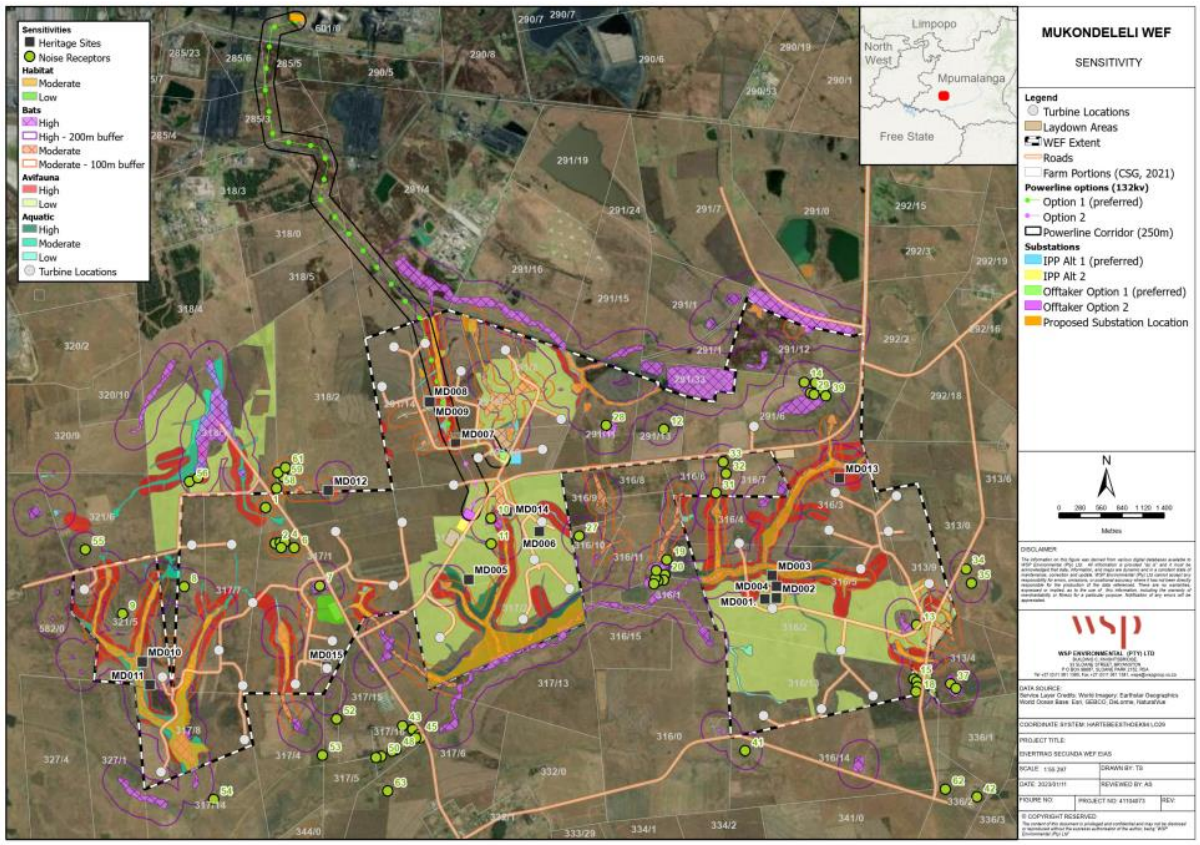


Figure 1-25: Site Layout overlain onto Environmental Sensitivity Map

1.7 FINDINGS OF THE IMPACT ASSESSMENT

A summary of the identified impacts and corresponding significance ratings for the Mukondeleli WEF is provided in **Table 1-6**.

Table 1-6: Impact Significance Summary

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
Air Quality	Generation of dust and PM.	Construction	**Moderate**	Negative	**Low**	Negative
Noise and Vibrations	Construction Impact on Noise - Daytime		**Low**	Negative	**Low**	Negative
	Construction Impact on Noise – Night-time		**Moderate**	Negative	**Low**	Negative
	Operational Impact on Noise - Daytime	Operation	**Low**	Negative	**Low**	Negative
	Operational Impact on Noise – Night-time		**Moderate**	Negative	**Low**	Negative
Topography & Geology	Soil Erosion	Construction	**Moderate**	Negative	**Low**	Negative
	Oil Spillage		**Moderate**	Negative	**Very Low**	Negative
	Disturbance of Fauna and Flora		**Low**	Negative	**Very Low**	Negative
	Slope Stability		**Low**	Negative	**Very Low**	Negative
	Seismic Activity		**Very Low**	Negative	**Very Low**	Negative
	Soil Erosion	Operation	**Low**	Negative	**Very Low**	Negative
	Oil Spillage		**Moderate**	Negative	**Very Low**	Negative
	Soil Erosion	Decommissioning	**Moderate**	Negative	**Very Low**	Negative
	Oil Spillage		**Moderate**	Negative	**Very Low**	Negative
	Disturbance of Fauna and Flora		**Low**	Negative	**Very Low**	Negative
	Slope Stability		**Low**	Negative	**Very Low**	Negative

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
Soils, Land Capability and Agricultural Potential	Agricultural Production Potential loss by land occupation	Construction	**Moderate**	Negative	**Moderate**	Negative
	Agricultural Production Potential loss by soil degradation		**Very Low**	Negative	**Very Low**	Negative
	Agricultural Potential enhancement Through Financial Security	Operation	**Low**	Negative	**Low**	Negative
Aquatic	Changes in Water Flow Regime	Construction	**Moderate**	Negative	**Low**	Negative
	Changes in sediment entering and exiting the system		**Moderate**	Negative	**Low**	Negative
	Introduction and spread of alien vegetation		**Moderate**	Negative	**Low**	Negative
	Loss and disturbance of watercourse habitat and fringe vegetation		**Moderate**	Negative	**Low**	Negative
	Changes in water quality due to pollution		**Moderate**	Negative	**Low**	Negative
	Loss of Aquatic Biota		**Moderate**	Negative	**Low**	Negative
	Changes in Water Flow Regime	Operation	**Moderate**	Negative	**Low**	Negative
	Changes in sediment entering and exiting the system		**Moderate**	Negative	**Low**	Negative
	Introduction and spread of alien vegetation		**Moderate**	Negative	**Low**	Negative
	Loss and disturbance of watercourse habitat and fringe vegetation		**Moderate**	Negative	**Low**	Negative
	Changes in water quality due to pollution		**Moderate**	Negative	**Low**	Negative
	Loss of Aquatic Biota		**Moderate**	Negative	**Low**	Negative

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
Biodiversity	Clearing of Natural Vegetation	Construction	**Moderate**	Negative	**Low**	Negative
	Loss of threatened, protected & endemic plant species		**Moderate**	Negative	**Low**	Negative
	Loss of Faunal Habitat		**Low**	Negative	**Very Low**	Negative
	Direct faunal mortalities due to construction and increased traffic		**Low**	Negative	**Low**	Negative
	Increased dust deposition		**Low**	Negative	**Very Low**	Negative
	Increased human activity, noise and light levels		**Moderate**	Negative	**Low**	Negative
	Establishment of alien vegetation		**Moderate**	Negative	**Very Low**	Negative
	Increased water run-off and erosion		**Moderate**	Negative	**Low**	Negative
	Changes in animal behaviour		**Moderate**	Negative	**Low**	Negative
	Direct faunal mortalities	Operation	**Low**	Negative	**Very Low**	Negative
	Increased light and noise levels and changes in animal behaviour		**Low**	Negative	**Very Low**	Negative
	Establishment of alien vegetation		**Low**	Negative	**Very Low**	Negative
	Increased water run-off and erosion		**Moderate**	Negative	**Low**	Negative
	Faunal mortalities	Decommissioning	**Low**	Negative	**Very Low**	Negative
	Increased dust deposition		**Low**	Negative	**Very Low**	Negative
	Establishment of alien vegetation		**Low**	Negative	**Very Low**	Negative
	Increased water run-off and erosion		**Low**	Negative	**Very Low**	Negative

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
Avifauna	Displacement of priority species due to disturbance associated with the construction of the wind turbines and associated infrastructure.	Construction	**Moderate**	Negative	**Low**	Negative
	Displacement of priority species due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.		**Moderate**	Negative	**Low**	Negative
	Mortality of priority species due to collisions with the wind turbines	Operation	**High**	Negative	**Moderate**	Negative
	Electrocution of priority species on the medium voltage infrastructure.		**High**	Negative	**Very Low**	Negative
	Mortality of priority species due to collisions with the medium voltage infrastructure.		**High**	Negative	**Very Low**	Negative
	Displacement of priority species due to disturbance associated with the dismantling of the wind turbines and associated infrastructure.	Decommissioning	**Moderate**	Negative	**Low**	Negative
Bats	Loss of foraging habitat by clearing of vegetation.	Construction	**Low**	Negative	**Low**	Negative
	Roost destruction during earthworks.		**Low**	Negative	**Very Low**	Negative
	Bat mortalities during foraging.	Operation	**High**	Negative	**Moderate**	Negative
	Bat mortalities during migration.		**Moderate**	Negative	**Low**	Negative
	Increased bat mortalities due to light attraction and habitat creation.		**High**	Negative	**Low**	Negative

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
Visual and Landscape	Visual impact on visual receptors due to construction.	Construction	**Moderate**	Negative	**Low**	Negative
	Visual impact of wind turbines and associated infrastructure.	Operation	**Moderate**	Negative	**Moderate**	Negative
	Visual impact on visual receptors due to decommissioning	Decommissioning	**Moderate**	Negative	**Low**	Negative
Heritage and Cultural Resources	Impacts to Archaeological Resources	Construction	**Moderate**	Negative	**Very Low**	Negative
	Impacts to Graves		**High**	Negative	**Very Low**	Negative
	Impacts on Cultural Resources		**Moderate**	Negative	**Moderate**	Negative
	Impacts on Cultural Resources	Operation	**Moderate**	Negative	**Moderate**	Negative
	Impacts on Cultural Resources	Decommissioning	**Moderate**	Negative	**Moderate**	Negative
Palaeontology	Impacts on Palaeontological resources	Construction	**Very Low**	Negative	**Very Low**	Negative
Transport	Noise, dust pollution due to vehicle trips on-site.		**Moderate**	Negative	**Moderate**	Negative
	Noise, dust & exhaust pollution due to additional trips on the national and district roads.	Operation	**Low**	Negative	**Low**	Negative
Social	Creation of employment and business opportunities.	Construction	**Low**	Positive	**Moderate**	Positive
	Impacts on family structures and social networks associated with the presence of construction workers.		**Moderate**	Negative	**Low**	Negative
	Influx of job seekers into local community.		**Low**	Negative	**Low**	Negative

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
	Risk to safety, livestock and damage to farm infrastructure.		**Moderate**	Negative	**Low**	Negative
	Increased risk of grass fire		**Low**	Negative	**Low**	Negative
	Nuisance impacts associated with construction activities.		**Moderate**	Negative	**Low**	Negative
	Impact on loss of productive farmland.		**Moderate**	Negative	**Low**	Negative
	Improve energy security and support renewable sector.	Operation	**Moderate**	Negative	**Moderate**	Positive
	Creation of employment, skills development and business opportunities.		**Low**	Positive	**Moderate**	Positive
	Generation of additional income for affected farmers.		**Low**	Positive	**Moderate**	Positive
	Visual impact and impact on the areas rural sense of place.		**Low**	Negative	**Low**	Negative
	Visual impact and impact on property values.		**Low**	Negative	**Very Low**	Negative
	Impact of the WEF on local tourism operations and activities.		**Very Low**	Negative	**Very Low**	Negative
	Social Impacts associated with decommissioning	Decommissioning	**Low**	Negative	**Low**	Negative
Climate Change	Reduced GHGs and contribution of cleaner energy to the National grid.	Operation	**High**	Positive	**High**	Positive
Hazardous Substances and Pollutants	Soil, groundwater and surface water contamination	Construction	**Low**	Negative	**Low**	Negative

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
	Soil, groundwater and surface water contamination	Operation	**Low**	Negative	**Low**	Negative
Waste Management	Generation of general and hazardous waste	Construction	**Moderate**	Negative	**Low**	Negative
	Generation of sanitation waste		**Moderate**	Negative	**Low**	Negative
Safety, Health and Environmental Risk	Human health - chronic exposure to toxic chemical or biological agents for SSL BESS	Construction	**Moderate**	**(-)**	**Low**	**(-)**
	Human health - exposure to noise for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human health - exposure to temperature extremes and/or humidity for SSL BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Human health - exposure to psychological stress for SSL BESS		**Low**	**(-)**	**Low**	**(-)**
	Human health - exposure to ergonomic stress for SSL BESS		**Low**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to fire radiation for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to fire radiation for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to explosion over pressures for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**

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

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
	Human health - exposure to noise for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human health - exposure to temperature extremes and/or humidity for VRF BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Human health - exposure to psychological stress for VRF BESS		**Low**	**(-)**	**Low**	**(-)**
	Human health - exposure to ergonomic stress for VRF BESS		**Low**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to fire radiation for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to explosion over pressures for VRF BESS		**Very Lowe**	**(-)**	**Very Low**	**(-)**
	Human and equipment safety - exposure to acute toxic chemical and biological agents for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to violent release of kinetic or potential energy for VRF BESS		**High**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to electromagnetic waves for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Environment - emissions to air for VRF BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Environment - emissions to water for VRF BESS		**Low**	**(-)**	**Low**	**(-)**
	Environment - emissions to earth for VRF BESS		**Low**	**(-)**	**Low**	**(-)**

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

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
	Human and equipment safety - exposure to fire radiation for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to explosion over pressures for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS		**Low**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to acute toxic chemical and biological agents for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to violent release of kinetic or potential energy for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to electromagnetic waves for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Environment - emissions to air for SSL BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Environment - emissions to water for SSL BESS		**Low**	**(-)**	**Low**	**(-)**
	Environment - emissions to earth for SSL BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Environment - waste of resources e.g. water, power etc for SSL BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Public – aesthetics for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Investors – financial for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**

ASPECT	IMPACT DESCRIPTION	PHASE	SIGNIFICANCE (WITHOUT MITIGATION)	NATURE	SIGNIFICANCE (WITH MITIGATION)	NATURE
	Employees and investors – security for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Employees and investors – security for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Emergencies for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Investors – legal for SSL BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human health - chronic exposure to toxic chemical or biological agents for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human health - chronic exposure to toxic chemical or biological agents for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human health - exposure to noise for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human health - exposure to temperature extremes and/or humidity for VRF BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Human health - exposure to psychological stress for VRF BESS		**Low**	**(-)**	**Very Low**	**(-)**
	Human health - exposure to ergonomic stress for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to fire radiation for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to fire radiation for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**
	Human and equipment safety - exposure to explosion over pressures for VRF BESS		**Moderate**	**(-)**	**Low**	**(-)**

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

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

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

1.8 APPLICABLE DOCUMENTATION

The EMPr (this Report) is to be read in conjunction with following documentation:

- Final EIR for the proposed Mukondeleli Wind Energy Facility (March 2023);
- Site Sensitivity Verification and Agricultural Agro-Ecosystem Specialist Assessment for the proposed Mukondeleli Wind Energy Facility;
- Mukondeleli Wind Energy Project: EIA Phase Aquatic Impact Assessment;
- Avifaunal Impact Assessment: Mukondeleli Wind Energy Facility, Grid Connection and Battery Storage Facility;
- 12-Month Pre-construction Bast and Environmental Impact Assessment Report for the proposed Mukondeleli Wind Energy Facility (WEF);
- Terrestrial Biodiversity Assessment: Mukondeleli Wind Energy Facility near Secunda in Mpumalanga Province;
- Geotechnical Desk Study for Mukondeleli Wind Energy Facility;
- Heritage Impact Assessment for the proposed Mukondeleli Wind Energy Facility (up to 200MW), Mpumalanga Province;
- Palaeontological Impact Assessment for the proposed Mukondeleli Wind Energy Facility, south of Secunda, Mpumalanga Province;
- Environmental Acoustic Impact Assessment: Mukondeleli Wind Energy Facility;

- High Level Safety Health and Environmental Risk Assessment for the proposed development of Battery Energy Storage Systems at the Mukondeleli Wind Energy facilities, Mpumalanga;
- Social Impact Assessment: Mukondeleli Wind Energy Facility, Mpumalanga Province;
- Mukondeleli Wind Energy Facility, Mpumalanga: Transport Impact Assessment;
- Proposed Construction of the Mukondeleli Wind Energy Facility near Ermelo, Mpumalanga Province: Visual Impact Assessment Report – EIA Phase; and
- EA (once issued by MDARDLEA).

2 NEED AND DESIRABILITY

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

South Africa is faced with significant increases in electricity demand and a shortage in electricity supply. South Africa is the seventh coal producer in the world, with approximately 77% of the country's electricity generated from coal. This large dependence on coal and its use has also resulted in a variety of negative impacts on the environment, including the contribution to climate change. South Africa is also the highest emitter of greenhouse gases in Africa; attributed to the country's energy-intensive economy that largely relies on coal-based electricity generation.

The development of renewable energy and the associated energy infrastructure is strongly supported at a national, provincial, and local level. The development of, and investment in, renewable energy and associated energy distribution infrastructure is supported by the National Development Plan, New Growth Path Framework and National Infrastructure Plan, which all highlight the importance of energy security and investment in energy infrastructure. The development of the proposed Mukondeleli WEF is therefore supported by key policy and planning documents and is in line with South Africa's strategic energy planning context.

2.1.1 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 WEF 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 WEF qualifies as a clean technology that will generate 300MW 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 12$^{th\ of}$ 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. This project will aid in the efforts towards a just energy transition in accordance to recently signed Political Declaration between SA, USA, UK, EU, Ireland etc.

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.

This project further supports the growing global demand for green hydrogen and its derivatives. One example of such emerging opportunities is that of the German Federal Government's H2Global platform. The H2Global platform is an international auction framework system that enables green hydrogen projects to be established in designated countries, such as South Africa.

2.1.2 NATIONAL PERSPECTIVE

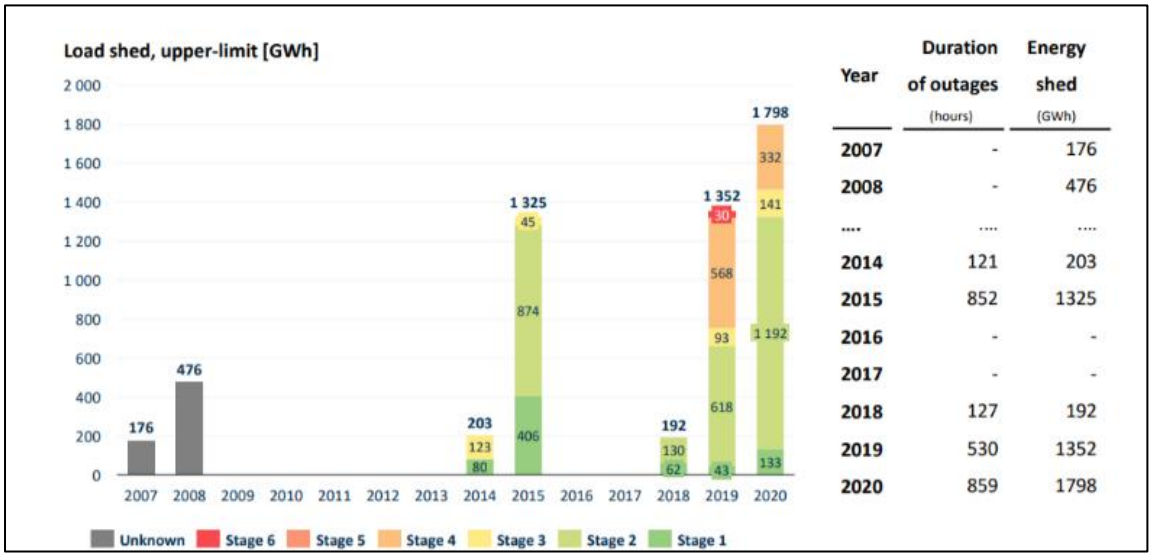
The South African Government, through the IRP, has set a target to secure 17 800 MW of renewable energy by 2030. This is an effort to diversify the country's energy mix in response to the growing electricity demand and promote access to clean sources of energy.

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 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.

The authorisation of the Mukondeleli WEF 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 Mukondeleli WEF, will pave the way for the Just Energy Transition (JET)[2] in South Africa and promote the transition from a fossil fuel-based economy to a low carbon economy. The proposed Mukondeleli WEF aims towards the aforementioned national energy targets of diversification of energy supply and the promotion of clean energy. Wind and solar energy developments contribute to reduced emissions and subsequently climate change whilst promoting industrial development and job creation.

The proposed Mukondeleli WEF will also aid in overcoming the power shortages that are currently faced in the country. In 2020, South Africa witnessed its longest recorded hours of load shedding, with the power being off for 859 hours of the year as shown in **Figure 2-1**. The South African Government has taken strides to try reducing these power cuts through the implementation of bid Windows in REIPPP and lifting the independent power generation threshold to 100MW, but it is still expected that the country will undergo more load shedding. Over the years the construction of Wind facilities has become cheaper, and less time-consuming. Thus, acting as a faster and more efficient method of meeting the ever-growing demand for electricity in the country.



Year	Duration of outages (hours)	Energy shed (GWh)
2007	-	176
2008	-	476
....	....	....
2014	121	203
2015	852	1325
2016	-	-
2017	-	-
2018	127	192
2019	530	1352
2020	859	1798

Figure 2-1: Load shedding hours over the years in South Africa

In addition, the Council for Scientific and Industrial Research (CSIR) reported that renewable energy assisted in relieving pressure on the constrained South African power system during load shedding in the first quarter of 2019. This indicates that renewable energy is a key factor in ensuring that the country does not face further load shedding in the future.

[2] The Just Transition is described as the transition towards a low-carbon and climate-resilient economy that maximizes the benefits of climate action while simultaneously improving the welfare of the workers and their communities.

2.1.3 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 local Mpumalanga economy. Shifting to a low carbon economy will thus need to offset or exceed the benefits being realised by fossil fuels in the province. Thus, a key factor to ensuring the success of the Just Energy Transition 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.

The transition towards renewable energy will improve the socio-economic conditions of the Gert Sibande District Municipality. The Gert Sibande District Municipality recorded an unemployment rate of 26.7% in 2017, with the majority of its employed in the trade and community services sectors. The Project will aid in solving two of the leading challenges faced by the Gert Sibande District Municipality, namely the cost of electricity and lack of adequate employment opportunities. The Project will be the first large-scale wind energy facilities being developed in Mpumalanga. The proponent foresees this project as being the catalyst to realising a true Just Energy Transition for Mpumalanga. As various career opportunities are presented by the wind industry, and these are divided into four pillars that are aligned with the value chain. These four pillars are project development, component manufacturing, construction, and operation & maintenance as shown in **Figure 2-2**.

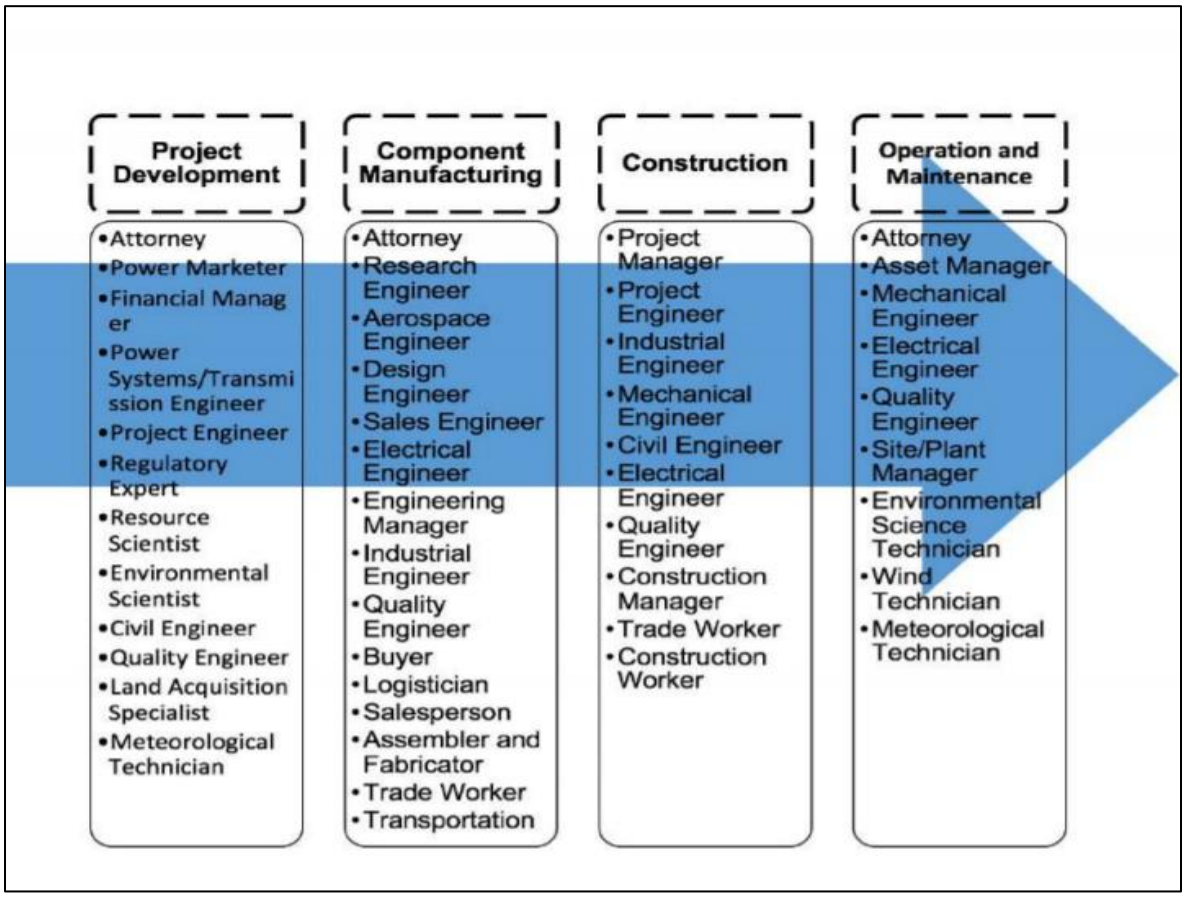


Figure 2-2: Career Opportunities presented by the Wind Industry (Source: https://www.res4africa.org/wp-content/uploads/2020/09/RES4Africa-Foundation-A-Just-Energy-Transition-in-South-Africa.pdf)

Figure 2-2 Error! Reference source not found. shows that the wind industry will create job opportunities throughout the supply chain. The wind 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 Mpumalanga to ensure that the transition from fossil fuels to renewable energy happens gradually and takes off effectively.

MULTIPLE LAND USE

Unlike opencast coal mining within the broader study area, the Project facilitates multiple land use functions within the development area. As wind turbines are spread out across the development area this allows multiple land use functions such as operating the wind farm in tandem with agricultural activities or even underground coal mining. This will boost the economic activities in the area which will in turn increase job opportunities in that area and help improve the local community's welfare without jeopardizing the environment.

DESIRABILITY OF THE PROJECT SITE

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

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

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

3 GOVERNANCE FRAMWORK

3.1 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 3-1**.

Table 3-1: Applicable National Legislation[3]

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
The Constitution of South Africa (No. 108 of 1996)	The Constitution cannot manage environmental resources as a stand-alone piece of legislation hence additional legislation has been promulgated to manage the various spheres of both the social and natural environment. Each promulgated Act and associated Regulations are designed to focus on various industries or components of the environment to ensure that the objectives of the Constitution are effectively implemented and upheld in an on-going basis throughout the country. In terms of Section 7, a positive obligation is placed on the State to give effect to the environmental rights.
National Environmental Management Act (No. 107 of 1998)	In terms of Section 24(2) of the NEMA, the Minister may identify activities, which may not commence without prior authorisation. The Minister thus published GNR 983 (as amended) (Listing Notice 1), GNR 984 (as amended) (Listing Notice 2) and GNR 985 (as amended) (Listing Notice 3) listing activities that may not commence prior to authorisation. The regulations outlining the procedures required for authorisation are published in the EIA Regulations of 2014 (GNR 982) (as amended). Listing Notice 1 identifies activities that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 2 identifies activities that require an S&EIR process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. Listing Notice 3 identifies activities within specific areas that require a BA process to be undertaken, in terms of the EIA Regulations, prior to commencement of that activity. 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 will be applied for with the MDARDLEA.
Listing Notice 1: GNR 983, as amended	***Activity 11(i):*** *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; or* **Description:** The Facility is located outside urban areas. Furthermore, internal distribution electrical infrastructure required to connect the respective electrical components related to the Facility, and the onsite substation, including cabling (buried or overhead) will be between 33kV and 132kV. The onsite substation will be rated 33/132kV whereas internal cabling will be up to 33kV.

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

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
Listing Notice 1: GNR 983, as amended	***Activity 12(ii)(a)(c)*** *The development of—* *(ii) infrastructure or structures with a physical footprint of 100 square metres or more;* *where such development occurs—* *(a) within a watercourse;* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* **Description:** The Facility will require the development of internal roads and/or access roads around the site. The physical footprint of internal access roads and electrical cabling required to connect the various components of the Facility either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site
Listing Notice 1: GNR 983, as amended	***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 500m^3. This activity will also be applicable in the event that Redox Flow Battery technology is considered preferred.
Listing Notice 1: GNR 983, as amended	***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;* **Description:** 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 10m^3 from delineated watercourses on site. The exact values will be confirmed once final designs have been provided.
Listing Notice 1: GNR 983, as amended	***Activity 24(ii)*** *The development of a road—* *(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres* **Description:** Internal access roads required by the Facility will be up to 10m wide, and exceed 1km in length. Where required for turning circle/bypass areas, however, access or internal roads may be up to 20m to allow for larger component transport. The exact values will be confirmed once final designs have been provided.

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
Listing Notice 1: GNR 983, as amended	***Activity 27*** *The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation* **Description:** The non-linear infrastructure components of the development footprint (buildable area) is approximately 100ha; inclusive of infrastructure such as the onsite substation, the turbine hard standings, the BESS facility etc.
Listing Notice 1: GNR 983, as amended	***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:* *(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;* **Description:** The Facility is considered a commercial and/or industrial development, and is located on several farm portions outside an urban area, used for agricultural purposes. The total area to be developed for the Facility (buildable area) is approximately 100ha (i.e. greater than 1 hectare).
Listing Notice 1: GNR 983, as amended	***Activity 30*** *Any process or activity identified in terms of section 53(1) of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004).* **Description:** The Facility infrastructure is located within, and will require vegetation clearance or disturbance of ecosystems confirmed to be listed in the National List of Ecosystems that are Threatened and in Need of Protection (as indicated in GNR 1002 of 9 December 2011). Due to the fact that these ecosystems are listed as threatened, it is assumed that various threatened or protected species may be found within the development area. The restricted activity of "cutting, chopping off, uprooting, damaging or destroying, any specimen" has been identified in terms of NEM:BA and is therefore applicable to the vegetation clearance that will be required to construct the development. In light of this, Activity 30 is considered applicable.
Listing Notice 1: GNR 983, as amended	***Activity 48(i)(a)(c)*** *The expansion of—* *(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more;* *where such expansion occurs—* *(a) within a watercourse;* *(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;* **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 100m^2 or more beyond existing road or road reserves located within

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
	delineated watercourses on site, or within 32m of the outer extent of the delineated watercourses on site.
Listing Notice 1: GNR 983, as amended	***Activity 56(ii)*** *The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre—* *(ii) where no reserve exists, where the existing road is wider than 8 metres;* **Description:** Transport of large infrastructure components related to the facility will require the widening of existing access and/or internal roads where no reserve exists and where such road is wider than 8 metres. The Facility is located within a rural area.
Listing Notice 2: GNR 984, as amended	***Activity 1*** *The development of facilities or infrastructure for the generation of electricity from a renewable resource where the electricity output is 20 megawatts or more,* **Description:** The proposed project entails the construction and operation of a wind energy facility that will generate up to 300MW of electricity from a renewable resource (wind). The proposed project is located outside an urban area.
Listing Notice 2: GNR 984, as amended	***Activity 15*** *The clearance of an area of 20 hectares or more of indigenous vegetation,* **Description:** The clearance required for the Facility will be approximately 100ha (subject to finalisation based on technical, final design and environmental requirements) of indigenous vegetation. Although the approximate footprint will be confirmed at final design, more than 20ha of indigenous vegetation would be removed for the construction of the individual project infrastructure.
Listing Notice 3: GNR 985, as amended	***Activity 4(f)(i)(ee)*** *The development of a road wider than 4 metres with a reserve less than 13,5 metres.* *f. Mpumalanga* *i. Outside urban areas:* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* **Description:** Internal access roads required by the Facility will be 10m wide, and approximately 60km in length. Where required for turning circle/bypass areas, however, access or internal roads may be up to 20m to allow for larger component transport. The exact values will be confirmed once final designs have been provided. In addition, the site will be located within, and will require vegetation clearance or disturbance within Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA).

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
Listing Notice 3: GNR 985, as amended	***Activity 10(f)(i)(ee)(hh)*** *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:* *(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;* **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 500m^3. This activity will also be applicable in the event that Redox Flow Battery technology is considered preferred. Furthermore, storage contemplated above will be located within, and will require vegetation clearance or disturbance within CBA and ESA.
Listing Notice 3: GNR 985, as amended	***Activity 12(f)(ii)*** *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* **Description:** The clearance required for the Facility will be approximately 100ha of indigenous vegetation. Such clearance will be in excess of 300m^2 and be located in a CBA and ESA.
Listing Notice 3: GNR 985, as amended	***Activity 14(ii)(a)(c)(f)****(i)(ff)* *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:* *(ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* **Description:** The Facility will require the development of internal roads and/or access roads around the site (total physical footprint of approximately 72 hectares). The physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
	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. 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 32m of the outer extent of the delineated watercourses on site, located within CBA and ESA.
Listing Notice 3: GNR 985, as amended	***Activity 18(f)(i)(ee)*** *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:* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority 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 where by more than 4 metres or in excess of 1km within the Mpumalanga Province and outside urban areas. Such widening will be located within CBA and ESA.
Listing Notice 3: GNR 985, as amended	***Activity 23(ii)(a)(c)(f)(i)(ee)*** *The expansion of—* *(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:* *(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;* **Description:** The Facility will require the development of internal roads and/or access roads around the site (total physical footprint of approximately 72 hectares). The physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various components of the Facility will either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site. The physical footprint of internal access roads, stormwater control infrastructure and electrical cabling required to connect the various components of the Facility either traverse the delineated watercourses on site, or be located within 32m of the outer extent of the delineated watercourses on site, located within CBA and ESA.
Procedures for the Assessment and Minimum Criteria for	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,

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
Reporting on Identified Environmental Themes (GNR 320, 20 March 2020 and GNR 1150, 30 October 2020)	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 following environmental themes were applicable to the Mukondeleli WEF project: — Agricultural Theme — Animal Species Theme — Aquatic Biodiversity Theme — Archaeological and Cultural Heritage Theme — Avian Theme — Bats Theme — Civil Aviation Theme — Defence Theme — Flicker Theme — Landscape — Palaeontology Theme — Noise Theme — Plant Species Theme — RFI Theme — Terrestrial Biodiversity Theme
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), as amended: 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, as amended. However, the contents of this Scoping Report will include 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. During screening CBAs were identified, which represent biodiversity priority areas which should be maintained in a natural to near natural state. The CBA maps indicate the most efficient selection and classification of land portions requiring safeguarding in order to meet national biodiversity objectives. Based on the screening, a significant part of the Project Area falls within CBA (Irreplaceable and Optimal), especially the especially the western part of the site. There are also some Ecological Support Area (ESA) Local and Landscape corridors demarcated within the Mukondeleli site. According to the description for the Mpumalanga Biodiversity Sector Plan (MBSP) Terrestrial Assessment categories, CBAs are areas that are required to meet biodiversity targets (for biodiversity pattern and ecological process features). The management approach is that they should remain in a natural state. CBAs are areas of high biodiversity value which are usually at risk of being lost and usually identified as important in meeting biodiversity targets, except for

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
	Critically Endangered Ecosystems or Critical Linkages. CBAs in the Province can be divided into two sub-categories: – Irreplaceable (parts of the site are within this sub-category), and – Optimal (northern parts of the site are within this sub-category). The site is located in the Soweto Highveld Grassland vegetation type (Mucina & Rutherford 2006, SANBI 2006-2018) which is classified as "Vulnerable" (NEMA 2011, Skowno et al. 2018). Terrestrial ecology studies will be undertaken during the EIA phase to inform the assessment of impacts and will include flora surveys of the project footprint to determine the presence of flora species of concern (SoC), and bird surveys of the area to define the potential risks to bird SoC. The Conservation of Agricultural Resources Act (No. 43 of 1983) (CARA) Regulations with regards to alien and invasive species have been superseded by the National Environmental Management: Biodiversity Act, 2004 (Act no. 10 of 2004) – Alien and Invasive Species (AIS) Regulations which became law on 1 October 2014. Specific management measures for the control of alien and invasive plants will be included in the Environmental Management Programme (EMPr).
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. According to the National Protected Area Expansion Strategy (NPAES), there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas. The study area is therefore outside the NPAES focus area. In addition, the site is also not earmarked in the 5-year plan of the Mpumalanga PAES (data supplied by M. Lötter, MTPA).
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: *a) Taking water from a water resource;* *c) Impeding or diverting the flow of water in a watercourse;* *g) Disposing of waste in a manner which may detrimentally impact on a water resource;* *i) 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 (WUA) as determined by the risk assessment will be undertaken in compliance with procedural regulations published by the DWS within General Notice 267 (GN267). These regulations specify required information per water use and the reporting structure of required supporting technical information.
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

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
	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 Mukondeleli WEF, 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). The proposed project will be loaded onto the SAHRIS portal for comment by SAHRA.
Mineral and Petroleum Resources Development Act (No. 28 of 2002)	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. 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 approval 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 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 –*

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
	(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.
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. 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.
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 DEA Screening Tool Report identified Civil Aviation as having medium sensitivity for the proposed Mukondeleli WEF, and as being located between 8 and 15km of other civil aviation arerodrome. An Application for the Approval of Obstacles will also be submitted to ATNS. SACAA will be included on the project stakeholder database. They will be informed of the proposed Project, and comment will be sought from these authorities as applicable.
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.

LEGISLATION	DESCRIPTION OF LEGISLATION AND APPLICABILITY
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. 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.

3.2 POLICES AND PLANS

Table 3-2 Summarised key policies and plans as an outline of the governance framework for the project.

Table 3-2: Applicable Regional Policies and Plans

APPLICABLE POLICY	DESCRIPTION OF POLICY
National Development Plan	The National Development Plan aims to eliminate poverty and reduce inequality by 2030. The NDP identifies a number of enabling milestones. Of relevance to the proposed development the NDP refers to the need to produce sufficient energy to support industry at competitive prices and ensure access for poor households, while reducing carbon emissions per unit of power by about one-third. In this regard the infrastructure is not just essential for faster economic growth and higher employment. It also promotes inclusive growth, providing citizens with the means to improve their own lives and boost their incomes. Infrastructure is essential to development. 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 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.

APPLICABLE POLICY	DESCRIPTION OF POLICY
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.
Strategic Integrated Projects	As part of the NIP and in terms of Section 8(1)(a) read with Section 7(1) of the Infrastructure Development Act, as amended (Act 23 of 2014), large-scale infrastructure projects, known as Strategic Integrated Projects (SIPs), have been identified across all nine provinces. Thirty-six (36) SIPs have been prioritised as part of the NIP. SIPs cover catalytic projects that can fast-track development and growth. Work is being aligned with key cross-cutting areas: human settlement planning and skills development. The SIPs comprise: — Six Geographically-focussed SIPs (SIP 1 to 5 and 36); — Three Spatial SIPs (SIP 6, 7 and 11); — Four Energy SIPs (SIP 8 to 10 and 20); — Thirteen Socially focussed Infrastructure SIPs (SIP 12 to 14 and 24 to 27 and 31); — Two Knowledge SIPs (SIP 15 and 16); — One Regional Integration SIP (SIP 17); and — Three Water and Sanitation SIPs (SIP 18, 19 and 33); — One Transport SIP (SIP 21); — Two Digital Infrastructure SIP (SIP 22 and 30); — One Agriculture and Agro-Processing Sip (SIP 23) As of 6 December 2022 a total of 9 projects have been successfully registered with Infrastructure South Africa (ISA). Projects registered with ISA received their SIP letters immediately after GN2835 was published in December 2022. One of the projects registered included the Sasol HyShift Project in Secunda, Mpumalanga. The Mukondeleli WEF feeds into the broader HyShift Project through the generation of renewable energy.
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.

APPLICABLE POLICY	DESCRIPTION OF POLICY
	The IEP notes that South Africa needs to grow its energy supply to support economic expansion and in so doing, alleviate supply bottlenecks and supply-demand deficits. In addition, it is essential that all citizens are provided with clean and modern forms of energy at an affordable price. As part of the Integrated Energy Planning process, eight key objectives are identified, namely: — Objective 1: Ensure security of supply. — Objective 2: Minimise the cost of energy. — Objective 3: Promote the creation of jobs and localisation. — Objective 4: Minimise negative environmental impacts from the energy sector. — Objective 5: Promote the conservation of water. — Objective 6: Diversify supply sources and primary sources of energy. — Objective 7: Promote energy efficiency in the economy. — Objective 8: Increase access to modern energy. The IEP provides an assessment of current energy consumption trends within different sectors of the economy (i.e., agriculture, commerce, industry, residential and transport) and uses this information to identify future energy requirements, based on different scenarios. The scenarios are informed by different assumptions on economic development and the structure of the economy and also take into account the impact of key policies such as environmental policies, energy efficiency policies, transport policies and industrial policies, amongst others. Based on this information the IEP then determines the optimal mix of energy sources and technologies to meet those energy needs in the most cost-effective manner for each of the scenarios. The associated environmental impacts, socio-economic benefits and macroeconomic impacts are also analysed. The IEP is therefore focused on determining the long-term energy pathway for South Africa, taking into account a multitude of factors which are embedded in the eight objectives. As part of the analysis four key scenarios were developed, namely the Base Case, Environmental Awareness, Resource Constrained and Green Shoots scenarios: — The Base Case Scenario assumes that existing policies are implemented and will continue to shape the energy sector landscape going forward. It assumes moderate economic growth in the medium to long term. — The Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, where a higher cost is placed on externalities caused by the supply of energy. — The Resource Constrained Scenario in which global energy commodity prices (i.e. coal, crude oil and natural gas) are high due to limited supply. — The Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the National Development Plan (NDP), are met. The IEP notes that South Africa should continue to pursue a diversified energy mix which reduces reliance on a single or a few primary energy sources. In terms of existing electricity generation capacity, the IEP indicates that existing capacity starts to decline notably from 2025, with significant plant retirement occurring in 2031, 2041 and 2048. By 2050 only 20% of the current electricity generation capacity remains. As a result, large investments are required in the electricity sector in order to maintain an adequate supply in support of economic growth. By 2020, various import options become available, and some new coal capacity is added along with new wind, solar and gas capacity. The mix of generation capacity technologies by 2050 is considerably more diverse than the current energy mix, across all scenarios. The main differentiating factors between the scenarios are the level of demand, constraints on emission limits and the carbon dioxide externality costs. In all scenarios the energy mix for electricity generation becomes more diverse over the period to 2050, with coal reducing its share from about 85% in 2015 to 15–20% in 2050 (depending on the scenario). Solar, wind, nuclear, gas and electricity imports increase their share. The

APPLICABLE POLICY	DESCRIPTION OF POLICY
	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.
National Protected Area Expansion Strategy, 2010	The NPAES areas were identified through a systematic biodiversity planning process. They present the best opportunities for meeting the ecosystem-specific protected area targets set in the NPAES and were designed with strong emphasis on climate change resilience and requirements for protecting freshwater ecosystems. These areas should not be seen as future boundaries of protected areas, as in many cases only a portion of a particular focus area would be required to meet the protected area targets set in the NPAES. They are also not a replacement for fine scale planning which may identify a range of different priority sites based on local requirements, constraints and opportunities (NPAES, 2010). According to the NPAES, there are no areas within the study area that have been identified as priority areas for inclusion in future protected areas. The study area is therefore **outside the NPAES focus area**.

3.3 PROVINCIAL AND MUNICIPAL LEGAL FRAMEWORK

Table 3-3: Provincial Plans

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

APPLICABLE PLAN	DESCRIPTION OF PLAN
	movement due to open cast mining thus affecting the ecosystem etc. It also notes that Mpumalanga's manufacturing plants and coal fired power plants are the key polluters of air, with climate change also identified as a key challenge in the province. Therefore, the province must carefully design interventions that provide a gradual shift from mining oriented sectors to the sustainable economic sectors to maintain sustained growth of the provincial economy. The SDF notes that a significant amount of the country's electricity comes from coal-fired stations in Mpumalanga. It also observes that there is a steady increase in the demand for electricity in the province, mostly attributed to residential, commercial and industrial development, including mining and heavy industry. The Provincial SDF also notes that the abundance of coal has led to the development of many coal-fired power stations in the province, however these coalfields are depleting, therefore making it necessary to consider renewable power sources in Mpumalanga. The SDF also recognises that Mpumalanga's Coal Mining and Coal Fired Power Plant region (mainly the Highveld area) will be under immense pressure for environmental considerations and as a result, the region will witness a possible decline in demand of coal and large-scale employment. The SDF proposes to diversify the regional economy and facilitate the gradual transition of economic activities in the region.
Mpumalanga Industrial Development Plan	In terms of industry, the purpose of the Mpumalanga Industrial Development Plan (MIDP) (2015) is to promote the establishment of new industries and promote growth of existing industries in the province.
Mpumalanga Conservation Act (No. 10 of 1998)	This Act provides for the sustainable utilisation of wild animals, aquatic biota and plants; provides for the implementation of the Convention on International Trade in Endangered Species of Wild Fauna and Flora; provides for offences and penalties for contravention of the Act; provides for the appointment of nature conservators to implement the provisions of the Act; and provides for the issuing of permits and other authorisations. Amongst other regulations, the following may apply to the current project: — Various species are protected; — The owner of land upon which an invasive species is found (plant or animal) must take the necessary steps to eradicate or destroy such species. The Act provides lists of protected species for the Province. According to the Mpumalanga Nature Conservation Act, a permit is required for the removal of any species on this list.

Table 3-4: District and Local Municipality Plans

APPLICABLE PLAN	DESCRIPTION OF PLAN
Gert Sibande Municipality Integrated Development Plan	According to the Municipal Systems Act (Act 32 of 2000) (MSA), all municipalities have to undertake an Integrated Development Plan (IDP) process. The IDP is a legislative requirement thus it has legal status and supersedes all other plans that guide development at local government level. The Gert Sibande Municipality (GSM) IDP Review (2019/ 2020) and Final IDP (2020/2021) has identified the following development priorities: — Municipal Transformation and Organisational Development — Basic Service Delivery and Infrastructure Development — Local Economic Development — Municipal Financial Viability and Management — Good Governance and Public Participation — Spatial Development Analysis and Rationale The main goal and strategic objective of the Basic Service Delivery and Infrastructure Development priority is a reliable and sustainable service. One of the main strategic

APPLICABLE PLAN	DESCRIPTION OF PLAN
	objectives for reaching the goal is the provision of basic services such as water and electricity to an approved minimum level of standards in a sustainable manner; as per the national guidelines.
Govan Mbeki Local Municipality IDP	The GMM Revised IDP (2020/2021) has identified the following key Municipal priorities: — Providing sustainable, quality services; — Enabling diversified local economic development and job creation; — Ensuring the financial sustainability of the Municipality; — Working together with our stakeholders; — Empowering our workforce; and — Ensuring sound corporate governance. The Vision, Mission and Values are informed by six Key Strategic objectives of which Strategic Objective 3, To facilitate and create an enabling environment for diversified local economic development, social cohesion, and job creation and Strategic Objective 5, To develop spatially integrated, safe communities and a protected environment, are relevant to the proposed development. The IDP also refers to the establishment of a Special Economic Zone (SEZ) in the GMM, including the establishment of an industrial park. The proposed Industrial Park is to be located on an identified portion of land north west of Secunda. The success of the park and other industrial developments in the GMM will be dependent on the provision of reliable energy.
Govan Mbeki Spatial Development Framework	The GMM SDF is informed by six strategic objectives, including: — Strategic Objective 1: Economic development and job creation supporting and guiding development; — Strategic Objective 2: Promoting education, training, and innovation; — Strategic Objective 3: Accommodating urbanisation and transforming human settlements; — Strategic Objective 4: Promote the development of the rural areas within GMM that can support sustainable economic, social, and engineering infrastructure; — Strategic Objective 5: Protect biodiversity, water, and agricultural resources; and — Strategic Objective 6: Infrastructure Investment. Strategic Objective 1, 5 and 6 are relevant to the proposed development: — Strategic Objective (S0)1: Of specific relevance SO 1 refers to the need to diversify the local mining dependent economy by phasing in renewable energy options, which include concentrated solar power, wind, and natural gas, reducing dependence on coal resources. — Strategic Objective (SO) 5: Of specific relevance SO5 highlights the need to minimise the consumption of scarce environmental resources, particularly water, electricity and land and protect biodiversity, water, and agricultural resources. — Strategic Objective (SO) 6: Of specific relevance SO6 highlights the need to ensure efficient supply of electricity and water install green infrastructure, including renewable energy.

3.4 INTERNATIONAL ENVIRONMENTAL AND SOCIAL STANDARDS

3.4.1 IFC PERFORMANCE STANDARDS

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

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

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

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

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

The objectives and applicability of the eight PSs are outlined in **Table 3-5.**

Table 3-5: IFC Performance Standards Applicability to the Project

REFERENCE	REQUIREMENTS	PROJECT SPECIFIC APPLICABILITY
Performance Standard 1: Assessment and Management of Environmental and Social Risks and Impacts		

REFERENCE	REQUIREMENTS		PROJECT SPECIFIC APPLICABILITY
Overview	Performance Standard 1 underscores the importance of managing environmental and social performance throughout the life of a project. An effective Environmental and Social Management System (ESMS) is a dynamic and continuous process initiated and supported by management, and involves engagement between the client, its workers, local communities directly affected by the project (the Affected Communities) and, where appropriate, other stakeholders.		
Objectives	– To identify and evaluate environmental and social risks and impacts of the project. – To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, Affected Communities, and the environment. – To promote improved environmental and social performance of clients through the effective use of management systems. – To ensure that grievances from Affected Communities and external communications from other stakeholders are responded to and managed appropriately. – To promote and provide means for adequate engagement with Affected Communities throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.		
Aspects	1.1	Policy	The IFC Standards state under PS 1 (Guidance Note 23) that "*the breadth, depth and type of analysis included in an ESIA must be proportionate to the nature and scale of the proposed project's potential impacts as identified during the course of the assessment process.*" This document is the second deliverable from the S&EIR process undertaken for the proposed Project. The impact assessment comprehensively assesses the key environmental and social impacts and complies with the requirements of the South African EIA Regulations. In addition, an EMPr has been compiled during this EIA phase of the project (**Appendix I**). A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlines in the EMPr will serve as the basis for an ESMS for the proposed Project.
	1.2	Identification of Risks and Impacts	
	1.3	Management Programmes	
	1.4	Organisational Capacity and Competency	
	1.5	Emergency Preparedness and Response	
	1.6	Monitoring and Review	
	1.7	Stakeholder Engagement	
	1.8	External Communication and Grievance Mechanism	
	1.9	Ongoing Reporting to Affected Communities	
Performance Standard 2: Labour and Working Conditions;			
Overview	Performance Standard 2 recognises that the pursuit of economic growth through employment creation and income generation should be accompanied by protection of the fundamental rights of workers.		
Objectives	– To promote the fair treatment, non-discrimination, and equal opportunity of workers. – To establish, maintain, and improve the worker-management relationship. – To promote compliance with national employment and labour laws. – To protect workers, including vulnerable categories of workers such as children, migrant workers, workers engaged by third parties, and workers in the client's supply chain. – To promote safe and healthy working conditions, and the health of workers. – To avoid the use of forced labour.		
Aspects	2.1	– Working Conditions and Management of Worker Relationship	The construction activities will require contractors for completion. A safe working environment and fair contractual agreements must be in place. The operational phase will have permanent employees

REFERENCE	REQUIREMENTS		PROJECT SPECIFIC APPLICABILITY
		— Human Resources Policy and Management — Working Conditions and terms of Engagement — Workers organisation — Non- Discrimination and Equal Opportunity — Retrenchment — Grievance Mechanism	for day-to-day activities as well as contractors who will all need a safe working environment and fair contractual agreements. Whilst PS2 will be applicable to the Project, it is not intended to be addressed in detail at the ESIA stage. Recommendations are provided concerning development of a detailed Human Resources (HR) and Occupational Health and Safety (OHS) system by the developer and its partners as the Project moves towards implementation. In addition, measures to address the Interim Advice for IFC Clients on Supporting Workers in the Context of COVID-19 are referenced. The EMPr incorporates the requirements for compliance with local and international Labour and Working legislation and good practice on the part of the contractors (**Appendix I**).
	2.2	— Protecting the Workforce — Child Labour — Forced Labour	
	2.3	Occupational health and Safety	
	2.4	Workers Engaged by Third Parties	
	2.5	Supply Chain	
Performance Standard 3: Resource Efficiency and Pollution Prevention			
Overview	Performance Standard 3 recognises that increased economic activity and urbanisation often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. There is also a growing global consensus that the current and projected atmospheric concentration of greenhouse gases (GHG) threatens the public health and welfare of current and future generations. At the same time, more efficient and effective resource use and pollution prevention and GHG emission avoidance and mitigation technologies and practices have become more accessible and achievable in virtually all parts of the world.		
Objectives	— To avoid or minimise adverse impacts on human health and the environment by avoiding or minimising pollution from project activities. — To promote more sustainable use of resources, including energy and water. — To reduce project related GHG emissions.		
Aspects	3.1	— Policy Resource Efficiency — Greenhouse Gases — Water Consumption	PS3-related impacts, such as the management of construction waste, hazardous substances, and stormwater are assessed in **Section 7.4** of the final EIR. There are no material resource efficiency issues associated with the Project. The EMPr includes general resource efficiency measures (**Section 6**). The project is not GHG emissions intensive and a climate resilience study or a GHG emissions-related assessment is not deemed necessary for a project of this nature. However, the Mukondeleli WEF seeks to facilitate resource efficiency and pollution prevention by contributing to the South African green economy. Dust air pollution in the construction phase has been adequately addressed in the EMPr (**Section 6**). The Project will not result in the release of industrial effluents. Potential pollution associated with sanitary wastewater is low and mitigation measures have been included in the EMPr. Land contamination of the site from historical land use (i.e. low intensity agricultural / grazing) is not considered to be a cause for concern. The waste generation profile of the project is not complex. Waste mitigation and management measures have been included in EMPr.
	3.2	— Pollution Prevention — Air Emissions — Stormwater — Waste Management — Hazardous Materials Management — Pesticide use and Management	

REFERENCE	REQUIREMENTS		PROJECT SPECIFIC APPLICABILITY
			Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel etc.) are the only wastes expected to be associated with the project. The EMPr identifies these anticipated hazardous materials and recommends relevant mitigation and management measures. Hazardous materials are not a key issue; small quantities of construction materials (oil, grease, diesel fuel etc.) are the only wastes expected to be associated with the project. The EMPr identifies these anticipated hazardous materials and recommends relevant mitigation and management measures (**Section 6**).
Performance Standard 4: Community Health, Safety, and Security			
Overview	Performance Standard 4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts.		
Objectives	— To anticipate and avoid adverse impacts on the health and safety of the Affected Community during the project life from both routine and non-routine circumstances. — To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the Affected Communities.		
Aspects	4.1	— Community Health and Safety — Infrastructure and Equipment Design and Safety — Hazardous Materials Management and Safety — Ecosystem Services — Community Exposure to Disease — Emergency Preparedness and Response	The requirements included in PS 4 have been addressed in the S&EIR process and the development of this EMPr. During the construction phase there will be an increase in vehicular traffic along public roads, largely due to the need for importation of construction material. Pedestrian and road safety risks will be qualitatively evaluated in the S&EIR process and the clients' standard safety and security measures, as well as potential additional measures recommended by WSP, are detailed in the EMPr (**Section 6** and **Section 7.9**).
	4.2	Security Personnel	
Performance Standard 5: Land Acquisition and Involuntary Resettlement			
Overview	Performance Standard 5 recognises that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. Involuntary resettlement refers both to physical displacement (relocation or loss of shelter) and to economic displacement (loss of assets or access to assets that leads to loss of income sources or other means of livelihood) as a result of project-related land acquisition and/or restrictions on land use.		
Objectives	— To avoid, and when avoidance is not possible, minimise displacement by exploring alternative project designs. — To avoid forced eviction. — To anticipate and avoid, or where avoidance is not possible, minimise adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. — To improve, or restore, the livelihoods and standards of living of displaced persons. — To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.		
Aspects	5.1	— Displacement — Physical Displacement — Economic Displacement	PS5 is not applicable to the proposed Mukondeleli WEF as no physical or economic displacement or livelihood restoration will be required.

		— Private Sector Responsibilities under Government Managed Resettlement	The proposed Mukondeleli WEF is located on privately owned land that is utilised for agriculture by the landowners. The significance of all potential agricultural impacts is kept low by the very small proportion of the land that is impacted.
Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources			
Overview	Performance Standard 6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.		
Objectives	— To protect and conserve biodiversity. — To maintain the benefits from ecosystem services. — To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.		
Aspects	6.1	Protection and Conservation of Biodiversity	A significant part of the Project Area falls within CBAs (Irreplaceable and Optimal) and some ESA Local and Landscape corridors are demarcated within the Mukondeleli site. A Biodiversity Impact Assessment as well as an Avifaunal Impact Assessment and Freshwater Ecology Impact Assessment have been included in the EIA scope, **Appendix H-4** and **H-2** of the final EIR respectively. These specialist assessments comprise of a combination of literature review, in-field surveys and sensitivity mapping, as well as the assessment of impacts on biodiversity associated with the proposed project. This substantively complies with the PS 6 general requirements for scoping and baseline assessment for determination of biodiversity and ecosystem services issues, as well as the risks and impacts identification process requirements. The determination of habitat sensitivity was undertaken within the legal and best practice reference framework for South Africa. Specific mitigation and management measures for alien invasive species control are included in the EMPr (**Section 6** (**Biodiversity Management**) and **Section 7.2)**.
Performance Standard 7: Indigenous People			
Overview	Performance Standard 7 recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. Indigenous Peoples are particularly vulnerable if their lands and resources are transformed, encroached upon, or significantly degraded.		
Objectives	— To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. — To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is not possible, to minimize and/or compensate for such impacts. — To promote sustainable development benefits and opportunities for Indigenous Peoples in a culturally appropriate manner. — To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the Indigenous Peoples affected by a project throughout the project's life-cycle. — To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples when the circumstances described in this Performance Standard are present. — To respect and preserve the culture, knowledge, and practices of Indigenous Peoples.		
Aspects	7.1	General	

REFERENCE	REQUIREMENTS		PROJECT SPECIFIC APPLICABILITY
		— Avoidance of Adverse Impacts — Participation and Consent	As per the international instruments under the United Nations (UN) Human Rights Conventions, no indigenous peoples are present within the study area. The Project does not involve displacement. PS7 will not be triggered.
	7.2	Circumstances Requiring Free, Prior, and Informed Consent — Impacts on Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use — Critical Cultural Heritage — Relocation of Indigenous Peoples from Lands and Natural Resources Subject to Traditional Ownership or Under Customary Use	
	7.3	Mitigation and Development Benefits	
	7.4	Private Sector Responsibilities Where Government is Responsible for Managing Indigenous Peoples Issues	
Performance Standard 8: Cultural Heritage			
Overview	Performance Standard 8 recognizes the importance of cultural heritage for current and future generations.		
Objectives	— To protect cultural heritage from the adverse impacts of project activities and support its preservation. — To promote the equitable sharing of benefits from the use of cultural heritage.		
Aspects	8.1	Protection of Cultural Heritage in Project Design and Execution	A Heritage Impact Assessment Report (**Appendix H-6** of the final EIR**)** has been carried out by a suitably qualified specialist, revealing that no archaeological sites of significance were noted, and finds were limited to several ruins and graves recorded in the Project area. Based on the current layout, none of the recorded sites will be directly impacted on. A Chance Find Procedure has been included in the EMPr (**Section 7.13.1**).

3.4.2 WORLD BANK GROUP ENVIRONMENTAL HEALTH AND SAFETY GUIDELINES

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

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

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

- *Wind Energy (August 2015)* - The EHS Guidelines for wind energy include information relevant to environmental, health, and safety aspects of onshore and offshore wind energy facilities. It should be applied to wind energy facilities from the earliest feasibility assessments, as well as the environmental impact assessment, and continue to be applied throughout the construction and operation phases

  The guidelines list issues associated with wind energy facilities which need to be considered. These include:

  - Environmental impacts associated with the construction, operation, and decommissioning of wind energy facilities activities may include, among others, impacts on the physical environment (such as noise or visual impact) and biodiversity (affecting birds and bats, for instance).
  - Due to the typically remote location of wind energy facilities, the transport of equipment and materials during construction and decommissioning may present logistical challenges (e.g., transportation of long, rigid structures such as blades, and heavy tower sections).
  - Environmental issues specific to the construction, operation, and decommissioning of wind energy projects and facilities include the following:
    - Landscape, Seascape, and Visual impacts;
    - Noise;
    - Shadow Flicker; and
    - Water Quality.
- *Electric Power Transmission and Distribution (2007)* - information relevant to power transmission between a generation facility and a substation located within an electricity grid, in addition to power distribution from a substation to consumers located in residential, commercial, and industrial areas
- *General EHS Guidelines* – this includes a section on a range of environmental, occupational health and safety, community health and safety, and construction activities that would apply to the project. The guideline also contains recommended guidelines adopted form the World Health Organisation (WHO) for ambient air and water quality, which are referred to in the relevant impact assessment sections in the ESIA report.

3.4.3 EQUATOR PRINCIPLES

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

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

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

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

The requirements and applicability of the EPs are outlined in **Table 3-6**.

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

Table 3-6: Requirements and Applicability of the Equator Principles

REQUIREMENT		PROJECT SPECIFIC APPLICABILITY
Principle 1: Review and Categorisation		
Overview	When a project is proposed for financing, the EPFI will, as part of its internal social and environmental review and due diligence, categorise such project based on the magnitude of its potential impacts and risks in 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 and readily addressed through mitigation measures; and — Category C: Projects with minimal or no adverse environmental and social risks and/or impacts.	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.
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	This document is the second deliverable (i.e. final EIR) from the S&EIA process undertaken for the proposed Project. The assessment appropriately and comprehensively assessed the key environmental and social impacts and complies with the requirements of the South African EIA Regulations and this Principle. A formal project specific ESMS will be compiled in the event that the project is developed in the future. Management and monitoring plans outlined in the EMPr will serve as the basis for an ESMS for the proposed Project.

REQUIREMENT		PROJECT SPECIFIC APPLICABILITY
	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.	
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, 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.	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).
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	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.

REQUIREMENT		PROJECT SPECIFIC APPLICABILITY
	process and results of the consultation, including any actions agreed resulting from the consultation. 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.	The stakeholder engagement process is detailed in **Appendix D.**
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 includes a *Grievance Mechanism Process for Public Complaints and Issues* (**Section 7.15.1**). *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.
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 monitoring and reporting for all Category A, and as appropriate, Category B projects. Monitoring and reporting should be provided by an Independent Environmental and Social Consultant; alternatively, the EPFI will require that the client retain qualified and experienced external experts to verify its monitoring information, which will be shared with the EPFI in accordance with the frequency required.	This principle will only become applicable in the event that that the project is developed in the future.

3.4.4 INTERNATIONAL LABOUR STANDARDS

The International Labour Organisation (ILO) brings together governments, employers, and workers of 187 member states, to set labour standards, develop policies and devise programmes promoting decent work for all women and men. The ILO advocates and governs a set of International Labour Standards (ILS). The ILS is a system of standards that are fundamental, universal, and invisible human rights for all working people across the world. The aim of the international labour standards is to ensure that the growth the of the global economic provides benefits to all. These standards are legal instruments drawn up by ILO's constituents setting out basic principles and rights at work. These instruments are either Conventions (or Protocols), which are legally binding international treaties that may be ratified by member states, or recommendations, which serve as non-binding guidelines. The fundamental instruments of the ILO and ILS outlined in **Table 3-7.**

Table 3-7: Fundamental Instruments of the ILO and ILS.

INTERNATIONAL LABOUR STANDARDS: FUNDAMENTAL INSTRUMENTS	PROJECT SPECIFIC APPLICABILITY
1. Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)	The Constitution of the Republic of South Africa (1996) allows for all workers to: — Section 18: Freedom of Association — Section 23: Labour Relations — Everyone has the right to fair labour practices; — Every worker has the right to form and join a trade union and to participate in the union's activities; — Every worker has the right to strike — Every employer has the right to form and join an employers' organization and to participate in the activities of the organization; and — Every trade union, employers' organization and employer has the right to engage in collective bargaining. The Mukondeleli WEF project shall abide by all laws and rights enshrined by The Constitution of The Republic of South Africa (1996).
2. Right to Organise and Collective Bargaining Convention, 1949 (No. 98)	
3. Forced Labour Convention, 1930 (No. 29) (and its 2014 Protocol)	The South African Constitution (1996) and Basic Conditions of Employment Act (as amended) prohibits any forced labour in the country. Therefore, the Mukondeleli WEF project commits to not undertake any forced labour over the lifespan of the project. During the operational phase labour audits will be conducted on the project's main contractors and subcontractors.
4. Abolition of Forced Labour Convention, 1957 (No. 105)	
5. Minimum Age Convention, 1973 (No. 138)	According to the South African Basic Conditions of Employment Act and entrenched in the Constitution of the Republic of South Africa (1996), it is a criminal offence to employ a child younger than 15, except in the performing arts with a permit from the Department of Labour. Children aged 15 to 18 may not be employed to do work inappropriate for their age or work that place them at risk. The project will not employ individuals 18 years old or younger.
6. Worst Forms of Child Labour Convention, 1999 (No. 182)	
7. Equal Remuneration Convention, 1951 (No. 100)	This WEF project will follow The Promotion of Equality and Prevention of Unfair Discrimination Act, 2000 (PEPUDA or the Equality Act, Act No. 4 of 2000). This is a comprehensive South African anti-discrimination law. It
8. Discrimination (Employment and Occupation) Convention, 1958 (No. 111)	

INTERNATIONAL LABOUR STANDARDS: FUNDAMENTAL INSTRUMENTS	PROJECT SPECIFIC APPLICABILITY
	prohibits unfair discrimination by the government and by private organisations and individuals and forbids hate speech and harassment. The project will ensure employment equity across all individuals employed by the project, and all employment opportunities will be free of discrimination.
9. Occupational Safety and Health Convention, 1981 (No. 155)	The Mukondeleli WEF development will abide by the South African Occupational Health and Safety Act 85 of 1993. This act intends to: — to provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; — the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work; — to establish an advisory council for occupational health and safety; and — to provide for matters connected therewith.
10. Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)	

3.4.1 GENERIC EMPR RELEVANT TO AN APPLICATION FOR SUBSTATION AND OVERHEAD ELECTRICITY TRANSMISSION AND DISTRIBUTION INFRASTRUCTURE

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

GN 435 of 22 March 2019 identified a generic EMPr relevant to applications for substations and overhead electricity transmission and distribution infrastructure which require authorisation in terms of Section 42(2) of NEMA. Applications for overhead electricity transmission and distribution infrastructure and applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity that trigger Activity 11 or 47 of Listing Notice 1 or Activity 9 of Listing Notice 2 and any other listed or specified activities must use the generic EMPrs.

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 and the development or expansion of substation infrastructure for the transmission and distribution of electricity. The use of a generic EMPr is intended to reduce the need to prepare and review individual EMPrs for applications of a similar nature.[4]

[4] DEA (2019) *Generic Environmental Management Programme (EMPr) for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity*

The generic EMPr for substations have been used as a basis for this EMPr. The *Generic Environmental Management Programme (EMPr) for the Development and Expansion of Substation Infrastructure for the Transmission and Distribution of Electricity* is attached as **Appendix D**.

4 ENVIRONMENTAL MANAGEMENT OBJECTIVES

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

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

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.

4.1 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 EIA process.

4.2 ENVIRONMENTAL OBJECTIVES AND TARGETS

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

It is recommended that environmental objectives (as outlined in this document) be emphasised to the Proponent via the appointed EPC contractor/principal contractor 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.

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. The Proponent via the appointed EPC contractor/principal contractor will be responsible for the overall control of the project site during the pre-construction, construction, operation, decommissioning and rehabilitation phases of the project. The Proponent's responsibilities (via the appointed EPC contractor/principal contractor) will include the following:

- Appointing an independent environmental control officer (ECO) for the duration of the Contract during construction and as specified by the MDARDLEA during operation;
- Being fully familiar with the EIR, EA conditions and the EMPr;
- Applying for an amendment of the EA from the MDARDLEA as and when required in line with the prevailing legislation
- The overall implementation of the EMPr;
- Ensuring compliance, by all parties, and the imposition of penalties for noncompliance;
- Implementing corrective and preventive actions, where required;
- 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 MDARDLEA within 30 days that construction activity will commence;
- Notifying the MDARDLEA in writing within 24 hours if any condition in the EA cannot be or is not adhered to; and
- Notifying the MDARDLEA 14 days prior to commencement of the operational phase

A high-level outline of the various roles and responsibilities of this project are as defined in **Table 5-1**.

Table 5-1: Roles and Responsibilities

DESIGNATION	ROLES AND RESPONSIBILITY
Proponent / Holder of the EA	— The Proponent (holder of the EA) shall take overall responsibility for the adherence to the EMPr and EA conditions, via the appointed EPC contractor/principal contractor
Project Manager	— Ensure the Proponent and the relevant contractor/s are aware of all specifications, legal constraints pertaining to the project during construction, specifically with regards to the environment. — Ensure that all stipulations within the EMPr and conditions of the environmental authorisation are communicated and adhered to by the Proponent and its contractor(s). — Monitor the implementation of the EMPr and conditions of the environmental authorisation throughout the project by means of site inspections and meetings. This will be documented as part of the site meeting minutes. — Be fully conversant with the EIR for the project, the conditions of environmental authorisation and all relevant environmental legislation.

DESIGNATION	ROLES AND RESPONSIBILITY
Site Manager **(EPC Contractor)**	— Be fully conversant with the EIR, the conditions of environmental authorisation and the EMPr. — Approve method statements. — Provide support to the ECO. — Be fully conversant with all relevant environmental legislation and ensure compliance thereof. — Have overall responsibility for the implementation of the EMPr and conditions of the environmental authorisation — Ensure that audits are conducted to ensure compliance to the EMPr and conditions of the environmental authorisation. — Liaise with the Project Manager or his delegate, the ECO and others on matters concerning the environment — Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution and unnecessary degradation onsite. — Confine construction activities to demarcated areas.
Environmental Officer (EO) **(EPC Contractor)**	The EO must be appointed by the Contractor and is responsible for managing the day-to-day onsite implementation of the EMPr, and for the compilation of weekly environmental monitoring reports during construction. During the operational phase environmental monitoring reports may be as specified by the MDARDLEA (such as annually) by the external EO or ECO. In addition, the EO must act as liaison and advisor on all environmental and related issues, seek advice from the ECO when necessary, and ensure that any complaints received from I&APs are duly processed and addressed and that conflicts are resolved in an acceptable manner and timely manner. The EO shall be a full time dedicated member of the Contractor's team and must be approved by 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: — Monitoring, on a daily basis, environmental specifications on site and compliance with the conditions of the EA, environmental legislation and EMPr; — Keeping a register of compliance / non-compliance with the environmental specifications; — Identifying and assessing previously unforeseen, actual or potential impacts on the environment; — Ensuring that a brief weekly environmental monitoring report is submitted to the ECO; — Conducting site inspections during the defects liability period, and bringing any environmental concerns to the attention of the ECO and Contractor; — Advising the Contractor on the rectification of any pollution, contamination or damage to the construction site, rights of way and adjacent land; — Attending site meetings (scheduled and ad hoc); — Presenting 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;

DESIGNATION	ROLES AND RESPONSIBILITY
	— 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 complaince and environmental documentation; — Ensuring that the Contractor is made aware of all applicable changes to the EMPr that are approved by the MDARDLEA; — 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.
Independent Environmental Control Officer (ECO)	A suitably qualified ECO must be appointed by the Holder of the EA to monitor the project compliance with the EMPr and conditions of the environmental authorisation on a monthly basis during construction. During the operational phase environmental monitoring may be undertaken as specified by the MDARDLEA (such as annually) by the external ECO. Proof of external ECO appointment must be maintained onsite. Responsibilities of the ECO 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; — Remain employed until the completion of the construction activities; and — Report to the Project Manager, including all findings identified onsite. In addition, the ECO will: — Undertake independent monthly inspections of the site and surrounding areas in order to audit compliance with the EMPr and conditions of the environmental authorisation; — Take appropriate action if the specifications contained in the EMPr and conditions of the environmental authorisation are not followed; — Monitor and verify that environmental impacts are kept to a minimum, as far as possible; and — Ensure that activities onsite comply with all relevant environmental legislation.
Contractors, Staff and Service Providers	— Prepare Method Statements as per the EMPr, and ensure all activities are conducted as per the approved Method Statements. — Complying with the Holder of the EA's environmental management specifications. — Be conversant with all EMPr and conditions of the EA, and ensure compliance thereto. — Adhering to any environmental instructions issued by the Site Manager/Project Manager on the advice of the ECO.Completion of the appropriate training requirements as specified in the training program.

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 Proponent via the appointed EPC contractor/principle contractor must develop an environmental awareness plan that describes the manner in which they intend 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 Proponent via the appointed EPC contractor/principle contractor will provide appropriate resources to facilitate social and environmental awareness training during the construction, operational and decommissioning phases of the project. The Proponent 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.

5.3 ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

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

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

ASPECT	REFER TO GENERIC EMPR (PART A)
Document control/Filing system	Section 4.1
Documentation to be available	Section 4.2
Weekly Environmental Checklist	Section 4.3
Environmental site meetings	Section 4.4
Required Method Statements	Section 4.5
Environmental Incident Log (Diary)	Section 4.6

ASPECT	REFER TO GENERIC EMPR (PART A)
Non-compliance	Section 4.7
Corrective action records	Section 4.8
Photographic record	Section 4.9
Complaints register	Section 4.10
Claims for damages	Section 4.11
Interactions with affected parties	Section 4.12
Environmental audits	Section 4.13
Final environmental audits	Section 4.14

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

5.4 MONITORING

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

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

The Proponent via the appointed EPC contractor/principle contractor will ensure that all instruments and devices used for the measurement or monitoring are calibrated and appropriately operated and maintained. Calibration records must be kept on site or in close proximity to the equipment for ease of availability.

All the conditions outlined in the EMPr will be subject to required internal day-to-day monitoring and external compliance monitoring. Where required, any specific additional monitoring has been outlined in the EMPr.

5.5 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.

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

5.5.2 DUTY OF CARE

Under Section 28 of the NEMA, all personnel involved with the construction and operational activities onsite will be responsible for implementing measures to prevent pollution or degradation of the environment from occurring, continuing or recurring. Failure to comply with the above conditions is a breach of the duty of care. If such harm is unavoidable, steps must be taken to minimise and rectify such pollution or degradation of the environment.

5.6 DOCUMENTATION AND REPORTING

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

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

The contractor will be required to report on the following:

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

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

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

- Date of complaint/incident/emergency;
- Location of complaint/incident/emergency;
- Nature of complaint/incident/emergency;
- Causes of complaint/incident/emergency;
- Party/parties responsible for causing complaint/incident/emergency;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident/emergency;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent reoccurrence of the complaint/incident/emergency;
- Timeframes and the parties responsible for the implementation of the corrective or remedial actions;

- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and
- Copies of all correspondence received regarding complaints/incidents/emergency.

All incidents or complaints should be reported to Department of Agriculture, Rural Development, Land and Environmental Affairs, Gert Sibande District Municipality and Govan Mbeki Local Municipality.

5.7 PUBLIC COMPLAINTS

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

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

6 GENERIC ENVIRONMENTAL CONTROLS

This section refers to construction related activities that are common to most power line projects as defined within the pre-approved generic 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 prepared and agreed to by the holder of the EA must be appended to the template. Each method statement must also be duly signed and dated on each page by the 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 are as follows:

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

ACTIVITY	**REFER TO GENERIC EMPR FOR THE DEVELOPMENT 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

ACTIVITY	REFER TO GENERIC EMPR FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)
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	
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	
Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)	5.28
Stringing (and cabling)	5.30

ACTIVITY	REFER TO GENERIC EMPR FOR THE DEVELOPMENT AND EXPANSION OF SUBSTATION INFRASTRUCTURE, ATTACHED AS APPENDIX D (PART B: SECTION 1)
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 Proponent. It is essential that the EMPr be carefully studied, understood, implemented and adhered to at all times.

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

The EMPr identifies various actions which are undertaken throughout the construction and operational phases of the Mukondeleli WEF. 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.

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

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

It should be noted that at this point of the Project planning process, the necessity for and timing of the decommissioning phase is unknown. Before decommissioning, the holder of the EA will need to follow the related legal permitting process in terms of NEMA and other legislation applicable at the time. The future associated permitting process will further supplement any commitments made within this document.

Table 7-2 outlines the site specific EMPr for the proposed Project.

Table 7-2: Environmental Management Programme Mitigation and Management Measures

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
CONTRACTOR LAYDOWN AREA AND SITE ACCESS			
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.			
Project Initiation of Construction Activities	Prior to commencement of onsite activities, appoint an ECO to manage and verify compliance with the EA and EMPr.	Project Manager ECO Contractor (Site Manager)	Construction Decommissioning
	The development footprint must be demarcated to ensure that only the demarcated areas are impacted upon. Any no-go areas identified must be demarcated before the construction or decommissioning commences.		
	All personnel and contractors to undergo Environmental Awareness Training, including awareness of the surrounding area and sensitive environmental receptors within the project area, to inform contractors and site staff of the importance of these areas and their conservation. A signed register of attendance must be kept for proof.		Construction Operation
	Site clearing must be limited to the footprint of the infrastructure requirements.		Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	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.		
VEHICLE, EQUIPMENT AND MACHINERY MANAGEMENT			
Impact Management Outcome: — To implement measures to minimise impacts on the environment from poorly maintained equipment, machinery and vehicles onsite.			
Indicator and Compliance Mechanism: — Vehicle and Equipment maintenance programme. — 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 Contractor	Construction Operation Decommissioning
	The movement of vehicles into and out of the site must be managed to ensure the impact on public areas is minimised, such as ensuring that abnormal loads are moved outside of peak traffic hours, and reasonable measures are taken to ensure that public and staff safety is managed adequately.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
FUEL AND CHEMICAL MANAGEMENT			
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 SANS 10089-1 (2008). Ensure that the total combined storage capacity on site does not exceed 500 cubic metres. If storage capacity triggers licencing, those must be acquired.	EO 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.		
	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		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	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 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.		
WASTE MANAGEMENT			
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).			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
— Emergency preparedness and response procedure. — Incident classification and reporting management procedure (to be developed). — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports.			
General Waste Management	General waste generated as a result of construction and operational activities must be managed in accordance with a WMP (see Section 7.1 of this EMPr). The procedure must be reviewed to ensure compliance with legislative amendments.	EO Contractor	Construction Operation Decommissioning
	Train and inform all onsite personnel regarding general waste minimisation, management and disposal as per the WMP.		
	Prohibit littering and burning of waste onsite.		
	Place an adequate number of labelled or colour coded general waste bins around the laydown area and at the construction sites during construction activities in order to minimise littering. The bins must be removed from the site on a regular basis for disposal at a registered or licensed disposal facility.		
	Waste management must be a priority and all waste must be collected and stored adequately. It is recommended that all waste be removed from site on a weekly basis to prevent rodents and pests entering the site. Including preventing livestock access to waste. — Refuse bins will be emptied and secured. — Temporary storage of domestic waste shall be in covered waste skips. — Maximum domestic waste storage period will be 10 days.		
	Retain records 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.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	There will need to be waste segregation (e.g. electronic equipment, chemicals, oil contaminated rags, paper, plastic) and management on the site.		
	Recover, recycle and reuse waste of general waste as far as possible.		
Hazardous Waste Management	Appropriate ablution facilities should be provided for construction workers during construction and decommissioning and on-site staff during the operation of the facility. These must be situated outside of any delineated watercourses and pans/depressions or the buffers provided.	ECO EO Contractor	Construction Operation Decommissioning
	Hazardous waste generated as a result of construction, operational and decommissioning activities must be managed in accordance with a WMP.		
	The WMP must include a procedure for handling spillages.		
	Strict use and management of all hazardous materials used on site.		
	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.		
	Any recyclable material which is considered hazardous is to be collected and transferred by a permitted/trained waste contractor in accordance with the SANS 10228 for transport to the approved recycling/recovery facility.		
	A designated and appropriately demarcated and covered hazardous waste storage area must be established on a hard standing area.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	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.		
	The emergency preparedness and response plan (Section 7.6 of this EMPr or the site specific one developed) must be implemented. The plan must be placed in key locations around the site, visible to all employees.		
	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.		
	Report any major spill incidents[5] that causes or may cause environmental pollution to the Department within 24 hours of occurrence.		
	Should Redox-flow batteries energy systems be implemented, process controls in place for the BESS to prevent contamination and deterioration of electrolyte leading to excessive purging.	EO Operator	Operation

[5] "Incident" means an unexpected, sudden and uncontrolled release of a hazardous substance, including from a major emission, fire or explosion, that causes, has caused or may cause significant harm to the environment, human life or property. For example, a large oil spill into storm water systems. An incident is reportable if the environment outside the boundaries of your operation is likely to be impacted by the incident i.e., water pollution or radiation.

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
SOIL, LAND AND AGRICULTURAL MANAGEMENT			
Impact Management Outcome: — To prevent any disturbance, erosion or contamination of soil resources.			
Indicator and Compliance Mechanism: — Induction training and records. — WMP. — Incident classification and reporting management procedure (to be developed). — Health, safety, environmental and community incident and complaints management system register. — Monitoring and audit reports. — Stormwater Management Plan (SWMP) (to be developed).			
Soil and Land Management	Develop and implement a system of storm water management, which will prevent erosion, as part of the road engineering on site. As part of this system, the integrity of the existing contour bank systems of erosion control on croplands, where they occur on steeper slopes, must be kept in tact.	EO Contractor Site Manager	Construction Operation
	Land clearance must only be undertaken in accordance with the construction programme and only within the development footprint. Unnecessary land clearance must be avoided.		
	Access roads must have gradients or surface treatment to limit erosion, and road drainage systems must be accounted for.		
	Implement an effective system of storm water run-off control, in line with the SWMP (to be developed).		
	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.		Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Any excavations done during the construction phase, in areas that will be re-vegetated at the end of the construction phase, must separate the upper 30 cm of topsoil from the rest of the excavation spoils and store it in a separate stockpile. When the excavation is back-filled, the topsoil must be back-filled last, so that it is at the surface.	EO Contractor	
	Topsoil should only be stripped in areas that are excavated. On areas that are only cleared, like construction lay down areas, it is much better to leave the topsoil in place.		
	Ensure soil stockpiles (from road construction) and concrete / building sand are sufficiently safeguarded against rain wash.		
	Landscape and re-vegetate all unnecessarily denuded areas as soon as possible.	Contractor Site Manager	
	Water erosion action is considered limited, however backfilling with soil and use of gabions or Reno Mattresses must be used where evidence of erosion is present.	Contractor Site Manager	Construction Operation
	Due to the potential for soil compaction due to vehicles, traffic must be limited to existing or proposed roadways as far as possible.	Contractor Site Manager	
	The construction of roads must be limited in width and length as far as is practical to limit impacts.	EO Contractor	Construction
	Where an impact to the vegetation outside of the development footprint occurs, rehabilitation measures must be undertaken to maintain the baseline vegetation population and health.		
	Machinery must be regularly checked to ensure hydrocarbon leaks (including fuel and hydraulic fluids) are not occurring. Drip trays must be used where necessary. Fuels and oils must be stored within bunded areas.	Contractor/Operator	Construction Operation

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Sufficient on-site ablutions must be made available during site construction and decommissioning. If portable toilets can be installed for the construction phases, ensure that they in accordance with Occupational Health and Safety Act, (No 85 of 1993).	EO Contractor	Construction Decommissioning
	Design an effective system of storm water run-off control, where it is required - that is at any points where run-off water might accumulate. The system must effectively collect and safely disseminate any run-off water from all accumulation points and it must prevent any potential down slope erosion.	Contractor Site Manager	Design
	Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	EO	Construction
	If an activity will mechanically disturb the soil below surface in any way, then any available 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 evenly spread over the entire disturbed surface.		
	Facilitate re-vegetation of denuded areas throughout the site	Site Manager	Operation
	Maintain where possible all vegetation cover and facilitate re-vegetation of denuded areas throughout the site, to stabilize disturbed soil against erosion.	EO	Decommissioning
WATER MANAGEMENT			
Impact Management Outcome: — To implement measures to prevent the contamination on surface and groundwater resources. — To prevent erosion.			
Indicator and Compliance Mechanism: — Induction training and records.			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
— WMP. — Water Use Licence (or General Authorisation as applicable). — Incident classification and reporting management procedure (to be developed). — Environmental awareness programme/toolbox talks. — SWMP (to be developed).			
Surface Water Management	Investigate feasibility of construction activities being conducted during the dry season to avoid possible wetland contamination from storm water runoff (as well as soil erosion) that may be experienced during wet seasons, as far as practically possible.	Site Manager Contractor EO	Pre-Construction
	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. Effective stormwater management will include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks.		
	The stormwater control systems must be inspected on an annual basis to ensure these are functional. Effective stormwater management must include effective stabilisation (gabions and Reno mattresses) of exposed soil and the re-vegetation of any disturbed riverbanks.		
	In the instances where facility roads are required on the present road / track crossings already installed by local landowners / public works entities, install properly sized culverts with erosion protection measures.		
	To appropriately manage storm water, the SWMP needs to be implemented.		Pre- construction Construction Operation
	It is recommended that a comprehensive rehabilitation / monitoring plan be implemented from the project onset i.e. during the detailed design phase prior to construction, to ensure a net benefit to the environment within all areas that will remain undisturbed.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	The effectiveness of the stormwater / energy dissipation structures will then be inspected on an annual basis and maintained / improved as required during this the operational phase, especially where any erosion or sedimentation has become evident in the operational phase.	Site Manager EO	Operation
	Ensure proposed locations of the BESS facilities are a suitable distance from the closest water course, that is outside the demarcated water resources as per the Aquatic specialist delineation.	Site Manager Contractor Operator/Developer	Construction
	The site must be prepared/managed/contoured as according to the SWMP (to be developed) to allow for surface water to readily drain away and to prevent ponding of water anywhere within the site.	Site Manager Contractor EO	Construction
	Containment of all contaminated water by means of careful run-off management on site.		
	Install properly sized culverts with erosion protection measures at the present road / track crossings where already installed by local landowners / public works entities.		
	Working protocols incorporating pollution control measures (including approved method statements by the contractor) should be clearly set out for the project and strictly enforced.		
	No runoff may be discharged or directed into the Pans, as these are not tolerant of excessive / regular volumes of water and would then change in nature and attributes. Suitable measures must be implemented to prevent such runoff, i.e. stormwater detention pond (or similar appropriate measure).		
Water Flow Regime\	The Wind Energy Structure currently located either within a wetland or within the buffer of a wetland should be moved into nearby impacted areas like agricultural fields	Site Manager Contractor EO	Construction
	A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	when compiling work method statements to prevent access to the adjacent portions of the watercourse.		
	Where development activities are located upslope from wetlands, effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP		
	Where development activities are located upslope from wetlands, high energy stormwater input into the watercourses should be prevented at all cost.		
	Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area.		
	Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas		
	Effective culverts should be incorporated into the design of access roads		Operation
Loss and disturbance of watercourse habitat and fringe vegetation	Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish.	Site Manager Contractor EO	Construction
	Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed		
	Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas.		
	Operational activities should not impact on rehabilitated or naturally vegetated areas.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Water quality	Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone.		Construction Operation
	Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.		
	The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse i.e. water runoff from cleaning of equipment, vehicle access etc		
	Maintenance of construction vehicles/equipment should not take place within the watercourse or watercourse buffer		
	Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects.		
	Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse.		
	Regular independent water quality monitoring should form part of operational procedures in order to identify pollution		
	Treatment of pollution identified should be prioritized according to best practice guidelines.		
	Develop norms and standards for the treatment of spills such as oil or hydraulic fluid. Ensure that the required equipment is available on hand to contain any spills.		
	Appoint a reliable contractor for the removal of refuse during the construction phase		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Alien Vegetation	Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.	Site Manager Contractor EO	Construction Operation
	Undertake an Alien Plant Control Plan which specifies actions and measurable targets		
	Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area and returning it where possible afterwards.		
	Long-term monitoring for the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish, as specified in the Alien Vegetation Management Plan		
Groundwater Management	Areas with the potential to contaminate the groundwater must be underlain by hardstanding of suitable integrity.	Site Manager Contractor EO	Construction Operation
	Acquire spill kits to clean up any hydrocarbon or chemical spills during construction, operation and closure to prevent seepage. All spillage incidents must be reported to the responsible site officer as soon as they occur.		
	Oils, greases, diesel and other chemicals must be stored in the prescribed manner and within bunded areas to prevent groundwater contamination.		
	Any cement mixing shall be completed on impervious hardstanding surfaces to prevent spillage to the environment.		
	Concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Potable Water Management	Onsite staff are to be provided with an appropriate potable water supply, safe and healthy sanitary facilities and protection against exposure to environmentally dangerous or unhealthy situations or conditions.	Contractor/Operator EO	Construction Operation
	Onsite staff must be made aware and encouraged to use water sparingly such that there is no water wastage.		
BIODIVERSITY MANAGEMENT			
Impact Management Outcome: — Prevent the unnecessary destruction of, and fragmentation, of the vegetation community. — Prevent the loss of the faunal community associated with these vegetation communities. — Prevent the loss of the bat community associated with these vegetation communities.			
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.			
Vegetation and Habitats Management	A preconstruction walk-through of the development footprint for the purpose of turbine and crane pad micrositing could ensure that no SCC are present at these sites.	Project Manager EO Contractor	Pre-Construction
	As far as possible avoid placing of turbines and other large infrastructure in CBAs.		
	MK11, MK24, MK26, MK28, MK36, MK37 & MK39 must be microsited prior to approval of final layout such that the site can be groundtruthed and any sensitive areas are avoided.		
	Construction crew, in particular the drivers, should undergo environmental training (induction) to increase their awareness of environmental concerns. This includes awareness as		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	to remaining within demarcated construction areas, no littering, handling of pollution and chemical spills, avoiding fire hazards and minimising wildlife interactions		
	Ensure that all temporary use areas e.g. laydown areas and construction camp, are located in areas of low sensitivity.		
	Footprints of the turbines, crane pads, roads, construction and substation locations should be clearly demarcated. Vegetation clearance should be confined to the footprint of the development and unnecessary clearance should be avoided.		
	Watercourses, wetlands, rocky outcrops/sheets should be avoided (Habitats 1 & 7).		
	Observe buffer zones along drainage lines (see report of aquatic specialist).		
	All vehicles are to remain on demarcated roads and no driving through the veld should be allowed.		
	The ECO is to provide supervision on vegetation clearing activities and other activities that may cause damage to the environment, especially when construction commences and most vegetation clearing is taking place.		
	River/stream crossings should be placed in areas without extensive wetlands and preferably in areas where the risk of disruption and erosion is low. All river/stream crossings should be inspected by the aquatic specialist to ensure that optimal and acceptable locations have been chosen for river crossings. River/stream crossings should be specifically designed not to impede or disrupt the direction and flow of the water. Specific guidelines of the aquatic specialist should be followed		
	No plants may be translocated or otherwise uprooted or disturbed without express permission from the ECO		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Placement of infrastructure should be done in such a way as to minimise the impact on protected species.	EO Contractor	Construction Operation Decommissioning
	The construction crew should undergo environmental training (induction) to make them aware of the importance of protected species.		
	Implement a monitoring program for the early detection of alien invasive plant species		
	A control program should be employed to combat declared alien invasive plant species in the most environmentally friendly manner that does not result in undesirable secondary impacts		
	Herbicides for the control of alien species should be applied according to the relevant instructions and by appropriately trained personnel		
	No alien species should be used in rehabilitation or landscaping		
	Use only plants and seed collected on-site for revegetation		
	Cleared areas may need to be fenced-off during rehabilitation to exclude livestock and wildlife.		
	Material brought onto site e.g. building sand should be regularly checked for the germination of alien species		
Fauna Management	Vegetation clearance should be confined to the smallest possible footprint of the development and unnecessary clearance should be avoided.	EO Contractor	Construction Operation Decommissioning
	Construction crew should undergo environmental training (induction) to increase their awareness of environmental concerns		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Speed limits should be set on all roads and strictly adhered to		
	Development should avoid water courses, wetlands and rocky outcrops/sheets.		
	Proper waste management procedures should be in place to avoid waste lying around and to remove all waste material from the sites.		
	Observe buffer zones along drainage lines		
	Construction crew, in particular the drivers, should undergo environmental training to increase their awareness of environmental concerns in order to reduce the number of kills during construction and on roads. The crew should also be made aware of not harming or collecting species such as snakes, tortoises and owls.		
	Proper waste management procedures should be in place to avoid litter, food or other foreign material from lying around and to remove all waste material from the site.		
	No activity, including night driving, should be allowed at the site after sunset.		
	Speed limits should be set on all roads on site and strictly adhered to.		
	Personnel should not be allowed to roam into the veld.		
	Ensure that cabling and electrical infrastructure at the site are buried sufficiently deeply to avoid being excavated by fauna and that where such infrastructure emerges above-ground that it is sufficiently protected from gnawing animals.		
	Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days, should have an escape ramp to allow any fauna that fall in to escape.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	If there is any part of the site that needs to be lit at night for security reasons, then appropriate lighting should be installed to minimise negative effects on nocturnal animals.		
	Should electrical fences be erected it must be done according to the norms and standards of the Nature Conservation Authorities in Mpumalanga.		
	Access to the site should be regulated to reduce the opportunities for poaching. Construction crew, in particular the drivers, should undergo environmental training to increase their awareness of environmental concerns in order to reduce the number of kills during construction and on roads. The crew should also be made aware of not harming or collecting species such as snakes, tortoises and owls.		
	Proper waste management procedures should be in place to avoid litter, food or other foreign material from lying around and to remove all waste material from the site.		
	No activity, including night driving, should be allowed at the site after sunset.		
	Speed limits should be set on all roads on site and strictly adhered to.		
	Personnel should not be allowed to roam into the veld.		
	Ensure that cabling and electrical infrastructure at the site are buried sufficiently deeply to avoid being excavated by fauna and that where such infrastructure emerges above-ground that it is sufficiently protected from gnawing animals		
	Any dangerous fauna (e.g. snakes, scorpions) that are encountered during construction should not be handled or molested by construction staff and the ECO (or other suitably qualified person) should be contacted to remove the animals to safety.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Holes and trenches should not be left open for extended periods of time and should only be dug when needed for immediate construction. Trenches that may stand open for some days, should have an escape ramp to allow any fauna that fall in to escape.		
	If there is any part of the site that needs to be lit at night for security reasons, then appropriate lighting should be installed to minimise negative effects on nocturnal animals.		
	Should electrical fences be erected it must be done according to the norms and standards of the Nature Conservation Authorities in Mpumalanga.		
	Access to the site should be regulated to reduce the opportunities for poaching.		
	Construction crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.		
	Development should avoid wetlands and rocky sheets.		
	Soil compaction should be kept to a minimum by restricting driving to designated roads.		
	Appropriate lighting should be installed to minimise negative effects on nocturnal animals.		
	No activity should be allowed at the site between sunset and sunrise.		
	The mitigation measures as indicated by the noise specialist must be adhered to.		
	Maintenance crew should undergo environmental training, by way of an induction course, to increase their awareness of environmental concerns.	EO Contractor	Operation
	Access to the site should be strictly controlled.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	All excess wires, cables and waste material should be removed from the site.		
	All vehicles at the site should adhere to a low speed limit and slow-moving fauna such as tortoises on roads should be moved off the road.		
	No activity should be allowed at the site between sunset and sunrise.		
	Electrical fences should be erected according to the norms and standards of the Nature Conservation Authorities in Mpumalanga.		
Water Run-off and Erosion	Clearing of vegetation, compaction and leveling should be restricted to the footprint of the proposed development.	EO Contractor	Construction Operation Decommissioning
	All roads should have structures to deflect water run-off to disperse the water into the receiving area.		
	A rehabilitation and revegetation plan should be developed as part of the EMP.		
	Regular monitoring of the site during construction for erosion problems.		
	Silt traps should be used where there is a danger of topsoil eroding and entering streams and other sensitive areas.		
	If applicable, topsoil should be removed and stockpiled, then reapplied as soon as possible in order to facilitate regeneration of the natural vegetation on cleared areas		
	Reduce activity on site after large rainfall events when the soils are wet. No driving off hardened roads until soils have dried out and the risk of bogging down has decreased		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	A suitably qualified person should plan, design and supervise the proper construction of roads to minimise the impact on the environment		
AVIFAUNA MANAGEMENT			
Impact Management Outcome: — To minimise impacts to avifauna and their habitat. — Prevent mortality of priority avifauna — Prevent displacement of priority avifauna			
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.			
Planning and design phase	A 100m all infrastructure exclusion zone must be implemented around wetlands, dams and pans to prevent collision mortality and disturbance of priority bird species.	Developer / Operator	Pre-Construction
	The medium voltage cable should be buried as far as possible. Overhead lines should only be considered if technical constraints to trenching are present.		
	Where the use of overhead lines is unavoidable due to technical reasons, the Avifaunal Specialist must be consulted to ensure that a raptor friendly pole design is used.		
	A 32m all infrastructure exclusion zone must be implemented around drainage lines to prevent collision mortality and disturbance of priority bird species.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Development in the remaining high sensitivity grassland must be limited as far as possible. Where possible, infrastructure must be located near margins, with shortest routes taken from the existing roads.		
	Construction of new roads should only be considered if existing roads cannot be upgraded		
Construction	Conduct a pre-construction inspection to identify Red List species that may be breeding within the project footprint to ensure that the impacts on breeding species (if any) are adequately managed.	EO Contractor	Construction
	Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible. The recommendations of the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned).		
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species. Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum		
	Measures to control noise and dust should be applied according to current best practice in the industry.		
	Bird flight diverters should be installed on all overhead medium voltage power lines (according to the relevant Eskom Engineering Instruction). These devices must be installed as soon as the conductors are strung		
Operational phase	The mitigation measures proposed by the vegetation specialist must be strictly enforced, including rehabilitation of disturbed areas.	EO Contractor	Operation
	If estimated annual collision rates indicate unacceptable mortality levels of priority species i.e. exceeding mortality thresholds as determined by the avifaunal specialist in consultation with other experts e.g. BLSA, additional measures will have to be implemented which could include shut down on demand or other proven measures (if available at the time).		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Live-bird monitoring and carcass searches to be implemented in the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al., 2015) to compare the abundance of avifauna during the pre-construction monitoring with the abundance post-construction. Operational monitoring and carcass searches to be implemented for a minimum of two years, and then again in Year 5 and every fifth year after that.		
Decommissioning	Decommissioning activity should be restricted to the immediate footprint of the infrastructure as far as possible.	EO Contractor	Decommissioning
	Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of priority species.		
	Measures to control noise and dust should be applied according to current best practice in the industry.		
	Maximum used should be made of existing access roads		
Mortality due to collisions with the turbines	A 100m all infrastructure exclusion zone must be implemented around wetlands, dams and pans.	EO Contractor	Construction Operation Decommissioning
	A 32m all infrastructure exclusion zone must be implemented around drainage lines.		
Mortality due to electrocution	Use underground cabling as much as is practically possible.	EO Contractor	Construction Operation Decommissioning
	Where the use of overhead lines is unavoidable due to technical reasons, the Avifaunal Specialist must be consulted to ensure that a raptor friendly pole design is used, and that appropriate mitigation is implemented pro-actively for complicated pole structures e.g. insulation of live components to prevent electrocutions on terminal structures and pole transformers.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Displacement due to disturbance	A 100m all infrastructure exclusion zone must be implemented around wetlands, dams and pans.	EO Contractor Construction	Operation Decommissioning
	A 32m all infrastructure exclusion zone must be implemented around drainage lines		
	Development in the remaining high sensitivity grassland must be limited as far as possible. Where possible, infrastructure must be located near margins, with shortest routes taken from the existing roads		
	Driving is only permitted in designated roads.		
	Maximum use of existing roads.		
	Measures to control noise and dust according to latest best practice.		
	Restricted access to the rest of the property outside the designated construction area.		
	Strict application of all recommendations in the botanical specialist report pertaining to the limitation and rehabilitation of the footprint		
Displacement due to habitat transformation	Develop a Habitat Rehabilitation Plan (HRP) and ensure that it is approved	EO Contractor	Construction Operation Decommissioning
	Monitor rehabilitation via site audits and site inspections to ensure compliance. Record and report any non-compliance		
	Vehicle and pedestrian access to the site to be controlled and restricted to the facility footprint as much as possible to prevent unnecessary destruction of vegetation.		
Mortality due to collisions with the wind turbines	Formal live-bird monitoring and carcass searches to be implemented at the start of the operational phase, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al., 2015), to assess collision rates. The exact time when operational monitoring is	EO	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	to commence, will depend on the construction schedule, and must commence when the first turbines start operating. The Best Practice Guidelines require that, as an absolute minimum, operational monitoring is to be undertaken for the first two (preferably three) years of operation, and then repeated again in year 5, and again every five years thereafter for the operational lifetime of the facility	Contractor	Operation Decommissioning
	If estimated annual collision rates indicate unacceptable mortality levels of priority species i.e. exceeding mortality thresholds as determined by the avifaunal specialist in consultation with other experts e.g. BLSA, additional measures will have to be implemented which could include shut down on demand or other proven measures (if available at the time).		
Mortality due to collisions and electrocutions on the 33kV network	Conduct regular inspections of the overhead sections of the internal reticulation network to look for carcasses.	EO Contractor	Construction Operation Decommissioning
Displacement due to disturbance associated with the dismantling activities	A site-specific EMPr must be implemented, which gives appropriate and detailed description of how construction activities must be conducted. All contractors are to adhere to the EMPr and must apply good environmental practice during construction. The EMPr must specifically include the following: - No off-road driving. - Maximum use of existing roads. - Measures to control noise and dust according to latest best practice. - Restricted access to the rest of the property. - Strict application of all recommendations in the botanical specialist report pertaining to the limitation of the footprint.	EO Contractor	Construction Operation Decommissioning

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
BAT MANAGEMENT			
Impact Management Outcome: To minimise impacts to bats and their habitat.			
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.			
Bat and Habitat Management	Adhere to the bat sensitivity map during all phases of the facility's operation, thus avoiding all bat sensitive areas. This also applies to temporary activities such as storage yards and construction offices.	Project Manager EO Contractor	Pre-construction Construction Operation Decommissioning
	All lights on substation and/or Operations and Management (O&M) buildings, should be down-hooded and connected to motion sensors (where safe to do so), to minimise light pollution.		
	For buildings, avoid tin roofs and roof structures that offer entrance holes into the roof cavity.	Site Manager EO	
	Rehabilitate cleared vegetation where possible at areas such as laydown yards.	Project Manager EO Contractor	Construction Post-construction
	Vegetation should be allowed to recover where it was cleared after the construction and decommissioning of the facility.		Construction Operation Decommissioning

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Turbine layout adjustments to adhere to the sensitivity maps, and where needed reducing blade movement at selected turbines and high-risk bat activity times/weather conditions as informed by operational monitoring results.	Project Manager Contractor	Construction Operation
	Bat mortality impact during operation should be measured and ensure that the WEF impacts remain within sustainable levels.	Project Manager	Operation
	Curtailment may be implemented during operation if the results of the operational bat mortality monitoring indicate that bats are being killed above sustainable thresholds. These thresholds are advised on during the operational study.		
	Only use lights with low sensitivity motion sensors that switch off automatically when no persons are nearby while still adhering to safety and security requirements, to prevent the creation of regular insect gathering pools. This will be at turbine bases (if applicable, and other infrastructure buildings).		
AIR QUALITY MANAGEMENT			
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	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
		Contractor	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 — 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.		
	All materials transported to, or from, site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials.		
	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.		
	Dust-reducing mitigation measures must be put in place and must be strictly adhered to, for all roads and soil/material stockpiles especially. This includes wetting of exposed soft soil		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	surfaces and not conducting activities during high wind periods which will increase the likelihood of dust being generated.		
	The processes must avoid all sources of dust or particulate matter generation and immediate mitigation plans be implemented in consultation with the District Air Quality Officers including on all unpaved roads.		
	Dust suppression measures must be implemented on un-surfaced roads, such as wetting on a regular basis and ensuring that vehicles used to transport building materials are fitted with tarpaulins or covers.		
	Where possible, minimise speed limits, vehicle weights and the number of vehicles using unpaved roads.		
Exhaust emissions and Other Emissions Management	All equipment, machinery and vehicles must be fitted with appropriate emission control equipment, are maintained frequently and serviced to the manufacturers' specifications.	EO Contractor / Operator	Construction Operation Decommissioning
	Ensure incident and complaint registers are established and maintained		
	Prohibit burning of waste or vegetation onsite.		
	Conduct training of the workforce at all levels (i.e. workers, foremen, managers) in awareness of air emissions. This can be included in site induction courses and should focus on promoting understanding as to why operational controls are in place and should be adhered to.	EO Contractor / Operator	Construction Operation
NOISE MANAGEMENT			
Impact Management Outcome: To ensure that noise impacts to the surrounding environment are minimal or mitigated.			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
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	Plan construction activities in consultation with local communities so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance. Information regarding construction activities should be provided to identified and nearby receptors likely to be affected. Such information includes: — Proposed working times. — Anticipated duration of activities. — Explanations on activities to take place and reasons for activities. — Contact details of a responsible person on site should complaints arise.	Project Manager	Pre-construction
	Design the system to 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.		
	Notify the NSR when night-time activities will be taking place within 1,000m from the NSR;	Contractor/Operator	Construction
	Minimise active night-time construction activities when operating within 1,000m from an NSR at night. Work should only take place at one WTG location to minimize potential night-time cumulative noises; and		
	Plan the completion of noisiest activities (such a pile driving, rock breaking and excavation) during the daytime period.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	It is also recommended that the applicant plan to locate access roads further than 80 m from verified NSR, especially if these roads may experience significant traffic.		
	The applicant can select to use a quieter WTG (with a SPL less than 106.0 dba as per the IEC 61400-14 certificate) within 2,000m from all NSR where noise rating levels was modelled higher than 45 dba; or,	EO Contractor/Operator	Operation
	The layout be changed, where the WTG located within 1,000m from certain NSR (from all NSR where noise rating levels was modelled higher than 45 dba) be moved further from this NSR. The applicant should also consider the total number of WTG located within 2,000m from these NSR (to ensure that cumulative noise rating levels are acceptable); or,		
	The applicant can develop a noise abatement programme, that may require the operation of one or more WTG in a reduced noise mode (if the WTG allows such an operating mode) to ensure that the noise levels are less than 45 dba at NSR (all NSR where noise rating levels was modelled higher than 45 dba); or		
	That certain NSR be relocated (NSR where noise rating levels was modelled higher than 45 dba); and, the applicant must get confirmation in writing that the structure(s) will not be used for residential purposes in the future.		
	It is recommended that the project applicant re-evaluate the selected mitigation option for the operational phase to ensure that the total noise levels are less than 45 dBA.		
	In addition, to ensure that noise does not become an issue for future residents, landowners or the local communities, it is recommended that the applicant get written agreement from current landowners/community leaders that: — no new residential dwellings will be developed within areas enveloped by the 42 dBA noise level contour — structures located within the 45 dba noise level contour should not be used for residential use		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Re-evaluate the noise impact should the layout be revised where: — any WTG, located within 1,500 m from a confirmed NSR, are moved closer to the NSR; — any new WTG are introduced within 1,500m from an NSR; — the number of WTG within 2,000m from an NSR are increased;	EO ECO Contractor/Operator	Construction Operation
	Re-evaluate the noise impact should the applicant make use of a wind turbine with a maximum SPL exceeding 109.0 dba re 1 pw;		
	Ensure that equipment is well maintained and fitted with the correct and appropriate noise abatement measures. Engine bay covers over heavy equipment could be pre-fitted with sound absorbing material. Heavy equipment that fully encloses the engine bay should be considered, ensuring that the seam gap between the hood and vehicle body is minimised;		
	Include a component covering environmental noise in the Health and Safety Induction to sensitize all employees and contractors about the potential impact from noise, especially those employees and contractors that have to travel past receptors at night, or might be required to do work close (within 1,000m) to NSR at night. This should include issues such as minimising the use of vehicle horns;		
	Investigates any reasonable and valid noise complaint if registered by a receptor staying within 2,000 m from the location where construction activities are taking place, or where night-time construction activities are required, or where an operational WTG are located. A complaint register, keeping a full record of the complaint, must be kept by the applicant.		
	With regard to unavoidable noisy night-time construction activities in the vicinity of NSR (closer than 1,000 m from any identified NSR), the contractor and Environmental Control Officer (ECO) must liaise with local NSR on how best to minimise impact and the NSR must be kept informed of the nature and duration of intended activities;		
	Where practicable, mobile equipment should be fitted with broadband (white-noise generators/alarms), rather than tonal reverse alarms		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
SITES OF CULTURAL OR HERITAGE SIGNIFICANCE			
Impact Management Outcome: – To ensure that sites/artefacts of heritage value are identified and protected.			
Indicator and Compliance Mechanism: – Reporting as per Chance Find Procedure. – Monitoring and audit reports.			
Cultural and/or Heritage Site and Palaeontological Material	The likely graveyard alongside turbine MK-24 must be buffered by a minimum of 50m unless the site is checked and confirmed not to be a graveyard	Project Manager/Site Manager Contractor EO ECO	Pre-construction Construction Operation
	If any archaeological material or human burials are uncovered during the course of development then work in the immediate area should be halted. The find would need to be reported to the heritage authorities and may require inspection by an archaeologist. Such heritage is the property of the state and may require excavation and curation in an approved institution.		
	Recorded heritage features should be indicated on development plans and avoided with a 30 m buffer.		
	Sites MD002 – 004, MD007, MD009 are to be avoided by roads and ancillary infrastructure.		
	Prior to construction commencing, the final layout should be subjected to a heritage walkthrough.		Pre-construction
	A report of the results of the archaeological heritage pre-construction walkdown must be submitted to SAHRA for review and comment. No construction may commence without comment from SAHRA.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Pre-construction survey and micro-siting of infrastructure must be conducted.		
	A pre-construction survey should also be undertaken to determine whether any graves are visible in the final footprint		
	The study area should be monitored by the ECO during construction.		Construction
	The ECO should familiarise him- or herself with the fossiliferous formations and its fossils. The Evolutionary Studies Institute, University of the Witwatersrand has good examples of Ecca Group Fossils.	ECO	Pre-Construction Construction
	Implementation of a Chance Find Procedure (provided in Section 7.13) for the Project during construction. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds.	Project Manager EO Contractor	Construction
VISUAL IMPACT MANAGEMENT			
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.			
Visual	Plan the placement of laydown areas and temporary construction equipment camps in order to minimise vegetation clearing (i.e. in already disturbed areas) wherever possible.	Project Manager	Pre-Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter.	Contractor EO	Construction
	Plan all roads, ancillary buildings and ancillary infrastructure in such a way that clearing of vegetation is minimised. Consolidate infrastructure and make use of already disturbed sites rather than undisturbed areas.		
	Carefully plan to minimise the construction period and avoid construction delays.		
	Where possible, restrict construction activities to daylight hours in order to negate or reduce the visual impacts associated with lighting.		
	Inform receptors within 1km of the WEF development area of the construction programme and schedules.		
	Minimise vegetation clearing and rehabilitate cleared areas as soon as possible.		
	Position storage / stockpile areas in unobtrusive positions in the landscape, where possible.		
	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.		
	Maintain a neat construction site by removing litter, rubble and waste materials regularly.		
	Limit the number of vehicles and trucks travelling to and from the construction site, where possible.		
	Ensure that dust suppression techniques are implemented: — on all access roads; — in all areas where vegetation clearing has taken place;	EO Contractor	Construction Decommissioning

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	— on all soil stockpiles.		
	Turbine colours should adhere to CAA requirements. Bright colours and logos on the turbines should be kept to a minimum.	Project Manager Contractor	Pre-Construction Operation
	Inoperative turbines should be repaired promptly, as they are considered more visually appealing when the blades are rotating (or at work) (Vissering, 2011).	Project Manager Operator	Operation
	If turbines need to be replaced for any reason, they should be replaced with turbines of similar height and scale to lessen the visual impact.		
	As far as possible, limit the amount of security and operational lighting present on site whilst adhering to relevant safety standards.	EO ECO	Operation
	Light fittings for security at night should reflect the light toward the ground and prevent light spill.	EO Contractor Operator	Operation
	Lighting fixtures should make use of minimum lumen or wattage whilst adhering to safety and security requirements.	EO Contractor Operator	Operation
	Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used	EO Contractor Operator	Operation
	If possible, make use of motion detectors on security lighting.		
	Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Non-reflective surfaces should be used where possible.		
	Remove infrastructure not required for the post-decommissioning use of the site.	Project Manager EO Contractor	Decommissioning
	Carefully plan to minimize the decommissioning period and avoid delays.		
	Maintain a neat decommissioning site by removing rubble and waste materials regularly.		
	Position storage / stockpile areas in unobtrusive positions in the landscape, where possible.		
	Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase.		
	All cleared areas should be rehabilitated as soon as possible		
HEALTH AND SAFETY			
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 Mechanisms: — 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.			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
— Occupational health and safety plan (to be developed). — Health and safety protocol (to be developed). — MHI (to be developed)			
Health and Safety	The construction and operation phase must be managed according to all the requirements of the Occupational Health and Safety Act 85 of 1993.	Site Manager Contractor EO	Construction Operation
	The appointed contractor will be responsible for the development of a comprehensive health and safety protocol, as well as safe work instruction method statements, that are to be used by employees in completing their tasks and which must be adhered to throughout the construction phase.	Contractor EO	Construction
	The Contractor is to appoint a health and safety officer to monitor safety conditions during construction activities.		
	All onsite personnel are required to undergo induction training and regular toolbox talks in order to raise awareness of health and safety.		Construction Operation
	The contractor is to ensure all employees are properly trained to use specific equipment or machinery and provide all staff with appropriate PPE and ensure they are trained in proper use thereof.		
	Train all onsite personnel handling chemical or hazardous substances in the use of such substances and the environmental, health and safety consequences of incidents.		
	Provide onsite personnel with sufficient potable water for drinking.		
	Develop and implement a fall protection program that includes training in climbing techniques and use of fall protection measures; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers, among others.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Restrict public access by ensuring fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site.		
	All visitors to active work areas are to undergo site induction and be made aware of the risks associated with the site.		Construction
	Contractor's safety files must be in place and kept up to date.		
	All necessary health controls/ practices must be in place, e.g. ventilation of welding and painting areas.	Contractor/Operator Site Manager	Construction Operation
	An emergency response plan must be compiled prior to construction, which must include aspects such as appointment of emergency controller, provision of first aid, first responder contact numbers.	Contractor/Operator EO	
	Construction site facilities, as well as 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.	Contractor/Operator Site Manager	
	Fuels stored on site must be situated in dedicated, demarcated and bunded areas.		
	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
	Suitable lighting to be provided including emergency lighting for safe building exit in the event of power failure.		
	All necessary good hygiene practices to be in place, e.g. provision of toilets, eating areas, infectious disease controls.	Site Manager	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Policies and practice for dealing with known vectors of disease such as Aids, TB, COVID 19 and others and others must be developed and implemented.	Contractor EO	Operation
	Conduct 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.		
	Outside work must be stopped during thunderstorms. Lighting conductors may be required for the final installation, to be confirmed during design phase.		
	Fencing around the electrical infrastructure to adhere to SANS standard and Eskom Guidelines.		Pre-construction Construction
	Civil works and building structures must adhere to the National Building Regulations and building Standards Act 103 of 1977 SANS 10400 and other relevant codes		
	Civil design to take seismic activity into account.		
	Adhere to Eskom Operating Regulations for high voltage systems including access control, permit to work, safe work procedures, live work, abnormal and emergency situations, keeping records.	Site Manager Contractor EO Operator	Pre-construction Construction Operation
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,	Operator	Operation

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	— 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		
	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 EO	Construction Operation
Fire risk	Suitable fire-fighting equipment must be available on site near source of fuel, e.g. diesel tank, generators, mess, living quarters, workshops etc	Site Manager Contractor Operator EO	Construction Operation
	Contractor should ensure that open fires on the site for cooking or heating are not allowed except in designated areas.		
	Smoking on site should be confined to designated areas.		
	Contractor should ensure that construction related activities that pose a potential fire risk, such as welding, are properly managed and are confined to areas where the risk of fires has been reduced. Measures to reduce the risk of fires include avoiding working in high wind conditions when the risk of fires is greater. In this regard special care should be taken during the high risk dry, windy summer months.		
	Contractor should provide fire-fighting training to selected construction staff.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Grass cutting and fire breaks must be maintained around the BESS installations to prevent veld fires.	Site Manager Contractor Operator EO	Construction Operation
	No combustible materials to be stored in or near the batteries or electrical infrastructure. Ensure separation of site diesel tank, transformers from BESS and vice versa.		
	If persons are decanting fuels or dealing with other highly flammable materials care should be taken regarding possible static discharge, installations to be suitably designed and maintained.		
	A detailed Failure Modes and Effects Analysis (FMEA) / (Hazard and Operability Analysis (HAZOP) / Bowtie methodology must be developed during design at the component level and system levels.		
	An emergency response plan must be in place as referred to above and employee training on the plan must be provided.		
Risk associated with the BESS	Undertake adequate research during the planning and design phase to select the supplier and/contractor with the best technology that is internationally recognized and proven.	Project Manager	Pre-construction
	Solid state battery design must include abuse tests such as drop test, impact, rapid discharge etc. Propagation tests for systems, e.g. heat insulating materials between cells/modules must be conducted. Factory acceptance test prior to leaving manufacture must be conducted. Batteries are usually stored at 50% charge to prolong life but may be shipped fully discharged. This level of detail should be understood so as to assess the risk during transport and storage.		
	The Facility to comply with prescribed design standards such as the BESS design codes from the USA and standards of practice that (e.g. UL9540, NFPA 855 and DNV GL RP 43).		
	The developer should ensure suitably competent transport companies are appointed. The company responsible for transportation should ensure: – Compliance with National Road Traffic Act Regulation 8 – dangerous goods.	Project Manager Contractor	Pre-construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Port Authorities should 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.	Project Manager Site Manager Contractor EO	Pre-construction
	Prior to bringing any containers into the country a full Emergency response plan should be in place for the full route from the ship to the site. Drivers must be trained in the hazards of containerized batteries. The emergency plan to determine and address: — What gases would be released in a fire and are there inhalation hazards. — Extinguishing has two important elements, put out fire and to provide cooling. Different approaches may be needed for small fire – e.g. put out, and for large fires e.g. cool with copious quantities of water. Note inert gases and foam may put out the initial fire but fail to control thermal runaway or to cool the batteries resulting in reignition. — What initial fire extinguishing medium should be used? — Are there any secondary gases or residues from use of extinguishers? — If water is appropriate, may need outside connections to inside sprinklers. — First responders need to know what media to use, especially if water totally unsuitable and if there are no connection points for water etc. — PPE to be specified including possible exposure to chemicals and fumes as well as radiate heat. — Containment of residues/water/damaged equipment.		
	Compile and implement a disposal plan that manages the handling of partially and/or fully charged damaged units, contaminated surfaces (e.g. HF residues) and other associated dangerously charged components.		
	Develop and implement an emergency response plan that deals with all emergency responses applicable to the BESS, including during transportation.		
	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.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Once an import route has been chosen, e.g. Richards Bay or Durban and along N2/N3/N11 etc, then the appointed transport company should ensure key emergency services on route could be given awareness training in battery fire/accident response.		
	SSL BESS must be transported in sealed packages that are kept upright, protected from movement damage etc.		
	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.		
	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 must be adhered to, Transport Emergency Card (Trem cards) must be carried/held, and the driver/s must be trained on the hazards of the load.		
	Handling protocols must be provided by the battery supplier.		
	Avoid stacking battery containers as physical space is not a constraint and therefore stacking of containers would not be required.	Site Manager Contractor Operator EO	Construction
	The hazardous nature of the electrical and battery equipment should be clearly indicated – e.g. Skull and Cross Bones or other signs.		Construction Operation
	BESS units should not be stored any closer to each other than they would be in the final installation so that propagation is prevented, i.e. laydown area needs to be considered.		
	Training of staff on general hazards on site must be conducted.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Ensure PPE for handling battery parts and other equipment on site is specified and worn when required.		
	Install a leak detection system with local alarms if regulated occupational exposure limits are exceeded etc prior to entry for inspection of battery containers.		
	Confined space entry procedures must be developed and adhered to when entering tanks and possibly battery containers.		
	Operating manuals must be provided including start-up, shut-down, steady state, monitoring requirements. Maintenance manuals with make safe, decontamination and repair procedures must also be in place. A maintenance schedule must be developed and implemented to include the required daily, weekly, monthly, annual etc maintenance.		
	Grass cutting and fire breaks must be maintained around the BESS installations to prevent veld fires.		
	Fire resistant barrier between the batteries and the PCS side if in the same container, or separate containers must form part of the design.		
	Drivers must be trained in the hazards of containerized batteries.		
	PPE to be specified including possible exposure to chemicals and fumes as well as radiate heat.		
	Batteries to be packaged in a manner that ensures no short-circuiting during transport.		
	Consideration must be taken to prevent excessive vibration as battery internal may be damaged leading to thermal run-away during commissioning.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Suitable ingress protection level to be provided for electrical equipment, e.g. IP55 - 66. If air cooling into container, suitable dust filters to be provided.		
	An Emergency plan, from transport and construction phase, must be extended to operational phase. The plan must include the hazards of the electrically live system. This Plan must include procedures to address solid state container fires - extinguishing, ventilating, entering as appropriate or not.		
	PPE for container firefighting must include fire retardant, chemically resistant, nitrile gloves, antistatic acid resistant boots, fill face shields, BA sets.		
	A planned fire response to prevent escalation to an explosion or an environmental event must be developed.		
	Suitable supply of fire extinguishing medium and cooling medium must be provided. Consider fire water for cooling adjacent equipment for BESS units. Fogging nozzles can be used to direct smoke.		
	Ensure procedures in place for clean up after event Lingering HF and other toxic residues in the soil and on adjacent structures.		
	Procedures to be in place for Infrared (IR) scanning (or other suitable method) to determine if batteries are still smouldering / are sufficient cooled to handle as batteries may still be active some weeks after an event.		
	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.		
	Consider 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.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Suitable training of selected emergency responders who may be called out to the facility must be undertaken.		
	Acid resistant PPE (e.g. overalls, gloves, eyeglasses) to be specified for all operations in electrolyte areas.		
	Low voltage equipment (e.g. batteries) to be separated from high voltage (e.g. transmission to grid).		
	Personnel to be trained in line with IEE 1657 – 2018 (Recommended Practice for Personnel Qualifications for Installation and Maintenance of Stationary Batteries).		
	Consideration should be given, where required, for remote isolation devices or switching measures on equipment, plant and machinery to ensure the ability to shut off power to systems in use on site.		
	There needs to be careful thought given to procedures to be adopted before entering into the BESS or a container under normal circumstances (confined space) but particularly after a BMS shut down where there may be flammable or toxic gases present, a fire etc. Any situation could await those entering.		
	Effects of battery aging to be considered. Solid state battery life starts to be impacted above 40 deg C and significant impacts above 50 deg C with thermal run away starting at 65-70 deg C. BMS trips system at 50 deg C. Temperature monitoring to be in place. Regular infrared scanning. Data needs to be stored for trend analysis.		
	Provided portable equipment for calibration and for testing/verification of defective equipment, e.g. volt/current meters, infrared camera	Project Manager Site Manager Contractor EO	Operation

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Undertake a hazardous area classification of the inside of the container to confirm the rating of electrical equipment. Might be zone 2 due to possible leaks of electrolyte or generation of flammable gases under thermal run away.	Project Manager Site Manager Contractor EO	Operation
	Electrolyte areas to be fully bunded to 110% of largest tank, or more.	Site Manager Contractor	Operation
Decommissioning of facility	Develop and implement End of Life shutdown procedure including a risk assessment of the specific activities involved.	Operator EO	Decommissioning
	Re-purpose the solid-state batteries / containers and equipment with associated Environmental impact considered.	Operator EO	Decommissioning
	Undertake disposal according to local regulations and other directives such as the European Batteries Directive.	Operator EO	Decommissioning
	Applicants should seek the opinion from a waste consultant on how to correctly dispose of hazardous waste.	Operator EO	Decommissioning
SOCIO-ECONOMIC ENVIRONMENT			
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.			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Indicator and Compliance Mechanisms: — 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.			
Socio-economic	Preparation and implementation of a Stakeholder Engagement Plan (SEP) prior to and during the construction phase.	Project Manager Contractor Operator	Pre-construction Construction Operation Decommissioning
	Where reasonable and practical, the proponent should appoint local contractors and implement a 'locals first' policy, especially for semi and low-skilled job categories. However, due to the low skills levels in the area, the majority of skilled posts are likely to be filled by people from outside the area.		
	Where feasible, efforts should be made to employ local contactors that are compliant with Broad Based Black Economic Empowerment (BBBEE) criteria.		
	Before the construction phase commences the proponent should meet with representatives from the Municipality to establish the existence of a skills database for the area. If such as database exists, it should be made available to the contractors appointed for the construction phase.		
	The local authorities, community representatives, and organisations on the interested and affected party database should be informed of the final decision regarding the project and the potential job opportunities for locals and the employment procedures that the proponent intends following for the construction phase of the project.		
	Where feasible, training and skills development programmes for locals should be initiated prior to the initiation of the construction phase.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	The proponent should implement a policy that no employment will be available at the gate.		
	The recruitment selection process should seek to promote gender equality and the employment of women wherever possible.		
	The proponent should liaise with the Municipality with regards the establishment of a database of local companies, specifically BBBEE companies, which qualify as potential service providers (e.g., construction companies, catering companies, waste collection companies, security companies etc.) prior to the commencement of the tender process for construction service providers. These companies should be notified of the tender process and invited to bid for project-related work.		
	Preparation and implementation of a Community Health, Safety and Security Plan (CHSSP) prior to and during the construction phase.		
	The SEP and CHSSP should include a Grievance Mechanism that enables stakeholders to report resolve incidents.		
	Where possible, the proponent should make it a requirement for contractors to implement a 'locals first' policy for construction jobs, specifically for semi and low-skilled job categories.		
	The proponent and contractor should develop a Code of Conduct (CoC) for construction workers. The code should identify which types of behaviour and activities are not acceptable. Construction workers in breach of the code should be subject to appropriate disciplinary action and/or dismissed. All dismissals must comply with the South African labour legislation. The CoC should be signed by the proponent and the contractors before the contractors move onto site. The CoC should form part of the CHSSP.		
	The proponent and the contractor should implement an HIV/AIDS, COVID-19 and Tuberculosis (TB) awareness programme for all construction workers at the outset of the construction phase. The programmes should form part of the CHSSP.		
	The loss of high-quality agricultural land should be avoided and or minimised by careful planning of the final layout of the proposed WEF facilities, where possible.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	The proponent should enter into an agreement with the local farmers in the area whereby damages to farm property etc. during the construction phase will be compensated for.	Project Manager Contractor	Pre-construction Construction
	Contractors appointed by the proponent must ensure that all workers are informed at the outset of the construction phase of the conditions contained in the Code of Conduct, specifically consequences of stock theft and trespassing on adjacent farms.		
	Contractors appointed by the proponent must ensure that construction workers who are found guilty of stealing livestock and/or damaging farm infrastructure are dismissed and charged. This should be contained in the CoC. All dismissals must be in accordance with South African labour legislation.		
	The proponent should implement a Grievance Mechanism that provides local farmers with an effective and efficient mechanism to address issues related to report issues related to damage to farm infrastructure, stock theft and poaching, construction related impacts, including damage to local gravel farm roads.		
	All farm gates must be closed after passing through.	Contractor	Construction
	No construction workers, with the exception of security personnel, should be permitted to stay over-night on the site.		
	As per the conditions of the Code of Conduct, in the advent of a fire being caused by construction workers and or construction activities, the appointed contractors must compensate farmers for any damage caused to their farms. The contractor should also compensate the fire-fighting costs borne by farmers and local authorities.		
	The proponent should hold contractors liable for compensating farmers and communities in full for any stock losses and/or damage to farm infrastructure that can be linked to construction workers. This should be contained in the Code of Conduct to be signed between the proponent, the contractors, and neighbouring landowners. The agreement should also cover loses and costs associated with fires caused by construction workers or construction related activities	Project Manager Contractor	Construction

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	Contractors appointed by the proponent should provide daily transport for low and semi-skilled workers to and from the site.	Contractor	Construction Post-construction
	Affected landowners should be notified about the timing of construction related activities in advance.	Project Manager Contractor ECO	Construction Decommissioning
	The footprint associated with the construction related activities (access roads, construction platforms, workshop etc.) should be minimised.		
	An Environmental Control Officer (ECO) should be appointed to monitor the establishment phase of the construction phase.		
	All areas disturbed by construction related activities, such as access roads on the site, construction platforms, workshop area etc., should be rehabilitated at the end of the construction phase.		
	The implementation of a rehabilitation programme should be included in the terms of reference for the contractor/s appointed. The specifications for the rehabilitation programme should be drawn up by the Environmental Consultants appointed to manage the EIA.		
	The implementation of the Rehabilitation Programme should be monitored by the ECO.		
	Ongoing communication with land owners and road users during construction period. This should be outlined in the SEP.		
	Maximise the number of employment opportunities for local community members.	Project Manager	Operation
	Implement training and skills development programs for members from the local community.		
	Maximise opportunities for local content and procurement.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	The proponent should investigate providing training and skills development to enable locally based service providers to provide the required services for the operational phase.		
	Implement agreements with affected landowners.		
	To maximise the benefits and minimise the potential for corruption and misappropriation of funds the following measures should be implemented: — The proponents should liaise with the LM and GSDM to identify projects that can be supported by SED contributions. — Clear criteria for identifying and funding community projects and initiatives in the area should be identified. The criteria should be aimed at maximising the benefits for the community as a whole and not individuals within the community. — Strict financial management controls, including annual audits, should be instituted to manage the SED contributions.		
TRAFFIC MANAGEMENT			
Impact Management Outcome: — To ensure that the traffic impacts of the project are mitigated and managed.			
Indicator and Compliance Mechanisms: — 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			

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
Traffic Management	The transport route/s between the origin of the turbine components and the facility may be National, Provincial or Local roads; and each authority will be required to provide the necessary permits for the transportation of any oversized or abnormally heavy components.	Project Manager Contractor	Pre-Construction Construction
	It is recommended that an abnormal vehicle route management plan be undertaken when the port/s of entry of the tower components (masts, blades, rotor nacelles, generators, etc.) are known. These plans should include all aspects such as horizontal and vertical requirements along the routes, bridges along the route, speed limits, etc. These plans and the application for the abnormal permits is normally the responsibility of the logistics company that will transport the components to site.		
	A permit must be obtained from the Mpumalanga Department of Public Works, Road and Transport for any abnormal loads transported.		
	Develop a Road Maintenance Plan to address any road quality impacts along the gravel access roads to/along the site. The repairs, if required, should be the responsibility of the Contractor and the Provincial road authority.		
	All drivers must adhere to all speed limits applicable to the roads used and made aware of the potential road safety issues.		Construction Decommissioning
	All unsurfaced roads must be regularly sprayed with water to prevent dust generation		
	All vehicles that travel on-site must be roadworthy to ensure noise and emissions levels comply to national vehicle standards, thereby minimising noise/exhaust pollution.		
	All vehicles that travel on-site must not be overloaded, and abnormal vehicles must comply to relevant legislation for overweight loads, to ensure lowest possible road surface damage.		
	The delivery of components to and from the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.		
	The delivery of components to the site can be staggered and trips can be scheduled to occur outside of peak traffic periods.		
	Dust suppression of gravel roads during the construction phase, as required.		

ACTIVITY/ASPECT	IMPACT MANAGEMENT ACTIONS/MEASURES	RESPONSIBLE PERSON	PRIORITY TIMEFRAME
	The use of mobile batch plants and quarries near the site would decrease the traffic impact on the surrounding road networks.		
	Accommodation of secure material storage on site to allow for staggered delivery of materials.		
	Staff and general trips should occur outside of peak traffic periods as far as possible		
	The use of busses and taxis to transport staff can also limit construction phase trips		
	The preferred abnormal load travel routes should be surveyed to identify problem areas (e.g., intersections with limited turning radii and sections of the road with sharp horizontal curves or steep gradients, that may require modification).		
	Design and maintenance of internal roads. Any internal gravel roads will require grading with a grader to obtain a flat even surface and the geometric design of these gravel roads needs to be confirmed at detailed design stage. This process is to be undertaken by a civil engineering consultant or a geometric design professional. All vehicles that travel on-site must not be overloaded, and abnormal vehicles must comply to relevant legislation for overweight loads, to ensure lowest possible road surface damage.		

8 MANAGEMENT PLANS

A number of generic management plans have been included in the EMPr. The plans included below provide an indication of the requirements that must be followed on the proposed construction and operation of the Mukondeleli WEF. 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:

- Waste Management Plan
- Alien Invasive Plant Management Plan
- Plant Rescue and Protection Plan
- Re-vegetation and Habitat Rehabilitation Plan
- Fire Management Plan
- Emergency Response Plan (ERP)
- Stormwater Management Plan
- Erosion Management Plan
- Traffic and Transport Management Plan
- Fauna Management Plan
- Avifaunal Management Plan
- Soil Management Plan
- Closure and Decommissioning management plan
- Hazardous Substance Management Plan
- Heritage and Palaeontological Management Plan
- HIV/AIDS Management Plan
- Grievance Mechanism
- Covid-19 Management

8.1 WASTE MANAGEMENT PLAN

8.1.1 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.

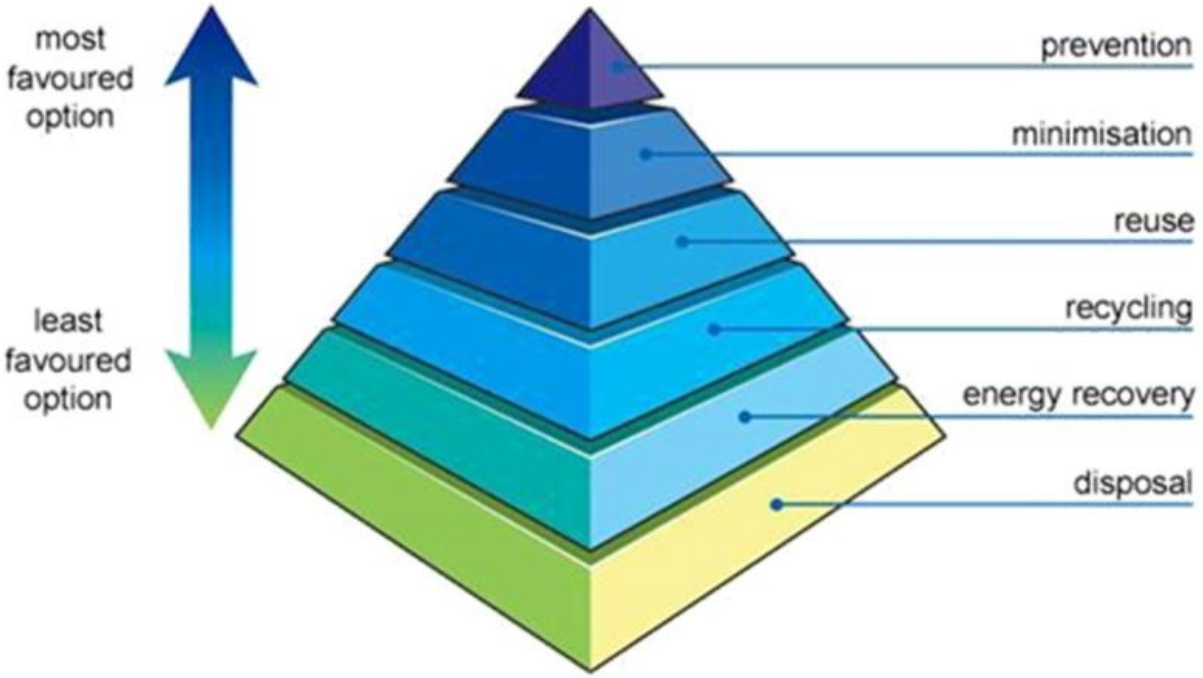


Figure 8-1: Waste Hierarchy

8.1.2 PROJECT STAGES

The purpose of this section is to assess the construction, operational processes of the proposed Mukondeleli WEF 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; —
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 general removal of waste.

8.2 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 within the areas affected by construction and operation activities, which in turn serves to manage open spaces, as required. The broad objectives of the plan include the following:

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

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

- Monitor for early detection, to find species when they first appear on site. This should be as per the frequency specified in the management plan, and should be conducted by an experienced botanist. Early detection should provide a list of species and locations where they have been detected. Summer (vegetation maximum growth period) is usually the most appropriate time, but monitoring can be adaptable, depending on local conditions.
- Monitor for the effect of management actions on target species, which provides information on the effectiveness of management actions. Such monitoring depends on the management actions taking place. It should take place after each management action.
- Monitor for the effect of management actions on non-target species and habitats.

- Stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding.
- Alien vegetation and the spread of exotic species on the site will need to be controlled.
- The contractor must be responsible for implementing a programme of weed control (particularly in areas where soil has been disturbed); and grassing of any remaining stockpiles to prevent weed invasion.
- Herbicide use shall only be allowed according to contract specifications. The application shall be according to set specifications and under supervision of a qualified technician. The possibility of leaching into the surrounding environment shall be properly investigated and only suitable herbicides shall be used.
- The use of pesticides and herbicides on the site must be discouraged as these can impact on important pollinator species of indigenous vegetation. Use of these should only be permitted where absolutely necessary
- Six monthly inspections of the area must take place for the emergence of invader species.
- Correct rehabilitation with locally indigenous species.
- Monitoring programme to ensure that rehabilitation efforts are successful to ensure that risks such as erosion, spread of exotic species and the edge effect are avoided.
- Constant maintenance of the area to ensure re-colonisation of floral species.
- Ensure regular removal of alien species which may otherwise jeopardise the proliferation of indigenous species.

8.3 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.

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

- In the event where Conservation important plant species must be rescued from the development footprint it should be replanted at a suitable site on the same farms. A plant specialist should be appointed and a register kept. The necessary permits must be obtained from MTPA.
- The location of all transplanted rescued plants must be recorded, along with the identity of the plant.
- As a scientific control, non-transplanted individuals of the same species, within similar habitats, should be monitored in the same way as the transplanted specimens. This will provide comparative data on the survival of wild populations relative to transplanted plants.
- If populations of threatened plant species are found to occur on site, annual monitoring of population health should take place. This should be appropriate to the species concerned.
- Vegetation clearing must only commence after a walk down has been conducted by a suitably qualified person and the necessary permits obtained.
- Vegetation clearing to be kept to a minimum. No unnecessary vegetation to be cleared.
- Vegetation removal must be limited to the construction site and must be removed only as it becomes necessary rather than removing all the vegetation throughout the site at once.
- Materials must not be delivered to the site prematurely which could result in additional areas being cleared or affected.
- No vegetation to be used for firewood.
- Gathering of firewood, fruit, medicinal plants, or any other natural material onsite or in areas adjacent to the site is prohibited unless with prior approval of the ECO.
- Construction site office and laydown areas must be clearly demarcated and no encroachment must occur beyond demarcated areas.
- All natural areas impacted during construction must be rehabilitated with locally indigenous plant species or grassed accordingly.
- A buffer zone must be established in areas where construction will not take place to ensure that construction activities do not extend into these areas.
- The use of pesticides and herbicides in the development area must be discouraged as these impacts on important pollinator species of indigenous vegetation.

- Soil stockpiles must not become contaminated with oil, diesel, petrol, garbage or any other material, which may inhibit the later growth of vegetation in the soil. Spillage can result in a loss of soil functionality thus limiting the re-establishment of flora.
- 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 service roads and footprints of tower structures (final infrastructure layout). 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, 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 WITH KNOWLEDGE OF THE AREA.

8.4 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.

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

- Rehabilitation Plan must be compiled by an approved ecologist prior to achieving COD and prior to the start of 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.

8.5 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.

8.6 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 Mukondeleli WEF. 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.

8.6.1 ROLES AND RESPONSIBILITIES

Roles, responsibility and authority shall be defined, documented and communicated in order to facilitate effective emergency response through implementation of the EPRP.

The table below outlines roles and responsibilities related to each position.

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

— Appoint an Emergency Response (ER) team which includes an appropriate first aid representative and a fire warden. — Ensure that the appointed ER team undergo the correct training. — Appoint an appropriate Emergency Coordinator.
First Aid representative(s)
— Ensuring the first aid box is properly stocked to meet all foreseeable incidents which may occur. — Ensure that the boxes are properly safeguarded, and that First Aiders name appears on the box. — Should any activity involve hazardous chemical substances, or any other specific first aid emergencies, this must be brought to the attention of the emergency coordinator. — Ensure the first aid certificate is current. — Ensure that there is always a first aider available at each shift.
Fire warden(s)
— Ensure that the firefighting equipment is regularly serviced. — Attend the relevant firefighting training. — Report any unserviceable or damaged fire-fighting equipment to the ER. — Ensure the firefighting certificate is current. — Ensure that there is always a firefighter available at each shift.
Emergency Co-ordinator
— Ensure that an update of the EPRP is kept on file and is easily accessible in case of an emergency. — Ensure that all staff have been issued with the correct Personal Protective Equipment (PPE). — Ensure that a list of emergency telephone numbers, including those of the Emergency Response team, are visible to all staff at a number of locations around the facility. — In the case of an emergency, the emergency coordinator is responsible for undertaking roll call at the designated Assembly points.

8.6.2 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 Mukondeleli WEF, equipment and personnel will be deployed to the maximum extent necessary, so as to prevent/minimise potential risks.

8.6.3 RESPONSE TO INCIDENTS

An incident is any occurrence that has caused, or has the potential to cause, a negative impact on people, the environment or property (or a combination thereof). It also includes any significant departure from standard operating procedures. The reporting and investigation of all potential and actual incidents that could have a detrimental impact on human health, the natural environment or property is required so that remedial and preventive steps can be taken to reduce the potential or actual impacts because of all such incidents.

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

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

8.6.4 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.

8.6.5 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 Project 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.

8.7 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, which will only take place in the event that the project is identified as a preferred bidder as part of the REIPPP (or where a third party off-take agreement can be concluded). 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 and Reno mattresses) of exposed soil and the re-vegetation of any disturbed water courses.

8.8 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 seeded 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.

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 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.

8.10 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 Mukondeleli WEF.

8.10.1 MANAGING IMPACT ON FAUNA

SNAKE FIND AND HANDLING

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

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

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

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

MAMMALS AND REPTILES

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

In the event that the protected species of reptiles are encountered it must be reported to the MTPA Herpetofauna scientist.

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

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

LIMIT THE DEVELOPMENT FOOTPRINT

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

LIMIT DISTURBANCE

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

INSPECTIONS AND MONITORING

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

TRAINING

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

Examples of Toolbox Talks include:

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

8.11 BAT MANAGEMENT PLAN

Addition to the mitigation of turbine placement (adhering to a bat sensitivity map), the available options to minimise bat mortalities are discussed in this section. Details on how each option must be implemented is explained in the step-by-step Mitigation Action Plan in Section 7.

8.11.1 MINIMISATION OF LIGHT POLLUTION AND ARTIFICIAL HABITAT CREATION

A mitigation to consider in the design of the Mukondeleli WEF is to keep artificial lighting to a minimum on the infrastructure (O&M buildings and on wind turbines), while still adhering to safety and security requirements. For example, this can be achieved by having floodlights down-hooded, installing passive motion sensors onto lights around buildings and possibly utilising lights with lighting colours (also referred to as lighting temperatures) that attract fewer insects. Light pollution will impact bat feeding habits and species compositions negatively, by artificially discouraging photophobic (light averse) species and favouring species that readily forage around insect-attracting lights.

Stormwater management should also avoid creating artificial wetlands and open water sources in the turbine zones (less than 300m from any turbine base), as this will increase insect and bat activity around turbines.

The likelihood of bats being killed by moving turbine blades increases significantly when they are attracted to their proximity when it has become an improved foraging airspace due to the presence of artificial light or artificial water sources.

8.11.2 CURTAILMENT TO PREVENT FREEWHEELING

Freewheeling occurs when the turbine blades are rotating in wind speeds below the generator cut-in speed (also called the manufacturer's cut-in speed), thus no electricity is being produced and only some blade momentum is maintained.

Since bat activity tends to be negatively correlated with wind speed, it means that high numbers of bats are likely to be flying and impacted on in low wind speeds where freewheeling may occur. If turbine blades are feathered below the generator cut-in speed to prevent freewheeling, it can result in a very significant reduction of bat mortalities with minimal energy production loss.

8.11.3 CURTAILMENT THAT INCREASES THE CUT-IN SPEED

The activity levels of South African bats generally decrease in weather conditions with increased wind speeds. However, in scenarios where an unsustainable number of bats is being killed, and these bats fly in wind speeds above the turbine manufacturer's cut-in speed, the turbine's computer control system (referred to as the Supervisory Control and Data Acquisitions or SCADA system) can be programmed to a cut-in speed higher than the manufacturer's set speed. The new cut-in speed will then be referred to as the mitigation cut-in speed and can be determined from studying the relationship between long term (12-month) bat activity patterns on site and wind speed. This sustainable threshold of bat mortalities will be calculated according to the South African Bat Fatality Threshold Guidelines (MacEwan, et al., Edition 2, October 2018).

Turbines are curtailed in this manner by means of blade feathering, to render the blades motionless in wind speeds below the mitigation cut-in speed.

8.11.4 ACOUSTIC BAT DETERRENTS

This technology is developed well enough to be tested on site and may be recommended during operational monitoring, if mortality data indicate bat mortalities above the sustainable threshold for the wind farm. This threshold will be calculated according to the South African Bat Fatality Threshold Guidelines (MacEwan, et al., Edition 2, October 2018). Initial experiments with this technology on wind farms in South Africa are yielding promising results that may indicate the effectiveness of the devices in the correct scenarios.

Current data on the South African trials is still limited to a small sample set, and the technology will not necessarily be effective in all mitigation scenarios and for all bat species. Therefore, it should be considered and tested on a case-by-case basis if possible, and it is highly recommended that adequate monitoring continues concurrently, to assess the effectiveness of the devices in reducing bat mortalities.

8.11.5 MITIGATION ACTION PLAN

STEP 1: MINIMISATION OF LIGHT POLLUTION AND ARTIFICIAL HABITAT CREATION (REFER TO SECTION 6.1)

During the planning phase for the Mukondeleli WEF it must become mandatory to only use lights with low sensitivity motion sensors that switch off automatically when no persons are nearby, to prevent the creation of regular insect gathering pools, where practically possible without compromising security requirements. This applies to the turbine bases (if applicable) and other infrastructure/buildings. Aviation lights should remain as required by aviation regulations. Floodlights should be down-hooded and where possible, lights with a colour (lighting temperature) that attract less insects should be used. This mitigation step is a simple and cost-effective strategy to effectively decrease the chances of bat mortality on site.

Bi-annual visits to the facility at night must be conducted for the operational lifetime of the facility by operational staff of the facility, to assess the lighting setup and whether the passive motion sensors are functioning correctly. The bat specialist conducting the operational bat mortality monitoring must conduct at

least one visit to site during nighttime to assess the placement and setup of outside lights on the facility. When lights are replaced and maintenance on lights is conducted, this Mitigation Action Plan must be consulted.

The storm water drainage plan must avoid creations of artificial ponds/open water sources or wetlands in turbine zones (less than 300m from any turbine base), as these will increase insect activity and therefore bat activity in the area. This can result in turbines that were previously assessed as having a low risk to be financially and biologically costly high-risk turbines.

STEP 2: APPOINTMENT OF BAT SPECIALIST TO CONDUCT OPERATIONAL BAT MORTALITY MONITORING

As soon as the Mukondeleli WEF facility becomes operational, a bat specialist must be appointed to conduct a minimum of 2 years of operational bat mortality monitoring. The methodology of this monitoring must comply with the South African Good Practice Guidelines for Operational Monitoring for Bats at Wind Energy Facilities - 2nd Edition June 2020 (Aronson et al. 2020), or any newer version of the applicable guidelines that may be in force at the start of operation of the facility.

The results of the bat mortality study may be used to develop mitigation measures focused on specific problematic turbines. The results of the operational monitoring must be made available, on request, to other bat specialists conducting operational and preconstruction monitoring on WEF's in South Africa.

STEP 3: CURTAILMENT TO PREVENT FREEWHEELING

For the lifetime of the facility, curtailment must be applied to all turbines by ninety-degree feathering of blades below the manufacturer's cut-in speed, so it is exactly parallel to the wind direction and minimises freewheeling blade rotation as much as possible without locking the blades. The time-period of the year for this blade feathering is determined from the 12 months bat activity data as 1 October – 30 April. This can significantly lower probability of bat mortalities. Influence on productivity is minimal since no power is generated below the manufacture's cut-in speed.

STEP 4: ADDITIONAL MITIGATION BY CURTAILMENT OR ACOUSTIC DETERRENTS

If mitigation steps 1 – 3 are followed, and the bat mortality monitoring study detects bat mortalities that are above the sustainable threshold for the Mukondeleli WEF, then additional mitigation will need to be implemented to bring bat mortalities to or below the sustainable threshold. According to the South African Bat Fatality Threshold Guidelines (MacEwan, et al., Edition 2, October 2018), this threshold is calculated by considering the hectare size of the WEF area of turbine influence and the value of 2% of bats/10ha/year for the ecoregions that the WEF is located in, to give an annual number of sustainable bat mortalities that is acceptable for the WEF. The area of turbine influence of a wind farm is dictated by the turbine layout and is a tight fitting polygon around the turbine layout. The site is located in the Highveld Grasslands ecoregion according to Olson et al. (2012), and this ecoregion is not covered in the threshold guidelines. Therefore, the number of sustainable bat mortalities cannot be calculated at this stage, and operational mortality monitoring data should contribute to calculating this threshold. If an updated version of the threshold guidelines are available during the WEF operation, it must be consulted.

Such additional mitigation measures may be to curtail problematic turbines according to the mitigation cut-in speed, and/or to utilise acoustic deterrents on problematic turbines.

The time-period of the year for additional mitigation is determined from the 12 months bat activity data as 1 October – 30 April and must be applied to any turbines or group of turbines identified as causing the wind farm's mortalities to be above the sustainable threshold levels. This time period is based on high bat activity months as detected during the 12-month preconstruction study.

The bat specialist conducting the operational bat monitoring may recommend other time periods for additional mitigation, based on robust mortality data. If required, the bat specialist may make use of climatic data to allow for an active and adaptable mitigation schedule.

STEP 5: AUDITING OF BAT MORTALITIES FOR THE LIFETIME OF THE FACILITY

During the implementation of mitigation Steps 1 – 4, it is crucial for the facility to determine and monitor bat mortalities in order to implement, maintain and adapt mitigations as efficiently as possible. For the duration of the lifetime of the facility, the impacts on bats must be audited/monitored by reliable methods of carcass

searching and/or electronic devices capable of automatically counting bat mortalities. Such auditing should occur every 5 years (after the end of the initial 2-year operational study) for all turbines on site, and continuously for turbines where mitigations discussed in Step 4 are implemented.

8.12 AVIFAUNAL MANAGEMENT PLAN

The avifaunal post-construction monitoring at the proposed Mukondeleli WEF must be conducted in accordance with the latest version (2015) of the 'Best practice guidelines for avian monitoring and impact mitigation at proposed wind energy development sites in southern Africa' (Jenkins et al., 2015) .

8.12.1 AIM OF POST-CONSTRUCTION MONITORING

The avifaunal post construction monitoring aims to assess the impact of each proposed WEF by comparing pre- and post- construction monitoring data and to measure the extent of bird fatalities caused by each WEF. Post-construction monitoring is therefore necessary to:

- Confirm as far as possible what the actual impacts of each WEF are on avifauna; and
- Determine what mitigation is required if need be (adaptive management).
- The proposed post-construction monitoring can be divided into three categories:
- Habitat classification;
- Quantifying bird numbers and movements (replicating baseline pre-construction monitoring); and
- Quantifying bird mortalities.

Post-construction monitoring will aim to answer the following questions:

- How has the habitat available to birds in and around each WEF changed?
- How has the number of birds and species composition changed?
- How have the movements of priority species changed?
- How has each WEF affected priority species' breeding success?
- How many birds collide with the turbines of each WEF? And are there any patterns to this?
- What mitigation is necessary to reduce the impacts on avifauna?

8.12.2 TIMING

Post-construction monitoring should commence as soon as possible after the first turbines become operational to ensure that the immediate effects of each facility on resident and passing birds are recorded, before they have time to adjust or habituate to the developments. However, it should be borne in mind that it is also important to obtain an understanding of the impacts of the facilities as they would be over the lifespan of the facilities. Over time the habitat within each WEF may change, birds may become habituated to, or learn to avoid the facilities. It is therefore necessary to monitor over a longer period than just an initial one year.

8.12.3 DURATION

Monitoring should take place in Year 1 and 2 of the operational phase of each proposed WEF, and then repeated in Year 5 and every five years after that. After the first year of monitoring, the programme should be reviewed in order to incorporate significant findings that may have emerged. This may entail the revision of the number of turbines to be searched, and the size of the search plots, depending on the outcome of the first year of monitoring. If significant impacts are observed, i.e., exceeding predetermined thresholds, and mitigation is required, the matter should be taken up with the operator to discuss potential mitigation. In such instances the scope of monitoring could be reduced to focus only on the impacts of concern.

8.12.4 HABITAT CLASSIFICATION

Any observed changes in bird numbers and movements at each WEF may be linked to changes in the available habitat. The avian habitats available must be mapped once a year for the first two years, then in year 5 and thereafter in 5-yearly intervals. BIRD NUMBERS AND MOVEMENTS

In order to determine if there are any impacts relating to displacement and/or disturbance, all methods used to estimate bird numbers and movements during baseline monitoring must be applied as far as is practically possible in the same way to post-construction work in order to ensure maximum comparability of these two data sets. This includes sample counts of small terrestrial species, counts of large terrestrial species and raptors, focal site surveys and vantage point surveys according to the current best practice.

8.12.5 COLLISIONS

The collision monitoring must have three components:

- Experimental assessment of search efficiency and scavenging rates of bird carcasses on the respective sites.
- Regular searches in the immediate vicinity of the WEF turbines for collision casualties (see Section 9).
- Estimation of collision rates.

8.12.6 SEARCHER EFFICIENCY AND SCAVENGER REMOVAL

The value of surveying the area for collision victims is only valid if some measure of the accuracy of the survey method is developed. The probability of a carcass being detected and the rate of removal / decay of the carcass must be accounted for when estimating collision rates. This must be addressed in the form of searcher and scavenger trails which must be conducted by the avifaunal specialists at least twice a year during each year of post-construction monitoring to arrive at an estimated annual collision mortality rate.

8.12.7 COLLISION VICTIM SURVEYS

ALIGNING CARCASS SEARCH PROTOCOLS

The carcass search protocol must be agreed upon between the bat and bird specialists to constitute an acceptable compromise between the current best practice guidelines for bird and bat monitoring.

Daily carcass searches must begin as early in the mornings as possible to reduce carcass removal by scavengers. A carcass searcher must walk in straight line transects, 6m apart, covering 3m on each side. A team of searchers and one supervisor must be trained to implement the carcass searches. The searchers must have a vehicle available for transport per site. The supervisor must assist with the collation of the data at each site and to provide the data to the specialist in electronic format on a weekly basis. The specialists must ensure that the supervisor is completely familiar with all the procedures concerning the management of the data. The following must be sent to the specialist on a weekly basis:

- Carcass fatality data (hardcopy and scans as well as data entered into Excel spreadsheets);
- Pictures of any carcasses, properly labelled;
- GPS tracks of the search plots walked; and BB
- Turbine search interval spreadsheets.

When a carcass is found, it must be bagged, labelled and kept refrigerated for species confirmation by the avifaunal specialist.

ESTIMATION OF COLLISION RATES

Observed mortality rates need to be adjusted to account for searcher efficiency and scavenger removal. There have been many different formulas proposed to estimate mortality rates. The available methodologies must be investigated, and an appropriate method will be applied. The current method which is used widely is the GenEst method.

8.12.8 DELIVERABLES

ANNUAL REPORT

An operational monitoring report must be completed at the end of each year of operational monitoring. As a minimum, the report must attempt to answer the following questions:

- How has the habitat available to birds in and around each WEF changed?
- How has the number birds and species composition changed?
- How have the movements of priority species changed?
- How has each WEF affected priority species' breeding success?
- What are the likely drivers of any changes observed?
- How many, and which species of birds collided with the turbines and associated infrastructure? And are there any patterns to this?
- What is the significance of any impacts observed?
- What mitigation measures are required to reduce the impacts?

QUARTERLY REPORTS

Concise quarterly reports must be compiled by the avifaunal specialist for the WEF operator with basic statistics and recommendations for the management of impacts that need to be addressed..

8.13 SOIL MANAGEMENT PLAN

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

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

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

8.13.1 PRINCIPLES FOR SOIL MANAGEMENT

THE CORRECT HANDLING OF TOPSOIL

- Before beginning work on site, topsoil must be stripped from all areas that will be disturbed by construction activities. Appropriate equipment must be used and appropriate work practices must be implemented for soil stripping as mishandling soil can have an adverse effect on its properties.
- Topsoil must be stripped in the driest condition possible.
- Topsoil must be retained on site in order to be used in site rehabilitation. The correct handling of the topsoil layer is in most cases the key to rehabilitation success.
- It is important that the correct depth of topsoil is excavated in order to ensure good plant growth. If excavation is too shallow, then an important growth medium for new seedlings could be lost. If excavation is too deep, this could lead to the dilution of the seed and nutrient rich topsoil with deeper sterile soil.

- Topsoil and subsoil layers must never be mixed. The mixture of topsoil with the deeper sterile soil hinders the germination of seeds which are buried too deep in the soil layer. Mixture of soil layers also leads to the dilution of nutrient levels which are at highest concentration within the topsoil, resulting in lower levels of nutrients available for new seedlings.
- To enable soil to be reused on site at a later stage, it needs to be stored in temporary stockpiles to minimise any damage or loss of function. Stockpiles must not be higher than 2m. Alternatively, topsoil berms can be created on the site boundaries. There are a number of important considerations when creating stockpiles - including soil erosion, pollution to watercourses and the risk of flooding. These will be affected by the size, height and method of forming stockpiles, and how they are protected and maintained.
- Topsoil must be stored separately from other soil in heaps until construction in an area is complete.
- The duration of topsoil storage must be minimised as far as possible. Storing topsoil for long periods leads to seed bank depletion following germination during storage, and anoxic conditions develop inside large stockpile heaps.
- All stockpiles must be positioned away from drainage lines.
- Sediment fencing must be erected downslope of all stockpiles to intercept any sediment and upslope runoff must be diverted away from stockpiles.

STRIPPING OF SUBSOIL

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

8.14 HERITAGE AND PALAEONTOLOGICAL MANAGEMENT PLAN

The purpose of this document is to provide a response guideline should archaeological sites, palaeontological sites or graves become exposed during ground altering activities within the Mukondeleli WEF 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 procedural guidelines must be considered in the event that previously unknown heritage resources are exposed or found during the construction of the Mukondeleli WEF Project area.

HERITAGE RESOURCES

The possibility of the occurrence of subsurface finds cannot be excluded. Therefore, if during construction any possible finds such as stone tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped, and a qualified archaeologist must be contacted for an assessment of the find. A short summary of chance find procedures is discussed below and monitoring guidelines for this procedure are provided in Section 7.13.2.

This procedure applies to the developer's permanent employees, its subsidiaries, contractors and subcontractors, and service providers. The aim of this procedure is to establish monitoring and reporting procedures to ensure compliance with this policy and its associated procedures. Construction crews must be properly inducted to ensure they are fully aware of the procedures regarding chance finds as discussed below:

- If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or service provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.
- It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find and confirm the extent of the work stoppage in that area.
- The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.
- Employ reasonable mitigation measures in accordance with the requirements of SAHRA.
- Only recommence operations once impacts have been mitigated.

MONITORING PROGRAMME FOR PALEONTOLOGY – TO COMMENCE ONCE THE EXCAVATIONS / DRILLING ACTIVITIES BEGIN.

If fossils occur in the footprint of any section of WEF footprint, associated grid infrastructure, access roads or all other associated infrastructure, they can be removed, and the project can continue. The Fossil Chance Find Protocol must be followed during removal as follows:

- When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected place. This way the project activities will not be interrupted.
- Photographs of similar fossils must be provided to the contractor/s to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will be built into the EMP's training and awareness plan and procedures.
- Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment.
- If there is any possible fossil material found by the environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible.
- Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. If required annual reports must be submitted to SAHRA as required by the relevant permits.
- If no good fossil material is recovered, then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.
- If no fossils are found and the excavations have finished, then no further monitoring is required.

The Grievance Procedure and Guidance will apply to any stakeholder complaints relating to cultural heritage and chance finds;

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

8.14.2 TRAINING, INSPECTION AND MONITORING

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

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

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

As most heritage resources occur below surface, all earth-moving activities need to be routinely monitored in case of accidental discoveries. The greatest potential impacts are from construction activities. The ECO should monitor all such activities weekly. If any heritage resources are found, the chance finds procedure must be followed as outlined above.

8.15 NOISE MONITORING PLAN

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

- Passive monitoring – the registering of any complaints (reasonable and valid) regarding noise; and
- Active monitoring – the measurement of noise levels at identified locations.

Noise levels will be higher than 42 dBA (more than 7 dBA of the night-time rating level of a rural noise district) and active noise monitoring is recommended and required.

In addition, should a reasonable and valid noise complaint be registered, the Developer should investigate the noise complaint as per the guidelines in sub-section 12.1 and 12.2. These guidelines should be used as a rough guideline as site-specific conditions may require that the monitoring locations, frequency or procedure be adapted.

8.15.1 MEASUREMENT LOCALITIES AND FREQUENCY

The applicant must develop and implement an environmental noise monitoring programme for the construction phase, conducting active night-time noise measurements at selected locations within 1,000 m from night-time construction activities.

The applicant must develop and implement an environmental noise monitoring programme for the operational phase at selected NSR living within the 42 dBA noise contour. Ambient sound levels must be measured at these NSR before the development of the WEF, with the measurements repeated after the first year of operation. Should any of these locations not being used for residential purposes, measurements at these NSR would not be required.

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. The measurement location should consider the direct surroundings to ensure that other sound sources cannot influence the reading. These measurement locations can be reduced accordingly if the NSR are relocated or the dwelling are no longer used for residential purposes.

8.15.2 MEASUREMENT PROCEDURES

Ambient sound measurements should be collected as defined in SANS 10103:2008. Due to the variability that naturally occurs in sound levels at most locations, it is recommended that semi-continuous measurements are conducted over a period of at least 48 hours, covering at least a full day- (06:00 – 22:00) and night-time (22:00 – 06:00) period

8.16 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 Mukondeleli WEF:

- 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.

8.16.1 HAZARDOUS SUBSTANCES MANAGEMENT PROCEDURE

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

REGISTER OF HAZARDOUS SUBSTANCES

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

MSDS

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

DELIVERIES

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

Prior to fuel transfer the operator will verify that: all fuel transfer hoses have been connected properly and couplings are tight; transfer hoses are not obviously damaged; fuel transfer personnel are familiar with procedures; for fuelling stations, personnel are located at both the fuel truck and fuel transfer tank(s) and have the ability to

shut off fuel flow manually; a means of communication has been established between the two people transferring fuel; and a high liquid level shutoff device can be substituted for the person at the delivery tank, in which case operation of the shutoff will be verified each time it is used; The fuel contractor will clean up and report any accidents or spills immediately to the project EHS team.

ENVIRONMENT AND OCCUPATIONAL HEALTH AND SAFETY

- Storage facilities will have the applicable Material Safety Data Sheets (MSDS) available;
- Smoking will be strictly prohibited from any areas where fuel loading operations take place;
- Appropriate signage will be used to identify potential spill risks;
- Any accidental damage to containment structures will be inspected immediately and appropriate repairs undertaken. Record and report all significant fuel, oil, hydraulic fluid or electrolyte spills or leaks. Any release of fuels or other substance must be cleaned up;
- All used fuel / oil products will be collected in tanks marked "Waste Oil"; and
- All hydrocarbon associated wastes will be managed in line with the Waste Management Plan.

MATERIALS STORAGE

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

SPILL AND LEAK MANAGEMENT AND PREVENTION

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

8.16.2 OPERATIONAL PHASE

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

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

8.16.3 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

8.17 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.

RECOURSE

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

MANAGING, TRACKING, RECORDING GRIEVANCES – INTERNALLY

In terms of managing grievances the Proponent will:

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

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

Contractors shall ensure that all individual contractor employees are aware of the Grievance Procedure. Contractors will receive any grievance from an individual or community and notify the Proponent thereof immediately.

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

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

8.17.2 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

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

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

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

8.19 COVID -19 MANAGEMENT

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

PREVENTION AND RESPONSE

A dedicated assignee with the responsibility to identify and implement/oversee actions to mitigate the effects of COVID-19 on the company and community should be assigned.

INNFORMATION

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

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

EMPLOYEE QUESTIONNAIRE

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

The following is an example:

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

PREVENTION METHODS

SICK PERSONS TO STAY AT HOME

Workers requested to stay away from work in cases where they exhibit any COVID-19 symptoms or have been in close contact with a confirmed COVID-19 patient during the previous 14 days. Workers who do not feel well should seek immediate medical advice. An employee who works while evidencing mild COVID-19 symptoms can risk spreading this infectious disease to others.

COUGH HYGIENE

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

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

SOCIAL DISTANCING

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

HAND SANITATION

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

CLEANING AND DISINFECTING

Frequently – and at least daily - clean touched surfaces, such as tables, light switches, appliances, countertops, handles, desks, phones, keyboards, toilets, taps, sinks, and so forth. Use the cleaning agents that are routinely used in these areas and follow the directions on the labels. For multiuse equipment, clean after every use. Workers are to be instructed to clean their work areas and equipment at the end of each shift. Equipment and instructions on how to do this are to be provided

9 CONCLUSION

ENERTRAG South Africa is proposing to develop two Wind Energy Facilities (WEFs) and associated132kV overhead powerlines, near Secunda in Mpumalanga. **This report is specific to the Mukondeleli Wind Energy Facility (up to 300MW)**. The proposed Mukondeleli WEF is located approximately 8km south of Secunda in the Gert Sibande District Municipality and the GMM Local Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa.

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. As discussed previously, the purpose of the proposed Mukondeleli WEF 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.

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

Should the above-mentioned environmental guidelines and mitigation measures be adopted, it is anticipated that the negative environmental impacts of the proposed 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.

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

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 and this EMPr are implemented effectively.

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

WSP Group Africa

Attention: Ashlea Strong

Tel: 011 361 1391

Fax: 011 361 1381

E-mail: Ashlea.Strong@wsp.com

APPENDIX

A EAP CURRICULUM VITAE

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.

Ashlea Strong

Environmental Planning & Advisory, Principal Associate

Eskom Holdings SOC Limited, Proposed continuous Ashing at Tutuka Power Station, Mpumalanga, South Africa
2012
Project Manager
This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed continuous ashing project at the Tutuka Power Station in Mpumalanga.

Hendrina Power Station, Proposed extension of Ash Dams at Hendrina Power Station, Mpumalanga, South Africa
2011
Project Manager
This project entailed the compilation Environmental Impact Assessment and Waste Management License Application for the proposed extension of the ash dams at the Hendrina Power Station in Mpumalanga.

Coega Development Corporation, Phase 1 of the Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility, Eastern Cape
2005
Project Manager
This project entailed the compilation Environmental Impact Assessment for the Proposed Regional General and Hazardous Waste Processing Facility in the Eastern Cape.

Auditing

Sasol Chemical Industries, Secunda Synfuels Operations Waste Management License Audits for the Sasol Secunda, Mpumalanga, South Africa
2014 – 2021
Lead Auditor
These projects involve the annual and biannual environmental compliance auditing of the Waste Management licenses for various waste facilities

South 32. Compliance Audits at South 32, Mpumalanga, South Africa
2016 – 2020
Project Manager
This project involved the environmental compliance audits of the Water Use Licenses for the BMK, Douglas, Klipfontein and Middelburg Mine North and South Sections at South 32 in Mpumalanga.

South 32, Compliance Audits at Middelburg Water Reclamation Plant (MWRP), Mpumalanga, South Africa
2016 – 2020
Project Manager
This project involved the environmental compliance audits of the Water Use License and Waste Management License for the MWRP at South 32 in Mpumalanga.

Nedbank, BioTherm Round 4 Lenders Technical Advisor, South Africa
2018 – 2021
Project Manager – Environmental
Environmental monitoring of the construction of the Konkoonsies II and Aggeneys Photovoltaic Solar Plants against the IFC Performance Standards.

Eskom Holdings SOC Limited, Water Use Licence Audits, Delmas, Mpumalanga, South Africa
2019
Lead Auditor
External compliance audits of the water use licences for the Delmas and Argent Powerlines in Mpumalanga.

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

Ashlea Strong

Environmental Planning & Advisory, Principal Associate

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

Sasol Oil (Pty) Ltd, Sasol Regulation 34 Audits, South Africa
2019
Lead Auditor
Environmental compliance audits for 13 authorisations for the Sasol Owned Petrol Filling Stations.

Anglo American Platinum. Regulation 34 Audits at Mogalakwena Mine, Limpopo Province, South Africa
2019
Project Manager
Environmental compliance audits of the EMPR and various environmental authorisations at the Mogalakwena Mine.

Sasol Secunda Operations, Sasol Environmental Authorisations and Environmental Management Plans for the Secunda Operations, Secunda, South Africa
2019
Lead Auditor
Environmental compliance audits for 49 authorisations for the Sasol Secunda.

Palabora Company, Waste Management Licence Compliance Audit and PCB Plan Close Out Audit, Phalaborwa, Limpopo, South Africa
2019
Project Manager
Environmental compliance audit of a WML and the PCB Plan for the Palabora Mine.

Sasol Mining, Water Use Licence Compliance, Secunda, South Africa
2018
Project Manager
Environmental compliance audit of six WULs held by mining operations.

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

2019
Project Manager and Lead Auditor
This project involved the assessment of legal compliance against the mine's legal register.

Investchem (Pty) Ltd, InvestChem Annual Environmental Compliance Monitoring, Kempton Park, Gauteng, South Africa
2013 – 2019
Lead Auditor
This project involved the annual environmental compliance auditing for InvestChem's Sulphonation Plant. The monitoring included InvestChem's compliance to various commitments contained in their environmental management programmes and conditions within their environmental authorisations (records of decision).

Sasol Oil (Pty) Ltd, Compliance Audits at Sasol Alrode and Pretoria West Depots, Gauteng, South Africa
2015 – 2019
Project Manager and Lead Auditor
Annual Environmental compliance auditing of the Environmental authorisations at the Alrode and Pretoria West Depots in Gauteng.

Eskom Holdings, Water Use Licence for the Letabo Power Station, Free State, South Africa
2018
Project Manager

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.

APPENDIX

B EAP DECLARATION OF INTEREST

10.2 The Environmental Assessment Practitioner (EAP)

I Ashlea Strong as the appointed environmental assessment practitioner ("EAP") hereby declare/affirm the correctness of the information provided or to be provided as part of the application, and that I:

- in terms of the general requirement to be independent (tick which is applicable):

X	other than fair remuneration for work performed/to be performed in terms of this application, have no business, financial, personal or other interest in the activity or application and that there are no circumstances that may compromise my objectivity; or
	am not independent, but another EAP that is independent and ~~meets the general requirement~~s set out in Regulation 13 has been appointed ~~to review~~ my work (Note: a declaration by the review EAP must be submitted);

- have expertise in conducting environmental impact assessments, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- will ensure compliance with the EIA Regulations 2014;
- will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the application;
- will take into account, to the extent possible, the matters listed in regulation **18** of the regulations when preparing the application and any report, plan or document relating to the application;
- will disclose to the proponent or applicant, registered interested and affected parties and the competent authority all material information in my possession that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority or the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority (unless access to that information is protected by law, in which case I will indicate that such protected information exists and is only provided to the competent authority);
- will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- declare that all the particulars furnished by me in this form are true and correct;
- am aware that it is an offence in terms of Regulation 48 to provide incorrect or misleading information and that a person convicted of such an offence is liable to the penalties as contemplated in section 49B(2) of the National Environmental Management Act, 1998 (Act 107 of 1998).

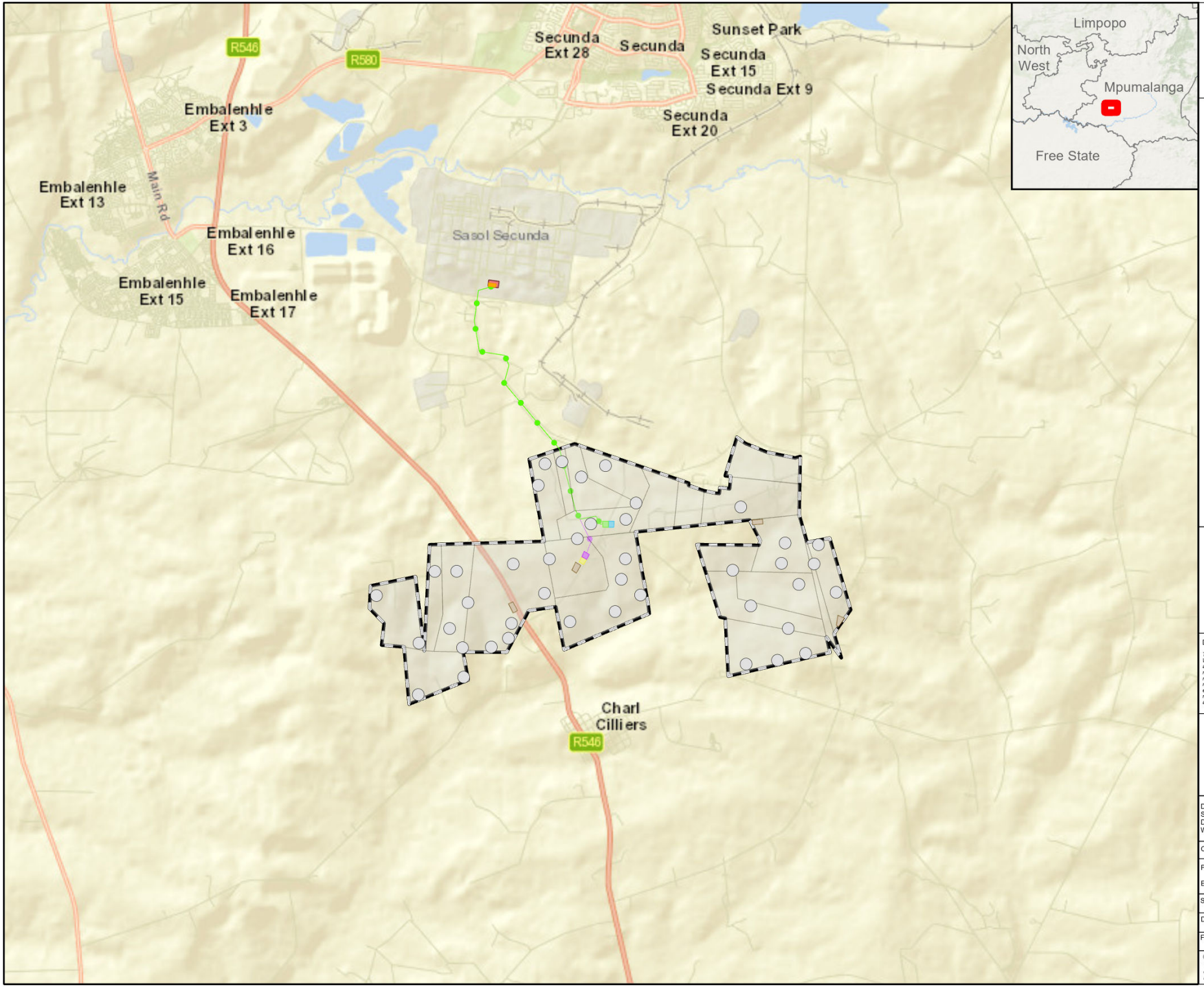
Signature of the environmental assessment practitioner

WSP Group Africa (Pty) Ltd
Name of company

18/08/2022.
Date

APPENDIX

C SENSITIVITY MAP



MUKONDELELI WEF

LOCALITY

Legend

- Turbine Locations
- Option 1 (preferred)
- Option 2
- Expanded Area
- Laydown Areas
- Properties SIgned
- IPP Alt 1 (preferred)
- IPP Alt 2
- Offtaker Option 1 (preferred)
- Offtaker Option 2
- Proposed Substation Location
- WEF Extent

N

0 600 1 200 1 800 2 400 3 000

Metres

DISCLAIMER

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DATA SOURCE:
Service Layer Credits: World Ocean Base: Esri, GEBCO, DeLorme, NaturalVue
World Street Map: Esri South Africa, Esri, HERE, Garmin, NGA,

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:

ENERTRAG SECUNDA WEF EIAS

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DATE: 2023/01/10	REVIEWED BY: AS

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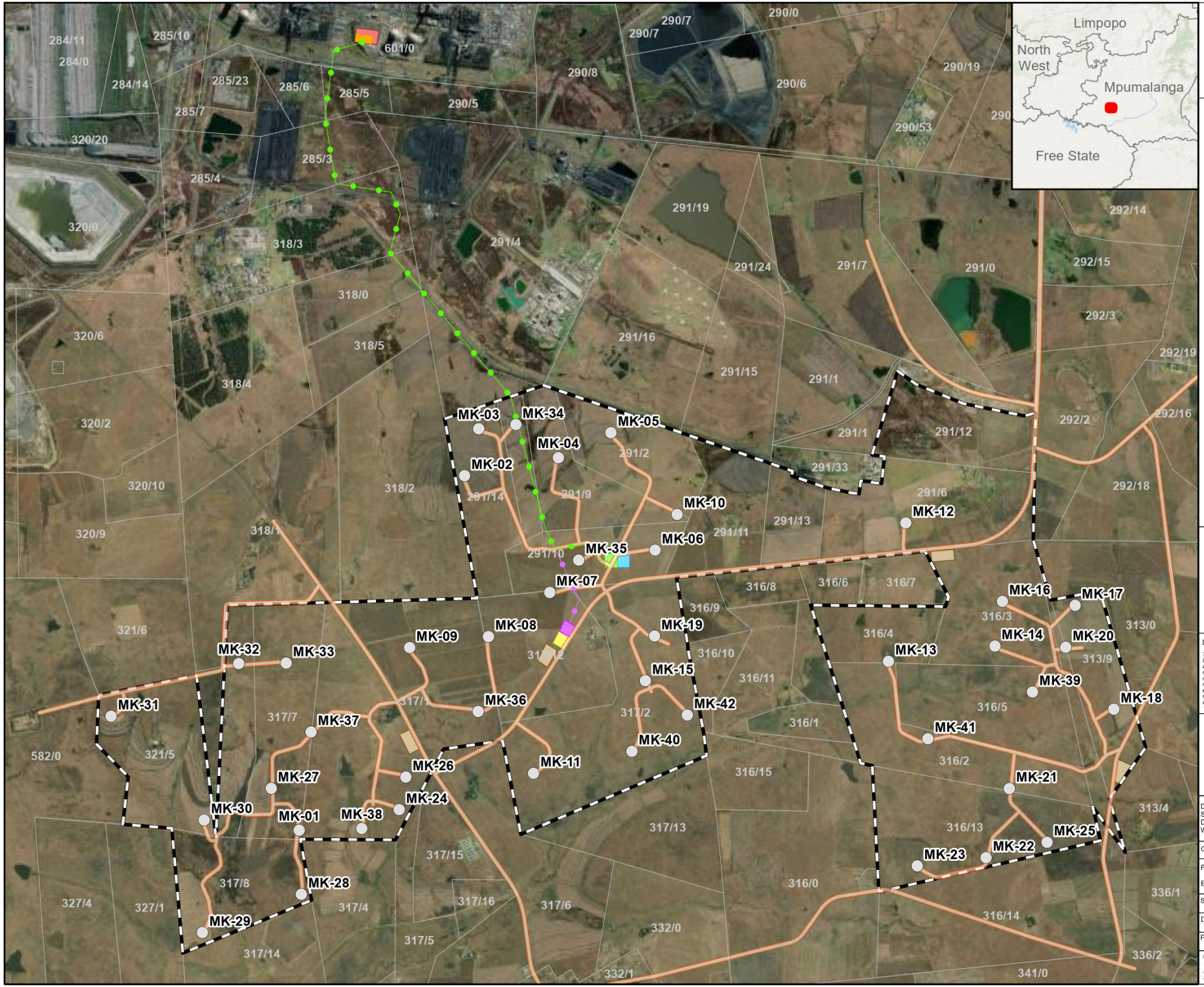

MUKONDELELI WEF

LAYOUT

Legend

- Turbine Locations
- Roads
- Laydown Areas
- IPP Alt 1 (preferred)
- IPP Alt 2
- Offtaker Option 1 (preferred)
- Offtaker Option 2
- Proposed Substation Location
- Expanded Area
- WEF Extent
- Farm Portions (CSG, 2021)

Powerline options (132kv)

- Option 1 (preferred)
- Option 2

N

0 275 550 825 1 100 1 375

Metres

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DATA SOURCE:
Service Layer Credits: World Ocean Base: Esri, GEBCO, DeLorme, NaturalVue
World Imagery: Maxar

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:

ENERTRAG SECUNDA WEF EIAS

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DATE: 2023/01/10	REVIEWED BY: AS
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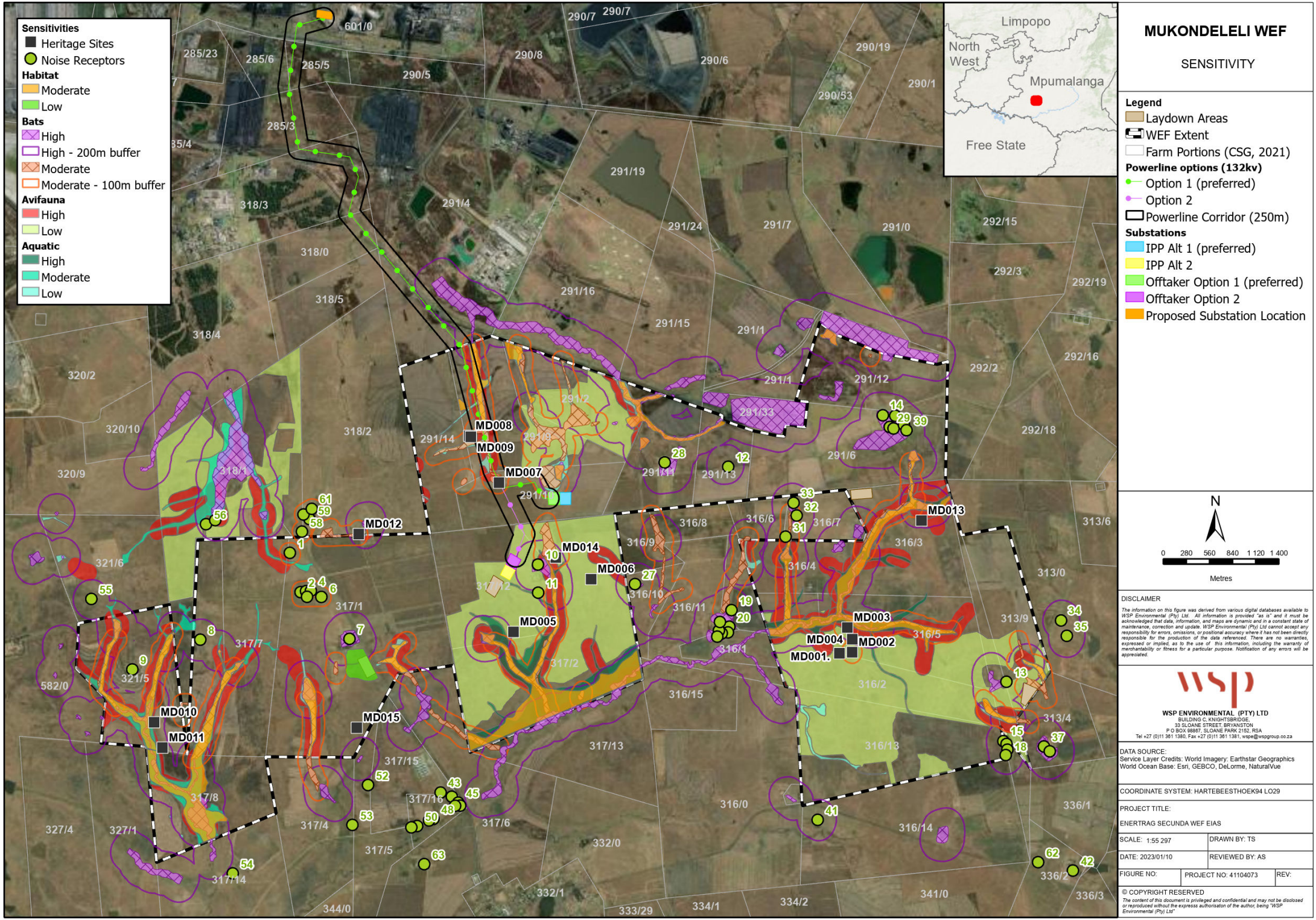

MUKONDELELI WEF

SENSITIVITY

Legend

- Laydown Areas
- WEF Extent
- Farm Portions (CSG, 2021)

Powerline options (132kv)

- Option 1 (preferred)
- Option 2
- Powerline Corridor (250m)

Substations

- IPP Alt 1 (preferred)
- IPP Alt 2
- Offtaker Option 1 (preferred)
- Offtaker Option 2
- Proposed Substation Location

N

0 280 560 840 1 120 1 400

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.

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

COORDINATE SYSTEM: HARTEBEESTHOEK94 LO29

PROJECT TITLE:
ENERTRAG SECUNDA WEF EIAS

SCALE: 1:55 297	DRAWN BY: TS
DATE: 2023/01/10	REVIEWED BY: AS
FIGURE NO:	PROJECT NO: 41104073 REV:

APPENDIX

D SUBSTATION GENERIC EMPR

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

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

TABLE OF CONTENTS

List of tables

INTRODUCTION

Background

The National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) requires that an environmental management programme (EMPr) be submitted where an environmental impact assessment (EIA) has been identified as the environmental instrument to be utilised as the basis for a decision on an application for environmental authorisation (EA). The content of an EMPr must either contain the information set out in Appendix 4 of the Environmental Impact Assessment Regulations, 2014, as amended (EIA Regulations) or must be a generic EMPr relevant to an application as identified and gazetted by the Minister in a government notice. Once the Minister has identified, through a government notice that a generic EMPr is relevant to an application for EA, that generic EMPr must be applied by all parties involved in the EA process, including but not limited to the applicant and the competent authority (CA).

Purpose

This document constitutes a generic EMPr relevant to applications for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and all listed and specified activities necessary for the realisation of such infrastructure.

Objective

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

Scope

The scope of this generic EMPr applies to the development or expansion of substation infrastructure for the transmission and distribution of electricity requiring EA in terms of NEMA. This generic EMPr applies to activities requiring EA, mainly activity 11 and 47 of the Environmental Impact Assessment Regulations Listing Notice 1 of 2014, as amended, and activity 9 of the Environmental Impact Assessment Regulations Listing Notice 2 of 2014, as amended, and all associated listed or specified activities necessary for the realization of such infrastructure.

Structure of this document

This document is structured in three parts with an Appendix as indicated in the table below:

Part	Section	Heading	Content
A		Provides general guidance and information	Definitions, acronyms, roles & responsibilities and documentation and reporting.

Part	Section	Heading	Content
		and is **not legally binding**	
B	1	Pre-approved generic EMPr template	Contains generally accepted impact management outcomes and impact management actions required for the avoidance, management and mitigation of impacts and risks associated with the development or expansion of substation infrastructure for the transmission and distribution of electricity, which are presented in the form of a template that has been pre-approved. The template in this section is to be completed by the contractor, with each completed page signed and dated by the holder of the EA prior to commencement of the activity. Where an impact management outcome is not relevant, the words "not applicable" can be inserted in the template under the "responsible persons" column. Once completed and signed, the template represents the EMPr for the activity approved by the CA and is legally binding. The template **is not required** to be submitted to the CA as once the generic EMPr is gazetted for implementation, it has been approved by the CA. To allow interested and affected parties access to the pre-approved EMPr template for consideration through the decision-making process, the EAP on behalf of the applicant /proponent must make the hard copy of this EMPr available at a public location and where the applicant has a website, the EMPr should also be made available on such publicly accessible website.
	2	Site specific information	Contains preliminary infrastructure layout and a declaration that the applicant/holder of the EA will comply with the pre-approved generic EMPr template contained in Part B: Section 1, and understands that the impact management outcomes and impact management actions are **legally binding**. The preliminary infrastructure layout must be

Part	Section	Heading	Content
			finalized to inform the final EMPr that is to be submitted with the basic assessment report (BAR) or environmental impact assessment report (EIAR), ensuring that all impact management outcomes and impact management actions have been either pre-approved or approved in terms of Part C. This section **must be** submitted to the CA together with the final BAR or EIAR. The information submitted to the CA will be considered to be incomplete should a signed copy of Part B: section 2 not be submitted. Once approved, this Section forms part of the EMPr for the development and is legally binding.
C		Site specific sensitivities/ attributes	If any specific environmental sensitivities/ attributes are present on the site which require site specific impact management outcomes and impact management actions, not included in the pre-approved generic EMPr, to manage impacts, these specific impact management outcomes and impact management actions must be included in this section. These specific environmental attributes must be referenced spatially and impact management outcomes and impact management actions must be provided. These specific impact management outcomes and impact management actions must be presented in the format of the pre-approved EMPr template (Part B: section 1) This section will not be required should the site contain no specific environmental sensitivities or attributes. However, if Part C is applicable to the site, it **is required** to be submitted together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. Once approved, Part C forms part of the EMPr for the site and is legally binding. This section applies only **to additional** impact management outcomes and impact

Part	Section	Heading	Content
			management actions that are necessary for the avoidance, management and mitigation of impacts and risks associated with the specific development or expansion and which are not already included in Part B: section 1.
Appendix 1			Contains the method statements to be prepared prior to commencement of the activity. The method statements are **not required** to be submitted to the competent authority.

Completion of part B: section 1: the pre-approved generic EMPr template

The template is to be completed prior to commencement of the activity, by providing the following information for each environmental impact management action:

For implementation
- a 'responsible person',
- a method for implementation,
- a timeframe for implementation

For monitoring
- a responsible person
- frequency
- evidence of compliance.

The completed template must be signed and dated by the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must be signed and dated on each page by the holder of the EA. This template once signed and dated is legally binding. The holder of the EA will remain responsible for its implementation.

Amendments of the impact management outcomes and impact management actions

Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the following manner:

Amendment of the impact management outcomes: in line with the process contemplated in Regulation 37 of the EIA Regulations; and

Amendment of the impact management actions: in line with the process contemplated in Regulation 36 of the EIA Regulations.

Documents to be submitted as part of part B: section 2 site specific information and declaration

Part B: Section 2 has three distinct sub-sections. The first and third sub-sections are in a template format. Sub-section two requires a map to be produced.

Sub-section 1 contains the project name, the applicant's name and contact details, the site information, which includes coordinates of the property or farm in which the proposed substation infrastructure is proposed as well as the 21-digit Surveyor General code of each cadastral land parcel and, where available, the farm name.

Sub-section 2 is to be prepared by an EAP and must contain his/her name and expertise including a curriculum vitae. This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout using the national web based environmental screening tool, when available for compulsory use at: https://screening.environment.gov.za/screeningtool. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features and within 50 m from the development footprint.

Sub-section 3 is the declaration that the applicant (s)/proponent (s) or holder of the EA in the case of a change of ownership must complete which confirms that the applicant/EA holder will comply with the pre-approved 'generic EMPr' template in Section 1 and understands that the impact management outcomes and impact management actions are legally binding.

Amendments to Part B: Section 2 – site specific information and declaration

Should the EA be transferred, Part B: Section 2 must be completed by the new applicant/proponent and submitted with the application for an amendment of the EA in terms of regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted as part of such an application for an amendment to an EA will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART A – GENERAL INFORMATION

DEFINITIONS

In this EMPr any word or expression to which a meaning has been assigned in the NEMA or EIA Regulations has that meaning, and unless the context requires otherwise –

"clearing" means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified;

"construction camp" is the area designated for key construction infrastructure and services, including but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management;

"contractor" - The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

"**hazardous substance**" is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995;

"method statement" means a written submission by the Contractor to the Project Manager in response to this EMPr or a request by the Project Manager and ECO. The method statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out an activity identified by the Project Manager when requesting the Method Statement. This must be done in such detail that the Project Manager and ECO is able to assess whether the Contractor's proposal is in accordance with this specification and/or will produce results in accordance with this specification;

The method statement must cover as a minimum applicable details with regard to:

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

— Any other information deemed necessary by the Project Manager.

"slope" means the inclination of a surface expressed as one unit of rise or fall for so many horizontal units;

"solid waste" means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers);

"spoil" means excavated material which is unsuitable for use as material in the construction works or is material which is surplus to the requirements of the construction works;

"topsoil" means a varying depth (up to 300 mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential, fertility and composition of the soil;

"works" means the works to be executed in terms of the Contract

ACRONYMS and ABBREVIATIONS

CA	Competent Authority
cEO	Contractors Environmental Officer
dEO	Developer Environmental Officer
DPM	Developer Project Manager
DSS	Developer Site Supervisor
EAR	Environmental Audit Report
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
ERAP	Emergency Response Action Plan
EMPr	Environmental Management Programme Report
EAP	Environmental Assessment Practitioner
FPA	Fire Protection Agency
HCS	Hazardous chemical Substance
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act ,2004 (Act No. 10 of 2004)
NEMWA	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)
MSDS	Material Safety Data Sheet
RI&AP's	Registered Interested and affected parties

ROLES AND RESPONSIBILITIES FOR ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr) IMPLEMENTATION

The effective implementation of this generic EMPr is dependent on established and clear roles, responsibilities and reporting lines within an institutional framework. This section of the EMPr gives guidance to the various environmental roles and reporting lines, however, project specific requirements will ultimately determine the need for the appointment of specific person(s) to undertake specific roles and or responsibilities. As such, it must be noted that in the event that no specific person, for example, an environmental control officer (ECO) is appointed, the holder of the EA remains responsible for ensuring that the duties indicated in this document for action by the ECO are undertaken.

Table 1: *Guide to roles and responsibilities for implementation of an EMPr*

Responsible Person(s)	**Role and Responsibilities**
Developer's Project Manager (DPM)	Role The Project Developer is accountable for ensuring compliance with the EMPr and any conditions of approval from the competent authority (CA). Where required, an environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMPr according to relevant environmental legislation, and the conditions of the environmental authorisation (EA). The Project Developer is further responsible for providing and giving mandate to enable the ECO to perform responsibilities, and he must ensure that the ECO is integrated as part of the project team while remaining independent. Responsibilities Be fully conversant with the conditions of the EA; Ensure that all stipulations within the EMPr are communicated and adhered to by the Developer and its Contractor(s); Issuing of site instructions to the Contractor for corrective actions required; Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and Ensure that periodic environmental performance audits are undertaken on the project implementation.
Developer Site Supervisor (DSS)	Role The DSS reports directly to the DPM, oversees site works, liaises with the contractor(s) and the ECO. The DSS is responsible for the day to day implementation of the EMPr and for ensuring the compliance of all

Responsible Person(s)	Role and Responsibilities
	contractors with the conditions and requirements stipulated in the EMPr. <u>Responsibilities</u> Ensure that all contractors identify a contractor's Environmental Officer (cEO); Must be fully conversant with the conditions of the EA. Oversees site works, liaison with Contractor, DPM and ECO; Must ensure that all landowners have the relevant contact details of the site staff, ECO and cEO; Issuing of site instructions to the Contractor for corrective actions required; Will issue all non-compliances to contractors; and Ratify the Monthly Environmental Report.
Environmental Control Officer (ECO)	<u>Role</u> The ECO should have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct periodic site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to conduct compliance audits, verifying the monitoring reports submitted by the cEO. The ECO provides feedback to the DSS and Project Manager regarding all environmental matters. The Contractor, cEO and dEO are answerable to the Environmental Control Officer for non-compliance with the Performance Specifications as set out in the EA and EMPr. The ECO provides feedback to the DSS and Project Manager, who in turn reports back to the Contractor and potential and Registered Interested &Affected Parties' (RI&AP's), as required. Issues of non-compliance raised by the ECO must be taken up by the Project Manager, and resolved with the Contractor as per the conditions of his contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e. those that are deemed to be a variation, not allowed for in the Performance Specification) must be endorsed by the Project Manager. The ECO must also, as specified by the EA, report to the relevant CA as and when required.

Responsible Person(s)	Role and Responsibilities
	Responsibilities The responsibilities of the ECO will include the following: Be aware of the findings and conclusions of all EA related to the development; Be familiar with the recommendations and mitigation measures of this EMPr; Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; Undertake regular and comprehensive site inspections / audits of the construction site according to the generic EMPr and applicable licenses in order to monitor compliance as required; Educate the construction team about the management measures contained in the EMPr and environmental licenses; Compilation and administration of an environmental monitoring plan to ensure that the environmental management measures are implemented and are effective; Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; In consultation with the Developer Site Supervisor order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses; Liaison between the DPM, Contractors, authorities and other lead stakeholders on all environmental concerns; Compile a regular environmental audit report highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; Validating the regular site inspection reports, which are to be prepared by the contractor Environmental Officer (cEO); Checking the cEO's record of environmental incidents (spills, impacts, legal transgressions etc.) as well as corrective and preventive actions taken; Checking the cEO's public complaints register in which all complaints are recorded, as well as action taken; Assisting in the resolution of conflicts; Facilitate training for all personnel on the site – this may range from carrying out the training, to reviewing the training programmes of the Contractor;

Responsible Person(s)	Role and Responsibilities
	In case of non-compliances, the ECO must first communicate this to the Senior Site Supervisor, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; Maintenance, update and review of the EMPr; Communication of all modifications to the EMPr to the relevant stakeholders.
developer Environmental Officer (dEO)	<u>Role</u> The dEOs will report to the Project Manager and are responsible for implementation of the EMPr, environmental monitoring and reporting, providing environmental input to the Project Manager and Contractor's Manager, liaising with contractors and the landowners as well as a range of environmental coordination responsibilities. <u>Responsibilities</u> Be fully conversant with the EMPr; Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures; Ensure that all stipulations within the EMPr are communicated and adhered to by the Employees, Contractor(s) ; Confine the development site to the demarcated area; Conduct environmental internal audits with regards to EMPr and authorisation compliance (on cEO); Assist the contractors in addressing environmental challenges on site; Assist in incident management: Reporting environmental incidents to developer and ensuring that corrective action is taken, and lessons learnt shared; Assist the contractor in investigating environmental incidents and compile investigation reports; Follow-up on pre-warnings, defects, non-conformance reports; Measure and communicate environmental performance to the Contractor; Conduct environmental awareness training on site together with ECO and cEO; Ensure that the necessary legal permits and / or licenses are in place and up to date;

Responsible Person(s)	Role and Responsibilities
	Acting as Developer's Environmental Representative on site and work together with the ECO and contractor;
Contractor	Role The Contractor appoints the cEO and has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during the development or expansion of substation infrastructure for the transmission and distribution of electricity activities. Responsibilities project delivery and quality control for the development services as per appointment; employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; ensure that safe, environmentally acceptable working methods and practices are implemented and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
contractor Environmental Officer (cEO)	Role Each Contractor affected by the EMPr should appoint a cEO, who is responsible for the on-site implementation of the EMPr (or relevant sections of the EMPr). The Contractor's representative can be the site agent; site engineer; a dedicated environmental officer; or an independent consultant. The Contractor must ensure that the Contractor's Representative is suitably qualified to perform the necessary tasks and is appointed at a level such that she/he can interact effectively with other site Contractors, labourers, the Environmental Control Officer and the public. As a minimum the cEO shall meet the

Responsible Person(s)	Role and Responsibilities
	following criteria: <u>Responsibilities</u> Be on site throughout the duration of the project and be dedicated to the project; Ensure all their staff are aware of the environmental requirements, conditions and constraints with respect to all of their activities on site; Implementing the environmental conditions, guidelines and requirements as stipulated within the EA, EMPr and Method Statements; Attend the Environmental Site Meeting; Undertaking corrective actions where non-compliances are registered within the stipulated timeframes; Report back formally on the completion of corrective actions; Assist the ECO in maintaining all the site documentation; Prepare the site inspection reports and corrective action reports for submission to the ECO; Assist the ECO with the preparing of the monthly report; and Where more than one Contractor is undertaking work on site, each company appointed as a Contractor will appoint a cEO representing that company.

ENVIRONMENTAL DOCUMENTATION REPORTING AND COMPLIANCE

To ensure accountable and demonstrated implementation of the EMPr, a number of reporting systems, documentation controls and compliance mechanisms must be in place for all substation infrastructure projects as a minimum requirement.

Document control/Filing system

The holder of the EA is solely responsible for the upkeep and management of the EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained in the office of the DSS (where applicable). This duplicate file must remain current and up-to-date. The filing system must be updated and relevant documents added as required. The EMPr file must be made available at all times on request by the CA or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

Documentation to be available

At the outset of the project the following preliminary list of documents shall be placed in the filing system and be accessible at all times:

- Full copy of the signed EA from the CA in terms of NEMA, granting approval for the development or expansion;
- Copy of the generic and site specific EMPr as well as any amendments thereof;
- Copy of declaration of implementing generic EMPr and subsequent approval of site specific EMPr and amendments thereof;
- All method statements;
- Completed environmental checklists;
- Minutes and attendance register of environmental site meetings;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record;
- Complaints register.

Weekly Environmental Checklist

The ECOs are required to complete a Weekly Environmental Checklist, the format of which is to be agreed prior to commencement of the activity. The ECOs are required to sign and date the checklist, retain a copy in the EMPr file and submit a copy of the completed checklist to the DSS on a weekly basis.

The checklists will form the basis for the Monthly Environmental Reports. Copies of all completed checklists will be attached as Annexures to the Environmental Audit Report as required in terms of the EIA Regulations.

Environmental site meetings

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Report that is distributed to attendees. Each set of minutes must clearly record "Matters for Attention" that will be reviewed at the next meeting.

Required Method Statements

The method statement will be done in such detail that the ECOs are enabled to assess whether the contractor's proposal is in accordance with the EMPr.

The method statement must cover applicable details with regard to:

- development procedures;
- materials and equipment to be used;
- getting the equipment to and from site;
- how the equipment/ material will be moved while on site;
- how and where material will be stored;
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- timing and location of activities;
- compliance/ non-compliance with the EMPr; and
- any other information deemed necessary by the ECOs.

Unless indicated otherwise by the Project Manager, the Contractor shall provide the following method statements to the Project Manager no less than 14 days prior to the commencement date of the activity:

1. Site establishment – Camps, Lay-down or storage areas, satellite camps, infrastructure;
2. Batch plants;
3. Workshop or plant servicing;
4. Handling, transport and storage of Hazardous Chemical Substance's;
5. Vegetation management – Protected, clearing, aliens, felling;
6. Access management – Roads, gates, crossings etc.;
7. Fire plan;
8. Waste management – transport, storage, segregation, classification, disposal (all waste streams);
9. Social interaction – complaints management, compensation claims, access to properties etc.;
10. Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
11. Emergency preparedness – Spills, training, other environmental emergencies;
12. Dust and noise management methodologies;
13. Fauna interaction and risk management – only if the risk was identified – wildlife interaction especially on game farms; and
14. Heritage and palaeontology management.

The ECOs shall monitor and ensure that the contractors perform in accordance with these method statements. Completed and agreed method statements between the holder of the EA and the contractor shall be captured in Appendix 1.

Environmental Incident Log (Diary)

The ECOs are required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance notice would not be issued. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that may be addressed immediately by the ECOs. (For example a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions for an afternoon); and
- General environmental information such as road kills or injured wildlife.

The ECOs are to record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Developer. The Log is to be kept in the EMPr file and at a minimum the following will be recorded for each environmental incident:

The date and time of the incident;
Description of the incident;
The name of the Contractor responsible;
The incident must be listed as significant or minor;
If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
Remedial or corrective action taken to mitigate the incident; and
Record of repeat minor offences by the same contractor or staff member.

The Environmental Incident Log will be captured in the EAR.

Non-compliance

A non-compliance notice will be issued to the responsible contractor by the ECOs via the DSS or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

Time and date of the non-compliance;
Name of the contractor responsible;
Nature and description of the non-compliance;
Recommended / required corrective action; and
Date by which the corrective action to be completed.
The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression

of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant CA for them to deal with the transgression, as it deems fit. The contractor is deemed not to have complied with the EMPr if, inter alia, There is a deviation from the environmental conditions, impact management outcomes and impact management actions activities, as approved in generic and site specific EMPr as relevant as set out in the EMPr, which deviation has, or may cause, an environmental impact.

Corrective action records

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the DSS, the contractor's cEO will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the cEO is to issue a Corrective Action Report in writing to the ECOs. If satisfied that the corrective action has been completed, the ECOs are to sign-off on the Corrective Action Report, and attach the report to the non-compliance notice in the EMPr file. A corrective action is considered complete once the report has signed off by the ECOs.

Photographic record

A digital photographic record will be kept. The photographic record will be used to show before, during and post rehabilitation evidence of the project as well used in cases of damages claims if they arise. Each image must be dated and a brief description note attached.

The Contractor shall:

Allow the ECOs access to take photographs of all areas, activities and actions.

The ECOs shall keep an electronic database of photographic records which will include:

Pictures of all areas designated as work areas, camp areas, development sites and storage areas taken before these areas are set up;
All bunding and fencing;
Road conditions and road verges;
Condition of all farm fences;
Topsoil storage areas;
All areas to be cordoned off during construction;
Waste management sites;
Ablution facilities (inside and out);
Any non-conformances deemed to be "significant";
All completed corrective actions for non-compliances;
All required signage;
Photographic recordings of incidents;
All areas before, during and post rehabilitation; and
Include relevant photographs in the Final Environmental Audit Report.

Complaints register

The ECOs shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

Record the name and contact details of the complainant;
Record the time and date of the complaint;
Contain a detailed description of the complaint;
Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECOs to take relevant photographs); and
Contain a copy of the ECOs written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECOs shall respond as described in (**section 4.11**) below.

Claims for damages

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

Record the full detail of the complaint as described in (**section 4.10**) above;
The DPM will evaluate the claim and associated damage and submit the evaluation to the Senior Site Representative for approval;
Following consideration by the DPM, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant. Should the claimant not accept this, the ECO shall, in writing report the incident to the Developer's negotiator and legal department; and
A formal record of the response by the ECOs to the claimant as well as the rectification of the method of making payments not amount will be recorded in the EMPr file.

Interactions with affected parties

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts.

The ECOs shall:

Ensure that all queries, complaints and claims are dealt within an agreed timeframe;
Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMPr file;
Ensure that a complaints telephone numbers are made available to all landowners and affected parties; and
Ensure that contact with affected parties is courteous at all times;

Environmental audits

Internal environmental audits of the activity and implementation of the EMPr must be undertaken. The findings and outcomes included in the EMPr file and submitted to the CA at intervals as indicated in the EA.

The ECOs must prepare a monthly EAR. The report will be tabled as the key point on the agenda of the Environmental Site Meeting. The Report is submitted for acceptance at the meeting and the final report will be circulated to the Project Manager and filed in the EMPr file. At a frequency determined by the EA, the ECOs shall submit the monthly reports to the CA. At a minimum the monthly report is to cover the following:

- Weekly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Bi-monthly Environmental Site Meetings.

Final environmental audits

On final completion of the rehabilitation and/or requirements of the EA a final EAR is to be prepared and submitted to the CA. The EAR must comply with Appendix 7 of the EIA Regulations.

PART B: SECTION 1: Pre-approved generic EMPr template

IMPACT MANAGEMENT OUTCOMES AND IMPACT MANAGEMENT ACTIONS

This section provides a pre-approved generic EMPr template with aspects that are common to the development of substation infrastructure for the transmission and distribution of electricity. There is a list of aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. Holders of EAs are responsible to ensure the implementation of these outcomes and actions for all projects as a minimum requirement, in order to mitigate the impact of such aspects identified for the development or expansion of substation infrastructure for the transmission and distribution of electricity.

The template provided below is to be completed by providing the information under each heading for each environmental impact management action.

The completed template must be signed and dated on each page by both the contractor and the holder of the EA prior to commencement of the activity. The method statements prepared and agreed to by the holder of the EA must be appended to the template as Appendix 1. Each method statement must also be duly signed and dated on each page by the 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.

5.1 Environmental awareness training

Impact management outcome: All onsite staff are aware and understands the individual responsibilities in terms of this EMPr.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All staff must receive environmental awareness training prior to commencement of the activities; The Contractor must allow for sufficient sessions to train all personnel with no more than 20 personnel attending each course; Refresher environmental awareness training is available as and when required; All staff are aware of the conditions and controls linked to the EA and within the EMPr and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMPr; The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: a) Safety notifications; and b) No littering. Environmental awareness training must include as a minimum the following: a) Description of significant environmental impacts, actual or potential, related to their work activities; b) Mitigation measures to be implemented when carrying out specific activities; c) Emergency preparedness and response procedures;						

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

Site Establishment development

Impact management outcome: Impacts on the environment are minimised during site establishment and the development footprint are kept to demarcated development area.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
A method statement must be provided by the contractor prior to any onsite activity that includes the layout of the construction camp in the form of a plan showing the location of key infrastructure and services (where applicable), including						

but not limited to offices, overnight vehicle parking areas, stores, the workshop, stockpile and lay down areas, hazardous materials storage areas (including fuels), the batching plant (if one is located at the construction camp), designated access routes, equipment cleaning areas and the placement of staff accommodation, cooking and ablution facilities, waste and wastewater management; Location of camps must be within approved area to ensure that the site does not impact on sensitive areas identified in the environmental assessment or site walk through; Sites must be located where possible on previously disturbed areas; The camp must be fenced in accordance with ***Section 5.5: Fencing and gate installation***; and The use of existing accommodation for contractor staff, where possible, is encouraged.						

Access restricted areas

Impact management outcome: Access to restricted areas prevented.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Identification of access restricted areas is to be informed by the environmental assessment, site walk through and any additional areas identified during development; Erect, demarcate and maintain a temporary barrier with clear signage around the perimeter of any						

access restricted area, colour coding could be used if appropriate; and Unauthorised access and development related activity inside access restricted areas is prohibited.						

Access roads

Impact management outcome: Minimise impact to the environment through the planned and restricted movement of vehicles on site.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
An access agreement must be formalised and signed by the DPM, Contractor and landowner before commencing with the activities; All private roads used for access to the servitude must be maintained and upon completion of the works, be left in at least the original condition All contractors must be made aware of all these access routes. Any access route deviation from that in the written agreement must be closed and re-vegetated immediately, at the contractor's expense; Maximum use of both existing servitudes and existing roads must be made to minimize further disturbance through the development of new roads; In circumstances where private roads must be used, the condition of the said roads must be recorded in accordance with ***section 4.9: photographic record***; prior to use and the condition thereof agreed by the landowner, the DPM, and the contractor; Access roads in flattish areas must follow fence lines and tree						

belts to avoid fragmentation of vegetated areas or croplands Access roads must only be developed on a pre-planned and approved roads.						

Fencing and Gate installation

Impact management outcome: Minimise impact to the environment and ensure safe and controlled access to the site through the erection of fencing and gates where required.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Use existing gates provided to gain access to all parts of the area authorised for development, where possible; Existing and new gates to be recorded and documented in accordance with **section *4.9: photographic record***; All gates must be fitted with locks and be kept locked at all times during the development phase, unless otherwise agreed with the landowner; At points where the line crosses a fence in which there is no suitable gate within the extent of the line servitude, on the instruction of the DPM, a gate must be installed at the approval of the landowner; Care must be taken that the gates must be so erected that there is a gap of no more than 100 mm between the bottom of the gate and the ground; Where gates are installed in jackal proof fencing, a suitable reinforced concrete sill must be provided beneath the gate; Original tension must be maintained in the fence wires; All gates installed in electrified fencing must be re-electrified; All demarcation fencing and barriers must be maintained in						

good working order for the duration of the development activities; Fencing must be erected around the camp, batching plants, hazardous storage areas, and all designated access restricted areas, where applicable; Any temporary fencing to restrict the movement of life-stock must only be erected with the permission of the land owner. All fencing must be developed of high quality material bearing the SABS mark; The use of razor wire as fencing must be avoided; Fenced areas with gate access must remain locked after hours, during weekends and on holidays if staff is away from site. Site security will be required at all times; On completion of the development phase all temporary fences are to be removed; The contractor must ensure that all fence uprights are appropriately removed, ensuring that no uprights are cut at ground level but rather removed completely.						

Water Supply Management

Impact management outcome: Undertake responsible water usage.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All abstraction points or bore holes must be registered with the DWS and suitable water meters installed to ensure that the abstracted volumes are measured on a daily basis; The Contractor must ensure the following: The vehicle abstracting water from a river does not enter or						

cross it and does not operate from within the river; No damage occurs to the river bed or banks and that the abstraction of water does not entail stream diversion activities; and All reasonable measures to limit pollution or sedimentation of the downstream watercourse are implemented. Ensure water conservation is being practiced by: Minimising water use during cleaning of equipment; Undertaking regular audits of water systems; and Including a discussion on water usage and conservation during environmental awareness training. The use of grey water is encouraged.						

Storm and waste water management

Impact management outcome: Impacts to the environment caused by storm water and wastewater discharges during construction are avoided.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Runoff from the cement/ concrete batching areas must be strictly controlled, and contaminated water must be collected, stored and either treated or disposed of off-site, at a location approved by the project manager; All spillage of oil onto concrete surfaces must be controlled by the use of an approved absorbent material and the used absorbent material disposed of at an appropriate waste disposal facility; Natural storm water runoff not contaminated during the development and clean water can be discharged directly to watercourses and water bodies, subject to the Project Manager's						

approval and support by the ECO; Water that has been contaminated with suspended solids, such as soils and silt, may be released into watercourses or water bodies only once all suspended solids have been removed from the water by settling out these solids in settlement ponds. The release of settled water back into the environment must be subject to the Project Manager's approval and support by the ECO.						

Solid and hazardous waste management

Impact management outcome: Wastes are appropriately stored, handled and safely disposed of at a recognised waste facility.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All measures regarding waste management must be undertaken using an integrated waste management approach; Sufficient, covered waste collection bins (scavenger and weatherproof) must be provided; A suitably positioned and clearly demarcated waste collection site must be identified and provided; The waste collection site must be maintained in a clean and orderly manner; Waste must be segregated into separate bins and clearly marked for each waste type for recycling and safe disposal; Staff must be trained in waste segregation; Bins must be emptied regularly; General waste produced onsite must be disposed of at registered waste disposal sites/ recycling company; Hazardous waste must be disposed of at a registered waste						

disposal site; Certificates of safe disposal for general, hazardous and recycled waste must be maintained.						

Protection of watercourses and estuaries

Impact management outcome: Pollution and contamination of the watercourse environment and or estuary erosion are prevented.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All watercourses must be protected from direct or indirect spills of pollutants such as solid waste, sewage, cement, oils, fuels, chemicals, aggregate tailings, wash and contaminated water or organic material resulting from the Contractor's activities; In the event of a spill, prompt action must be taken to clear the polluted or affected areas; Where possible, no development equipment must traverse any seasonal or permanent wetland No return flow into the estuaries must be allowed and no disturbance of the Estuarine functional Zone should occur; Development of permanent watercourse or estuary crossing must only be undertaken where no alternative access to tower position is available; There must not be any impact on the long term morphological dynamics of watercourses or estuaries; Existing crossing points must be favored over the creation of new crossings (including temporary access) When working in or near any watercourse or estuary, the following environmental controls and consideration must be taken:						

a) Water levels during the period of construction; No altering of the bed, banks, course or characteristics of a watercourse b) During the execution of the works, appropriate measures to prevent pollution and contamination of the riparian environment must be implemented e.g. including ensuring that construction equipment is well maintained; c) Where earthwork is being undertaken in close proximity to any watercourse, slopes must be stabilised using suitable materials, i.e. sandbags or geotextile fabric, to prevent sand and rock from entering the channel; and d) Appropriate rehabilitation and re-vegetation measures for the watercourse banks must be implemented timeously. In this regard, the banks should be appropriately and incrementally stabilised as soon as development allows.						

Vegetation clearing

Impact management outcome: Vegetation clearing is restricted to the authorised development footprint of the proposed infrastructure.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
General: Indigenous vegetation which does not interfere with the development must be left undisturbed; Protected or endangered species may occur on or near the development site. Special care should be taken not to damage such species; Search, rescue and replanting of all protected and endangered species likely to be damaged during project						

development must be identified by the relevant specialist and completed prior to any development or clearing; Permits for removal must be obtained from the relevant CA prior to the cutting or clearing of the affected species, and they must be filed; The Environmental Audit Report must confirm that all identified species have been rescued and replanted and that the location of replanting is compliant with conditions of approvals; Trees felled due to construction must be documented and form part of the Environmental Audit Report; Rivers and watercourses must be kept clear of felled trees, vegetation cuttings and debris; Only a registered pest control operator may apply herbicides on a commercial basis and commercial application must be carried out under the supervision of a registered pest control operator, supervision of a registered pest control operator or is appropriately trained; A daily register must be kept of all relevant details of herbicide usage; No herbicides must be used in estuaries; All protected species and sensitive vegetation not removed must be clearly marked and such areas fenced off in accordance to ***Section 5.3: Access restricted areas***. Alien invasive vegetation must be removed and disposed of at a licensed waste management facility.						

Protection of fauna

Impact management outcome: Disturbance to fauna is minimised.		
Impact Management Actions	**Implementation**	**Monitoring**

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
No interference with livestock must occur without the landowner's written consent and with the landowner or a person representing the landowner being present; The breeding sites of raptors and other wild birds species must be taken into consideration during the planning of the development programme; Breeding sites must be kept intact and disturbance to breeding birds must be avoided. Special care must be taken where nestlings or fledglings are present; Special recommendations of the avian specialist must be adhered to at all times to prevent unnecessary disturbance of birds; No poaching must be tolerated under any circumstances. All animal dens in close proximity to the works areas must be marked as Access restricted areas; No deliberate or intentional killing of fauna is allowed; In areas where snakes are abundant, snake deterrents to be deployed on the pylons to prevent snakes climbing up, being electrocuted and causing power outages; and No Threatened or Protected species (ToPs) and/or protected fauna as listed according NEMBA (Act No. 10 of 2004) and relevant provincial ordinances may be removed and/or relocated without appropriate authorisations/permits.						

Protection of heritage resources

Impact management outcome: Impact to heritage resources is minimised.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure in ***Section 5.3: Access restricted areas***; Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; All work must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences.						

Safety of the public

Impact management outcome: All precautions are taken to minimise the risk of injury, harm or complaints.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Identify fire hazards, demarcate and restrict public access to these areas as well as notify the local authority of any potential threats e.g. large brush stockpiles, fuels etc.; All unattended open excavations must be adequately fenced or demarcated; Adequate protective measures must be implemented to prevent unauthorised access to and climbing of partly						

constructed towers and protective scaffolding; Ensure structures vulnerable to high winds are secured; Maintain an incidents and complaints register in which all incidents or complaints involving the public are logged.						

Sanitation

Impact management outcome: Clean and well maintained toilet facilities are available to all staff in an effort to minimise the risk of disease and impact to the environment.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Mobile chemical toilets are installed onsite if no other ablution facilities are available; The use of ablution facilities and or mobile toilets must be used at all times and no indiscriminate use of the veld for the purposes of ablutions must be permitted under any circumstances; Where mobile chemical toilets are required, the following must be ensured: a) Toilets are located no closer than 100 m to any watercourse or water body; b) Toilets are secured to the ground to prevent them from toppling due to wind or any other cause; c) No spillage occurs when the toilets are cleaned or emptied and the contents are managed in accordance with the EMPr; d) Toilets have an external closing mechanism and are closed and secured from the outside when not in use to prevent toilet paper from being blown out; e) Toilets are emptied before long weekends and workers						

holidays, and must be locked after working hours; f) Toilets are serviced regularly and the ECO must inspect toilets to ensure compliance to health standards; A copy of the waste disposal certificates must be maintained.						

Prevention of disease

Impact Management outcome: All necessary precautions linked to the spread of disease are taken.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Undertake environmentally-friendly pest control in the camp area; Ensure that the workforce is sensitised to the effects of sexually transmitted diseases, especially HIV AIDS; The Contractor must ensure that information posters on AIDS are displayed in the Contractor Camp area; Information and education relating to sexually transmitted diseases to be made available to both construction workers and local community, where applicable; Free condoms must be made available to all staff on site at central points; Medical support must be made available; Provide access to Voluntary HIV Testing and Counselling Services.						

Emergency procedures

Impact management outcome: Emergency procedures are in place to enable a rapid and effective response to all types of environmental emergencies.

Impact Management Actions	Implementation			Monitoring		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Compile an Emergency Response Action Plan (ERAP) prior to the commencement of the proposed project; The Emergency Plan must deal with accidents, potential spillages and fires in line with relevant legislation; All staff must be made aware of emergency procedures as part of environmental awareness training; The relevant local authority must be made aware of a fire as soon as it starts; In the event of emergency necessary mitigation measures to contain the spill or leak must be implemented (see ***Hazardous Substances section 5.17***).						

Hazardous substances

Impact management outcome: Safe storage, handling, use and disposal of hazardous substances.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The use and storage of hazardous substances to be minimised and non-hazardous and non-toxic alternatives substituted where possible; All hazardous substances must be stored in suitable containers as defined in the Method Statement; Containers must be clearly marked to indicate contents, quantities and safety requirements; All storage areas must be bunded. The bunded area must be						

of sufficient capacity to contain a spill / leak from the stored containers; Bunded areas to be suitably lined with a SABS approved liner; An Alphabetical Hazardous Chemical Substance (HCS) control sheet must be drawn up and kept up to date on a continuous basis; All hazardous chemicals that will be used on site must have Material Safety Data Sheets (MSDS); All employees working with HCS must be trained in the safe use of the substance and according to the safety data sheet; Employees handling hazardous substances / materials must be aware of the potential impacts and follow appropriate safety measures. Appropriate personal protective equipment must be made available; The Contractor must ensure that diesel and other liquid fuel, oil and hydraulic fluid is stored in appropriate storage tanks or in bowsers; The tanks/ bowsers must be situated on a smooth impermeable surface (concrete) with a permanent bund. The impermeable lining must extend to the crest of the bund and the volume inside the bund must be 130% of the total capacity of all the storage tanks/ bowsers (110% statutory requirement plus an allowance for rainfall); The floor of the bund must be sloped, draining to an oil separator; Provision must be made for refueling at the storage area by protecting the soil with an impermeable groundcover. Where dispensing equipment is used, a drip tray must be used to ensure small spills are contained; All empty externally dirty drums must be stored on a drip tray or within a bunded area;						

No unauthorised access into the hazardous substances storage areas must be permitted; No smoking must be allowed within the vicinity of the hazardous storage areas; Adequate fire-fighting equipment must be made available at all hazardous storage areas; Where refueling away from the dedicated refueling station is required, a mobile refueling unit must be used. Appropriate ground protection such as drip trays must be used; An appropriately sized spill kit kept onsite relevant to the scale of the activity/s involving the use of hazardous substance must be available at all times; The responsible operator must have the required training to make use of the spill kit in emergency situations; An appropriate number of spill kits must be available and must be located in all areas where activities are being undertaken; In the event of a spill, contaminated soil must be collected in containers and stored in a central location and disposed of according to the National Environmental Management: Waste Act 59 of 2008. Refer to ***Section 5.7*** for procedures concerning ***storm and waste water management*** and ***5.8*** for ***solid and hazardous waste management.***						

Workshop, equipment maintenance and storage

Impact management outcome: Soil, surface water and groundwater contamination is minimised.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

Where possible and practical all maintenance of vehicles and equipment must take place in the workshop area; During servicing of vehicles or equipment, especially where emergency repairs are effected outside the workshop area, a suitable drip tray must be used to prevent spills onto the soil. The relevant local authority must be made aware of a fire as soon as it starts; Leaking equipment must be repaired immediately or be removed from site to facilitate repair; Workshop areas must be monitored for oil and fuel spills; Appropriately sized spill kit kept onsite relevant to the scale of the activity taking place must be available; The workshop area must have a bunded concrete slab that is sloped to facilitate runoff into a collection sump or suitable oil / water separator where maintenance work on vehicles and equipment can be performed; Water drainage from the workshop must be contained and managed in accordance Section ***5.7: Storm and waste water management***.						

Batching plants

Impact management outcome: Minimise spillages and contamination of soil, surface water and groundwater**.**						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Concrete mixing must be carried out on an impermeable surface; Batching plants areas must be fitted with a containment facility for the collection of cement laden water.						

Dirty water from the batching plant must be contained to prevent soil and groundwater contamination Bagged cement must be stored in an appropriate facility and at least 10 m away from any water courses, gullies and drains; A washout facility must be provided for washing of concrete associated equipment. Water used for washing must be restricted; Hardened concrete from the washout facility or concrete mixer can either be reused or disposed of at an appropriate licenced disposal facility; Empty cement bags must be secured with adequate binding material if these will be temporarily stored on site; Sand and aggregates containing cement must be kept damp to prevent the generation of dust (Refer to ***Section 5.20: Dust emissions***) Any excess sand, stone and cement must be removed or reused from site on completion of construction period and disposed at a registered disposal facility; Temporary fencing must be erected around batching plants in accordance with Section ***5.5: Fencing and gate installation***.						

Dust emissions

Impact management outcome: Dust prevention measures are applied to minimise the generation of dust.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Take all reasonable measures to minimise the generation of dust as a result of project development activities to the satisfaction of the ECO;						

Removal of vegetation must be avoided until such time as soil stripping is required and similarly exposed surfaces must be re-vegetated or stabilised as soon as is practically possible; Excavation, handling and transport of erodible materials must be avoided under high wind conditions or when a visible dust plume is present; During high wind conditions, the ECO must evaluate the situation and make recommendations as to whether dust-damping measures are adequate, or whether working will cease altogether until the wind speed drops to an acceptable level; Where possible, soil stockpiles must be located in sheltered areas where they are not exposed to the erosive effects of the wind; Where erosion of stockpiles becomes a problem, erosion control measures must be implemented at the discretion of the ECO; Vehicle speeds must not exceed 40 km/h along dust roads or 20 km/h when traversing unconsolidated and non-vegetated areas; Straw stabilisation must be applied at a rate of one bale/10 m² and harrowed into the top 100 mm of top material, for all completed earthworks; For significant areas of excavation or exposed ground, dust suppression measures must be used to minimise the spread of dust.						

Blasting

Impact management outcome: Impact to the environment is minimised through a safe blasting practice.		
Impact Management Actions	**Implementation**	**Monitoring**

	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Any blasting activity must be conducted by a suitably licensed blasting contractor; and Notification of surrounding landowners, emergency services site personnel of blasting activity 24 hours prior to such activity taking place on Site.						

Noise

Impact Management outcome: Prevent unnecessary noise to the environment by ensuring that noise from development activity is mitigated.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
The Contractor must keep noise level within acceptable limits, Restrict the use of sound amplification equipment for communication and emergency only; All vehicles and machinery must be fitted with appropriate silencing technology and must be properly maintained; Any complaints received by the Contractor regarding noise must be recorded and communicated. Where possible or applicable, provide transport to and from the site on a daily basis for construction workers; Develop a Code of Conduct for the construction phase in terms of behaviour of construction staff. Operating hours as determined by the environmental authorisation are adhered to during the development phase. Where not defined, it must be ensured that development activities must still meet the impact management outcome related to noise management.						

Fire prevention

Impact management outcome: Prevention of uncontrollable fires.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Designate smoking areas where the fire hazard could be regarded as insignificant; Firefighting equipment must be available on all vehicles located on site; The local Fire Protection Agency (FPA) must be informed of construction activities; Contact numbers for the FPA and emergency services must be communicated in environmental awareness training and displayed at a central location on site; Two way swop of contact details between ECO and FPA.						

Stockpiling and stockpile areas

Impact management outcome: Reduce erosion and sedimentation as a result of stockpiling.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All material that is excavated during the project development phase (either during piling (if required) or earthworks) must be stored appropriately on site in order to minimise impacts to watercourses, watercourses and water bodies; All stockpiled material must be maintained and kept clear of weeds and alien vegetation growth by undertaking regular weeding and control methods;						

Topsoil stockpiles must not exceed 2 m in height; During periods of strong winds and heavy rain, the stockpiles must be covered with appropriate material (e.g. cloth, tarpaulin etc.); Where possible, sandbags (or similar) must be placed at the bases of the stockpiled material in order to prevent erosion of the material.						

Civil works

Impact management outcome: Impact to the environment minimised during civil works to create the substation terrace.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Where terracing is required, topsoil must be collected and retained for the purpose of re-use later to rehabilitate disturbed areas not covered by yard stone; Areas to be rehabilitated include terrace embankments and areas outside the high voltage yards; Where required, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; These areas can be stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; Rehabilitation of the disturbed areas must be managed in accordance with ***Section 5.35: Landscaping and rehabilitation***; All excess spoil generated during terracing activities must be disposed of in an appropriate manner and at a recognised						

landfill site; and Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes.						

Excavation of foundation, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs as a result of excavation of foundation, cable trenching and drainage systems.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All excess spoil generated during foundation excavation must be disposed of in an appropriate manner and at a licensed landfill site, if not used for backfilling purposes; Spoil can however be used for landscaping purposes and must be covered with a layer of 150 mm topsoil for rehabilitation purposes; Management of equipment for excavation purposes must be undertaken in accordance with ***Section 5.18: Workshop, equipment maintenance and storage***; and Hazardous substances spills from equipment must be managed in accordance with ***Section 5.17: Hazardous substances***.						

Installation of foundations, cable trenching and drainage systems

Impact management outcome: No environmental degradation occurs during the installation of foundation, cable trenching and drainage system.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
Batching of cement to be undertaken in accordance with **Section *5.19: Batching plants***; and Residual solid waste must be disposed of in accordance with **Section *5.8: Solid waste and hazardous management***.						

Installation of equipment (circuit breakers, current Transformers, Isolators, Insulators, surge arresters, voltage transformers, earth switches)

Impact management outcome: No environmental degradation occurs as a result of installation of equipment.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Management of dust must be conducted in accordance with Section ***5. 20: Dust emissions***; Management of equipment used for installation must be conducted in accordance with Section ***5.18: Workshop, equipment maintenance and storage***; Management hazardous substances and any associated spills must be conducted in accordance with Section ***5.17: Hazardous substances***; and Residual solid waste must be recycled or disposed of in accordance with ***Section 5.8: Solid waste and hazardous management***.						

Steelwork Assembly and Erection

Impact management outcome: No environmental degradation occurs as a result of steelwork assembly and erection.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
During assembly, care must be taken to ensure that no wasted/unused materials are left on site e.g. bolts and nuts Emergency repairs due to breakages of equipment must be managed in accordance with ***Section 5. 18: Workshop, equipment maintenance and storage*** and ***Section 5.16: Emergency procedures***.						

Cabling and Stringing

Impact management outcome: No environmental degradation occurs as a result of stringing.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Residual solid waste (off cuts etc.) shall be recycled or disposed of in accordance with **Section *6.8: Solid waste and hazardous Management***; Management of equipment used for installation shall be conducted in accordance with **Section *5.18: Workshop, equipment maintenance and storage***; Management hazardous substances and any associated spills shall be conducted in accordance with ***Section 5.17: Hazardous substances***.						

Testing and Commissioning (all equipment testing, earthing system, system integration)

Impact management outcome: No environmental degradation occurs as a result of Testing and Commissioning.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
Residual solid waste must be recycled or disposed of in accordance with ***Section 5.8: Solid waste and hazardous management***.						

Socio-economic

Impact management outcome: enhanced socio-economic development.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
Develop and implement communication strategies to facilitate public participation; Develop and implement a collaborative and constructive approach to conflict resolution as part of the external stakeholder engagement process; Sustain continuous communication and liaison with neighboring owners and residents Create work and training opportunities for local stakeholders; and Where feasible, no workers, with the exception of security personnel, must be permitted to stay over-night on the site. This would reduce the risk to local farmers.						

Temporary closure of site

Impact management outcome: Minimise the risk of environmental impact during periods of site closure greater than five days.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible	Method of	Timeframe for	Responsible	Frequency	Evidence of

	person	implementation	implementation	person		compliance
Bunds must be emptied (where applicable) and need to be undertaken in accordance with the impact management actions included in ***sections 5.17: Hazardous substances and 5.18: Workshop, equipment maintenance and storage***; Hazardous storage areas must be well ventilated; Fire extinguishers must be serviced and accessible. Service records to be filed and audited at last service; Emergency and contact details displayed must be displayed; Security personnel must be briefed and have the facilities to contact or be contacted by relevant management and emergency personnel; Night hazards such as reflectors, lighting, traffic signage etc. must have been checked; Fire hazards identified and the local authority must have been notified of any potential threats e.g. large brush stockpiles, fuels etc.; Structures vulnerable to high winds must be secured; Wind and dust mitigation must be implemented; Cement and materials stores must have been secured; Toilets must have been emptied and secured; Refuse bins must have been emptied and secured; Drip trays must have been emptied and secured.						

Dismantling of old equipment

Impact management outcome: Impact to the environment to be minimised during the dismantling, storage and disposal of old equipment commissioning.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance

All old equipment removed during the project must be stored in such a way as to prevent pollution of the environment; Oil containing equipment must be stored to prevent leaking or be stored on drip trays; All scrap steel must be stacked neatly and any disused and broken insulators must be stored in containers; Once material has been scrapped and the contract has been placed for removal, the disposal Contractor must ensure that any equipment containing pollution causing substances is dismantled and transported in such a way as to prevent spillage and pollution of the environment; The Contractor must also be equipped to contain and clean up any pollution causing spills; and Disposal of unusable material must be at a licensed waste disposal site.						

Landscaping and rehabilitation

Impact management outcome: Areas disturbed during the development phase are returned to a state that approximates the original condition.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
All areas disturbed by construction activities must be subject to landscaping and rehabilitation; All spoil and waste must be disposed of to a registered waste site; All slopes must be assessed for contouring, and to contour only when the need is identified in accordance with the Conservation of Agricultural Resources Act, No 43 of 1983 All slopes must be assessed for terracing, and to terrace only when the need is identified in accordance with the Conservation						

of Agricultural Resources Act, No 43 of 1983; Berms that have been created must have a slope of 1:4 and be replanted with indigenous species and grasses that approximates the original condition; Where new access roads have crossed cultivated farmlands, that lands must be rehabilitated by ripping which must be agreed to by the holder of the EA and the landowners; Rehabilitation of access roads outside of farmland; Indigenous species must be used for with species and/grasses to where it compliments or approximates the original condition; Stockpiled topsoil must be used for rehabilitation (refer to ***Section 5.24: Stockpiling and stockpiled areas***); Stockpiled topsoil must be evenly spread so as to facilitate seeding and minimise loss of soil due to erosion; Before placing topsoil, all visible weeds from the placement area and from the topsoil must be removed; Subsoil must be ripped before topsoil is placed; The rehabilitation must be timed so that rehabilitation can take place at the optimal time for vegetation establishment; Where impacted through construction related activity, all sloped areas must be stabilised to ensure proper rehabilitation is effected and erosion is controlled; Sloped areas stabilised using design structures or vegetation as specified in the design to prevent erosion of embankments. The contract design specifications must be adhered to and implemented strictly; Spoil can be used for backfilling or landscaping as long as it is covered by a minimum of 150 mm of topsoil. Where required, re-vegetation including hydro-seeding can be enhanced using a vegetation seed mixture as described below. A mixture of seed can be used provided the mixture is						

carefully selected to ensure the following: a) Annual and perennial plants are chosen; b) Pioneer species are included; c) Species chosen must be indigenous to the area with the seeds used coming from the area; d) Root systems must have a binding effect on the soil; e) The final product must not cause an ecological imbalance in the area						

ACCESS TO THE GENERIC EMPr

Once completed and signed, to allow the public access to the generic EMPr, the holder of the EA must make the EMPr available to the public in accordance with the requirements of Regulation 26(h) of the EIA Regulations.

-+----------PART B: SECTION 2

SITE SPECIFIC INFORMATION AND DECLARATION

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

7.1.1 Details of the applicant:

Mukondeleli Wind (RF) (Pty) Ltd is the project proponent (Applicant) with regards to the application for the construction and operation of the Mukondeleli WEF.

PROPONENT: **MUKONDELELI WIND (RF) PTY LTD**

Contact Person:	Mercia Grimbeek
Postal Address	Suite 104, The Albion Springs Office Park, 183 Main Road, Rondebosch, Cape Town
Telephone:	071 752 8033
Email:	Kyle.Swartz@enertrag.com

7.1.2 Details and expertise of the EAP:

WSP was appointed in the role of Independent EAP to undertake the S&EIA processes for the proposed construction of the Mukondeleli WEF. The CV of the EAP is available in Appendix A. The EAP declaration of interest and undertaking is included in Appendix B.

EAP **WSP GROUP AFRICA (PTY) LTD**

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

EAP	**WSP GROUP AFRICA (PTY) LTD**
Fax:	011 361 1301
Email:	Ashlea.Strong@wsp.com

7.1.3 Project name:

Proposed Mukondeleli Wind Energy Facility

7.1.4 Description of the project:

The proposed Mukondeleli WEF is located approximately 8km south of Secunda in the Gert Sibande District Municipality and the GMM Local Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa.

The proposed Mukondeleli WEF will be developed with an installed capacity of up to 300 MW for export from the facility. The proposed Mukondeleli WEF will comprise the following key components, as outlined in **the Table below**

TECHNICAL DETAILS OF THE PROPOSED MUKONDELELI WEF FACILITY

Export Capacity	Up to 300 MW
Number of Turbines	Up to 42
Development Footprint (Buildable Area)	Approximately 100 ha
Project Area (Assessed Area)	Approximately 3600 ha
Turbine hub height	Up to 200m
Rotor diameter	Up to 200m
Turbine foundation	25m diameter x 3m deep
Permanent hard standing area for each wind turbine	Approximately 1 500m² per turbine. Error! Reference source not found. illustrates the typical hardstanding requirements for the construction of each turbine (it should be noted that the figure below is for illustration purposes only – the exact layout and specification of the hardstanding will be determined once the design phase has been completed).
Onsite substation and Battery Energy Storage System (BESS)	— Combined footprint of up to 4ha — Storage capacity will be up to 300MW / 1200 megawatt-hour (MWh) with up to four hours of storage — Lithium Battery (Lithium Iron Phosphate, Lithium Nickel Manganese Cobalt oxides) or Vanadium Redox Flow Technologies. Specific BESS technology to be determined following EPC procurement prior to construction. — Main components include the batteries, power conversion system and transformer which will all be stored in various rows of containers — BESS components will arrive on site pre-assembled.
Operations and Maintenance Building Infrastructure	Operations and maintenance (O&M) building infrastructure will be required to support the functioning of the WEF and for services required by operations and maintenance staff. The O&M building infrastructure

	will be in close proximity to the site substation and will include: — Operations building of approximately 200m^2; — Workshop and stores area of approximately 300m^2; and — Refuse area for temporary waste storage and conservancy tanks to service ablution facilities.
Construction Camp Laydown, batching plant, concrete wind tower factory, laydown areas	— Construction camp laydown and concrete batching plant footprint of up to 3ha; — Concrete wind tower plant of approximately 10ha (if necessary), comprising amongst others, a concrete storage area, batching plant, electrical infrastructure and substation, generators and fuel stores, gantries and loading facilities, offices, material stores (rebar, concrete, aggregate and associated materials), mess rooms, workshops, laydown and storage areas, sewage and toilet facilities, offices and boardrooms, labour mess and changerooms, mixers, moulds and casting areas, water and settling tanks, pumps, silos and hoppers, a laboratory, parking areas, internal and access roads; — Temporary laydown area of up to 4.5ha for the storage of equipment, materials, fuels, cement, chemicals etc; and — Sewage: conservancy tanks and portable toilets.
Access road	Via R546
Length of internal roads	To be determined based on the final layout
Width of roads	Up to 10m, including turning circle/bypass areas of up to 20m. The roads and cables will be positioned within a 20m wide corridor.
Height of fencing	Up to 3m high
Specifications of onsite switching stations, transformers, invertors, onsite cables etc	The medium voltage collector system will comprise of cables up to and including 33kV that run underground, except where a technical assessment suggest that overhead lines are required, within the facility connecting the turbines to the onsite substation
Other associated infrastructure	Lighting, lightning protection, telecommunication infrastructure, storm water channels, water pipelines, offices, operational control centre, Operation and Maintenance Area / Warehouse / workshop, Ablution facilities, a gate house, control centre, offices, warehouses, security building, a visitor's centre; and substation building

7.1.5 Project location:

The proposed Mukondeleli WEF is located approximately 8km south of Secunda in the Gert Sibande District Municipality and the GMM Local Municipality, near the town of Secunda, in the Mpumalanga Province of South Africa.

The proposed Mukondeleli WEF is not located within one of the promulgated Renewable Energy Development Zones (REDZ). Furthermore, only four renewable energy projects are located within a 55km radius of the site, namely:

— The authorised Tutuka 65.9 MW Solar Photovoltaic (PV) Energy Facility and its associated infrastructure (Ref: 14/12/16/3/3/2/754) located 23km southwest of the site;
— The authorised Forzando North Coal Mine Solar PV Facility, 9.5MW, (Ref: 14/12/16/3/3/1/452) is located 55km northwest of the site; and
— The proposed Impumelelo WEF to be located southeast of the site.
— The proposed Vhuvhili Solar Energy Facility (NEAS No. MPP/EIA/0001063/2022) located approximately 10km east of the site.

The locality of the Mukondeleli WEF is included in **Figure 1**. The Mukondeleli WEF project site, along with the main components, is indicated in **Figure 2**. The details of the properties associated with the proposed Mukondeleli WEF, including the 21-digit Surveyor General (SG) codes for the cadastral land parcels are outlined in table below**.**

FARM NAME	**21 DIGIT SURVEYOR GENERAL CODE OF EACH CADASTRAL LAND PARCEL**
Portion 0 of the Farm Knoppies No. 314	T0IS00000000031400000
Portion 1 of the Farm van Tondershoek No. 317	T0IS00000000031700001
Portion 2 of the Farm van Tondershoek No. 317	T0IS00000000031700002
Portion 2 of the Farm Brandwacht No. 316	T0IS00000000031600002
Portion 2 of the Farm Bosjesspruit No. 291	T0IS00000000029100002
Portion 3 of the Farm Brandwacht No. 316	T0IS00000000031600003
Portion 4 of the Farm Brandwacht No. 316	T0IS00000000031600004
Portion 5 of the Farm Brandwacht No. 316	T0IS00000000031600005
Portion 5 of the Farm Tweefontein No. 321	T0IS00000000032100005
Portion 6 of the Farm Bosjesspruit No. 291	T0IS00000000029100006
Portion 7 of the Farm van Tondershoek No. 317	T0IS00000000031700007
Portion 8 of the Farm van Tondershoek No. 317	T0IS00000000031700008
Portion 11 of the Farm van Tondershoek No. 317	T0IS00000000031700011
Portion 8 of the Farm Bosjesspruit No. 291	T0IS00000000029100008
Portion 9 of the Farm Knoppiesfontein No. 313	T0IS00000000031300009
Portion 9 of the Farm Bosjesspruit No. 291	T0IS00000000029100009
Portion 10 of the Farm Bosjesspruit No. 291	T0IS00000000029100010
Portion 11 of the Farm Bosjesspruit No. 291	T0IS00000000029100011
Portion 12 of the Farm Bosjesspruit No. 291	T0IS00000000029100012
Portion 12 of the Farm van Tondershoek No. 317	T0IS00000000031700012
Portion 13 of the Farm Brandwacht No. 316	T0IS00000000031600013
Portion 13 of the Farm Bosjesspruit No. 291	T0IS00000000029100013
Portion 14 of the Farm Bosjesspruit No. 291	T0IS00000000029100014

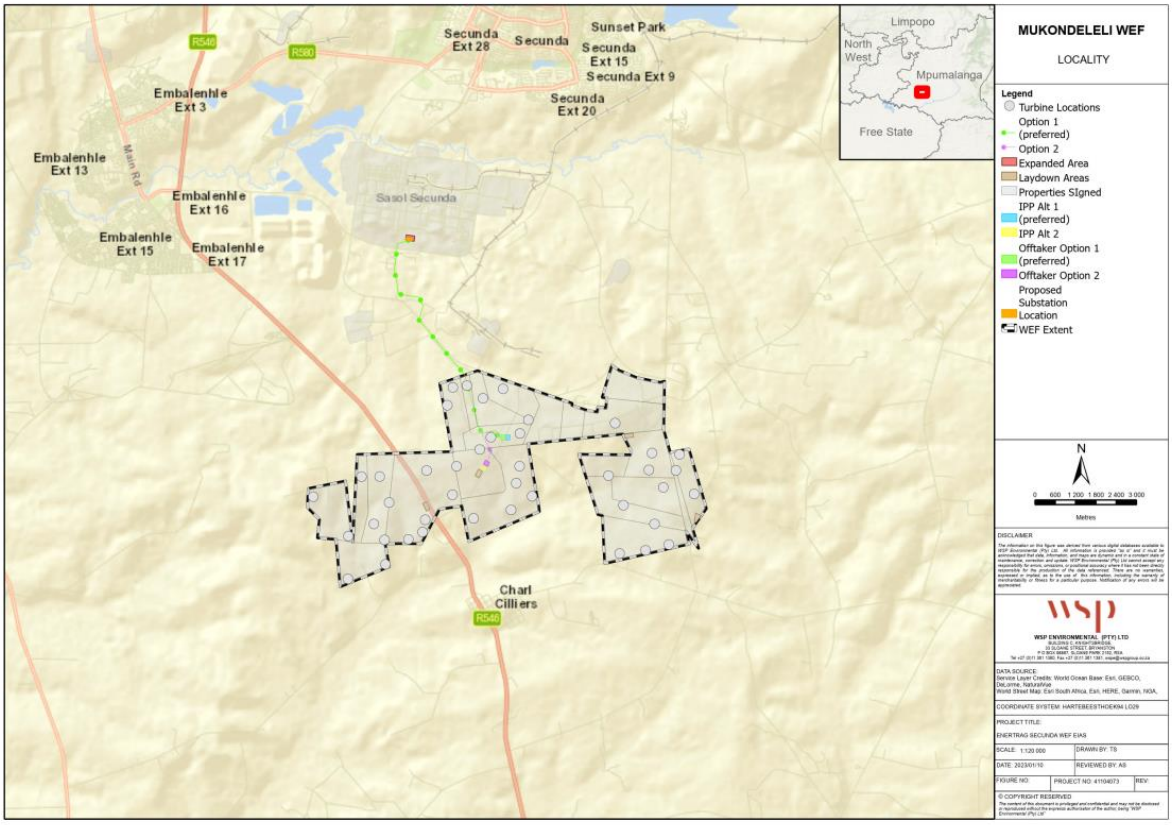


Figure 1: Locality map for the proposed Mukondeleli WEF

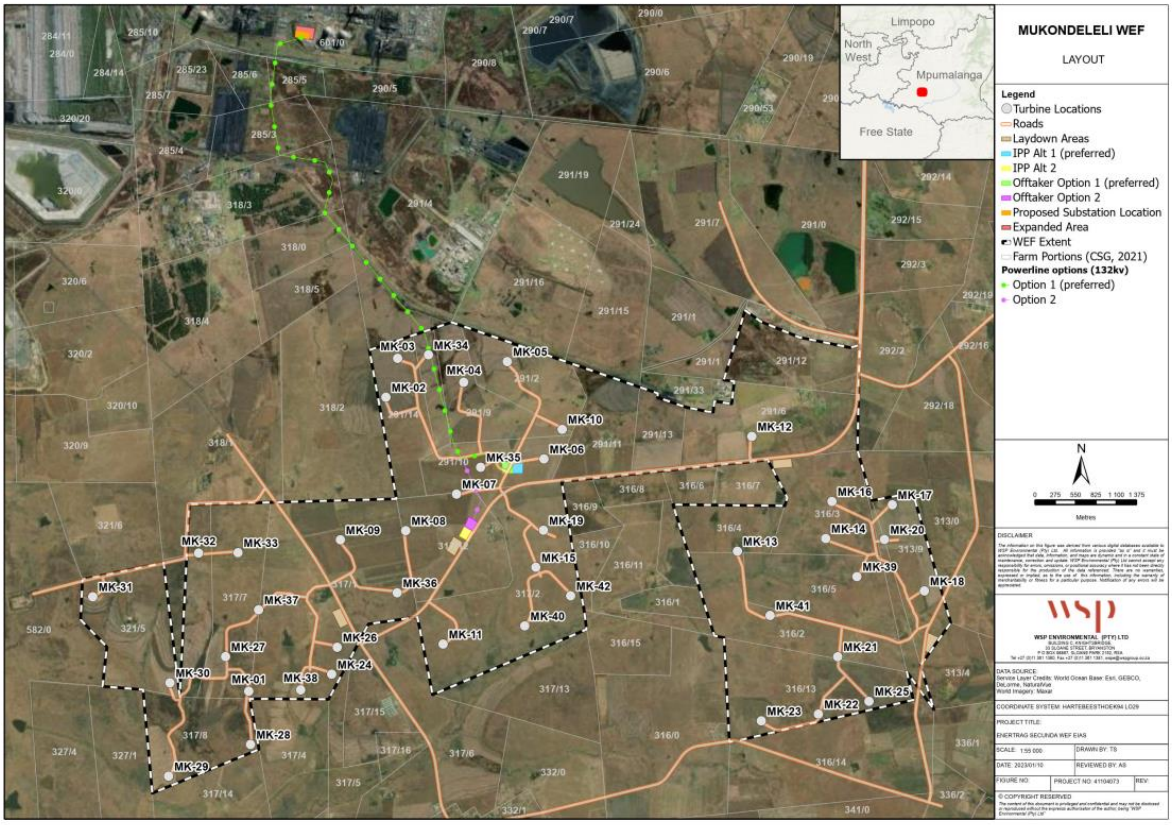
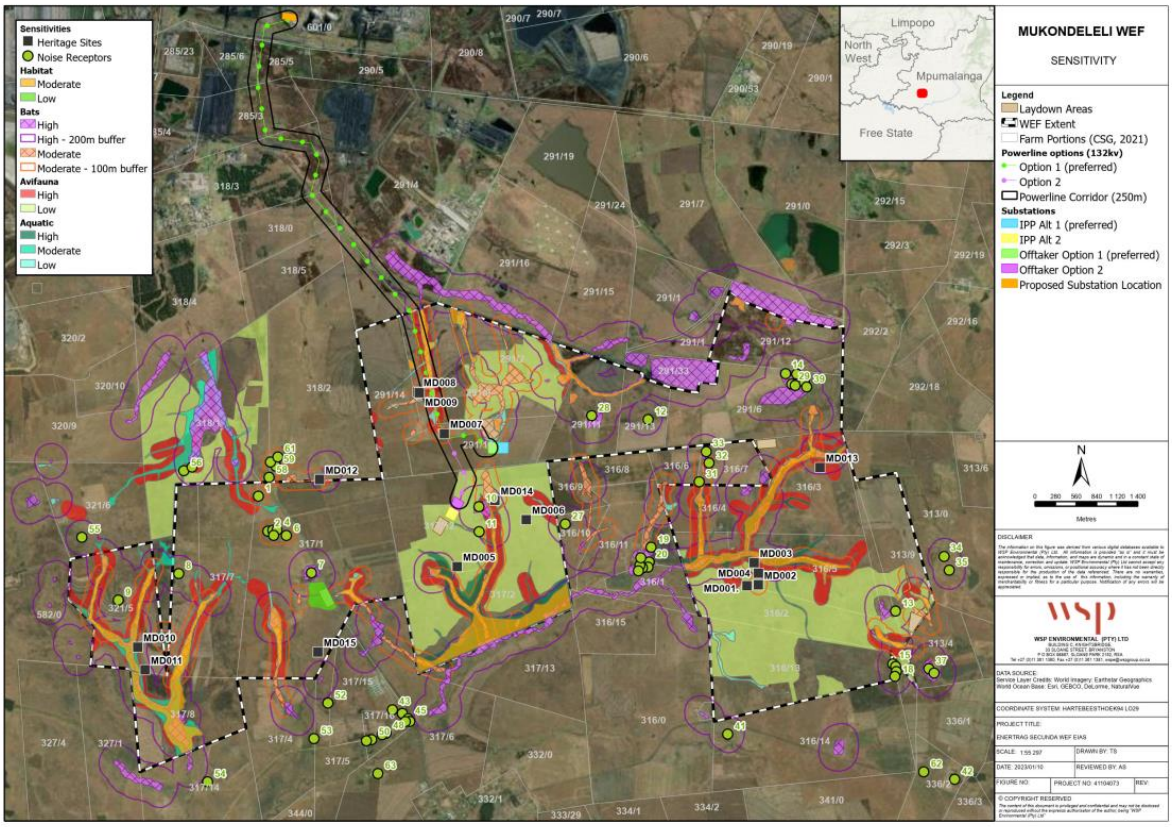


Figure 2: Proposed Mukondeleli WEF and associated main components

Sub-section 2: Development footprint site map

This sub-section must include a map of the site sensitivity overlaid with the preliminary infrastructure layout. The sensitivity map must be prepared from the national web based environmental screening tool, when available for compulsory use at: https://screening.environment.gov.za/screeningtool. The sensitivity map shall identify the nature of each sensitive feature e.g. threatened plant species, archaeological site, etc. Sensitivity maps shall identify features both within the planned working area and any known sensitive features within 50 m from the development footprint.



Sub-section 3: Declaration

The proponent/applicant or holder of the EA affirms that he/she will abide and comply with the prescribed impact management outcomes and impact management actions as stipulated in part B: section 1 of the generic EMPr and have the understanding that the impact management outcomes and impact management actions are legally binding. The proponent/applicant or holder of the EA affirms that he/she will provide written notice to the CA 14 day prior to the date on which the activity will commence of commencement of construction to facilitate compliance inspections.

DocuSigned by:
AAB2348FC01041E...

Signature Proponent/applicant/ holder of EA

Mercia Grimbeek

14/3/2023

Date:

Sub-section 4: amendments to site specific information (Part B; section 2)

Should the EA be transferred to a new holder, Part B: Section 2 must be completed by the new holder and submitted with the application for an amendment of the EA in terms of Regulations 29 or 31 of the EIA Regulations, whichever applies. The information submitted for an amendment to an environmental authorisation will be considered to be incomplete should a signed copy of Part B: Section 2 not be submitted. Once approved, Part B: Section 2 forms part of the EMPr for the development and the EMPr becomes legally binding to the new EA holder.

PART C

SITE SPECIFIC ENVIRONMENTAL ATTRIBUTES

If any specific environmental sensitivities/attributes are present on the site which require more specific impact management outcomes and actions, not included in the pre-approved generic EMPr template, to manage impacts, those impact management outcomes and impact management actions must be included in this section. These specific management controls must be referenced spatially, and must include impact management outcomes and impact management actions. The management controls including impact management outcomes and impact management actions must be presented in the format of the pre-approved generic EMPr template. This applies only to additional impact management outcomes and impact management actions that are necessary.

If Part C is applicable to the development as authorised in the EA, it is required to be submitted to the CA together with the BAR or EIAR, for consideration of, and decision on, the application for EA. The information in this section must be prepared by an EAP and the name and expertise of the EAP, including the curriculum vitae are to be included. Once approved, Part C forms part of the EMPr for the site and is legally binding.

This section will **not be required** should the site contain no specific environmental sensitivities or attributes.

There are sensitivities identified, in terms of terrestrial biodiversity, with regards to the on-site substation and BESS locations (both alternative sites).

In addition to the applicable mitigation measures included generic EMPr template, the following additional measures, with regards to vegetation clearing have been recommended in the Table below.

These mitigations were provided by the following Specialist, including and extract of the Specialists' details and expertise. The below is an extract of the Specialist's details and expertise. The Specialist's CV is contained in Appendix F of the Terrestrial Biodiversity Assessment Report (included in **Appendix H-4 of the EIR**).

Terrestrial Biodiversity Specialist,.

Specialist	Qualification and accreditation
Dr Noel van Rooyen and Prof. Gretel van Rooyen (Ekotrust CC)	Botanical Scientist : Pr.Sci.Nat; Reg no. 401430/83 Academic qualifications include BSc (Agric), BSc (Honours), MSc (1978) and DSc degrees (1984) in Plant Ecology at the University of Pretoria, South Africa

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Impact management outcome: Prevent the unnecessary destruction of, and fragmentation, of the vegetation community.						
Impact Management Actions	**Implementation**			**Monitoring**		
	Responsible person	Method of implementation	Timeframe for implementation	Responsible person	Frequency	Evidence of compliance
- A preconstruction walk-through of the development footprint for the purpose of turbine and crane pad micrositing could ensure that no SCC are present at these sites. - As far as possible avoid placing of turbines and other large infrastructure in CBAs. - MK11, MK24, MK26, MK28, MK36, MK37 & MK39 must be microsited prior to approval of final layout such that the site can be groundtruthed and any sensitive areas are avoided. - Construction crew, in particular the drivers, should undergo environmental training (induction) to increase their awareness of environmental concerns. This includes awareness as to remaining within demarcated construction areas, no						

littering, handling of pollution and chemical spills, avoiding fire hazards and minimising wildlife interactions - Ensure that all temporary use areas e.g. laydown areas and construction camp, are located in areas of low sensitivity. - Footprints of the turbines, crane pads, roads, construction and substation locations should be clearly demarcated. Vegetation clearance should be confined to the footprint of the development and unnecessary clearance should be avoided. - Watercourses, wetlands, rocky outcrops/sheets should be avoided (Habitats 1 & 7). - Observe buffer zones along drainage lines (see report of aquatic specialist). - All vehicles are to remain on demarcated roads and no driving through the veld should be allowed. - The ECO is to provide supervision on vegetation clearing activities and other activities that may cause damage to the environment, especially when construction commences and most						

vegetation clearing is taking place. - River/stream crossings should be placed in areas without extensive wetlands and preferably in areas where the risk of disruption and erosion is low. All river/stream crossings should be inspected by the aquatic specialist to ensure that optimal and acceptable locations have been chosen for river crossings. River/stream crossings should be specifically designed not to impede or disrupt the direction and flow of the water. Specific guidelines of the aquatic specialist should be followed - No plants may be translocated or otherwise uprooted or disturbed without express permission from the ECO - Placement of infrastructure should be done in such a way as to minimise the impact on protected species. - The construction crew should undergo environmental training (induction) to make them aware of the importance of protected species. - Implement a monitoring program for the early detection of alien invasive plant species						

- A control program should be employed to combat declared alien invasive plant species in the most environmentally friendly manner that does not result in undesirable secondary impacts - Herbicides for the control of alien species should be applied according to the relevant instructions and by appropriately trained personnel - No alien species should be used in rehabilitation or landscaping - Use only plants and seed collected on-site for revegetation - Cleared areas may need to be fenced-off during rehabilitation to exclude livestock and wildlife. - Material brought onto site e.g. building sand should be regularly checked for the germination of alien species						

APPENDIX 1: METHOD STATEMENTS

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