ABO WIND UJEKAMANZI WIND ENERGY FACILITY 1 (PTY) LTD

Proposed Development of the ABO Ujekamanzi Wind Energy Facility 1 and Associated Infrastructure near Amersfoort in the Mpumalanga Province

Draft Scoping Report

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Client:	ABO Wind Ujekamanzi Wind Energy Facility 1 (Pty) Ltd

Confidentiality Statement

KEY PROJECT INFORMATION

PROJECT DESCRIPTION

The application site assessed during the scoping phase (which incorporates the farm portions / properties listed above) is approximately 13 489 hectares (ha) in extent.

At this stage it is anticipated that the proposed ABO Ujekamanzi WEF 1 will comprise up to sixty-five (65) wind turbines with a maximum total energy generation capacity of up to approximately 650MWac. Each of the wind turbines will have an output capacity of up to 10 megawatt (MWac). The total number of wind turbines and total combined generation of the WEFs will be confirmed at a later stage as the Applicant currently requires authorisation for a buildable area. In summary, the proposed ABO Ujekamanzi WEF 1 development will include the following components:

Wind Turbines:

- The number of turbines will be determined at a later stage. The client is currently requesting authorisation for a buildable area.
- Each wind turbine will have an energy generation output of up to 10 MW.
- The hub height from the ground will be up to 180 m.
- Each wind turbine will have a rotator diameter up to 200 m.
- Each wind turbine will have a blade length up to 100m.
- The total footprint of turbine and laydown area of up to approximately 1 ha per turbine (but turbine-dependent).
- General temporary Hardstand Area (boom erection, storage, and assembly area) (also known as crane pads) will have an area of approximately 1 ha per turbine.
- Each wind turbine will have a foundation size of up to 1 ha – may be able to rehabilitate some of this area.

Roads:

- The width of internal access roads will be up to 10m. Circles / bypass will be confirmed at a later stage; and will be Wind Turbine Generator (WTG) specific.
- The length and site access points will be confirmed at a later stage.
- Existing access roads will be upgrade where necessary to a width of up to 10 m.

Construction Compounds and Laydown Areas:

- The temporary construction period laydown / staging area will have an area of approximately 10 ha.

Operational and Maintenance (O&M) Control Centre Building Area:

- The O&M Control Centre Building Area will be located within the on-site Substation Hub and will have a footprint of up to 1 ha.

On-site Substation Hub:

- The proposed project will include one on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.
- The on-site Substation Hub will have a footprint of up to 19 ha.
- The capacity for the on-site Substation Hub for WEF 1 and 2 will be 33/132 kV.
- The height of the on-site Substation Hub will be up to 10 m.
- The height of the communications tower will be up to 32 m – will be confirmed at a later stage.

Battery Storage:

- The battery technology type will comprise of electrochemical batteries and will include Lead Acid and Advanced Lead Acid, Lithium ion, NiCd, NiMH-based Batteries, High Temperature (NaS, Na-NiCl2, Mg/PB-Sb), Flow Batteries (VRFB, Zn-Fe, Zn-Br).
- The BESS would therefore comprise the selected batteries together with chargers, inverters, and related equipment.
- The BESS will be located within the on-site Substation Hub and will have a approximate footprint of up to 5 ha.
- The height of the BESS will be up to 8 m
- The BESS will have a capacity 500MW/500MWh.

Internal transmissions and / or distribution lines on site:

- The internal transmission / distribution lines on site will be located underground, unless not possible due to environmental reasons.
- The capacity of the transmission / distribution lines will typically be 33 kV.
- Cables to be buried along access roads, where feasible, with overhead 33kV lines grouping turbines to crossing valleys and ridges outside of the road footprints to get to the on-site substation – to be confirmed at a later stage.
- If below, the maximum depth of up to 1 m.
- The length of the transmission / distribution lines to follow internal site roads which will be confirmed at a later stage.

Perimeter Fencing:

- The height and type of material that will be used for perimeter fencing will be confirmed at later stage.

Wind Monitoring Mast:

- Currently 2 met masts are installed.

Component	Description / Dimensions
Location of site (centre point)	26°49'48.232"S 29°58'28.191"E
Application site area	13489 ha

Component	Description / Dimensions
Total Ujekamanzi WEF area	Approximately 25 920ha
Turbine development area	Up to approximately 1ha per turbine
SG codes (Project Area)	T0IS00000000047600005 T0IS00000000050000000 T0IS00000000050000002 T0IS00000000050000007 T0IS00000000050000008 T0IT00000000033300001 T0IT00000000033300009 T0IT00000000033500010 T0IS00000000049700010 T0IS00000000050000009 T0IS00000000049900000 T0IT00000000033400014 T0IT00000000033400015 T0IS00000000050000001 T0IT00000000033400008 T0IT00000000033400010 T0IT00000000033400009 T0IS00000000049800001 T0IS00000000049700011 T0IS00000000049800000 T0IS00000000047600002 T0IS00000000047600021 T0IS00000000047600022 T0IT00000000033300004 T0IT00000000033300005 T0IT00000000033300006 T0IS00000000053600003 T0IS00000000053600004 T0IS00000000053600006 T0IT00000000037300004 T0IT00000000037300005 T0IS00000000053600005 T0IS00000000049700009 T0IS00000000050600000 T0IS00000000047500000 T0IS00000000047600003 T0IT00000000033500005 T0IT00000000033500006 T0IT00000000033500007 T0IT00000000033500011 T0IS00000000047500002 T0IS00000000047500003 T0IS00000000047600001 T0IS00000000047600011

Component	Description / Dimensions
	T0IS00000000047600012 T0IS00000000047600025 T0IS00000000049700016 T0IS00000000047600007 T0IS00000000047600013 T0IT00000000036800001 T0IT00000000036800002 T0IT00000000036800003 T0IS00000000050300001 T0IS00000000050300004 T0IS00000000050300005 T0IT00000000036800004 T0IT00000000036800005 T0IT00000000036800007 T0IT00000000036800008 T0IT00000000036800018 T0IT00000000037000001
Export capacity	Up to 650MWac
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Up to 180 m
Rotor diameter	Up to 200 m
On-site substation hub	Approximately 19 ha
O&M building area	Approximately 1 ha (to be included within the in-site substation hub)
Temporary construction period laydown / staging area	Up to 1 ha
Hard stand areas	1 ha per turbine
Width of internal access roads	Up to 10 m
Length of internal access roads	To be confirmed during the detailed design phase
Site Access	This access option is at an existing gravel road connecting with the N11
Proximity to grid connection	The MTS and LILO (part of a separate EIA) fall within the site boundary of the ABO Ujekamanzi WEF 1.
Height of fencing (for substation)	To be confirmed during the detailed design phase.
Type of fencing (for substation)	To be confirmed during the detailed design phase.

ABO UJEKAMANZI WEF: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	SOUTH	EAST
1	26°51'16.947"S	29°53'15.656"E
2	26°51'28.899"S	29°53'4.802"E

ABO UJEKAMANZI WEF: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
3	26°51'8.668"S	29°52'52.359"E
4	26°50'52.751"S	29°52'57.931"E
5	26°50'48.155"S	29°53'31.242"E
6	26°49'33.71"S	29°53'51.548"E
7	26°48'59.736"S	29°53'16.996"E
8	26°48'53.016"S	29°54'21.455"E
9	26°47'55.18"S	29°54'13.962"E
10	26°47'44.512"S	29°54'40.309"E
11	26°47'48.567"S	29°54'46.227"E
12	26°48'12.599"S	29°54'43.019"E
13	26°48'11.167"S	29°55'58.247"E
14	26°46'43.316"S	29°55'17.375"E
15	26°46'34.68"S	29°55'24.157"E
16	26°46'20.625"S	29°55'21.312"E
17	26°46'13.28"S	29°55'22.125"E
18	26°47'59.178"S	29°56'3.572"E
19	26°47'10.214"S	29°57'8.808"E
20	26°47'27.758"S	29°57'31.73"E
21	26°46'31.857"S	29°58'3.51"E
22	26°46'50.05"S	29°58'24.193"E
23	26°46'31.331"S	29°58'32.233"E
24	26°46'56.048"S	30°0'2.502"E
25	26°48'40.287"S	29°59'39.935"E
26	26°48'24.167"S	30°0'55.159"E
27	26°46'52.824"S	30°0'55.159"E
28	26°46'56.048"S	30°1'37.069"E
29	26°49'46.913"S	30°2'28.651"E
30	26°48'58.589"S	30°3'33.685"E
31	26°48'42.087"S	30°4'8.425"E
32	26°50'18.883"S	30°4'49.542"E
33	26°51'17.989"S	30°3'7.606"E
34	26°51'31.695"S	30°3'11.889"E
35	26°51'51.397"S	30°2'36.768"E
36	26°52'10.242"S	30°2'59.04"E
37	26°52'25.661"S	30°2'53.9"E
38	26°52'46.219"S	30°1'30.81"E
39	26°52'39.053"S	30°0'54.598"E
40	26°52'35.26"S	30°0'48.83"E
41	26°52'36.059"S	30°0'48.294"E

ABO UJEKAMANZI WEF: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
42	26°52'34.239"S	30°0'43.796"E
43	26°52'28.029"S	30°0'11.567"E
44	26°52'3.187"S	29°59'47.26"E
45	26°51'27.21"S	29°59'21.883"E
46	26°52'42.276"S	29°58'39.573"E
47	26°53'32.209"S	29°58'58.57"E
48	26°51'10.126"S	29°57'27.87"E
49	26°52'23.614"S	29°55'19.63"E
50	26°51'39.253"S	29°54'47.08"E
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
51	26°49'48.232"S	29°58'28.191"E

ABO UJEKAMANZI WIND ENERGY FACILITY 1

DRAFT SCOPING REPORT

EXECUTIVE SUMMARY

INTRODUCTION AND PROJECT DESCRIPTION

ABO Wind Ujekamanzi Wind Energy Facility 1 (Pty) Ltd (The Applicant) is proposing to construct the ABO Ujekamanzi Wind Energy Facility (WEF) 1 and associated infrastructure approximately 20 km north-east of Amersfoort in the Dr Pixley Ka Isaka Seme Local Municipality, in Mpumalanga (**Figure 1**) (**DFFE Reference Number**: **TBA**). The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing wind energy to feed into the national grid. The proposed development will have a maximum total generation capacity of up to 650 megawatt (MWac).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for the proposed construction and operation of the ABO Ujekamanzi WEF 1 and associated infrastructure. The proposed development requires an (Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE). The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

One additional WEF is concurrently being considered on the adjacent properties and are assessed by way of a separate impact assessment process contained in the 2014 Environmental Impact Assessment Regulations (GN No. R982, as amended) for listed activities contained within Listing Notices 1, 2 and 3 (GN R983, R984 and R985, as amended). This project is known as the ABO Ujekamanzi Wind Energy Facility 2 (**DFFE Reference Number: TBA**).

The grid connection development, is also being proposed by the developer, namely ABO Wind Renewable Energies (Pty) Ltd, and includes the proposed construction of an onsite 400 kV Loop-In-Loop-Out (LILO) Power Line from the existing 400 kV Overhead Power Line to the proposed Main Transmission Substation (MTS) in order to feed electricity generated by the above-mentioned wind farm cluster development (part of separate respective applications for each WEF) into the national grid, which will be assessed in separate EIA's to be submitted to the Department of Agriculture, Rural Development and Environmental Affairs (DARDLEA) (**DARDLEA Reference Number: To be Allocated**).

The overall objective of the proposed ABO Ujekamanzi WEF projects (which includes the 2 WEFs, Main Transmission Substation, Loop In Loop Out Power Line and associated infrastructure) is to generate electricity by means of renewable energy technologies, capturing wind energy to feed into the national

grid, which will be procured under either the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), other government run procurement programmes, any other program it intends to supply power to or for sale to private entities, if required. To further ensure efficient power delivery, the facility will also incorporate the use of storage technologies like battery energy storage systems (i.e. BESS).

APPLICABILITY OF NEMA EIA REGULATIONS, 2014 (AS AMENDED IN 2017)

The following activities are applied for:

Activity No(s):	Relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.
11 (i)	**GN R. 983 (as amended) Item 11:** 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;
12 (ii)	**GN R. 983 (as amended) Item 12:** 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; -
19	**GN R. 983 (as amended) Item 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;
24 (ii)	**GN R. 983 (as amended) Item 24:** 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;
28 (ii)	**GN R. 983 (as amended) Item 28:** 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;
48 (i) (a) (c)	**GN R. 983 (as amended) Item 48:** 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; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;

56 (ii)	**GN R. 983 Item 56:** 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 –
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended.**
3 f. 1 (bb) (ee)	**GN R. 985 (as amended) Item 3:** The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower— (a) is to be placed on a site not previously used for this purpose; and (b) will exceed 15 metres in height— f. Mpumalanga i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
4 f. ii (bb) (dd)	**GN R. 985 (as amended) Item 4:** The development of a road wider than 4 metres with a reserve less than 13,5 metres. **f. Mpumalanga** ii. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
12 f. ii.	**GN R. 985 (as amended) Item 12:** The clearance of an area of 300 square meters or more of indigenous vegetation **f. Mpumalanga** ii Within critical biodiversity areas identified in bioregional plans;
14 (ii) (a) (c); f. i. (bb) (ff)	**GN R. 985 (as amended) Item 14:** The development of – (ii) infrastructure or structures with a physical footprint of 10 square meters or more; where such development occurs – (a) within a watercourse; (c) if no development setback has been adopted, within 32 meters of a watercourse, measured from the edge of a watercourse; **g. Mpumalanga** i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;

18 f. i. (bb) (ee)	**GN R. 985 (as amended) Item 18:** The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- **f. Mpumalanga** i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
23 (ii) (a) (c); f. ii. (ee) (gg)	**GN R. 985 (as amended) Item 23:** 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** ii. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;
Activity No(s):	**Provide the relevant Scoping and EIR Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended.**
1	**GN R. 984 (as amended) Item 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,
15	**GN R. 984 (as amended) Item 15**: The clearance of an area of 20 hectares or more of indigenous vegetation

DETAILS OF ALTERNATIVES CONSIDERED

Prior to the initiation of the EIA, alternative properties / sites were considered for the location of the proposed development. As discussed above, the selection of a potential wind farm site includes several key aspects including wind resource, grid connection suitability/infrastructure as well as environmental and social constraints, proximity to various planning units and strategic areas and topography and access. This proposed project site was selected based on the above criteria ahead of other regional properties / sites due to the cumulative assessment of all criteria. This internal process takes several weeks to complete and ensures that the least environmentally sensitive property / site is selected in the specific region of development.

Based on the reasons above no site alternatives have been considered during the EIA process for this proposed development. The placement of wind energy facilities is dependent on the factors discussed above, all of which are favourable at the proposed site location. The proposed project site has topography which is suitable for the development of a WEF. In addition, the proposed project site also is easily accessible off the N11. The site is therefore considered highly suitable for the proposed development of a WEF, and no other locations have been considered.

The no-go alternative will result in the current status quo being maintained as far as the avifauna, bats, ecological and the aquatic systems are concerned. The no-go option would therefore eliminate any additional impact on the ecological integrity of the proposed development site. The no-go option would also mean that the social environment is not affected as the status quo remains. This also means that all the positive aspects associated with the project would not materialise. Consequently, there would be no job creation, no revenue streams into the local economy and municipal coffers, and a lost opportunity to enhance the National Grid with a renewable source of energy.

POTENTIAL IMPACTS IDENTIFIED

Planning

None Identified.

Construction Phase

Environmental Aspect	Potential Impact
Agricultural	• Occupation of land: ○ Agricultural land directly occupied by the development infrastructure will become restricted for agricultural use, with consequent potential loss of agricultural productivity for the duration of the project lifetime.

	• Soil erosion and degradation:
	  ○ Erosion can occur as a result of the alteration of the land surface run-off characteristics, predominantly through the establishment of hard surface areas including roads.
	  ○ Loss of topsoil can result from poor topsoil management during construction related excavations.

	• Interference with farming operations - Construction activities are likely to have some nuisance impact for farming operations but are highly unlikely to have an impact on agricultural production. •
Aquatic Biodiversity	• Disturbance and possibly loss of aquatic habitats within the watercourses with the associated impact to sensitive aquatic biota.
	• The removal of indigenous riparian and instream vegetation has the potential to reduce the ecological integrity and functionality of the watercourses.
	• Demand for water for construction could place stress on the existing available water resources.
	• Road crossing structures if not adequately designed could impede flow in the watercourses.
	• Alien vegetation infestation within the aquatic features due to disturbance.
	• Increased sedimentation and risks of contamination of surface water runoff during construction
Avifaunal	• Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure.
	• Displacement due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.

Environmental Aspect	Potential Impact
Bat	• Direct Habitat and Roost Destruction - Clearing of vegetation and/or destruction of roosting structures (especially large, mature trees, rocky outcrops, and buildings) for roads and infrastructure.
	• Roost Disturbance and Displacement - Disturbance of bats or bat roosts from construction activities by way of excessive noise or dust.
Biodiversity	• Vegetation and plant species in the Agricultural fields or Old Fields: 5169 ha Low species richness, Low ecological sensitivity.
	• Vegetation and plant species in the Degraded Grassland: 2521 ha, Medium species richness, Medium-Low ecological sensitivity.
	• Vegetation and plant species in the Wakkerstroom Grassland: 650ha, High species richness, Medium ecological sensitivity.
	• Vegetation and plant species in the Valley Grassland: High species richness, Medium ecological sensitivity.
	• Vegetation and plant species in the Highland Grassland: 1530 ha, Very High species richness, Medium-High ecological sensitivity. This area is an Optimal CBA.
	• Vegetation and plant species in the Sensitive Highland Grassland: 1001 ha, Very High species richness, High ecological sensitivity. This area is an Irreplaceable CBA.
	• Increase of alien and invasive plant species.
	• Mammals, unlikely to occur in the way of the construction, if present likely to move away.
	• Herpetofauna direct impact or habitat loss.
Heritage	• Construction activities that take place near to archaeological resources may result in their destruction.
	• Construction activities that take place near to palaeontological resources may result in their destruction.
	• Construction activities that take place near to cultural landscape elements may result in their destruction.
Noise	• Noise associated with the construction phase.
Shadow Flicker	• N/A
Socio-Economic	• Expenditure associated with the construction of the proposed 300MW Wind Farm will impact on the production of the local economy.
	• Temporary increase in country's GDP due to capital expenditure during the construction period.
	• The construction of the 300MW Wind Farm will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).
	• Employees will develop and enhance skills thereby increasing experience and knowledge.
	• Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.
	• The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.
	• Negative impact on sense of place (noise, dust and visual) for farmers where construction activities will take place.

Environmental Aspect	Potential Impact
	• Farmers might feel that the increase of accessibility will increase theft in the area.
	• Loss of agricultural space.
	• An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.
	• An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.
Transportation	• Temporary increase in traffic due to construction vehicle trips on the external road network / increase in noise and dust pollution levels during the construction period.

Operational Phase

Environmental Aspect	Potential Impact
Agricultural	• Increased financial security for farming operations - Reliable and predictable income will be generated by the farming enterprises through the lease of the land to the energy facility. This is likely to increase their cash flow and financial security and could improve farming operations and productivity through increased investment into farming. • Improved security against stock theft and other crime - Due to the presence of security infrastructure and security personnel at the energy facility. • Improved road network, with associated storm water handling system - the wind farm will construct turbine access roads of a higher standard than the existing farm roads which will give farming vehicles better access to farmlands. This will be especially relevant during wet periods when access to croplands for spraying etc is limited by the current farm roads. • Prevention of crop spraying by aircraft over land occupied by turbines – ground based or using drones for spraying are effective, alternative methods that can be used without implications for production or profitability. • •
Aquatic Biodiversity	• Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained.
	• Modified runoff characteristics from hardened surfaces at the turbines and the substation as well along the access roads that have the potential to result in erosion of hillslopes.
	• Possible increase in water consumption and potential for water quality impacts (such as contamination from sewage generated onsite) as a result of the operation of the site.
Avifaunal	• Mortality of priority species due to collisions with the wind turbines.
	• Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.
	• Mortality due to collisions with the overhead sections of the internal 33kV cables.

Environmental Aspect	Potential Impact
Bat	• Bat Mortality during Commuting and/ or Foraging - Fatality of bats due to barotrauma or direct collision with wind turbine blades.
	• Bat Mortality during Migration - Fatality of migrational bat species due to barotrauma or direct collision with wind turbine blades while migrating
	• Light Pollution
Biodiversity	• Vegetation and plant species in the Agricultural fields or Old Fields: Low species richness, Low ecological sensitivity.
	• Vegetation and plant species in the Degraded Grassland: Medium species richness, Medium-Low ecological sensitivity.
	• Vegetation and plant species in the Wakkerstroom Grassland: High species richness, Medium-Low ecological sensitivity.
	• Vegetation and plant species in the Valley Grassland: High species richness, Medium ecological sensitivity.
	• Vegetation and plant species in the Highland Grassland: Very High species richness, Medium-High ecological sensitivity. This area is an Optimal CBA.
	• Vegetation and plant species in the Sensitive Highland Grassland: Very High species richness, High ecological sensitivity. This area is an Irreplaceable CBA.
	• Increase of alien and invasive plant species.
	• Impact on Mammals - unlikely to occur in the way of the construction, if present likely to move away.
	• Impact on Herpetofauna direct impact or habitat loss.
Heritage	• Operational activities that take place near to archaeological resources may result in their destruction.
	• Operational activities that take place near to palaeontological resources may result in their destruction.
	• Operational activities that take place near to cultural landscape elements may result in their destruction.
Noise	• Noise associated with the operation of the WEF.
Shadow Flicker	• Light Variation caused by Shadow Flicker from the WTG.
Socio-Economic	• Expenditure associated with the operations of the proposed 300MW Wind Farm will impact on the production of the local economy.
	• Temporary increase in country's GDP due to operational expenditure.
	• The operation of the 300MW Wind Farm will positively impact the community and beyond by creating a number of job opportunities.
	• Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.
	• The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.
	• The landowners will receive monthly/ annual compensation for the wind turbines situated on their farms, this will help to increase the landowner's revenue to ensure sustainability on the farms.
	• The additional electricity that will be generated will increase electricity supply in the country.
	• Negative impact on sense of place (noise and visual).

Environmental Aspect	Potential Impact
	• Loss of agricultural space.
Transportation	• Increase in trips on external roads due to maintenance and permanent staff travelling to and from site.
Visual	• Potential change to the rural landscape; • Potential visual impacts as experienced by visitors to Protected Areas • Potential visual impacts as experienced by visitors to the Ons Pan; • Potential visual impacts as experienced by users of adjacent local roads particularly users of the N11, the N2, and the R39; • Potential visual impacts as experienced by residents of homesteads; • Potential visual impacts as experienced by residents of local settlements particularly residents on the south-eastern edge of Amersfoot, Ermelo and Daggakraal; • Lighting impacts; and • Potential Shadow Flicker impacts particularly affecting local homesteads.

Decommissioning

Environmental Aspect	Potential Impact
Agricultural	• Interference with farming operations - Decommissioning activities are likely to have some nuisance impact for farming operations but are highly unlikely to have an impact on agricultural production.
Aquatic Biodiversity	• Increased disturbance of aquatic habitat due to the increased activity on the site.
	• Increased sedimentation and risks of contamination of surface water runoff.
Avifaunal	• Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure.
Bat	• Disturbance and Displacement - Displacement and disturbance of bats and due to disturbance associated with the decommissioning activities.
Biodiversity	• Demolishment and removal of infrastructure by heavy machinery, transport by heavy vehicles, presence of employees may influence vegetation and plants.
	• Fauna will be negatively affected by the decommissioning of the wind farm due to the human disturbance, the presence and operation of vehicles and heavy machinery on the site and the noise generated.
Heritage	• Decommissioning activities that take place near to archaeological resources may result in their destruction.
	• Decommissioning activities that take place near to palaeontological resources may result in their destruction
	• Decommissioning activities that take place near to cultural landscape elements may result in their destruction.
Noise	• N/A
Shadow Flicker	• N/A
Socio-Economic	• N/A
Transportation	• Temporary increase in traffic due to construction vehicle trips on the external road network / increase in noise and dust pollution levels during the construction period.

Cumulative

Environmental Aspect	Potential Impact
Agricultural	• Regional loss (including by degradation) of agricultural land, with a consequent decrease in agricultural production.
Aquatic Biodiversity	• Increased disturbance of aquatic habitat due to the increased activity in the wider area.
	• Degradation of ecological conditions of aquatic ecosystems.
	• Increased disturbance of aquatic habitat due to the increased activity in the wider area.
Avifaunal	• N/A
Bat	• Transformation from and presence of the facility will contribute to cumulative habitat loss and impacts on broad-scale ecological processes with regards to bats such as fragmentation, multiple roost destruction and disturbance, and mortalities at multiple facilities.
Biodiversity	• Transformation and presence of the facility will only slightly contribute to cumulative habitat loss and impacts on broad-scale ecological processes such as fragmentation.
Heritage	• Cumulative destruction of significant archaeological heritage.
	• Cumulative destruction of significant palaeontological heritage.
	• Cumulative impact to the cultural landscape.
Noise	• As per the Screening Report, there is one Solar PV energy project proposed within 35km of the Ujekamanzi WEF 1 development. The cumulative impacts of the proposed 65MW Solar PV Facility at Majuba Power Station (DFFE Ref No.: 14/12/16/3/3/2/752) will not need to be assessed as it is approximately 30km from the Ujekamanzi WEF 1 site. At this distance, the noise impacts will be negligible due to noise attenuation.
Shadow Flicker	• No other approved or operational WEFs have been identified within 30 km of the proposed site. Therefore, it is assumed that shadow flicker is not currently experienced by the receptors in the region. However, should Ujekamanzi 2 WEF be constructed on the neighbouring properties, potentially affected receptors may experience an increased duration of shadow flicker.
Socio-Economic	• Expenditure associated with the construction of the Projects will have an impact on the production of the local economy.
	• Temporary increase in country's GDP due to capital expenditure.
	• The construction of the MTS will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).
	• An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.
Transportation	• Traffic impact due to all planned and approved renewable developments in a 35km radius being developed at the same time (construction phase).
	• Traffic impact due to all planned and approved renewable developments in a 35km radius being developed at the same time (operational phase)

No-go

Environmental Aspect	Potential Impact
Agricultural	• The no-go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. There are no agricultural impacts of the no-go alternative.
Aquatic Biodiversity	• The No-go Alternative would imply that the proposed WEF is not developed, and that the status quo is maintained. This would imply that the existing land use practice and the

Environmental Aspect	Potential Impact
	current activities with their associated aquatic ecosystem impacts would remain as is. The current land use activities have resulted in the present ecological condition of the aquatic features of moderately modified. It can be expected that the aquatic features will remain in the present ecological condition or even deteriorate as the observed trend in the ecological state of the aquatic ecosystems is negative. The proposed development provides the opportunity for some potential ecological improvement.
Avifaunal	• The no-go alternative will result in the current status quo being maintained as far as the avifauna is concerned. The low human population in the area is definitely advantageous to sensitive avifauna, especially Red Data species. The no-go option would eliminate any additional impact on the ecological integrity of the proposed PAOI as far as avifauna is concerned.
Bat	• The 'No-Go' alternative reduces the opportunity to progress the de-carbonisation transition of the economy and achieve various climate change mitigation targets outlined by (amongst others) the South Africa's Low Emission Development Strategy, The National Development Plan, The National Climate Change Response Policy, Integrated Resource Plan the National Climate Change Adaptation Strategy and ultimately South Africa's commitment to the Paris Agreement. The proposed development site appears to be well suited for the development of renewable energy facilities as proposed if best practice guidelines are followed.
Shadow Flicker	• Should the application for the Ujekamanzi 1 WEF be refused the shadow flicker impacts will not be realised.
Transportation	• The no-go alternative implies that the proposed development of the Ujekamanzi WEF 1 does not proceed. This would mean that there will be no negative environmental impacts and no traffic impact on the surrounding network during the construction and decommissioning phases. However, this would also mean that there would be no socio-economic benefits to the surrounding communities, and it will not assist government in meeting its targets for renewable energy.

PUBLIC PARTICIPATION PROCESS

Notification of EIA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation to be circulated to all I&APs in xxx respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself on 19th of April 2023 (proof included in Appendix 5 the Scoping Report).
- Notification letters were sent via E-mail or sms (if cellphone number / email is available, it is assuming the I&AP have an email or cellphone).
- Public notification of the EIA process was advertised in a local newspaper (namely the Lowvelder) as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof included in Appendix 5 of the Draft Scoping Report.

Availability of report for review:

- The report will be made available on SiVESTs website for download.

- Electronic copies will be made available to parties upon request for the documentation.
- The Draft Scoping Report will be available for review at the following location:
  - Amersfoort Library, Bree Street, Mpumalanga, South Africa

PLAN OF STUDY

The EIA phase will be informed by the scoping phase. The following steps will be undertaken as part of the EIA phase:

- The proposed final layout will be further investigated in order to avoid or minimize negative impacts and maximize potential benefits;
- Environmental impact statements regarding the potential significance of residual impacts, taking into account proposed mitigation measures will be provided in the EIA;
- An Environmental Management Programme (EMPr) covering construction and decommissioning phases of the proposed development will be prepared. The EMPr will include input from specialists and will incorporate recommendations for mitigation and monitoring.

The following specialist studies have been undertaken for the project and the significant environmental aspects will be further assessed in the EIA Phase:

- Agricultural Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Aquatic/Freshwater Assessment;
- Terrestrial Ecological Assessment;
- Heritage Assessment;
- Noise Assessment;
- Transport Assessment;
- Visual Assessment;
- Flicker Assessment;
- Social Impact Assessment;
- BESS Risk Assessment.

The findings of the specialist studies have been included in the Scoping Phase of this project. The associated Impact Assessment tables will be included in the draft EIA report. Should the need for additional specialist studies be identified through the consultation process, these studies will be commissioned in the EIA Phase to further advise on the potential impacts that may arise from the proposed development. The specialist studies may identify opportunities and constraints as associated with the site and the proposed development.

SiVEST has consulted with DFFE as follows:

- Pre-application meeting with DFFE was requested on the 2nd of May 2023. DFFE denied the meeting request on the 16th of May 2023.
- Submission of application form to obtain EIA reference number.
- The Draft Scoping report will be made available for comment to I&APs, key stakeholders and the authorizing authority from the 26th of May 2023 until the 26th of June 2023.

- All comments will be incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report will be submitted to DFFE for approval.

The following items will still be undertaken:

- Notify I&APs and key stakeholders of acceptance of Final Scoping Report
- The Draft EIA report will be made available for comment to I&APs, key stakeholders and the authorizing authority.
- After the Draft EIA report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final EIA Report for submission to DFFE.
- Notify I&APs of the decision.
- Apart from the above-mentioned occasions, further consultation with authorities will occur whenever necessary.

ABO UJEKAMANZI WIND ENERGY FACILITY 1

DRAFT SCOPING REPORT

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ABO UJEKAMANZI WIND ENERGY FACILITY 1

DRAFT SCOPING REPORT

1. INTRODUCTION

ABO Wind Ujekamanzi Wind Energy Facility 1 (Pty) Ltd (The Applicant) is proposing to construct the ABO Ujekamanzi Wind Energy Facility (WEF) 1 and associated infrastructure approximately 20 km north-east of Amersfoort in the Dr Pixley Ka Isaka Seme Local Municipality, in Mpumalanga (**Figure 1**) (**DFFE Reference Number**: **TBA**). The overall objective of the proposed development is to generate electricity by means of renewable energy technologies capturing wind energy to feed into the national grid. The proposed development will have a maximum total generation capacity of up to 650 megawatt (MWac).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) process for the proposed construction and operation of the ABO Ujekamanzi WEF 1 and associated infrastructure. The proposed development requires an (Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE). The EIA for the proposed development will be conducted in terms of the EIA Regulations, 2014 (as amended) promulgated in terms of Chapter 5 of the NEMA. In terms of these regulations, a full EIA process is required for the proposed development. All relevant legislation and guidelines will be consulted during the EIA process and will be complied with at all times.

One additional WEF is concurrently being considered on the adjacent properties and are assessed by way of a separate impact assessment process contained in the 2014 Environmental Impact Assessment Regulations (GN No. R982, as amended) for listed activities contained within Listing Notices 1, 2 and 3 (GN R983, R984 and R985, as amended). This project is known as the ABO Ujekamanzi Wind Energy Facility 2 (**DFFE Reference Number: TBA**).

The grid connection development, is also being proposed by the developer, namely ABO Wind Renewable Energies (Pty) Ltd, and includes the proposed construction of an onsite 400 kV Loop-In-Loop-Out (LILO) Power Line from the existing 400 kV Overhead Power Line to the proposed Main Transmission Substation (MTS) in order to feed electricity generated by the above-mentioned wind farm cluster development (part of separate respective applications for each WEF) into the national grid, which will be assessed in separate EIA's to be submitted to the Department of Agriculture, Rural Development and Environmental Affairs (DARDLEA) (**DARDLEA Reference Number: To be Allocated**).

The overall objective of the proposed ABO Ujekamanzi WEF projects (which includes the 2 WEFs, Main Transmission Substation, LILO Power Line and associated infrastructure) is to generate electricity by means of renewable energy technologies, capturing wind energy to feed into the national grid, which will be procured under either the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), other government run procurement programmes, any other program it intends to supply power to or for sale to private entities, if required. To further ensure efficient power delivery, the facility will also incorporate the use of storage technologies like battery energy storage systems (i.e. BESS).

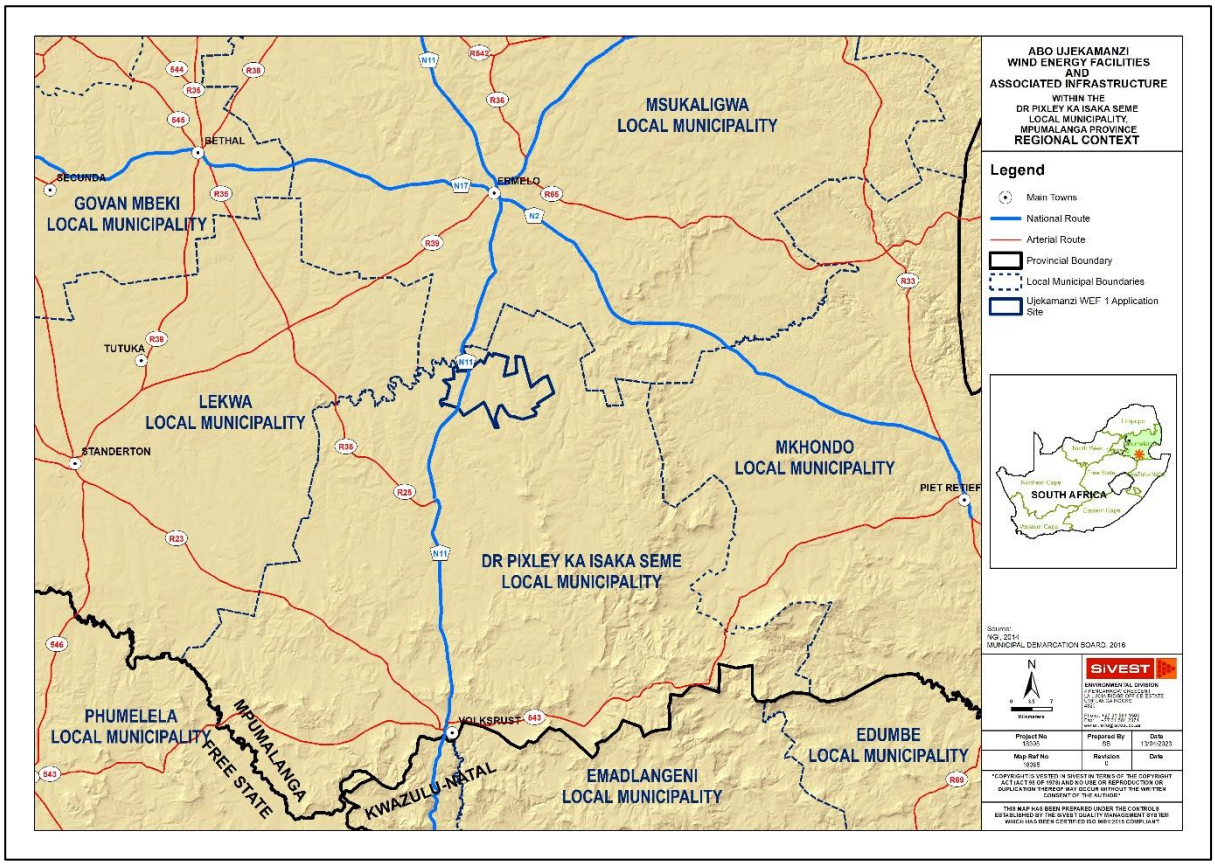

Figure 1: ABO Ujekamanzi WEF 1 Regional Context

Although the respective WEFs, MTS, LILO and associated infrastructure will be assessed separately, it is proposed that a single public participation process be undertaken to consider all of the proposed projects [i.e., four (4) EIAs]. The potential environmental impacts associated with all of the proposed developments mentioned above will be assessed as part of the cumulative impact assessment.

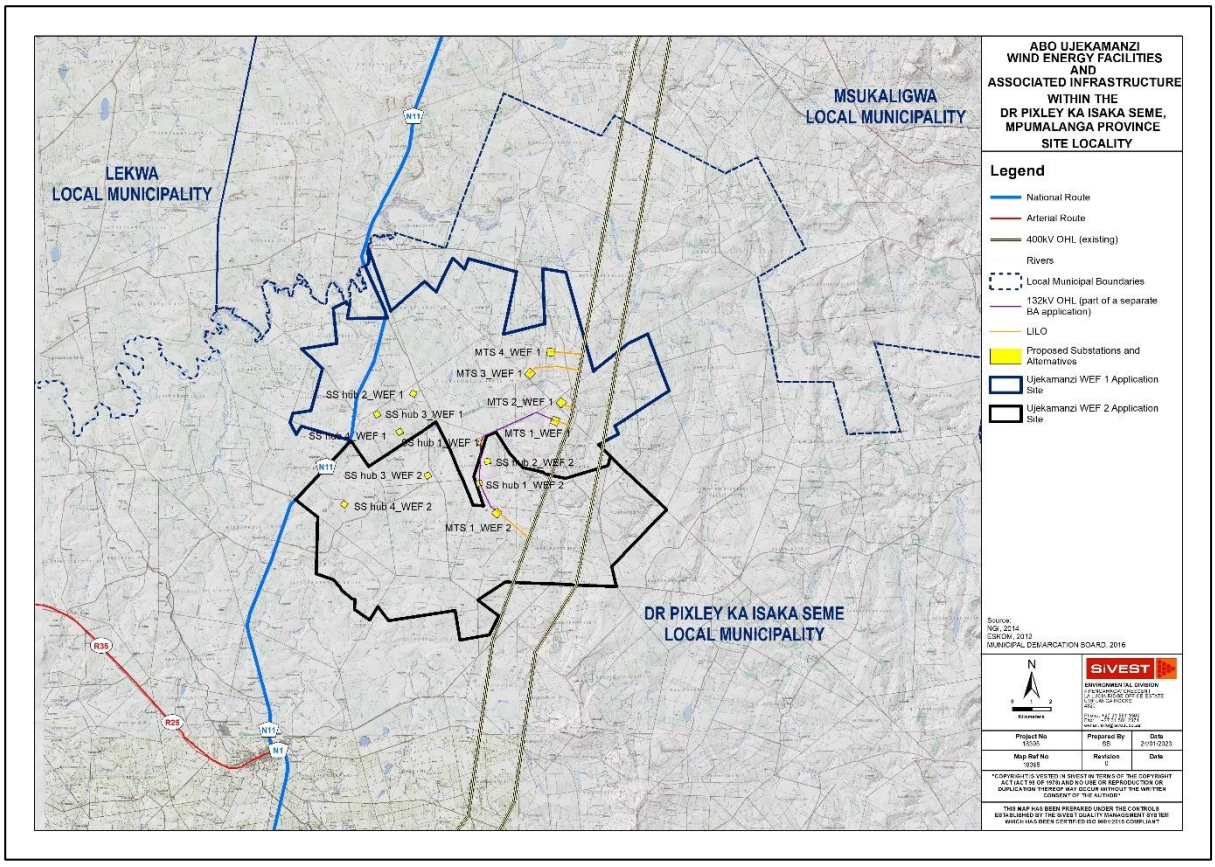

Figure 2: Layout showing context of the ABO Ujekamanzi Cluster

1.1 Overview of the EIA Process

The National Environment Management Act, 1998 (Act No 107 of 1998) (NEMA) promotes the use of scoping and EIA in order to ensure integrated environmental management. The purpose of an EIA is to provide the Authority with sufficient information to make an informed decision on whether an activity should proceed or not, and to assist with selecting an option that will provide the most benefit, and cause the least impact. The EIA process should identify activities which may have a detrimental effect on the environment, and which would therefore require Environmental Authorisation prior to commencement.

This project requires an Environmental Authorisation (EA) in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998, as amended) and the 2014 EIA Regulations (as amended). The process triggered is a Scoping and Environmental Impact Assessment report (S&EIR). All the phases including the Environmental Management Programme report (EMPr) must be prepared in terms of the NEMA and GN R. 982, (as amended by GN R. 326) and the associated activities listed under GN R. 983, GN R. 984 and GN R. 985 (as amended by GN R 327, GN R 325, and GN R 324 respectively).

Objectives and Overview of the Scoping Phase

The Scoping Phase involves establishing the existing environmental baseline of the site proposed for development, considering the type of development and its potential impacts on the existing environment, and therefore determining what potential impacts should be assessed and how, within the EIA process. The Scoping Phase also recommends the suggested alternative for more detailed assessment. The EAP therefore

compiles a Draft Scoping Report (inclusive of a Plan of Study for the EIA phase) which is made available for public and stakeholder comment for a period of 30 days as part of the public participation process. All comments received in response to the DSR are then considered and responded to, incorporated into the Final Scoping Phase and Plan of Study for EIA Phase.

Public Participation Process

Public and Stakeholder participation is a fundamental component of the EIA Process. The inclusion of the views of the affected and interested public aids in ensuring the EIA Process is open, transparent and robust, as well as that the decision-making process is equitable and fair. This in turn guides informed choice and better environmental outcomes. It further presents a valuable source of information on key impacts, potential mitigation measures and the identification and selection of feasible alternatives. This process allows the EAP to identify key stakeholders and Interested and Affected Parties (I&APs), as well as to identify any fatal flaws, at the onset of a project. The Draft Scoping Report will be made available to all I&APs as well as Organs of State for a period of 30 days from the **26 May 2023** until the **26 June 2023**, following this, all comments will be drafted and responded to in a Comments and Response Report which will then be submitted to the Department for approval. Following this, the EIA Phase can proceed.

1.2 Content Requirements for a Scoping Report

The content requirements for a Scoping Report (as provided in Appendix 2 of the EIA Regulations 2014, as amended), as well as details of which section of the report fulfils these requirements, are shown in **Table 1** below.

Table 1: Content requirements for a Scoping Report

Content Requirements	Applicable Section
(a) details of- (i) the EAP who prepared the report; and (ii) the expertise of the EAP, including a curriculum vitae;	4
(b) the location of the activity, including- (i) the 21-digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	5
(c) a plan which locates the proposed activity or activities applied for at an appropriate scale, or, if it is- (i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken; or (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	5.2
(d) a description of the scope of the proposed activity, including- (i) all listed and specified activities triggered; (ii) a description of the activities to be undertaken, including associated structures and infrastructure;	6
(e) a description of the policy and legislative context within which the development is proposed including an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments that are applicable to this activity and are to be considered in the assessment process;	10

Content Requirements	Applicable Section
(f) a motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	12
(g) a full description of the process followed to reach the proposed preferred activity, site and location of the development footprint within the site, including - (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (v) the impacts and risks which have informed the identification of each alternative, including the nature, significance, consequence, extent, duration and probability of such identified impacts, including the degree to which these impacts- (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated; (vi) the methodology used in identifying and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives; (vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects; (viii) the possible mitigation measures that could be applied and level of residual risk; (ix) the outcome of the site selection matrix; (x) if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such and (xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;	13
(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including- (i) a description of the alternatives to be considered and assessed within the preferred site, including the option of not proceeding with the activity; (ii) a description of the aspects to be assessed as part of the environmental impact assessment process; (iii) aspects to be assessed by specialists; (iv) a description of the proposed method of assessing the environmental aspects, including aspects to be assessed by specialists; (v) a description of the proposed method of assessing duration and significance; (vi) an indication of the stages at which the competent authority will be consulted; (vii) particulars of the public participation process that will be conducted during the environmental impact assessment process; and (viii) a description of the tasks that will be undertaken as part of the environmental impact assessment process;	14

Content Requirements	Applicable Section
(ix) identify suitable measures to avoid, reverse, mitigate or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.	
(i) an undertaking under oath or affirmation by the EAP in relation to- (i) the correctness of the information provided in the report; (ii) the inclusion of comments and inputs from stakeholders and interested and affected parties; and (iii) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;	Appendix 1
(j) an undertaking under oath or affirmation by the EAP in relation to the level of agreement between the EAP and interested and affected parties (I&APs) on the plan of study for undertaking the environmental impact assessment;	Appendix 1
(k) where applicable, any specific information required by the competent authority; and	Appendix 6
(l) any other matter required in terms of section 24(4)(a) and (b) of the Act.	All requirements have been met in this report.
(2) Where a government notice gazetted by the Minister provides for any protocol or minimum information requirement to be applied to a scoping report, the requirements as indicated in such notice will apply.	Appendix 6

2. PROJECT TITLE

Proposed Development of the ABO Ujekamanzi Wind Energy Facility 1 and Associated Infrastructure near Amersfoort in the Mpumalanga Province.

3. DETAILS OF APPLICANT

3.1 Name and contact details of the Applicant

Name and contact details of Applicant:

Table 2: Name and contact details of the applicant

Business Name of Applicant	ABO Ujekamanzi Wind Energy Facility 1
Physical Address	Unit B1, Mayfair Square, Century Way, Century City, Cape Town
Postal Address	Unit B1, Mayfair Square, Century Way, Century City, Cape Town
Postal Code	7441
Telephone	060 383 8058
Fax	N/A
Email	du-toit.malherbe@abo-wind.com capetown@abo-wind.com

4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTIONER AND SPECIALISTS

4.1 Name and contact details of the Environmental Consultant

The table below provides the name and contact details of the Environmental Consultants who prepared this report:

Table 3: Name and contact details of the Environmental Consultant who prepared the report

Business Name of EAP	SiVEST SA (PTY) Ltd
Physical Address	4 Pencarrow Crescent, La Lucia Ridge Office Estate
Postal Address	PO Box 1899, Umhlanga Rocks
Postal Code	4320
Telephone	031 581 1500
Fax	031 566 2371
Email	luvanyan@sivest.com

4.2 Names and expertise of the Environmental Assessment Practitioner (EAP)

The table below provides the names of the EAP's who prepared this report:

Table 4: Names and details of the expertise of the EAP's involved in the preparation of this report

Name of representative of the EAP	Educational Qualifications	Professional Affiliations	Experience (years)
Natalie Pullen	MSc Environmental Biotechnology	EAPASA Registration No. 2018/132 IAIAsa	19
Luvanya Naidoo (Pr.Sci.Nat)	BSc Hons Environmental Monitoring & Modelling	SACNASP Registration No. 126107 EAPASA Registration No. 2019/1404 IAIAsa	12

CV's of SiVEST personnel and the EAP declaration are attached in **Appendix 1.**

4.3 Names and expertise of the specialists

The table below provides the names of the specialists involved in the project:

Table 5: Names of specialists involved in the project

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
Johann Lanz	Johann Lanz	Agricultural	MSc Environmental Geochemistry Pr.Sci.Nat	24
Antonia Belcher	Antonia Belcher	Aquatic	MSc Environmental Management	30+

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
Chris van Rooyen Consulting	Chris van Rooyen	Avifaunal	BA LLB	22
Arcus	Michael Brits	Bat	BSc Conservation Ecology	11
EcoAgent	George Bredenkamp Jacobus Casparus Petrus Van Wyk	Biodiversity	DSc (PhD) Plant Ecology MSc	50+ 33
CTS Heritage	Jenna Lavin	Heritage	MSc Archaeology & Palaeoenvironments	10+
SAFETECH	Dr Brett Williams	Noise	PHD Registered Occupational Hygienist	26
iWink Consulting	Iris Wink	Transportation	MScEng (Civil) PrEng 20110156	21
Afzelia	Jonathan Marshall	Landscape and Visual Impact	DIP LA	40+
Urban-Econ	Pierre van Jaarsveld	Socio-Economic	B.TRP HONS (Town and Regional Planning)	15
iSHECON	Debra Mitchell	Risk Assessment	MSc Process Safety & Loss Prevention	37

5. LOCATION OF THE ACTIVITY

5.1 21 Digit Surveyor General Codes and Farm names of the project area

Table 6: 21 Digit Surveyor General Code

LPI Code	Farm Name	Farm No	Portion No
T0IS00000000047600005	PIET ZYN DRIFT	476	5
T0IS00000000050000000	STRYDFONTEIN	500	RE
T0IS00000000050000002	STRYDFONTEIN	500	RE/2
T0IS00000000050000007	STRYDFONTEIN	500	7
T0IS00000000050000008	STRYDFONTEIN	500	8
T0IT00000000033300001	FAMILIEHOEK	333	1
T0IT00000000033300009	FAMILIEHOEK	333	9
T0IT00000000033500010	VYFHOEK	335	10
T0IS00000000049700010	MOOIFONTEIN	497	10
T0IS00000000050000009	STRYDFONTEIN	500	9
T0IS00000000049900000	VLAKFONTEIN	499	0
T0IT00000000033400014	VAALBANKSPRUITDRIFT	334	RE/14

LPI Code	Farm Name	Farm No	Portion No
T0IT00000000033400015	VAALBANKSPRUITDRIFT	334	15
T0IS00000000050000001	STRYDFONTEIN	500	RE/1
T0IT00000000033400008	VAALBANKSPRUITDRIFT	334	8
T0IT00000000033400010	VAALBANKSPRUITDRIFT	334	10
T0IT00000000033400009	VAALBANKSPRUITDRIFT	334	9
T0IS00000000049800001	GOEDERTROUW	498	1
T0IS00000000049700011	MOOIFONTEIN	497	11
T0IS00000000049800000	GOEDERTROUW	498	0
T0IS00000000047600002	PIET ZYN DRIFT	476	2
T0IS00000000047600021	PIET ZYN DRIFT	476	21
T0IS00000000047600022	PIET ZYN DRIFT	476	22
T0IT00000000033300004	FAMILIEHOEK	333	4
T0IT00000000033300005	FAMILIEHOEK	333	5
T0IT00000000033300006	FAMILIEHOEK	333	6
T0IS00000000053600003	ROLFONTEIN	536	3
T0IS00000000053600004	ROLFONTEIN	536	RE/4
T0IS00000000053600006	ROLFONTEIN	536	6
T0IT00000000037300004	GOEDEMOED	373	4
T0IT00000000037300005	GOEDEMOED	373	5
T0IS00000000053600005	ROLFONTEIN	536	5
T0IS00000000049700009	MOOIFONTEIN	497	9
T0IS00000000050600000	MOOIFONTEIN	506	0
T0IS00000000047500000	VAALKRANS	475	RE
T0IS00000000047600003	PIET ZYN DRIFT	476	3
T0IT00000000033500005	VYFHOEK	335	5
T0IT00000000033500006	VYFHOEK	335	RE/6
T0IT00000000033500007	VYFHOEK	335	7
T0IT00000000033500011	VYFHOEK	335	11
T0IS00000000047500002	VAALKRANS	475	2
T0IS00000000047500003	VAALKRANS	475	3
T0IS00000000047600001	PIET ZYN DRIFT	476	1
T0IS00000000047600011	PIET ZYN DRIFT	476	11
T0IS00000000047600012	PIET ZYN DRIFT	476	12
T0IS00000000047600025	PIET ZYN DRIFT	476	25
T0IS00000000049700016	MOOIFONTEIN	497	RE/16
T0IS00000000047600007	PIET ZYN DRIFT	476	7
T0IS00000000047600013	PIET ZYN DRIFT	476	13
T0IT00000000036800001	KNELPOORT	368	1
T0IT00000000036800002	KNELPOORT	368	RE/2
T0IT00000000036800003	KNELPOORT	368	3
T0IS00000000050300001	BLOEMFONTEIN	503	1
T0IS00000000050300004	BLOEMFONTEIN	503	4

LPI Code	Farm Name	Farm No	Portion No
T0IS00000000050300005	BLOEMFONTEIN	503	5
T0IT00000000036800004	KNELPOORT	368	4
T0IT00000000036800005	KNELPOORT	368	5
T0IT00000000036800007	KNELPOORT	368	7
T0IT00000000036800008	KNELPOORT	368	8
T0IT00000000036800018	KNELPOORT	368	18
T0IT00000000037000001	ELAINDSBERG	370	1

5.2 Coordinates of the site

The centre point coordinates for the sites are as follows:

- Latitude: 26°49'48.232"S
- Longitude: 29°58'28.191"E

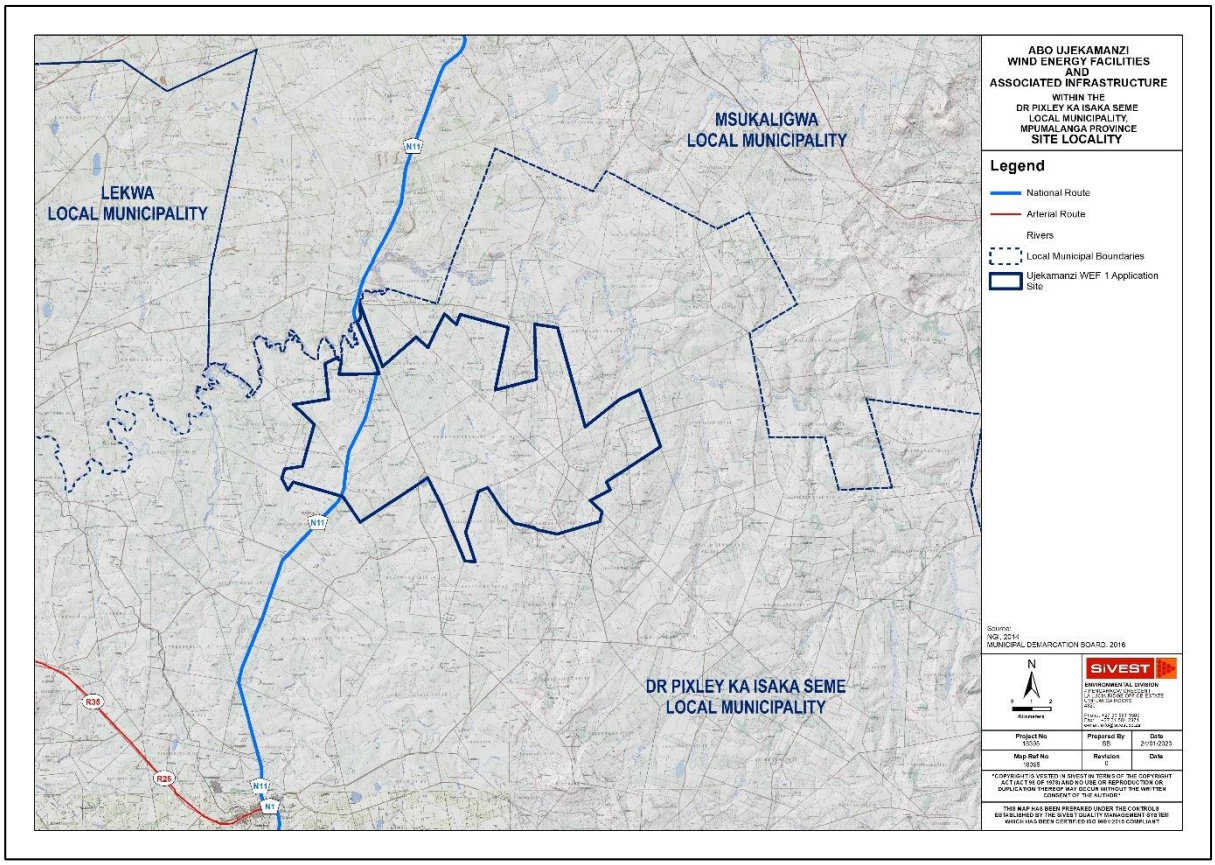

Figure 3: Site locality

The bend point coordinates of the site have been included below:

Table 7: Bend point coordinates for the ABO Ujekamanzi WEF study area

ABO UJEKAMANZI WEF: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
1	26°51'16.947"S	29°53'15.656"E
2	26°51'28.899"S	29°53'4.802"E
3	26°51'8.668"S	29°52'52.359"E
4	26°50'52.751"S	29°52'57.931"E
5	26°50'48.155"S	29°53'31.242"E
6	26°49'33.71"S	29°53'51.548"E
7	26°48'59.736"S	29°53'16.996"E
8	26°48'53.016"S	29°54'21.455"E
9	26°47'55.18"S	29°54'13.962"E
10	26°47'44.512"S	29°54'40.309"E
11	26°47'48.567"S	29°54'46.227"E
12	26°48'12.599"S	29°54'43.019"E
13	26°48'11.167"S	29°55'58.247"E
14	26°46'43.316"S	29°55'17.375"E
15	26°46'34.68"S	29°55'24.157"E
16	26°46'20.625"S	29°55'21.312"E
17	26°46'13.28"S	29°55'22.125"E
18	26°47'59.178"S	29°56'3.572"E
19	26°47'10.214"S	29°57'8.808"E
20	26°47'27.758"S	29°57'31.73"E
21	26°46'31.857"S	29°58'3.51"E
22	26°46'50.05"S	29°58'24.193"E
23	26°46'31.331"S	29°58'32.233"E
24	26°46'56.048"S	30°0'2.502"E
25	26°48'40.287"S	29°59'39.935"E
26	26°48'24.167"S	30°0'55.159"E
27	26°46'52.824"S	30°0'55.159"E
28	26°46'56.048"S	30°1'37.069"E
29	26°49'46.913"S	30°2'28.651"E
30	26°48'58.589"S	30°3'33.685"E
31	26°48'42.087"S	30°4'8.425"E
32	26°50'18.883"S	30°4'49.542"E
33	26°51'17.989"S	30°3'7.606"E
34	26°51'31.695"S	30°3'11.889"E
35	26°51'51.397"S	30°2'36.768"E
36	26°52'10.242"S	30°2'59.04"E
37	26°52'25.661"S	30°2'53.9"E
38	26°52'46.219"S	30°1'30.81"E

ABO UJEKAMANZI WEF: APPLICATION SITE		
COORDINATES AT CORNER POINTS (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
39	26°52'39.053"S	30°0'54.598"E
40	26°52'35.26"S	30°0'48.83"E
41	26°52'36.059"S	30°0'48.294"E
42	26°52'34.239"S	30°0'43.796"E
43	26°52'28.029"S	30°0'11.567"E
44	26°52'3.187"S	29°59'47.26"E
45	26°51'27.21"S	29°59'21.883"E
46	26°52'42.276"S	29°58'39.573"E
47	26°53'32.209"S	29°58'58.57"E
48	26°51'10.126"S	29°57'27.87"E
49	26°52'23.614"S	29°55'19.63"E
50	26°51'39.253"S	29°54'47.08"E
COORDINATES AT CENTRE POINT (DD MM SS.sss)		
POINT	**SOUTH**	**EAST**
51	26°49'48.232"S	29°58'28.191"E

6. ACTIVITY INFORMATION

6.1 Project Description

The application site assessed during the scoping phase (which incorporates the farm portions / properties listed above) is approximately 13 489 hectares (ha) in extent.

At this stage it is anticipated that the proposed ABO Ujekamanzi WEF 1 will comprise up to sixty-five (65) wind turbines with a maximum total energy generation capacity of up to approximately 650MWac. Each of the wind turbines will have an output capacity of up to 10 megawatt (MWac). The total number of wind turbines and total combined generation of the WEFs will be confirmed at a later stage as the Applicant currently requires authorisation for a buildable area. In summary, the proposed ABO Ujekamanzi WEF 1 development will include the following components:

Wind Turbines:

- The number of turbines will be determined at a later stage. The client is currently requesting authorisation for a buildable area.
- Each wind turbine will have an energy generation output of up to 10 MW.
- The hub height from the ground will be up to 180 m.
- Each wind turbine will have a rotator diameter up to 200 m.
- Each wind turbine will have a blade length up to 100m.
- The total footprint of turbine and laydown area of up to approximately 1 ha per turbine (but turbine-dependent).
- General temporary Hardstand Area (boom erection, storage, and assembly area) (also known as crane pads) will have an area of approximately 1 ha per turbine.

- Each wind turbine will have a foundation size of up to 1 ha – may be able to rehabilitate some of this area.

Roads:

- The width of internal access roads will be up to 10m. Circles / bypass will be confirmed at a later stage; and will be WTG specific.
- The length and site access points will be confirmed at a later stage.
- Existing access roads will be upgrade where necessary to a width of up to 10 m.

Construction Compounds and Laydown Areas:

- The temporary construction period laydown / staging area will have an area of approximately 10 ha.

Operational and Maintenance (O&M) Control Centre Building Area:

- The O&M Control Centre Building Area will be located within the on-site Substation Hub and will have a footprint of up to 1 ha.

On-site Substation Hub:

- The proposed project will include one on-site substation hub incorporating the facility substation, switchyard, collector infrastructure, battery energy storage system (BESS) and associated O&M buildings.
- The on-site Substation Hub will have a footprint of up to 19 ha.
- The capacity for the on-site Substation Hub for WEF 1 and 2 will be 33/132 kV.
- The height of the on-site Substation Hub will be up to 10 m.
- The height of the communications tower will be up to 32 m – will be confirmed at a later stage.

Battery Storage:

- The battery technology type will comprise of electrochemical batteries and will include Lead Acid and Advanced Lead Acid, Lithium ion, NiCd, NiMH-based Batteries, High Temperature (NaS, Na-NiCl2, Mg/PB-Sb), Flow Batteries (VRFB, Zn-Fe, Zn-Br).
- The BESS would therefore comprise the selected batteries together with chargers, inverters and related equipment.
- The BESS will be located within the on-site Substation Hub and will have a approximate footprint of up to 5 ha.
- The height of the BESS will be up to 8 m
- The BESS will have a capacity 500MW/500MWh.

Internal transmissions and / or distribution lines on site:

- The internal transmission / distribution lines on site will be located underground, unless not possible due to environmental reasons.
- The capacity of the transmission / distribution lines will typically be 33 kV.
- Cables to be buried along access roads, where feasible, with overhead 33kV lines grouping turbines to crossing valleys and ridges outside of the road footprints to get to the on-site substation – to be confirmed at a later stage.
- If below, the maximum depth of up to 1 m.
- The length of the transmission / distribution lines to follow internal site roads which will be confirmed at a later stage.

Perimeter Fencing:

- The height and type of material that will be used for perimeter fencing will be confirmed at later stage.

Wind Monitoring Mast:

- Currently 2 met masts are installed.

The Preliminary Layout is reflected in the figure below and attached in **Appendix 3**. Photographs of the site are included in **Appendix 4**.

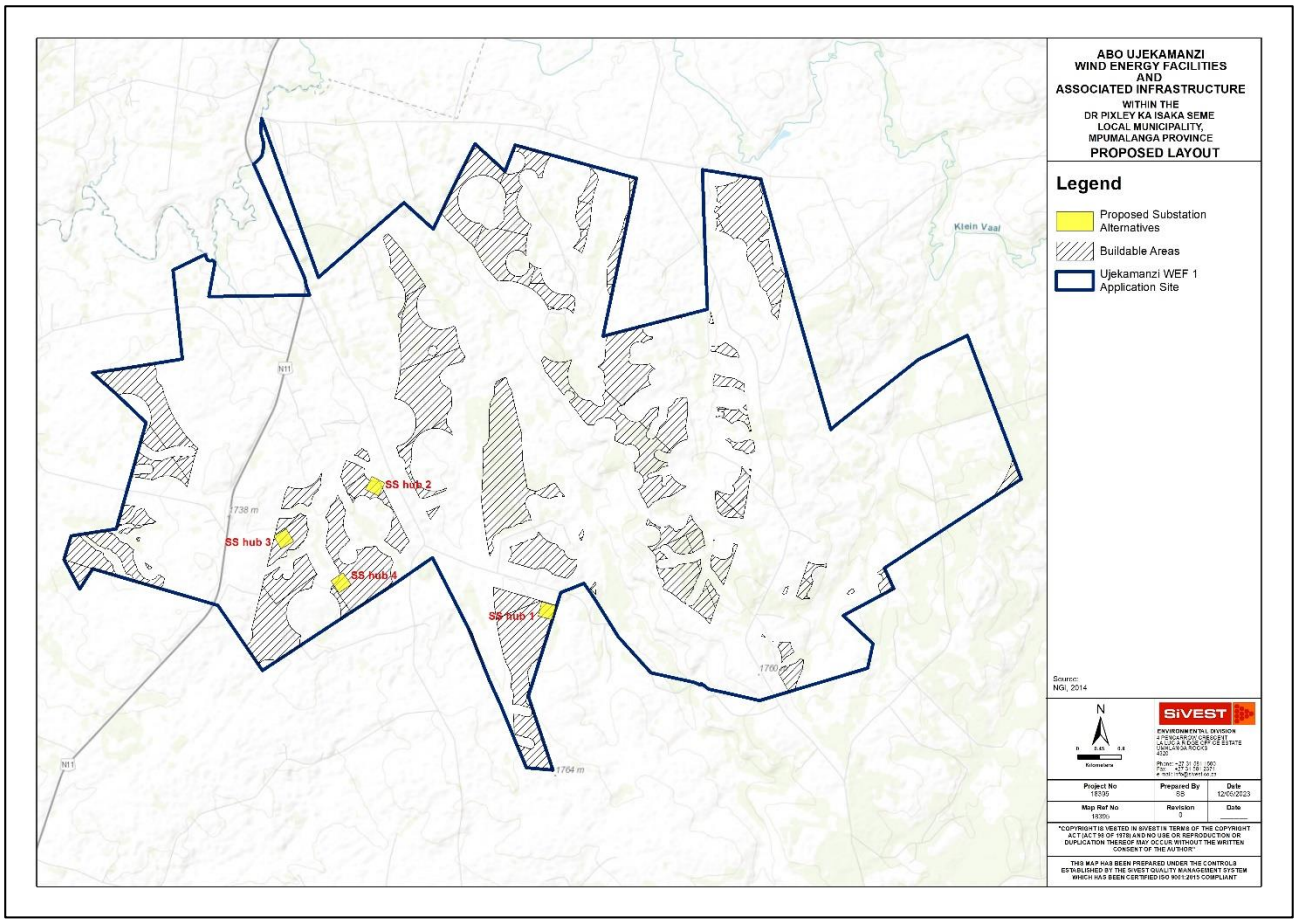

Figure 4: Preliminary layout showing proposed buildable areas

The wind turbines and all other project infrastructure will be placed strategically within the buildable area based on environmental constraints. The exact location of the turbines, total number of wind turbines, associated infrastructure, and total combined generation of the WEFs will be confirmed at a later stage as the Applicant currently requires authorisation for a buildable area.

Please refer to the figure below for the typical components of a wind turbine.

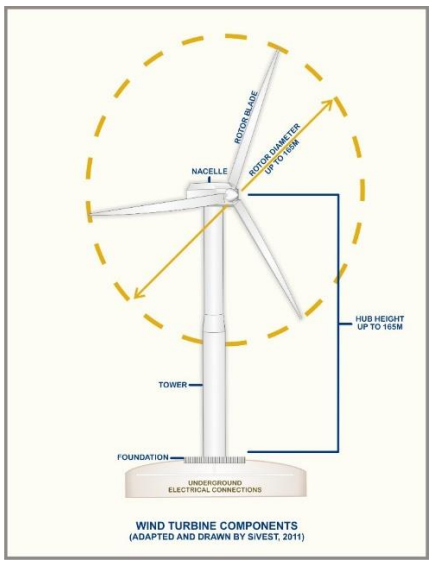

Figure 5: Typical components of a Wind Turbine

A summary of the project technical details is provided in **Table 8** below.

Table 8: Technical Detail Summary

Component	Description / Dimensions
Location of site (centre point)	26°49'48.232"S 29°58'28.191"E
Application site area	13489 ha
Total Ujekamanzi WEF area	Approximately 25 920ha
Turbine development area	Up to approximately 1ha per turbine
SG codes (Project Area)	T0IS00000000047600005 T0IS00000000050000000 T0IS00000000050000002 T0IS00000000050000007 T0IS00000000050000008 T0IT00000000033300001 T0IT00000000033300009 T0IT00000000033500010 T0IS00000000049700010 T0IS00000000050000009 T0IS00000000049900000 T0IT00000000033400014 T0IT00000000033400015 T0IS00000000050000001 T0IT00000000033400008 T0IT00000000033400010 T0IT00000000033400009 T0IS00000000049800001 T0IS00000000049700011 T0IS00000000049800000

Component	Description / Dimensions
	T0IS00000000047600002 T0IS00000000047600021 T0IS00000000047600022 T0IT00000000033300004 T0IT00000000033300005 T0IT00000000033300006 T0IS00000000053600003 T0IS00000000053600004 T0IS00000000053600006 T0IT00000000037300004 T0IT00000000037300005 T0IS00000000053600005 T0IS00000000049700009 T0IS00000000050600000 T0IS00000000047500000 T0IS00000000047600003 T0IT00000000033500005 T0IT00000000033500006 T0IT00000000033500007 T0IT00000000033500011 T0IS00000000047500002 T0IS00000000047500003 T0IS00000000047600001 T0IS00000000047600011 T0IS00000000047600012 T0IS00000000047600025 T0IS00000000049700016 T0IS00000000047600007 T0IS00000000047600013 T0IT00000000036800001 T0IT00000000036800002 T0IT00000000036800003 T0IS00000000050300001 T0IS00000000050300004 T0IS00000000050300005 T0IT00000000036800004 T0IT00000000036800005 T0IT00000000036800007 T0IT00000000036800008 T0IT00000000036800018 T0IT00000000037000001
Export capacity	Up to 650MWac
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	Up to 180 m
Rotor diameter	Up to 200 m
On-site substation hub	Approximately 19 ha
O&M building area	Approximately 1 ha (to be included within the in-site substation hub)

Component	Description / Dimensions
Temporary construction period laydown / staging area	Up to 1 ha
Hard stand areas	1 ha per turbine
Width of internal access roads	Up to 10 m
Length of internal access roads	To be confirmed during the detailed design phase
Site Access	This access option is at an existing gravel road connecting with the N11
Proximity to grid connection	The MTS and LILO (part of a separate EIA) fall within the site boundary of the ABO Ujekamanzi WEF 1.
Height of fencing (for substation)	To be confirmed during the detailed design phase.
Type of fencing (for substation)	To be confirmed during the detailed design phase.

6.2 NEMA Listed Activities

The amended EIA Regulations promulgated under Section 24(5) of the National Environmental Management Act, Act 107 of 1998 and published in Government Notice No. R. 326 list activities which may not commence without environmental authorization from the Competent Authority. The proposed activity is identified in terms of Government Notice No. R. 327, and 324 for activities which must follow a full Environmental Impact Assessment Process. The project will trigger the following listed activities:

Table 9: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended in 2017), applicable to the proposed project

Activity No(s):	Relevant Basic Assessment Activity(ies) as set out in Listing Notice 1 of the EIA Regulations, 2014 as amended.	Description
11 (i)	**GN R. 983 (as amended) Item 11:** 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;	The new Substation Hubs are being proposed on-site and will have a capacity of 33/132 kV for WEF 1.
12 (ii)	**GN R. 983 (as amended) Item 12:** 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; -	The proposed WEF and associated infrastructure will entail the construction of buildings and other infrastructure with physical footprints of approximately 100m^2 or more within a surface water feature / watercourse or within 32m of a surface water feature / watercourse. The infrastructure associated with the proposed projects will most likely avoid the identified surface water features / watercourses where possible, although some structures may occur within a surface water feature / watercourse and/or within 32m of a surface water feature / watercourse.

		A Surface Water Impact Assessment has been undertaken to assess the impacts of the proposed developments on the identified surface water features / watercourses.
19	**GN R. 983 (as amended) Item 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;	The proposed wind farm projects will likely involve the excavation, removal, infilling, depositing and moving of more than 10 cubic metres (m^3) of soil, sand, pebbles or rock from some of the identified surface water features / watercourses. Although the layout of the proposed wind farm projects will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and/or access roads may need to traverse the identified surface water features / watercourses. In addition, during construction of these roads, soil may need to be removed from some of the identified surface water features / watercourses. A Surface Water Impact Assessment has been undertaken to assess the impacts of the proposed wind farm projects on the identified surface water features / watercourses.
24 (ii)	**GN R. 983 (as amended) Item 24:** 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;	Internal access roads will be required to access the wind turbines and respective substations. Existing access roads will be used wherever possible. However, new roads will be required.
28 (ii)	**GN R. 983 (as amended) Item 28:** 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;	Based on Google Earth Imagery, the land use of the proposed site is currently and was historically utilised for agricultural purposes. As such the proposed projects will result in a change of land use of the proposed site from agriculture to industrial / commercial. The total extent of the proposed site is approximately 13 489 ha. An agricultural impact assessment is being undertaken to assess the impacts of the proposed wind farm projects on the agricultural potential of the sites.
48 (i) (a) (c)	**GN R. 983 (as amended) Item 48:** 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; or	The layouts of the proposed projects will be designed to avoid the identified surface water features / watercourses as far as possible, however, the proposed development will entail the upgrading (expansion) of existing access roads, where necessary, to a road width of up to 10m as well as other infrastructure within surface water features / watercourses and within 32m of a surface water feature /watercourse.

	(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	The upgrading (expansion) of the existing access roads and infrastructure will most likely exceed 100m^2. A Surface Water Impact Assessment has been undertaken to assess the impacts of the proposed projects on the identified surface water features / watercourses.
56 (ii)	**GN R. 983 Item 56:** 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 –	Internal access roads will be required to access the wind turbines and respective substations. Existing access roads will be used wherever possible. However, the existing access roads will be upgraded to a width of up to 10m or by lengthening them by more than 1km, where necessary.
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended.**	**Describe the portion of the proposed project to which the applicable listed activity relates.**
3 f. 1 (bb) (ee)	**GN R. 985 (as amended) Item 3:** The development of masts or towers of any material or type used for telecommunication broadcasting or radio transmission purposes where the mast or tower— (a) is to be placed on a site not previously used for this purpose; and (b) will exceed 15 metres in height— f. Mpumalanga i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	The proposed project includes the development of a telecommunications tower with a height of up to 32m.
4 f. ii (bb) (dd)	**GN R. 985 (as amended) Item 4:** The development of a road wider than 4 metres with a reserve less than 13,5 metres. **f. Mpumalanga** ii. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Internal roads with a width of up to approximately 10m will provide access to each wind turbine as well as the substations. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. These roads will occur within the Mpumalanga Province, outside urban areas. In addition, the proposed wind farm projects are located within National Protected Area Expansion Strategy Focus Areas and Critical Biodiversity Areas.
12 f. ii.	**GN R. 985 (as amended) Item 12:** The clearance of an area of 300 square meters or more of indigenous vegetation **f. Mpumalanga**	Clearance of indigenous vegetation will be required for the proposed wind farm project (including BESS and other associated infrastructure). The proposed wind farm project will transform more than 300m^2 of

	ii Within critical biodiversity areas identified in bioregional plans;	indigenous vegetation. The wind farm sites contain CBAs.
14 (ii) (a) (c); f. i. (bb) (ff)	**GN R. 985 (as amended) Item 14:** The development of – (ii) infrastructure or structures with a physical footprint of 10 square meters or more; where such development occurs – (a) within a watercourse; (c) if no development setback has been adopted, within 32 meters of a watercourse, measured from the edge of a watercourse; **f. Mpumalanga** i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	The proposed wind farm project will entail the construction of roads and other infrastructure with a physical footprint of $10m^2$ or more within a watercourse or within 32m from the edge of a surface water feature / watercourse. Although the layout of the proposed wind farm projects will be designed to avoid the identified surface water features / watercourses as far as possible, some of the internal and access roads will need to traverse the identified surface water features / watercourses. The proposed wind farm projects are located in the Mpumalanga Province, outside an urban area. In addition, the proposed wind farm projects are located within National Protected Area Expansion Strategy Focus Areas. The wind farm sites also contain CBAs.
18 f. i. (bb) (ee)	**GN R. 985 (as amended) Item 18:** The widening of a road by more than 4 meters, or the lengthening of a road by more than 1 kilometer- **f. Mpumalanga** i. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	Internal roads with a width of up to approximately 10m will provide access to each wind turbine as well as the substations. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary. Internal access roads will thus likely be widened by more than 4m, or lengthened by more than 1km. These roads will occur within the Mpumalanga Province, outside urban areas. The proposed wind farm projects are located within National Protected Area Expansion Strategy Focus areas. The wind farm site also contains CBAs.
23 (ii) (a) (c); f. ii. (ee) (gg)	**GN R. 985 (as amended) Item 23:** 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;	The proposed wind farm project will most likely entail the development and expansion of roads and other infrastructure by $10m^2$ or more within a surface water feature / watercourse or within 32m from the edge of a surface water feature / watercourse. Although the layouts of the proposed wind farm projects will be designed to avoid the identified surface water features / watercourses as far as possible, some of

	(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; **f. Mpumalanga** ii. Outside urban areas: (bb) National Protected Area Expansion Strategy Focus areas; (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;	the existing internal and access roads may likely need to traverse some of the identified surface water features / watercourses. The proposed wind farm projects occur within the Mpumalanga Province and are located outside urban areas. In addition, the proposed wind farm projects are located within National Protected Area Expansion Strategy Focus areas. The wind farm site also contains CBAs.
Activity No(s):	**Provide the relevant Scoping and EIR Activity(ies) as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended.**	**Describe the portion of the proposed project to which the applicable listed activity relates.**
1	**GN R. 984 (as amended) Item 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,	The proposed projects will entail the development of wind farms, including BESS and other associated infrastructure, each with a maximum generation capacity of up to approximately 650MW. In addition, the proposed wind farm projects will be located outside an urban area.
15	**GN R. 984 (as amended) Item 15**: The clearance of an area of 20 hectares or more of indigenous vegetation	The proposed wind farm project will involve the clearance of more than 20ha of indigenous vegetation. A Terrestrial Ecology Impact Assessment is being undertaken to assess the impacts of the proposed wind farm projects on indigenous vegetation.

7. NATIONAL WEB-BASED ENVIRONMENTAL SCREENING TOOL

The National Web based Environmental Screening Tool is a geographically based web-enabled application which allows a proponent intending to submit an application for environmental authorisation in terms of the Environmental Impact Assessment (EIA) Regulations 2014, as amended to screen their proposed site for any environmental sensitivity.

According to the DFFE Screening Tool Report (attached in **Appendix 8**), the following themes described in **Table 10** below are applicable to the proposed development:

Table 10: DFFE Screening Tool Environmental Sensitivity

Theme	DFFE Sensitivity	Specialist Sensitivity	Comment
Agriculture Theme	Very High	High	The Agricultural Agro-Ecosystem Specialist Assessment is included in **Appendix 6** of the Draft Scoping Report. This site sensitivity verification undertaken by the specialist verifies those parts of the site that are indicated as cropland as being of high agricultural

Theme	DFFE Sensitivity	Specialist Sensitivity	Comment
			sensitivity and the rest of the site as being of medium agricultural sensitivity.
Animal Species Theme	High	Medium – High	The Biodiversity Assessment Report is included **Appendix 6** of the Draft Scoping Report. According to the report, the Sensitivity is regarded as Medium to High. This is confirmed, but in this case the High Animal Species Diversity is often caused by birds listed under Animal Species Diversity. The avifauna is however not reported on in the Biodiversity Assessment (An Avifaunal Assessment has been undertaken refer to **Appendix 6**). As far as mammals are concerned, the medium animal species sensitivity is confirmed.
Aquatic Biodiversity Theme	Very High	Very High	The Aquatic Ecological Report is included in **Appendix 6** of the Draft Scoping Report. The study site lies mostly within an area in which the south-western half is considered Very high Aquatic Combined Biodiversity Sensitivity, and the north-eastern half has Low Aquatic Combined Biodiversity Sensitivity. The very high sensitivity is associated with the Freshwater Ecosystem Priority Area (FEPA) River sub-catchments of the Vaalbankspruit and Vaal Rivers. The larger rivers (Vaalbankspruit and Vaal) and associated valley bottom wetlands are mapped as Aquatic Critical Biodiversity Areas (CBAs). The assessment thus largely concurs with the Very high Aquatic Biodiversity Combined Sensitivity mapping of the screening tool for the larger Vaal and Vaalbankspruit Rivers with their associated tributaries and wetland areas. The surrounding catchments, after taking into account the recommended 50m areas are considered as of Low Aquatic Biodiversity Combined Sensitivity.
Archaeological and Cultural Heritage Theme	Very High	Moderate	The Heritage Report is included in **Appendix 6** of the Draft Scoping Report. According to the report, the specialist disputes the results of the DFFE Screening Tool for Palaeontology and disputes the results of the screening tool for archaeology and cultural heritage - these should be considered to be Moderate:

Theme	DFFE Sensitivity	Specialist Sensitivity	Comment
			• The cultural value of the broader area has some significance in terms of its mining and agricultural history (Moderate) • Some significant archaeological resources were identified within the broader area (Moderate) • No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils (Moderate)
Avian (Wind) Theme	Low	High	The Avifaunal Report is included in **Appendix 6** of the Draft Scoping Report. According to the report, The PAOI contains confirmed habitat for 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). The occurrence of SCC was confirmed during the integrated pre-construction monitoring programme. Based on the field surveys, a classification of High sensitivity for avifauna in the screening tool is suggested.
Bats (Wind) Theme	High	High	The Bat Report is included in **Appendix 6** of the Draft Scoping Report. According to the report, the high sensitivity in areas as identified by the DFFE Screening Tool has been confirmed by the specialist as well as the identification of some additional high-sensitivity areas. A complete pre- construction monitoring programme is currently underway to assess the potential impacts on bats and a more detailed sensitivity map will be generated for the proposed development.
Civil Aviation (Wind) Theme	High	TBC	The South African Civil Aviation Authority will be consulted with during the scoping phase to confirm the impacts in the civil aviation installations.
Defence (Wind) Theme	Low	N/A	The entire site has a low sensitivity in terms of the defence theme. No further specialist study required.
Flicker Theme	Very High	Moderate	The Flicker Assessment is included in **Appendix 6** of the Draft Scoping Report.

Theme	DFFE Sensitivity	Specialist Sensitivity	Comment
			According to the report, due to the number of potential receptors identified, the sensitivity of the project area to flicker is considered **moderate**.
Landscape (Wind) Theme	Very High	Very High	The Visual Assessment is included in **Appendix 6** of the Draft Scoping Report. According to the report, the specialist has confirmed the sensitivity rating as the landscape, site and receptor sensitivities were verified during the site visit (and detailed in the body of the Visual Assessment).
Palaeontology Theme	Very High	Moderate	The Heritage Report is included in **Appendix 6** of the Draft Scoping Report. According to the report, the specialist disputes the results of the DFFE Screening Tool for Palaeontology and disputes the results of the screening tool for archaeology and cultural heritage - these should be considered to be Moderate: • The cultural value of the broader area has some significance in terms of its mining and agricultural history (Moderate) • Some significant archaeological resources were identified within the broader area (Moderate) • No highly significant palaeontological resources were identified within the development area, however the geology underlying the development area is very sensitive for impacts to significant fossils (Moderate)
Noise Theme	Very High		The Noise Site Sensitivity Verification Report is included in **Appendix 6** of the Draft Scoping Report. The desktop review and field study undertaken by the specialist confirmed that the sensitivity rating produced by the screening tool is accurate and the site sensitivity is classified as very high for the noise theme.
Plant Species Theme	Medium	Medium – Very High	The Biodiversity Assessment Report is included **Appendix 6** of the Draft Scoping Report. According to the report, the DEA Screening Tool result of Low-to Medium Plant Species Sensitivity for the terrestrial habitat is confirmed. However, the current

Theme	DFFE Sensitivity	Specialist Sensitivity	Comment
			vegetation survey results indicate Medium to Very High plant species richness in the various plant communities on the site and several threatened plant species are listed from different sources. Seven plant species were recorded from the site. It was therefore indicated that some plant communities have High ecological (biodiversity) sensitivity, and these are also indicated as being “Irreplaceable” in the MBSP Critical Biodiversity assessment. The cultivated areas have Low plant species sensitivity while terrestrial grassland plant communities have medium plant species sensitivity. This is confirmed.
RFI (Wind Theme)	High	TBC	The screening tool described the study area as high Radio Frequency Interference Theme (RFI) sensitivity due to the ABO Ujekamanzi WEF 1 falling within 1 km of a telecommunication facility or between 30 and 60 km from a Weather Radar installation and within the radar’s line of sight. The relevant departments will be consulted with during the Scoping Phase to confirm requirements (if any).
Terrestrial Biodiversity Theme	Very High	Very High	The Biodiversity Assessment Report is included **Appendix 6** of the Draft Scoping Report. The Terrestrial Biodiversity Sensitivity is regarded to be Very High in the larger south-western part of the study site. The Very High Sensitivity is because, according to Mucina and Rutherford (2006, 2017) the Ecosystem status for this vegetation type (Amersfoort Highveld Clay Grassland) is Vulnerable, as so much of this vegetation type is already transformed. Of high significance is that, in terms of the MBSP Terrestrial Assessment, large areas are classified as Critical Biodiversity Areas (Irreplaceable and Optimal) and Ecological Support Areas are present. The Low Terrestrial Biodiversity Sensitivity in the north-eastern part is mainly due to agricultural areas, showed as Modified in the MBSP Terrestrial Assessment. The result of the screening tool on terrestrial biodiversity sensitivity for the proposed WEF development area is confirmed.

8. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

8.1 Geographical

The proposed WEF is located approximately 20 km north-east of Amersfoort in the Mpumalanga Province and is within the Dr Pixley Ka Isaka Seme Local Municipality, in the Gert Sibande District Municipality. The regional context of the proposed application site is shown in **Figure 6** below.

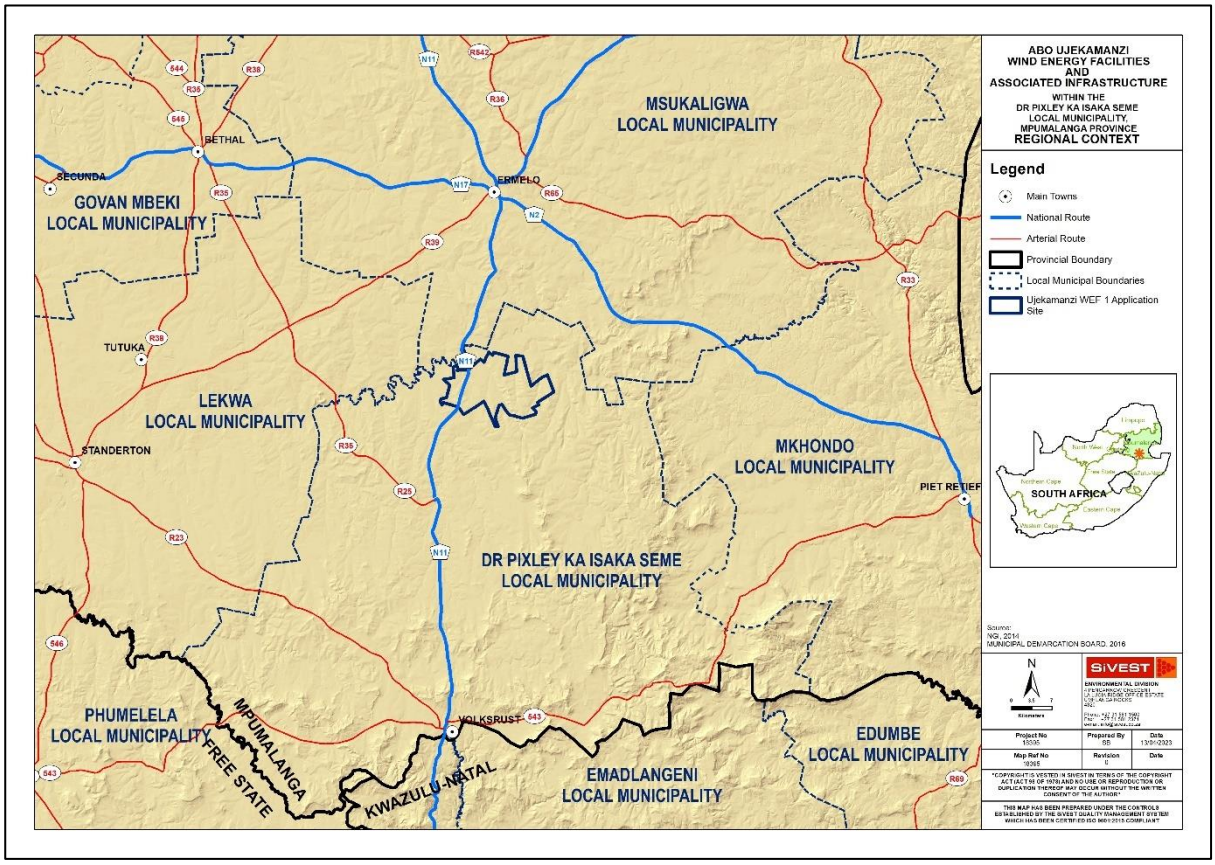

Figure 6: Regional context

8.2 Land Use

The site is located in a predominantly cattle farming area that includes grain. Agricultural land use on the site and surrounds is predominantly grazing of both cattle and sheep on the lower potential soils in combination with dryland crop production of maize, soya and Oulandsgras for hay on the higher potential soils (**Figure 7**). In most cases these patches of land are undisturbed areas with very sparse vegetation cover. The study area is an extensive flat plain with minimal relief (**Figure 8** and **9**).

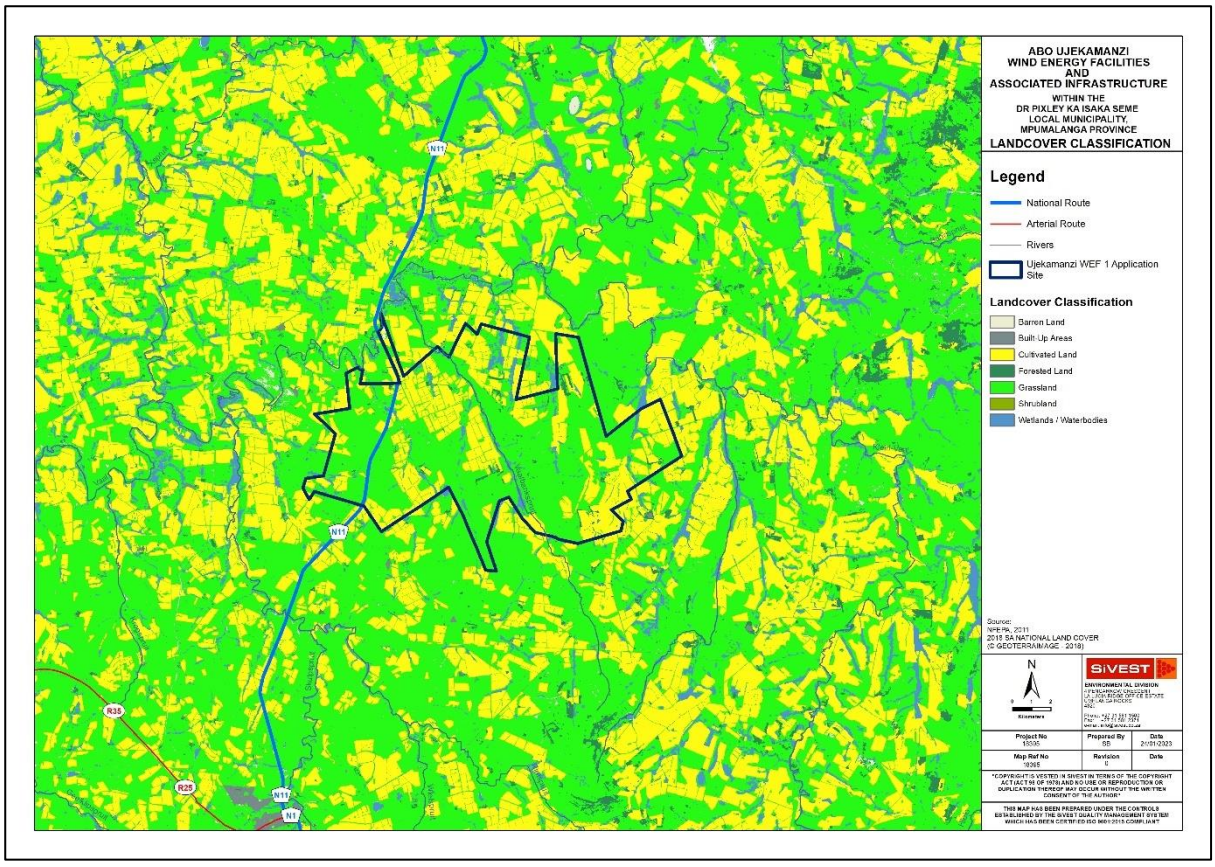

Figure 7: Land Cover Classification

Figure 8: Typical site area

Figure 9: Typical site area

8.3 Climate

The average annual high temperature is 25.42ºC. The average annual low temperature is 13.31ºC. The warmest month is December with the temperature rising up to 27.7ºC. The coldest month is June with the temperatures dropping to 8.35ºC. The area normally receives about 640mm of rain per year, mostly during summer. On average, it receives no rainfall in June and the highest rainfall (99mm) occurs in November and January.

8.4 Topography

The topography comprises low hills and undulating plains interspersed with tributaries of the upper Vaal River. Drainage in the study area is predominately north-westwards and associated with the Vaal, Klein Vaal and Vaalbankspruit Rivers. The altitude on site ranges from about 1590 m in the northern extent to about 1745 m in the south-east. Hilltops are orientated on a north-south orientation with the valleys drained by the Vaalbankspruit and Klein Vaal Tributaries flowing in a northerly direction. The site is in the upper middle reaches of the tributaries where the watercourses are relatively small in the southern portion, becoming larger as one moves northwards.

8.5 Aquatic/Freshwater Assessment

An Aquatic Biodiversity and Species Specialist Assessment was undertaken by Toni Belcher (report dated April 2023).

8.5.1 Baseline Assessment

According to the assessment, the study site lies mostly within an area in which the south-western half is considered Very high Aquatic Combined Biodiversity Sensitivity, and the north-eastern half has Low Aquatic Combined Biodiversity Sensitivity. The very high sensitivity is associated with the FEPA River sub-catchments of the Vaalbankspruit and Vaal Rivers. The larger rivers (Vaalbankspruit, Klein Vaal and Vaal) and associated valley bottom wetlands are mapped as Aquatic CBAs.

FEPAs are intended to provide strategic spatial priorities for conserving South Africa's freshwater ecosystems and supporting the sustainable use of water resources. The river and wetland FEPAs are required to be maintained in a largely natural ecological state, while Fish Support Areas should not be allowed to degrade from their existing ecological condition. The Vaalbankspruit and Vaal River Sub-catchments at the site are mapped as FEPA River sub-catchments while the Klein-Vaal River to the east of the study area is mapped as a Fish Support Area. The area also contains many FEPA wetlands and wetlands in the National Wetland Map (seeps, valley bottom and floodplain wetlands) that are associated with the rivers. There are also some natural depression wetlands (vernal ponds).

Figure 10: National Freshwater Ecosystem Priority Area wetland mapping and National Wetland Map version 5 mapping for the site (obtained from CapeFarmMapper, April 2023)

8.5.2 Aquatic Features

The aquatic features within the site comprise the Vaal, Klein Vaal and Vaalbankspruit Rivers. The Vaalbankspruit and Klein Vaal Rivers rise to the southeast of the study area and flow in the north-westerly direction to join the Vaal River north of the study area. The Rietspruit River to the south-west of the study area and joins the Vaal River about 5 km to the west of the study area. (**Figure 11).** These are all tributaries of the Vaal River that drains in a south-westerly direction along the northern edge of the site to eventually join the Orange River near Douglas more than 650 km south-west of the site.

Within the study area, the streams fall within the foothill zones of the Highveld Ecoregion. The larger watercourses in this area (Vaal, Klein Vaal and Vaalbankspruit Rivers) are perennial rivers that flow throughout the year while their smaller tributaries flow seasonally. These larger rivers comprise primarily wide meandering river channels with associated valley bottom wetland areas. Images of the watercourses within the site are provided on the following pages.

Figure 11: View of the upper Vaal River in the north-western extent of the study area

Figure 12. View of the lower Vaalbankspruit River in the western portion of the study area

Figure 13. View of extensive valley bottom wetlands associated with a tributary of the Vaal River in the eastern portion of the study area

Figure 14. View of a seep associated with a tributary of the Vaalbankspruit River in the northern portion of the study area

Figure 15. View of the large pan "Ons-Pan" in the south-western portion of the study area

Site verification of the aquatic features at the site determined the watercourses to be perennial and seasonal streams that have been modified by the surrounding agricultural activities within or adjacent to watercourses, as well as flow modification associated with the number of instream dams that have been constructed in the upper reaches of the feeder streams where seeps often occur. In places, the flow modification has resulted in the development of erosion dongas within the stream channels. There has also been the removal of riparian vegetation which has been replaced with alien plants. The watercourses, as a result, are, in general, in a moderately modified condition instream and are often more impacted in their riparian zones. In places, however, there are still watercourses that are in a largely natural ecological condition.

Classification of aquatic features

The geomorphological and physical characteristics of the watercourses within the site can be classified as follows:

Table 11. Geomorphological and physical features of the watercourses on site

River	Larger Vaal, Klein Vaal and Vaalbankspruit Rivers	Minor unnamed tributaries
Geomorph Zone	Upper to Lower Foothill and Lowland Zones	
Lateral mobility	Unconfined to Semi-Confined	
Channel form	Single to multiple channels	
Channel pattern	Single or braided channel with moderate sinuosity	Moderate to low sinuosity
Channel type	Primarily Alluvium with some boulders	Alluvial and loamy soils with gravel
Channel modification	Channel is fairly natural to moderately modified with localised habitat and flow modifications	Localise disturbances to watercourses and associated habitats
Hydrological type	perennial	Seasonal
Ecoregion	Highveld	
DWA catchment	C11D and C11E	

Vegetation type	Amersfoort Highveld Grassland vegetation
Rainfall region	Summer

8.5.3 Aquatic/Freshwater Sensitivities

The larger rivers on the valley floors are deemed to be of high/very high importance. They are usually associated with valley bottom wetlands and provide valuable habitat for biota. They also provide important corridors for the movement of biota. These larger watercourses, with their associated wetland habitat, are also particularly sensitive to disturbance and changes to flow. The smaller watercourses draining the valley sites are of lesser ecological importance. However, they are often associated with hillslope seeps that drain into the larger streams and are very sensitive to disturbance. The isolated depression wetlands are also deemed to be of high/very high ecological importance and sensitivity.

The site visit confirmed that the larger Vaal, Klein Vaal and Vaalbankspruit Rivers and many of their larger tributaries within the site are in a moderately modified ecological condition and are of high ecological importance and sensitivity due to the wetland habitats associated with these watercourses that are very sensitive to impact and help provide important ecological corridors in the landscape for the movement of biota.

Based on the PES, EIS and REC determined in the previous section, buffers have been recommended to protect these ecosystems. The recommended buffer area between the aquatic features and the project components (turbines, crane pads, substations and construction camps (please note this excludes roads) to ensure these aquatic ecosystems are not impacted by the proposed activities, is at least 50m from the delineated edge of the river channels in the case of the larger watercourses or from the centre of the stream for the smaller watercourses. Based on the above, the preliminary buildable areas have considered the aquatic ecosystem constraints such that the proposed buildable areas are located outside of the aquatic features and the recommended buffer areas.

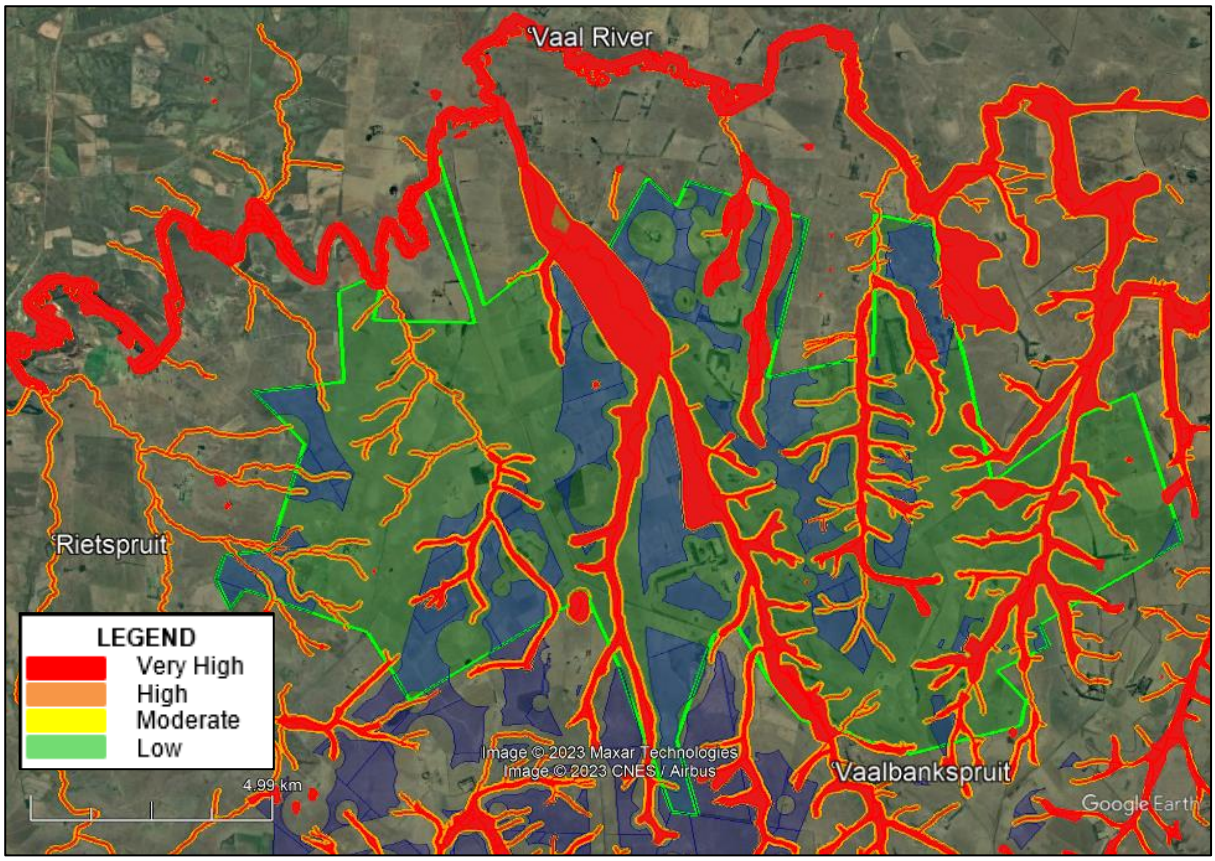

Figure 16: Google Earth image showing the aquatic sensitivity mapping together with the proposed layout (buildable areas) for the project for the site.

8.5.4 Preliminary Conclusions

Based on the findings of this specialist assessment, there is no reason from a freshwater perspective, why the proposed activity (with the implementation of the mitigation measures) should not be authorized. Cognisance has been taken of the initial aquatic ecosystem constraints mapping in the placing of the proposed buildable areas.

The risk assessment determined that the proposed development of the WEF poses a low risk of impacting aquatic habitat, water flow and water quality. The water use activities associated with the proposed project could potentially be authorised through the general authorisations for Section 21(c) and (i) water uses.

8.6 Biodiversity Impact Assessment

A Biodiversity Impact Assessment was undertaken by Eco Agent CC (report dated April 2023).

8.6.1 Baseline Assessment

According to the report, the Ujekamanzi WEF1 study site is located within a high altitude (1600-1750 m above sea level) slightly undulating landscape within the Amersfoort Highveld Clay Grassland vegetation type. The soils within this landscape are fertile, dark-coloured clays, derived from dolerite that is intrusive in the Karoo sediments of the Madzaringwe and Volksrust Formations. The area has relatively high rainfall, The regular annual precipitation is about 650-750 mm, and the cold winters have severe and frequent frost. The relatively

higher lying uplands are drained by numerous drainage lines that merge to form permanent spruits in the relatively lower-lying valleys, ultimately draining into the Vaal River, which is located just north of the study site.

- **Agriculture**: The rich soils in the relatively flat valleys, often along the spruits, are very suitable for crop production and are mostly ploughed for cultivation. This results in very valuable agricultural land, though also results in the transformation of natural vegetation to agricultural fields, which, from a biodiversity perspective have Low Sensitivity.
- **Natural Grasslands**: Contrary to this, the higher-lying uplands are covered by lush, dense grassland, with many grass and forb species, but very limited woody species. The uplands are further characterised by crests, slopes, scarps, and varying soil depth and soil rockiness. The highly productive grasslands (high rainfall and nutrient rich soils) are utilised for grazing by livestock. Different grazing management regimes over this large area with many different owners/managers resulted in a wide range of grazing intensities over long periods of time. Consequently, the vegetation consists of a mosaic of grassland patches varying from veld in very good condition to various degrees of disturbance and degradation. All these factors lead to a variety of ecosystems, which vary in biodiversity and consequently vary in ecological sensitivity. Large parts of these grassland are recognised as being Critical Biodiversity Areas, both Optimal and Irreplaceable.

8.6.2 Vegetation Types

The study site is mainly situated within the Amersfoort Highveld Clay Grassland (GM 13) vegetation type, with limited eastern parts located in the Wakkerstroom Montane Grassland (GM14).

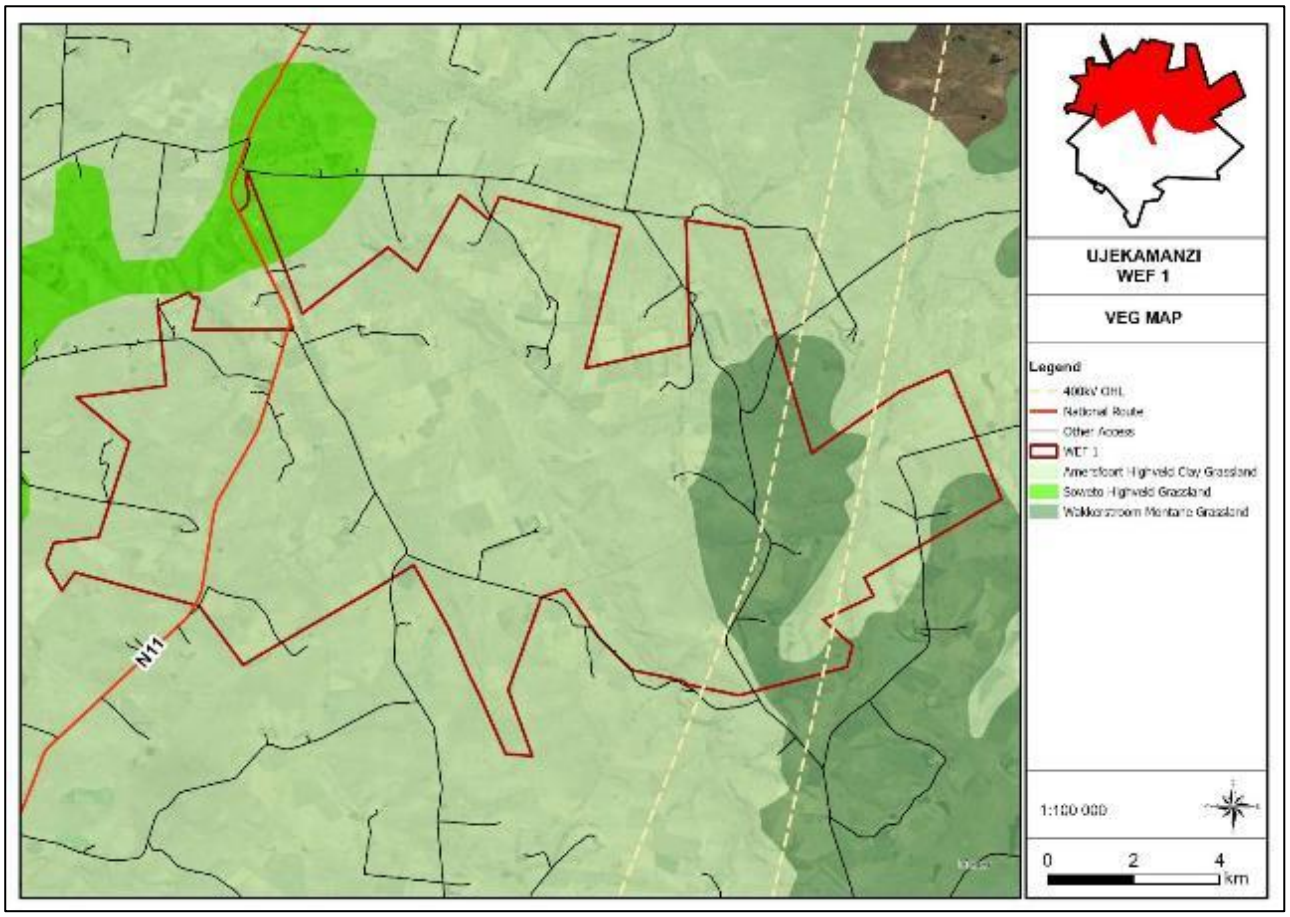

Figure 17: The site is located within the Amersfoort Highveld Clay Grassland and the Wakkerstroom Montane grassland

Due to the relatively large area of the study site within Amersfoort Highveld Clay Grassland, and the variety of plant communities, many of these species are expected to occur in the study site area:

On some of the slopes limited **shrubby woody species** occur:

Diospyros lycioides	*Diospyros austro-africana*

Grass species often encountered in these situations include:

Andropogon appendiculatus		*Elionurus muticus*	
Andropogon schirensis		*Eragrostis capensis*	
Aristida bipartita		*Eragrostis chloromelas*	d
Aristida congesta		*Eragrostis curvula*	d
Aristida junciformis		*Eragrostis plana*	d
Aristida stipitata		*Eragrostis racemosa*	
Brachiaria serrata		*Harpochloa falx*	
Cymbopogon caesius		*Heteropogon contortus*	
Cymbopogon pospischilii		*Koeleria capensis*	
Cynodon dactylon		*Microchloa caffra*	
Digitaria diagonalis		*Setaria incrassata*	
Digitaria monodactyla		*Setaria nigrirostris*	
Digitaria tricholaenoides		*Setaria sphacelata*	
Diheteropogon amplectens		*Themeda triandra*	d

Tristachya leucothrix

Furthermore, **forb species** that occur at many localities within this area include:

Abildgaardia ovata
Acalypha peduncularis
Anthospermum rigidum
Berkheya insignis
Berkheya pinnatifida
Berkheya setifera
Boophone disticha *RD*
Bulbostylis contexta
Chaetacanthus costatus
Crabbea acaulis
Cynoglossum hispidum
Dicoma anomala
Eucomis autumnalis *RD*
Euphorbia clavarioides truncata
Euphorbia striata
Gnidia burchellii
Gnidia capitata
Haplocarpha scaposa
Helichrysum caespititium
Helichrysum rugulosum
Hermannia depressa
Hermannia transvaalensis
Hilliardiella natalensis
Hilliardiella oligocephala
Hypoxis rigidula
Hypoxis villosa
Ipomoea crassipes
Ipomoea oblongata
Pelargonium luridum
Pentanisia angustifolia
Pentanisia prunelloides
Peucadanum magalismontanum
Polygala uncinata
Polygala hottentotta
Pseudognaphaleum luteo-album
Rhynchosia effusa
Rhynchosia totta
Salvia repens
Schistostephium crataegifolium
Sonchus nanus
Wahlenbergia undulata

8.6.3 Threatened Ecosystems

The report states that Amersfoort Highveld Clay Grassland is classified as **Vulnerable,** as about 25% has been transformed, mainly by cultivation of crops, while many parts are overgrazed (Mucina & Rutherford 2006) This vegetation is, however, **not listed** as threatened by SANBI & DEAT (2009) and NEMBA, Government Notice 1002 (2011) and Government Notice 689 (2022).

The Wakkerstroom Montane Grassland is **Least Threatened** (Mucina & Rutherford 2006), though according to SANBI & DEAT (2009) and NEMBA, Government Notice 1002 (2011) and Government Notice 689 (2022) the Ecosystem status for the Wakkerstroom/Luneberg area, within the Wakkerstroom Montane Grassland is **Endangered.** The study site does not fall into this category.

On the specific site the vegetation within the valleys is often transformed by ploughing and cultivation of maize and limited other crops, though the higher-lying areas are covered by grassland and mostly grazed by livestock.

8.6.4 Critical Biodiversity Areas (CBA) and Ecological Support Areas (ESA)

In terms of the MBSP Terrestrial Assessment (Figure below):

Irreplaceable CBAs occur in the central-southern parts of the area (marked red in the figure below), mostly restricted to eastern high-altitude grassland associated ridges and central parts of the Vaalbankspruit. These areas of the study site are the most important for conservation.

CBA Optimal sites occur over much of the western and central parts of the site. These areas are natural grassland of some conservation importance, with several upper reaches of drainage lines occurring in these areas.

Other Natural Areas also representing grassland occur widespread on the site (refer to the figure below), though these are highly fragmented by cultivation areas and are often disturbed/degraded.

Local **ESA corridors** occur mainly in the southern and eastern parts of the site. All the grasslands are highly fragmented by cultivation areas and are often disturbed/degraded, classified as Highly or Moderately modified.

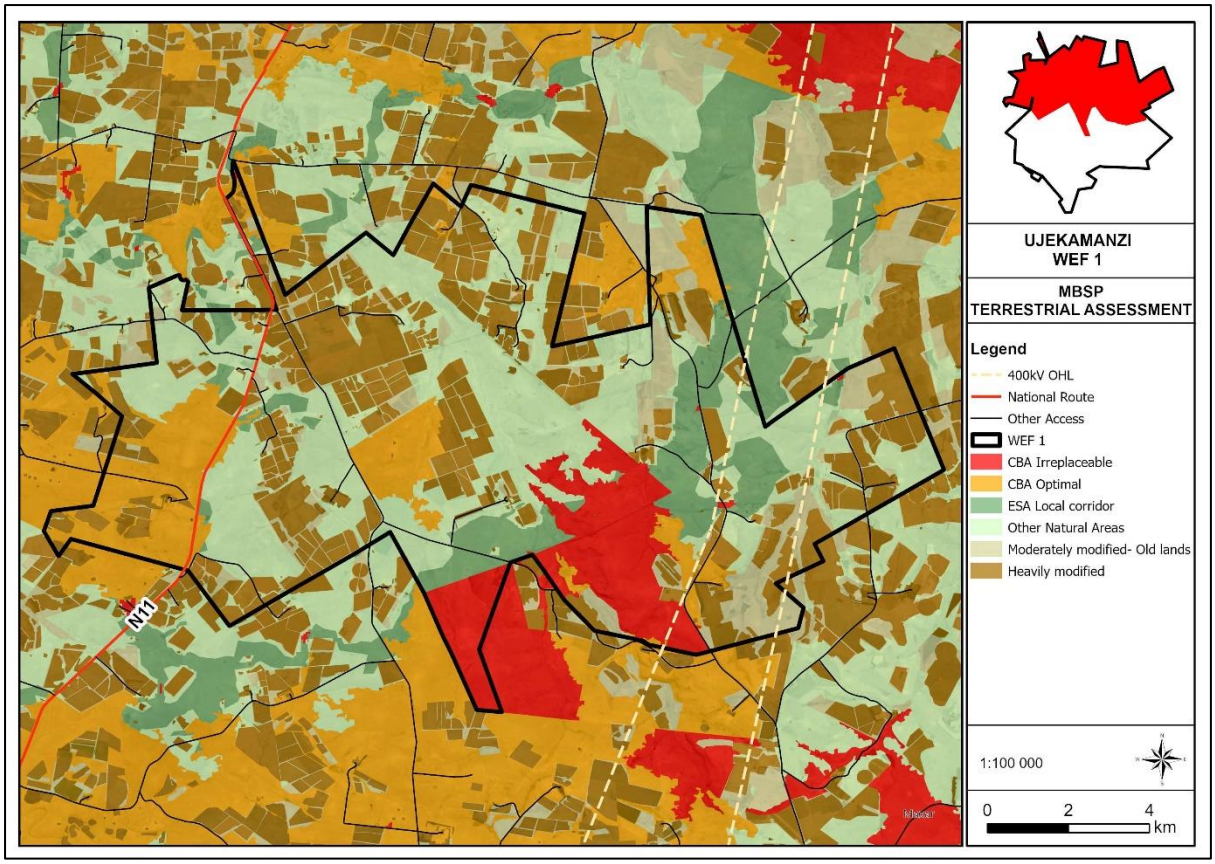

Figure 18: Irreplaceable CBAs occur in the central to south-eastern parts of the area (marked red). CBA Optimal areas occur scattered on the site.

Protected and Conservation Areas / Protected Trees

No formal protected or conservation area occur in the Amersfoort Highveld Clay Grassland. No protected trees occur on the site.

Species of Conservation Concern and Red Listed Plant Species

Red Data listed plant species and Orange listed plant species (= plant species of conservation concern) are those plants that are important for South Africa's conservation decision making processes. These plants are nationally protected by the National Environmental Management: Biodiversity Act (Raimondo et al, 2009). Threatened species (Red Data listed species) are those that are facing high risk of extinction, indicated by the categories Critically Endangered (CE), Endangered (EN) and Vulnerable (VU). Species of Conservation Concern include the Threatened Species.

Additionally, the Orange listed categories are Near Threatened (NT), Data Deficient (DD), (DDT = lack of taxonomic data), Critically Rare (CR), Rare (R) and Declining (D). This is in accordance with the Red List for South African Plants (Raimondo et al. 2009 upgraded on SANBI website).

Lists of Red Data plant species (Raimondo et al 2009) for the area in general were obtained from DEA Screening Tool, (2022) MTPA (2022) and SANBI (table below).

List of threatened or sensitive plant species for the area recorded by (MTPA) Mpumalanga

Family	Species	Status Mpumalanga	Habitat
Fabaceae	*Argyrolobium campicola*	NT	**grassland**
Apocinaceae	*Aspidoglossum xanthosphaerum*	VU	Marshy sites
Amaryllidaceae	*Boophone disticha*	Declining	**Grassland** *recorded on site*
Hyacinthaceae	*Eucomis autumnalis*	Declining	Damp grassland *Recorded on site*
Hyacinthaceae	*Eucomis montana*	Declining	Rocky montane grassland
Hyacinthaceae	*Eucomis pallidiflora (=E. pole-evansii)*	NT	wetlands
Orchidaceae	*Eulophia cooperi*	Rare	**grassland**
Orchidaceae	*Eulophia parvilabris*	Rare	Stream valleys
Iridaceae	*Gladiolus malvinus*	VU	Dolerite outcrops
Iridaceae	*Gladiolus robertsoniae*	NT	Wet rocky dolerite
Gunneraceae	*Gunnera perpensa*	Declining	Marshy area
Iridaceae	*Hesperantha rupestris*	DD	Wetland/rocky?
Hypoxidaceae	*Hypoxis hemerocallidea*	LC	Widely distributed, *Recorded from site*
Aizoaceae	*Khadia carolinensis*	VU	Rocky outcrops *Recorded on site*
Fabaceae	*Lotononis difformis*	VU	**grassland**
Amaryllidaceae	*Nerine gracilis*	NT	Wet or damp areas
Amaryllidaceae	*Nerine platypetala*	VU	Edges of marshes
Apocinaceae	*Pachycarpus suaveolens*	VU	**grassland**

The records of MTPA indicate that the species listed in the table above were previously recorded from farms within or from similar habitats in proximity of the farms on the study site. It can be assumed that they may occur locally in suitable habitats. Many of these species are wetland associated and as drainage lines, streams and wetlands are generally excluded from the proposed development, these species should therefore not be affected. However, several of the species do occur in grasslands on the site, particularly the higher-altitude grasslands (marked bold in the table above).

8.6.5 Results of the Vegetation and Flora Survey

Highland Grassland

This is the typical and widespread natural grassland found in the Amersfoort Highveld Clay Grassland type. Within the study area five patches of this type of grassland occur scattered over the site, on the higher-lying crests and higher slopes. Within the study area this plant community covers about 1530 hectares. The nutrient-rich, dark clay soil is mostly doloritic in origin. Due to high rainfall the soils are often moist, retaining the moisture due to high clay content. The vegetation is mostly dense, short grassland, dominated by grass species and scanty distribution of many forb species. This grassland is often well grazed by livestock, leading to the dominance of *Eragrostis plana* and *Eragrostis curvula*, while *Themeda triandra* is less prominent on well-grazed grazed sites. Woody species are rare, restricted to local rocky areas.

Figure 19: Highland Grassland

Fairly limited patches of Highland Grassland occupy small areas in the western and central parts of the study site. Due to its very high plant species richness within the study site, this plant community is often associated with the Optimal Critical Biodiversity Area (CBA). Within the study area only the Highland Grassland falls in this CBA category. This vegetation has a somewhat lower conservation status than the Sensitive Highland Grassland, which is classified as an Irreplaceable CBA. In terms of biodiversity sensitivity, the Highland Grassland is consequently placed between High and Medium sensitivity. The reason for this relatively lower sensitivity is particularly because it is classified as an Optimal CBA and not an Irreplaceable CBA. This implies a lower status than Irreplaceable, but nevertheless a Critical Biodiversity Area. Part of this community in the central part of the study site, will be located within a No-Go area.

Considering the nature of the proposed development with several widely scattered wind turbines (500-600 m apart), each with a relatively small footprint (<0.5 ha), and therefore with large tracks of natural undisturbed veld, it is suggested that proposed development can be supported in this vegetation. Large areas will be kept undeveloped (by this project) and will be available for conservation or farming purposes and will still be available for grazing by livestock and/or wildlife.

Sensitive Highland Grassland

The Sensitive Highland Grassland is restricted to High-lying areas in the central-eastern part of the study area, often above rocky scarp ridges. Within the study site this plant community covers 1001 hectares. This undulating area contains in addition to typical grassland, also more rocky soils on upland

crests and damp grassland in lower-lying areas, and is therefore also, as a whole, very rich in plant species.

Figure 20: Sensitive Highland Grassland above scarps or on crests.

Due to its very high plant species richness, this plant community is associated with Irreplaceable Critical Biodiversity Area (CBA) and consequently has High ecological sensitivity and a high conservation status. This grassland occurs mainly from the Vaalbankspruit eastwards and encloses the slopes and the Rocky scarps and Ridges. It also occurs at high altitudes in the central part of the study site. The Vaalbankspruit, and the slopes with the rocky scarps and ridges are both No-Go areas.

Considering the nature of the proposed development with several widely spaced wind turbines (500-600 m apart), each with a relatively small footprint (<0.5 ha), and therefore with large tracks of natural undisturbed veld, it is suggested that development can be supported in this vegetation, on condition that a strip of sensitive grassland immediately east of the scarps and ridges be included in the No-go area. Large areas will be then kept undeveloped for conservation purposes and will still be available for grazing by livestock and/or wildlife. This will imply that a large area on the Sensitive Highland Grassland will be available for the wind turbines.

Wakkerstroom Grassland

The Wakkerstroom Montane Grassland is restricted to the east of the study site. Most of this area is used for cultivation. Within the study site this grassland type covers 650 hectares. The terrain of this grassland is a fairly flat plain and the vegetation is grazed by livestock and seems to be fairly degraded with low plant species richness. The prominent plant species are *Eragrostis plans*, *Eragrostis curvula* and *Themeda triandra*.

Figure 21: Wakkerstroom Grassland

This Wakkerstroom Grassland plant community is restricted to a small area in the eastern part of the site. This is primary grassland, with high plant species richness, but as these grasslands are fairly degraded due to grazing, and as they represent a very small area of the Wakkerstroom Montane Grassland vegetation type, its sensitivity is regarded as Medium, and it is suggested that the proposed development can be supported in this area. Only a few widely spaced wind turbines (500-600 m apart), each with a relatively small footprint (<1 ha), will be placed in this grassland, and large areas will still be available for farming.

Rocky Scarps and Ridges

Rocky Scarps and Ridges are particularly prominent on the west to south-west-facing slopes along the Vaalbankspruit. Within the study site this plant community covers 270 hectares. This ecosystem is a highly specialised sandstone rocky habitat for both flora and fauna and is therefore regarded as Highly sensitive. The Rocky Scarps and Ridges are located within the Sensitive Highland Grassland. The Vaalbankspruit and its wetland floodplains, which also has High sensitivity, runs directly west of the Rocky Scarp and Ridges. These three ecosystems, namely the Sensitive Highland Grassland in the east, the Rocky Scarps and Ridges in the centre and the Vaalbankspruit in the west forms the motivation for the Irreplaceable Critical Biodiversity Area within the study site.

Due to their proximity, many of the species found in the Sensitive Highland Grassland present at or very close to the Rocky Scarps and Ridges. Scattered shrubby species, e.g. *Diospyros lycioides, Leucosidea sericea*, *Heteromorpha arborescens*, *diospyros austro-africana* are associated with the rocky areas, while the grasses *Themeda triandra, Digitaria diagonalis, Tristachya leucothrix* and *Harpochloa falx* are often present in these areas.

Figure 22: A Rocky Scarp along the Vaalbankspruit and rocky ridge with shrubs

This is a highly specialised sandstone rocky habitat for both flora and fauna and is therefore regarded as Highly sensitive. The Rocky Scarps and Ridges are located within the Sensitive Highland Grassland. The Vaalbankspruit and its wetland floodplains, which also has High sensitivity, runs directly west of the Rocky Scarp and Ridges. These three ecosystems, namely the Sensitive Highland Grassland in the west, the Rocky Scarps and Ridges in the centre and the Vaalbankspruit in the east forms the motivation for the Irreplaceable Critical Biodiversity Area within the study site. For this reason, this area is regarded as No-Go for this development.

Valley Grassland

The scattered narrow strips of Valley Grassland, in total covering 898 hectares within the study site. This vegetation is restricted to relatively lower-lying areas, associated with drainage lines or with "Ons-Pan", therefore has higher ecological sensitivity. It can often be regarded as floodplain area or merging into floodplain area. These areas have darker clayey soils that are often wet, and are mostly not ploughed for cultivation, but are grazed, (often overgrazed) by livestock. Often the Valley Grasslands occur in a narrow strip of grassland between a drainage line and the adjacent ploughed area or adjacent drier grassland.

Valley Grassland is dominated by *Eragrostis plana* and are mostly poor in plant species but represent specialised habitat for some fauna and flora species. Being low-lying in the undulating landscape, it is not envisaged that wind-energy turbines will be placed in these situations.

The vegetation is generally regarded as primary grassland. The grass *Eragrostis plana* is mostly the dominant, though grass species such as *Eragrostis curvula*, *Setaria sphacelata* and *Themeda triandra* are often prominent. Several forb species are present, though they are scattered and are never dominant.

Figure 23: Valley Grassland

The Valley Grasslands are regarded as wetlands or at least wetland associated. All wetland systems in South Africa have legal protection (National Water Act (2004). These Grassland therefore have High ecological sensitivity and therefore High conservation value. It is suggested that limited wind turbines could be located close to the edges of Valley Grassland, where the substate is not too wet. These areas are mostly regarded as part of the wetland systems and will probably be better indicated by the aquatic (wetland) study.

Degraded Grassland

Patches of Degraded Grassland occur scattered over the study site and together covers about 2521 hectares. These grassland patches are more associated with the lower-lying valley areas where more intensive grazing practices occurred over long periods, causing various degrees of degradation. These grassland areas are extensive west of the Vaalbankspruit. Although related to the Highland Grassland, the plant species composition is impoverished, with much less species present, and mostly dominated by *Eragrostis plana*.

Due to their situation in the lower-lying valleys and flatter terrain these grasslands had been utilised more intensively over many years and consequently some varying degrees of disturbance resulted in

loss of some plant species and lower plant species richness. The resulting ecological sensitivity, based on biodiversity, was calculated as Medium-Low. These areas are currently suitable for the proposed developments.

Figure 24: Degraded Grassland

8.6.6 Faunal Communities

Mammals

Although several mammal species may from time to time occur in the area of the site, only few may probably be encountered at any one time. This is due to low densities of small species, not easily seen. Many smaller mammals are either secretive, nocturnal, hibernators and/or seasonal, and some are seasonal migrators. However, by applying the standard methods of deducing probable presence by using the recognised literature on distribution and habitat preferences, and knowledge of habitats present on the site, a list of mammals could successfully be compiled with an acceptable level of confidence.

None of the mammal species predicted to visit the area of the site, will be threatened by the construction or the during the operational phase of the planned Wind Energy Facility. These mammal species are all quite motile and if present in the way of the construction, will easily move away from the danger.

From a mammal perspective, the Wind Energy Facility can be supported.

Herpetofauna

The local occurrences of reptiles and amphibians are closely dependent on broadly defined habitat types: terrestrial, arboreal (tree-living), rupicolous (rock-dwelling) and wetland-associated vegetation cover. It is thus possible to deduce the presence or absence of reptile and amphibian species by evaluating the habitat types within the context of global distribution ranges. From a herpetological habitat perspective, it was established that three of the four major habitats are naturally present on the study site, namely terrestrial, rupicolous and wetlands.

A few termitaria were recorded on the drier areas of the site. These structures are good indicators of the occurrence of small herpetofauna. Accordingly, it is estimated that the herpetofauna population density for the study site is higher. At the time of the site visit the basal cover was good in many places (Figure below) and would provide adequate cover for herpetofauna.

Figure 25: A moribund termite mound on the site.

Rupicolous habitats were found on a few areas of study site. Due to the presence of rupicolous habitat species like common girdled lizard, common crag lizard, southern rock agama and variable skink should occur on the site. Good manmade rupicolous habitat exists in the form of houses and building ruins. These rupicolous habitats offer nooks and crannies as refuge for some rupicolous herpetofauna.

Figure 26: Natural rupicolous habitat on the site.

A small area of natural arboreal habitat is present on the study site. However, in total, natural arboreal habitat is absent from the site. Due to the absence of arboreal habitat, species like boomslang and common flap-necked chameleon should not occur on the site. On many farms exotic trees such as Eucalyptus are present. There are also several dead logs, which would provide shelter and food for small mammals.

There are several drainage lines in the area. Several small dams occur locally in the drainage lines. Moist grassland occurs in the floodplain areas of the drainage lines. Important wetland-associated vegetation cover occurs along the drainage lines, wetlands, pans and dams on the site. These water bodies would provide habitat for water-dependent herpetofauna species. The drainage lines are also important as corridors for herpetofauna.

Except for the N11 on the western part of the study site, connectivity of the site with areas around it is good. Real opportunities for migration exist along the drainage lines and ridges.

A total of 67 herpetofauna species (50 reptile species and 17 amphibia species) were identified from the literature as potential occupants of the study site. Many of these herpetofauna species are robust generalists with the ability to capitalise on different environments. It should be noted that potential occurrence is interpreted as being possible over a period of time, as a result of expansions and contractions of population densities and ranges which stimulate migration.

Of the 50 reptile species that may occur on the study site, two were confirmed during the site visit and of the possible 17 amphibian species which may occur on the study site, two were confirmed during the site visit (refer to table below for confirmed species).

The species assemblage is typical of what can be expected in extensive natural areas with sufficient habitat to sustain populations. Most of the species of the resident diversity are fairly common and widespread for example. leopard tortoise, common house snake, mole snake, common egg eater, Mozambique spitting cobra, tree agama, puff adder, striped skink, common dwarf gecko, Van Son's gecko, Boettger's caco, bubbling kassina, guttural toad and eastern olive toad.

The American red-eared terrapin (*Trachemys scripta elegans*) and the Brahminy blind snake (Ramphotyphlops braminus) are the only two feral reptile or amphibian species known to occur in South Africa, but with only a few populations, they are not expected to occur on this particular site.

Table 12: Reptile and Amphibian species positively confirmed on the study site, observed indicators and habitat.

SCIENTIFIC NAME	ENGLISH NAME	OBSERVATION INDICATOR	HABITAT
Trachylepis punctatissima	Speckled Rock Skink	Sight record of individuals on houses and natural rock.	Man-made and natural Rupicolous habitat
Psammophylax rhombeatus rhombeatus	Spotted Skaapsteker	Sight record of adult in grassveld	Terrestrial
Amietia delalandii	Common River Frog	Sight record of adults and tadpoles	Aquatic habitat
Xenopus laevis	Common Platanna	Sight record of tadpoles	Aquatic habitat

Threatened and Red listed Reptile and Amphibian Species

No threatened herpetofauna species were recorded from the area of the site. Should wetland areas be protected, most herpetofauna species will not be threatened by the construction or the phase of operation.

8.6.7 Biodiversity Sensitivities

Vegetation

Irreplaceable CBAs occur in the central-southern parts of the area mostly restricted to high-altitude grassland associated ridges and central parts of the Vaalbankspruit. These areas of the study site are the most important for conservation, CBA Optimal sites occur in the western and central parts of the site. These areas are natural grassland of conservation importance, with some upper reaches of west-flowing drainage lines occurring in these areas. Other Natural Areas also representing grassland occur widespread in the site. Local ESA corridors occur mainly in the southern and eastern parts of the site. All the grasslands are highly fragmented by cultivation areas and are often disturbed/degraded, classified as Highly or Moderately modified.

Due to its very high plant species richness, the Sensitive Highland Grassland is associated with Irreplaceable Critical Biodiversity Area (CBA) and consequently has High ecological sensitivity and a high conservation status. This grassland is restricted to the area stretching from the Vaalbankspruit eastwards and encloses the slopes and the Rocky Scarps and Ridges. The Rocky Scarps and Ridges is a highly specialised sandstone rocky habitat for both flora and fauna and is therefore regarded as Highly sensitive. The Vaalbankspruit, and the slopes with the Rocky Scarps and Ridges are both No-

Go areas. A part of the Sensitive Highland Grassland directly east of the Rocky Scarps and Ridges, should also be included as No-Go area.

Due to its very high plant species richness, Highland Grassland is often associated with the Optimal Critical Biodiversity Area (CBA), identified within the study site. This vegetation has a lower conservation status than the Sensitive Highland Grassland, which is classified as an Irreplaceable CBA. In terms of biodiversity sensitivity, the Highland Grassland is consequently placed between High and Medium sensitivity. The reason for this relatively lower sensitivity is particularly because it is classified as an Optimal CBA and not an Irreplaceable CBA. This implies a lower status than Irreplaceable, but nevertheless a Critical Biodiversity Area. The patches of Highland Grassland occur scattered over the site.

Considering the nature of the proposed development with several widely spaced wind turbines (500-600 m apart), each with a relatively small footprint (<0.5 ha), and therefore with large tracks of natural undisturbed veld, it is suggested that development can be supported in Sensitive Highland Grassland and the Highland Grassland, on condition that a strip of Sensitive Highland Grassland immediately east of the Rocky Scarps and Ridges be included in the No-go area. Large areas will be then kept undeveloped for conservation purposes and will still be available for grazing by livestock and/or wildlife. This will imply that a large area within the Sensitive Highland Grassland and the Highveld Grassland will be available for the wind turbines.

This Wakkerstroom Grassland plant community is restricted to a small area in the north-eastern corner of the site. The Wakkerstroom Grassland represents primary grassland, with High plant species richness, but as these grasslands are fairly degraded due to grazing, and as they represent a very small area of the extensive Wakkerstroom Grassland, its sensitivity is regarded as Medium, and it is suggested that the proposed development can be supported in this area. Only a few widely spaced wind turbines (500-600 m apart), each with a relatively small footprint (<0.5 ha), can be placed in this grassland.

Due to their situation in the lower-lying valleys and flatter terrain Degraded Grasslands had been utilised more intensively over many years and consequently some varying degrees of disturbance resulted in loss of some plant species and lower plant species richness. The resulting ecological sensitivity, based on biodiversity, was calculated as Medium-Low. These areas are, from a biodiversity sensitivity point of view, suitable for the proposed developments.

The Valley Grasslands are regarded as wetlands or at least wetland associated. All wetland systems in South Africa have legal protection (National Water Act (2004). These Grassland therefore have High ecological sensitivity and therefore High conservation value. It is suggested that limited wind turbines could be located close to the edges of Valley Grassland, where the substate is not too wet. These areas are mostly regarded as part of the wetland systems and will probably be better indicated by the aquatic (wetland) study.

The The Vaalbankspruit and all Drainage Lines and their floodplains are all regarded as wetlands. “Ons Pan” is also included in the wetland system. All wetland systems in South Africa have legal protection (National Water Act (2004). The wetlands within the transect site have High ecological sensitivity and therefore High conservation value and are included in the No-Go area (also see Aquatic Assessment). All transformed areas, cultivated lands, old fields, farmyards, patches of alien trees etc have Low biodiversity sensitivity with low conservation value.

<u>Fauna</u>

The study site contains three of the four natural mammal habitats, namely terrestrial, rupicolous and wetlands. The study site has important and sensitive topographical features in the form of drainage lines and ridges. The drainage lines provide an important movement corridor for various animals.

Species richness: Three of the four habitat types occur on the site. As a result of the large size of the site, the pristine grassland areas and the perennial nature of the drainage lines, the species richness of vertebrates is high.

Endangered species: Bats excluded, fifteen mammal species with Red Data status could occur on the study site. These include the following species: rough-haired golden mole, Highveld golden mole, mountain reedbuck, grey rhebok, oribi, Cape clawless otter, spotted-necked otter, Robert's marsh rat, white-tailed mouse, swamp musk shrew, Maquassie musk shrew, Southern African hedgehog, serval, brown hyena and the African striped weasel.

Three listed Red Data herpetofauna species, the coppery grass lizard, the striped harlequin snake and plain stream frog may occur on the site. Two species with no national conservation status but with Mpumalanga Conservation status, the spotted harlequin snake and many-spotted snake can also occur on the site.

Sensitive species and/or areas (Conservation ranking): The study site falls mainly in the Amersfoort Highveld Clay Grassland (GM 13) vegetation type (Mucina & Rutherford, 2006, 2017) which has a Vulnerable status, but is not listed as threatened by SANBI & DEAT (2009) and NEMBA, Government Notice 1002 (2011) and Government Notice 689 (2022).
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Habitat(s) quality and extent: The three habitat types are sensitive, but mostly of good quality. The quality of terrestrial habitat has locally been disturbed by anthropogenic influences such as overgrazing by livestock, invasive and exotic trees/plants, some buildings, building ruins, fences, access gravel roads, agricultural fields of maize, sunflower and soya beans and old fields.

Most of the drainage lines are perennial, and they are important water sources on the site. The drainage lines as well as their buffer zones should be considered as ecologically highly sensitive. The normal 100 metres buffer zone outside the urban edge for riparian zones applies.

Impact on species richness and conservation: Wind farms have a significant impact on birds and the mammal group bats. The scope of this study falls outside these two groups of animals. Except for the visual impact, there should not be a large impact on the other vertebrate groups (other mammals, reptiles and amphibians).

However, any development will influence species richness and conservation. This would involve new structures, buildings, new roads carrying more vehicles and more habitat destruction, which will obviously influence any remaining vertebrates. These structures will form barriers for vertebrate movement, and it will result in a decrease in connectivity. Access roads could lead to an increase in poaching of animals on the study site. The development will have a permanent footprint.

Should the development go ahead, a very important indirect effect would be the likely impact that the proposed development might have on the water quality of the drainage lines due to surface water runoff, especially during the construction phase. This could have a negative impact on the vertebrates

specifically, but also on conserving biodiversity and maintaining ecosystem functioning in the long term. (See wetland report by separate specialists).

Connectivity: Except for the N11 tarred road on the western part of the study site, good connectivity exists with adjacent areas. Real opportunities for migration exist along the drainage lines and ridges.
Management recommendation: The drainage lines as well as their buffer zones should be considered as ecologically highly sensitive since they also act as dispersal corridors. The normal 100 metres buffer zone outside the urban edge for riparian zones applies. The very few stands of indigenous trees on site should be protected. The removal of alien invasive plants and building rubble will improve the ecological condition of some areas on the site.
General: From a mammal and herpetological perspective, there is no objection against the proposed development if the mitigation measures are adhered to and no development occurs on the rocky ridges or near the drainage lines.

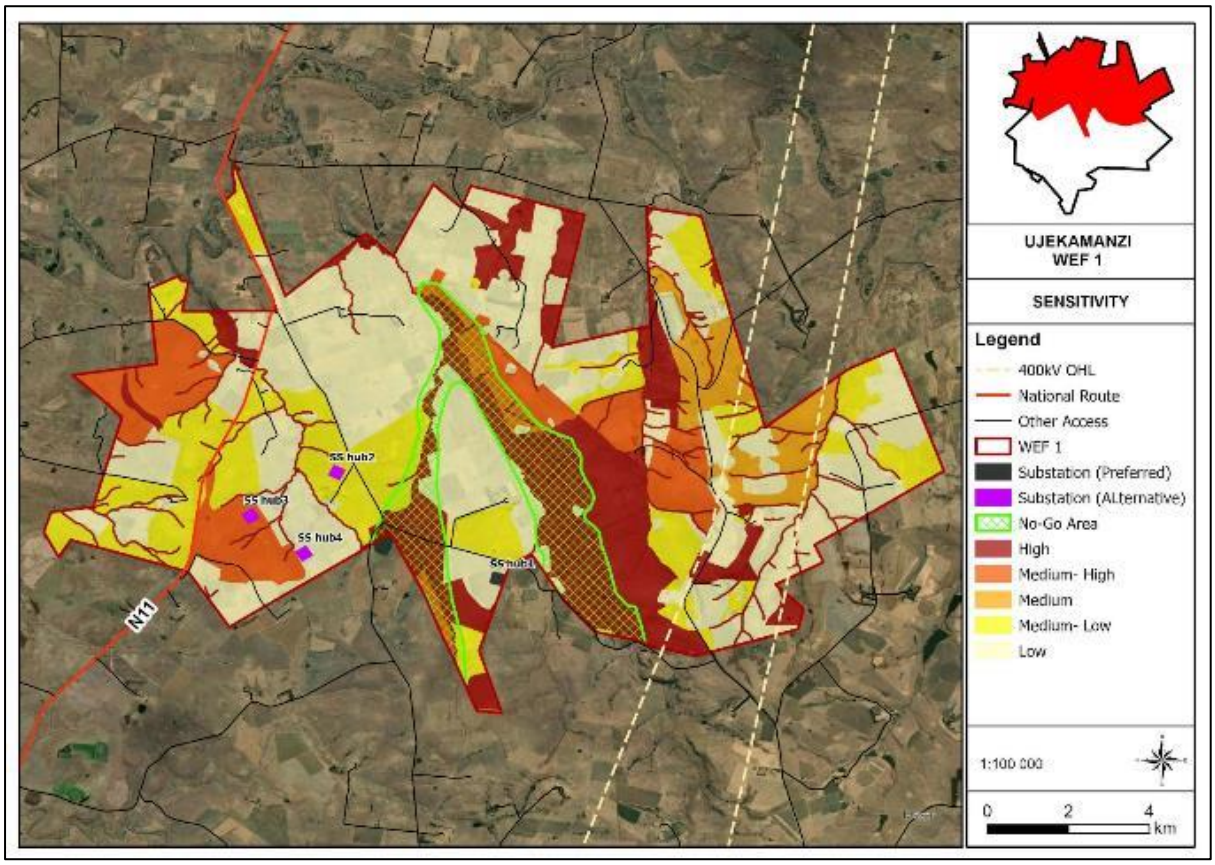

Figure 27: Biodiversity Sensitivities

8.6.8 Preliminary Conclusions

It can be derived that the impacts of the proposed development on biodiversity will, without as well as with mitigation measures, be Medium on the Highland Grassland, Sensitive Highland Grassland and Valley Grassland, during the construction phase and the operational phase. The impacts of the proposed development will be Low on the rest of the vegetation, plant species and fauna.

8.7 Agricultural

An Agricultural Agro-Ecosystem Specialist Assessment was undertaken by Johann Lanz (report dated 28 April 2023).

8.7.1 Baseline Assessment

According to the report, the site is located in a predominantly cattle farming area that includes grain. Agricultural land use on the site and surrounds is predominantly grazing of both cattle and sheep on the lower potential soils in combination with dryland crop production of maize, soya and Oulandsgras for hay on the higher potential soils.

Figure 28: Typical site conditions showing a combination of grazing land (foreground) and cropland (background*).*

8.7.2 Agricultural Sensitivities

In general, the agricultural production potential of the site is high and it is within an area that makes a significant contribution to food production in the country. Due to the favourable climate, crop yields are high on the suitable soils with average maize yields of around 7 tons per hectare according to the farmers on site. The long-term grazing capacity of the site is classified as 4 hectares per large stock unit, which can be categorised as very high within the range of grazing capacities across South Africa.

The site falls within an area that is classified as a Protected Agricultural Area. A Protected Agricultural Area is an area that has been demarcated because the climate, terrain, and soil are generally conducive for agricultural production and because, historically, it has made important contributions to the production of the various crops that are grown across South Africa. The protection, particularly of arable land, within Protected Agricultural Areas is considered a priority for the protection of food security in South Africa. Obviously, all land within a Protected Agricultural Area is not necessarily of sufficient agricultural potential to be suitable for crop production, due to site-specific terrain, soil, and other constraints, and all land within the area is therefore not necessarily worthy of prioritised protection as agricultural production land.

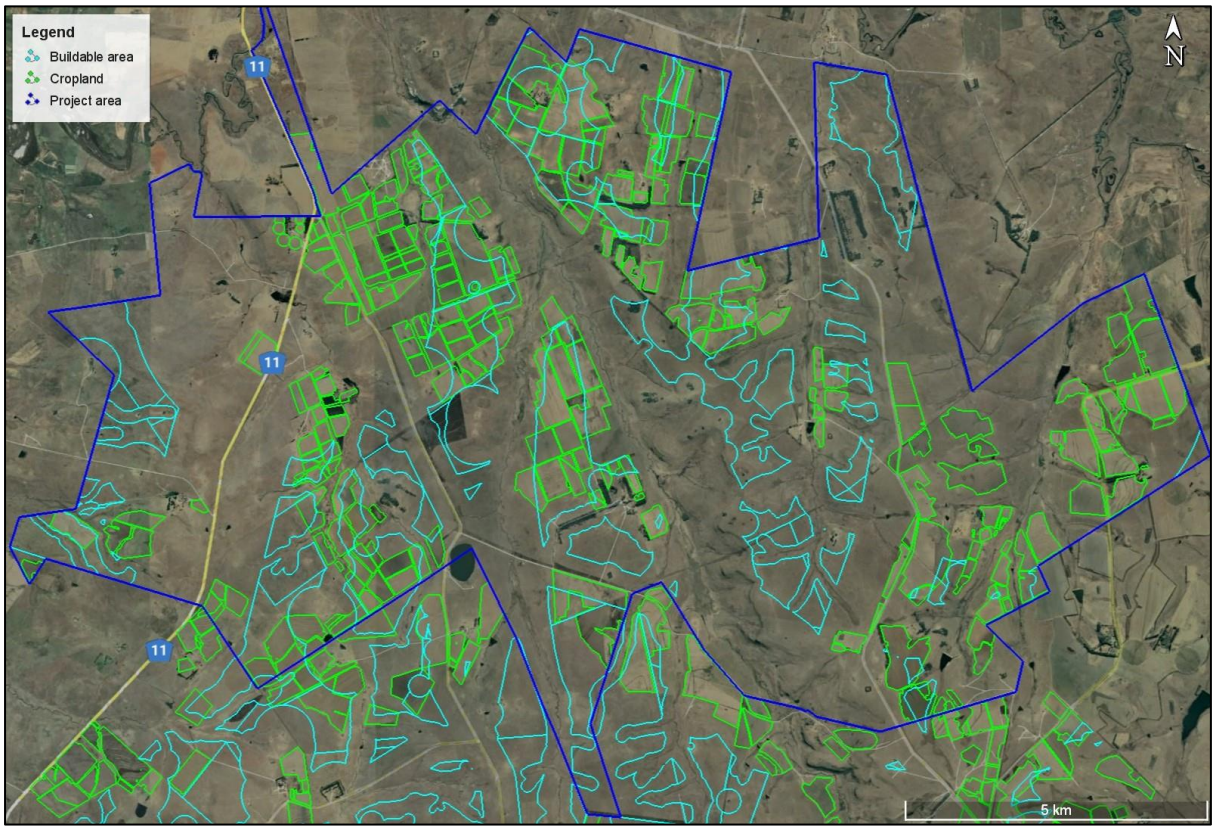

Figure 29: Satellite image map of the proposed development site showing buildable areas and existing cropland

8.7.3 Preliminary Conclusions

According to the specialist, the conclusion of this assessment is that the agricultural impact of the proposed development is acceptable because the agricultural production potential of the site is completely limited by the aridity of the climate and is therefore only suitable as grazing land, and therefore it offers a valuable opportunity for renewable energy development with insignificant loss of future agricultural production potential.

8.8 Avifauna

An Avifaunal Assessment was undertaken by Chris van Rooyen Consulting (report dated 19 April 2023).

8.8.1 Baseline Assessment

According to the report, it is estimated that a total of 263 bird species could potentially occur in the broader area. Refer the avifaunal Report (**Appendix 6**) which provides a comprehensive list of all the species in the broader area. Of these, 45 species are classified as priority species for wind developments. Of the priority species in the broader area, 37 were recorded during the 12 months of pre-construction monitoring.

8.8.2 Results of the pre-construction bird monitoring

The surveys for the pre-construction monitoring programme at the two proposed Ujekamanzi WEF sites were conducted during the following periods:

- Survey 1: 2 - 10 April 2022, 9 – 24 May 2022
- Survey 2: 4 July - 01 August 2022
- Survey 3: 5 – 27 September 2022
- Survey 4: 12 – 28 January 2023

Transects

The results of the transect counts are displayed in the table below:

Table 13: Results of the transect counts at the WEF and control sites

Turbine site	Number
Species composition	
All Species	147
Priority Species (16%)	24
Non-Priority Species	123
Total count	
Drive transects	13818
Walk transects	12831
	26649
Control site	Number
Species composition	
All Species	135
Priority Species (5%)	17
Non-Priority Species	118

Incidental Counts

The table provides an overview of the incidental sightings of priority species recorded thus far at the two WEF sites.

Table 14: Incidental sightings of priority species during survey 1

Priority Species (Incidentals)		Survey 1	Survey 2	Survey 3	Survey 4	Grand Total
Southern Bald Ibis	*Geronticus calvus*	50	314	109	385	**858**
Amur Falcon	*Falco amurensis*	0	0	0	532	**532**
Blue Crane	*Grus paradisea*	265	33	21	24	**343**
Grey Crowned Crane	*Balearica regulorum*	130	181	2	7	**320**

Priority Species (Incidentals)		Survey 1	Survey 2	Survey 3	Survey 4	Grand Total
Grey-winged Francolin	*Scleroptila afra*	53	79	20	23	**175**
Common Buzzard	*Buteo buteo*	0	0	0	114	**114**
White Stork	*Ciconia ciconia*	0	0	0	106	**106**
Black-winged Kite	*Elanus caeruleus*	19	41	26	15	**101**
Secretarybird	*Sagittarius serpentarius*	17	28	19	14	**78**
Black-winged Lapwing	*Vanellus melanopterus*	14	11	3	32	**60**
Spotted Eagle-Owl	*Bubo africanus*	5	18	2	33	**58**
Jackal Buzzard	*Buteo rufofuscus*	12	9	5	13	**39**
White-bellied Bustard	*Eupodotis senegalensis*	6	14	3	4	**27**
Black-winged Pratincole	*Glareola nordmanni*	0	0	0	21	**21**
Denham's Bustard	*Neotis denhami*	17	2	0	1	**20**
Black Sparrowhawk	*Accipiter melanoleucus*	6	7	2	0	**15**
Blue Korhaan	*Eupodotis caerulescens*	6	0	6	3	**15**
Lanner Falcon	*Falco biarmicus*	4	4	6	0	**14**
African Harrier-Hawk	*Polyboroides typus*	2	3	4	1	**10**
Buff-streaked Chat	*Campicoloides bifasciatus*	2	6	2	0	**10**
Marsh Owl	*Asio capensis*	7	1	1	1	**10**
Martial Eagle	*Polemaetus bellicosus*	1	0	6	2	**9**
Yellow-breasted Pipit	*Anthus chloris*	0	0	7	1	**8**
African Fish Eagle	*Haliaeetus vocifer*	3	1	2	1	**7**
Yellow-billed Stork	*Mycteria ibis*	0	0	0	6	**6**
Greater Kestrel	*Falco rupicoloides*	3	0	0	1	**4**
Long-crested Eagle	*Lophaetus occipitalis*	0	1	1	1	**3**
Black Harrier	*Circus maurus*	0	1	1	0	**2**
African Grass Owl	*Tyto capensis*	0	1	0	0	**1**
Black-rumped Buttonquail	*Turnix nanus*	0	0	1	0	**1**
Red-footed Falcon	*Falco vespertinus*	0	0	0	1	**1**
Rudd's Lark	*Heteromirafra ruddi*	0	0	1	0	**1**

8.8.3 Avifaunal Sensitivities

According to the report, preliminary avifaunal sensitivities were identified through a synthesis of professional judgment and avian risk modelling. The aim of the avian risk modelling was to assess if any associations existed between observed risky flight behaviour (i.e., flights within rotor sweep height) and underlying environmental and habitat conditions. A range of variables were therefore generated to characterise the environment within the area of interest. Subsequently, predictor variables were generated related to various aspects of topography, hydrology/drainage, vegetation, and land cover. Topographical variables characterised slope, aspect, elevational change, solar radiation, and ruggedness. Drainage specifically characterized the presence and magnitude of drainage lines. Habitat and vegetation were characterized using a range of remote sensing indices generated from Sentinel-2 imagery. Indices included seasonal and annual averages of respective indices, as well as dynamic

variables. Lastly, if any nest, colony and/or roost sites were identified by observers for any of the species being assessed, these were used to create an additional predictor variable, namely distance (m) to nest/colony/roost site.

From the above, following preliminary environmental sensitivities were identified from an avifaunal perspective for the proposed wind energy facility:

Very High sensitivity: All infrastructure exclusion zones

Included in this category are the following areas:

- Medium and high sensitivity buffers as defined by the aquatic specialist around drainage lines, dams and wetlands. This is to prevent the disturbance of priority species breeding and roosting in these areas and to reduce the risk of turbine collisions. Priority species in this category include African Fish Eagle, African Grass Owl, African Marsh Harrier, Black-winged Pratincole, Blue Crane, Grey Crowned Crane, Long-crested Eagle, Marsh Owl and Yellow-billed Stork.
- 1km buffers around Southern Bald Ibis roosts and colonies to prevent displacement of birds due to disturbance and to reduce the risk of turbine collisions.
- 500m buffers around Secretarybird nests to prevent displacement of birds due to disturbance and to reduce the risk of turbine collisions.
- 500m buffers around Grey Crowned Crane roosts and potential breeding areas to prevent displacement of birds due to disturbance and to reduce the risk of turbine collisions.
- All the modelled Rudd's Lark habitat.
- All the modelled Yellow-breasted Pipit habitat.

High sensitivity: Turbine exclusion zones

- A 5km turbine exclusion zone around the Martial Eagle nest (FP12)
- A shaped turbine exclusion zone based on the modelled flight activity of the Southern Bald Ibis recorded during the pre-construction monitoring.
- A shaped turbine exclusion zone based on the modelled flight activity of the Secretarybird recorded during the pre-construction monitoring.

Medium sensitivity: Pro-active mitigation zones (shutdown on demand)

- All medium sensitivity flight risk zones modelled for Grey Crowned Crane
- All medium sensitivity flight risk zones modelled for Secretarybird

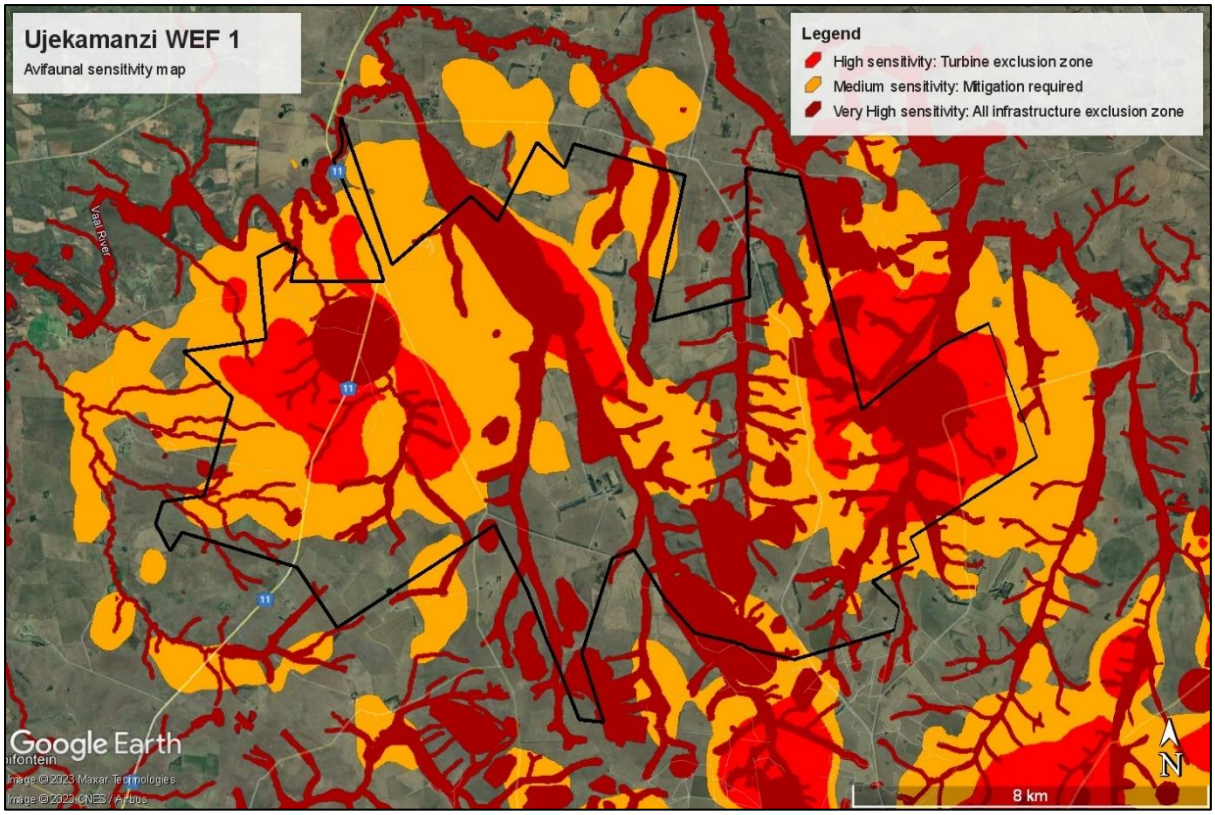

Figure 30: Preliminary avifaunal sensitivity zones

8.8.4 Preliminary conclusions

According to the report, the proposed ABO Ujekamanzi WEF 1 will have a moderate impact on avifauna which, in all instances, could be reduced to a low impact through appropriate mitigation. No fatal flaws were discovered during the onsite investigations. The specialist has therefore supported the development within the proposed buildable areas, provided the mitigation measures listed in this report are strictly implemented.

8.9 Bat

A bat specialist study and pre-construction monitoring was undertaken by Arcus Consultancy Services South Africa (Pty) Ltd (report dated April 2023).

8.9.1 Baseline Assessment

According to the report, the study area is located in the Drakensberg Grasslands, Woodlands and Forest biome and consists of two vegetation types: Amersfoort Highveld Clay Grassland and Wakkerstroom Montane Grassland. The landscape consists of on undulating plains, which are mainly used for livestock grazing with cultivated land in between. For foraging bats, one of the most important ecological constraints is clutter; objects (e.g., vegetation) that have to be detected and avoided by bats during flight. Clutter presents perceptual and mechanical problems for bats. Perceptually, bats are constrained by their sensory capabilities to find prey amongst clutter (e.g., having an echolocation system adapted to find prey in dense vegetation versus in the open). Mechanically, bats are constrained by their flight ability (e.g., adaptations in wing morphology that enable flight in dense vegetation versus in the open). Habitats can therefore be defined according to clutter conditions. These include

uncluttered space (open spaces, high above the ground and far from vegetation), background cluttered space (near the edges of vegetation, in vegetation gaps, and near the ground or water surfaces), and highly cluttered space (very close to surfaces such as leaves or the ground). Habitat complexity is therefore an important consideration for bats because areas that offer a variety of clutter conditions are more likely to support a greater diversity of bat species. The landscape is largely homogenous and is used mostly for grazing.

The availability of roosting space is a critical factor for bats and a major determinant of whether bats will be present in a landscape, as well as the diversity of species that can be expected. There are several potential roosting features on site that may be used by bats. These include buildings and trees (which are mainly associated with the farmsteads). Cape serotine and Egyptian free-tailed bats, readily make use of buildings as roosts. Bats can also roost in rocky outcrops, but no suitable rocky outcrops were found to date. Water sources are important for bats as a direct resource for drinking and because these areas tend to attract insects and promote the growth of vegetation (e.g., riparian vegetation). Therefore, besides providing drinking water, bats can also be attracted to water sources as potential foraging and roosting sites. Dams, open reservoirs, rivers and streams are present in the study area that will be attractive to bats. Rivers, and drainage lines will be equally important for foraging and commuting. Although the landscape is largely transformed, cultivated land is known to be important for foraging, as some species forage over agricultural fields to hunt insect pests.

Bats are known to use linear landscape features for commuting routes to get to and from foraging sites, roost sites and to access water sources. Linear landscape elements, such as tree lines and edge habitats, provide protection to bats from predators, shelter from wind, orientation cues as well as foraging habitat. The primary linear landscape features are drainage lines, which typically (but not always) are associated with vegetation, providing linear and edge habitats that bats can access. Rivers, tree lines, and other edge habitats might also be used as commuting routes or navigation cues.

Approximately sixteen bat species can potentially occur in the study area. It is possible that more (or fewer) species may be present because the distributions of some bat species in South Africa, particularly rarer species, are poorly known. Analysis of the acoustic monitoring data to date suggests that at least ten bat species are present (**Table 15**). The sensitivity of each of these species to the project is a function of their conservation status and the likelihood of risk to these species from wind farm developments. The likelihood of risk to impacts of wind energy was determined from the relevant bat monitoring guidelines and is based on the foraging and flight ecology of bats and migratory behaviour.

Table 15: Potential and Confirmed Bat Species Present on site and their Sensitivity to WEFs

Species	Species Code	# of Bat Passes	Conservation Status[2]		Likelihood of Risk
			Regional	Global	
Egyptian free-tailed bat *Tadarida aegyptiaca*	TADAEG	10,400	Least Concern	Least Concern	High
Long-tailed Serotine Bat *Eptesicus hottentotus*	VES30	1,600	Least Concern	Least Concern	High
African yellow bat *Scotophilus dinganii*			Least Concern	Least Concern	Med-High
Lesser long-fingered bat *Miniopterus fraterculus*	MINFRA	4	Least Concern	Least Concern	High
Natal long-fingered bat *Miniopterus natalensis*	VES50/NLB	379	Least Concern	Least Concern	High
Zulu serotine *Neoromicia zuluensis*			Least Concern	Least Concern	High

Species	Species Code	# of Bat Passes	Conservation Status[2]		Likelihood of Risk
			Regional	Global	
Cape serotine *Neoromicia capensis*	NEOCAP	12,422	Least Concern	Least Concern	**High**
Welwitsch's bat Myotis welwitschii		-	Least Concern	Least Concern	**Med-High**
Temminck's myotis *Myotis tricolor*		-	Least Concern	Least Concern	**Med-High**
Egyptian slit-faced bat *Nycteris thebaica*		-	Least Concern	Least Concern	**Low**
Darling's horseshoe bat *Rhinolophus darlingi*	RHIDAR	2	Least Concern	Least Concern	**Low**
Bushveld horseshoe bat *Rhinolophus simulator*		-	Least Concern	Least Concern	**Low**
Swinny's horseshoe bat Rhinolophus swinnyi		-	Vulnerable	Least Concern	**Low**
Blasius's horseshoe bat *Rhinolophus blasii*	RHIBLA	10	Near Threatened	Least Concern	**Low**
Geoffroy's horseshoe bat *Rhinolophus clivosus*	RHICLI	3	Least Concern	Least Concern	**Low**
Egyptian fruit bat *Rousettus aegyptiacus*		-	Least Concern	Least Concern	**High**

* Endemic to South Africa.

8.9.2 Results of the pre-construction bat monitoring

A total of eight months monitoring has been analysed for this report. During the sample period, ten species were detected and a total of 24,819 bat passes were recorded from 255 sample nights across all detectors. Bats were recorded between 17:00 and 05:00 across the study area with differences observed in activity times between seasons. Activity generally peaked early and then decreased for the rest of the night, except for during summer when activity was higher and more evenly spread throughout the night. The Cape serotine bat accounted for 50 % of total activity while the Egyptian free-tailed bat accounted for 42% of the activity (refer table below).

Table 16: Bat passes

Detector	Habitat	# of Sample Nights	% of Sample Nights with Bat Activity	Total Bat Passes
UJE-1	Small drainage line	253	79%	3 298
UJE-2	River	233	94%	13 015
UJE-3	Cultivated Land (open)	177	72%	2 936
UJE-MET-7m	Ridge (Open)	255	78%	3 972
UJE-MET-55m	Ridge (Open)	253	67%	1 079
UJE-MET-110m	Ridge (Open)	184	52%	519

At UJE-2, which had the highest bat activity, the Cape serotine bat accounted for 64 % of the bat passes followed by the Egyptian free-tailed bat which accounted for 29 % of the bat passes. Overall, the Cape serotine bat and Egyptian free-tailed bat was the most common species at Ujekamanzi. The Cape serotine bat and Egyptian free-tailed bat accounted for approximately 53 % and 38 % of the bat activity

at ground level respectively. At rotor sweep level, the Cape serotine bat only accounted for 5 % of the bat activity, while the Egyptian free-tailed bat accounted for 94 % of the activity. A higher diversity of species were found at locations such as UJE-2, next to a watercourse with more vegetation clutter.

8.9.3 Bat Sensitivities

The figure below depicts the preliminary sensitive areas of the site. Possible avoidance mitigation techniques have been incorporated by buffering key habitat features for bats. These include possible roosting habitat (rocky crevices, trees and buildings), foraging resources (trees, rivers, water courses and aquatic habitat) and commuting resources (water courses). All aquatic habitat and water courses with defined riparian structures have been buffered by 200m while some less sensitive water courses which do not have permanent water or a defined riparian structure, were buffered by 100m. Large trees and buildings have been buffered by 200m. According to the report, it is exceptionally difficult to find bats roosting in small numbers and therefore all buildings defined as highly suitable roosts for bats have been buffered by 500m. All buffers are considered as no- go for turbines to blade tip.

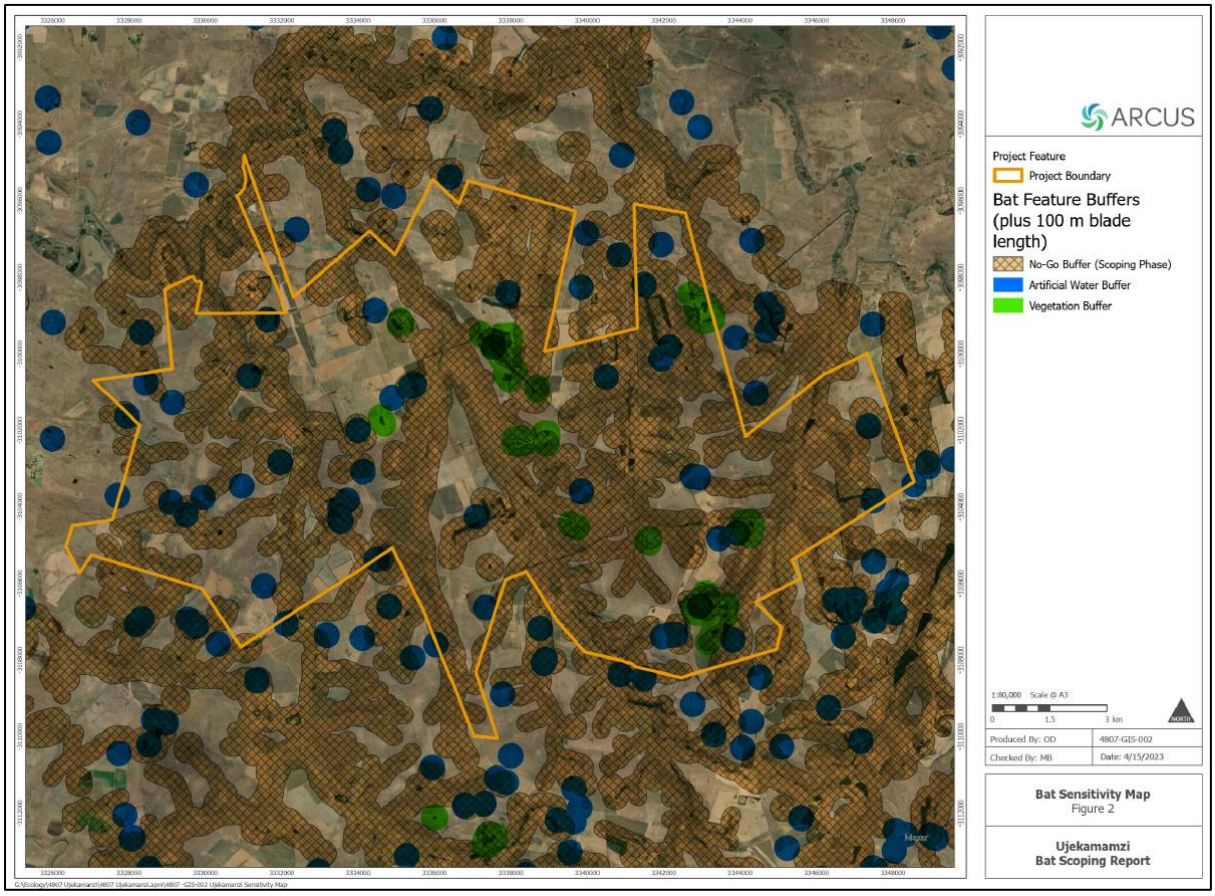

Figure 31: Bat Sensitivities

8.9.4 Preliminary Conclusions

According to the report, the data collected during the monitoring period so far suggests that the risk to bats posed by the wind energy development could be lower for clutter-edge bat species, as the correct placement of turbines and increasing the minimum distance between the blades and the ground will limit the impact to these species. Open air bat species are at a higher risk as free-tailed bats account

for more than 94 % of bat activity at height. Since free-tailed bat activity also decreases with height, it is advisable to select a combination of hub height and turbine blade length that increases the lower tip height as much as possible (preferably 50 m or higher).

Overall, impacts to bats are expected to be medium-high without mitigation and low- medium with mitigation at the ABO Ujekamanzi WEF 1 site. Cumulative impacts are expected to be very high without mitigation and medium with mitigation. Initial mitigation measure to avoid impacts is the correct placement of turbines to avoid sensitive bat habitat, which is considered as a no-go area for turbines. No turbine blades should intrude into such areas.
Due to bat activity being moderate to high across the site between September and January, residual impacts are possible even with the initial mitigation measures to avoid sensitive areas. Therefore, if fatality thresholds are reached during the operational phase of the wind farm, active mitigation of these residual impacts should include the use of curtailment and/or acoustic deterrents.

Provided these considerations are met, the development of wind farms at the ABO Ujekamanzi WEF 1 may be compatible with bat conservation. These conclusions are however preliminary, and the monitoring campaign will continue until 17 May 2023 after which a final conclusion will be made with the full 12-months of monitoring data. The application process can proceed to the EIA phase.

9. DESCRIPTION OF THE SOCIO- ECONOMIC ENVIRONMENT

9.1 Socio economic characteristics

A Social Impact Assessment was undertaken by Urban-Econ (report dated April 2023).

9.1.1 Population, Income and Employment Profile

According to the report, The Pixley Ka Seme Local Municipality falls within the Gert Sibande District Municipality, whereas Govan Mbeki account for 28% of the population, and 30% of the households in the district and Lekwa 12% of the population as well as households in the district. The Msukaligwa LM accounts for 14% of the population and 15% of the Households in the DM.

Population growth between 2011 and 2021 was 1,5% year-on-year for the local municipality, which compared lower than the district municipality (1,9%) and similar to Mpumalanga (1,5%) over the same period. The average population growth in the local municipality indicates that the municipality offers limited opportunities, attracting less people towards the area, this can also be motivated by the low population density (20 km2) in comparison to the other areas as well as the lower average monthly household income, which is the lowest (R4 994,00) of all the areas in review.

Table 17: Overview of the primary study areas population structure

Indicator	Mpumalanga	Gert Sibande District Municipality	Pixley Ka Seme Local Municipality
Area (km^2)	76 495	31 840	5 227
Population	4 841 308	1 301 767	102 327
Number of Households	1 293 315	341 811	24 287
Population density (km^2)	63	41	20
Average household size	3,7	3,8	4,2
Annual population growth (2011-2021)	1,5%	1,9%	1,5%
Average monthly household income	**R6 671**	**R6 933**	**R4 994**

The average household income for the Gert Sibande District Municipality in 2023 is estimated to be R6 933.00. The proposed project will also attract additional population to the study area as several employment opportunities will be created through the development, this will also ensure a sustainable population growth.

Table 18: Employment profile of the study areas

Indicator	Mpumalanga	Gert Sibande District Municipality	Pixley Ka Seme Local Municipality
Employed	1 051 844	286 920	14 702
Unemployment Rate	37,3%	36,5%	44,3%
Not Economically Active	1 395 317	374 105	33 410
Labour force participation rate	34,2%	34,7%	24,6%

The table above indicates the number of people employed and not economically active, the percentage of the population unemployed as well as the labour force participation rate for areas in review. The relatively higher unemployment rate and lower labour force participation relative to the district averages further suggests that the local municipality is subject to outward migration due to the limited employment opportunities available within the local municipality.

9.1.2 Regional Economic Profile

The GVA (Gross Value Added) of the local municipality was R5,95 billion in 2021 (constant prices), which collectively accounts for just over 2,8% of the district economy's GVA, and 0,9% of the Mpumalanga's. The proposed project will contribute further to the economy and ensure sustainability.

Table 19: Economic structure between 2011 and 2021 (constant 2015 prices; R' millions)

Sector	Mpumalanga		Gert Sibande District Municipality		Pixley Ka Seme Local Municipality	
	2011	2021	2011	2021	2011	2021
Agriculture and hunting	3,80%	6,58%	3,97%	6,84%	8,89%	17,16%
Mining and quarrying	19,35%	21,03%	17,35%	17,22%	2,35%	3,34%
Manufacturing	28,85%	23,77%	41,60%	37,35%	15,34%	12,61%
Electricity, gas and water	6,09%	5,71%	4,17%	3,70%	16,84%	5,65%
Construction	4,19%	3,04%	3,26%	2,59%	6,96%	5,64%
Trade	10,28%	9,86%	9,04%	9,36%	14,71%	16,17%
Transport and communication	5,78%	4,65%	4,43%	3,64%	8,17%	7,06%
Finance and business services	10,49%	12,82%	7,87%	9,91%	9,11%	12,19%
Community services	4,14%	4,87%	3,07%	3,59%	6,30%	7,02%
General government	7,04%	7,67%	5,24%	5,81%	11,33%	13,15%
TOTAL GVA	**R628 607**	**R679 310**	**R201 623**	**R212 014**	**R6 189**	**R5 958**

The growth in the local municipalities over the last few years was largely due to the strong performance of the agriculture, mining and finance business services sectors. Manufacturing indicated a contraction in the last 10-years in the local municipality but remains a large contributor in the economy. Many of these are linked to the agro-processing sector that is present in the town of Ermelo. Electricity was a large contributor in 2011, but realised a severe contraction, contributing only 5,65% in 2021, from 16,84% in 2011. The new development would likely increase the contribution of the utilities and construction sectors to the GVA.

Table 20: GVA per sector for the Pixley Ka Seme Local Municipality (2015 constant prices; in R' millions)

Sector	Pixley Ka Seme Local Municipality		
	2011	2021	CAGR

Agriculture and hunting	R550,44	R1 022,31	6,39%
Mining and quarrying	R145,31	R198,86	3,19%
Manufacturing	R949,40	R751,10	-2,32%
Electricity, gas and water	R1 042,28	R336,35	-10,69%
Construction	R430,86	R336,24	-2,45%
Trade	R910,66	R963,58	0,57%
Transport and communication	R505,60	R420,90	-1,82%
Finance and business services	R563,94	R726,45	2,56%
Community services	R389,61	R418,39	0,72%
General government	R701,05	R783,71	1,12%
TOTAL GVA	**R6 189,1**	**R5 957,9**	**-0,38%**

Over the last ten years, the Compound Average Growth Rate (CAGR) of the local municipality contracted with 0,38%, this can be aligned to the economic downturn experienced between 2020 and 2021 due to the covid-19 pandemic. The sectors responsible for the contraction of the overall GVA a growth over the 10-year period was manufacturing, transport, electricity, gas and water and construction.

As evident by the table below, the general government sector contributes the most towards employment on all levels from provincial to local. The utilities sector employs the least to employment, the proposed project will increase the number of employees in this sector.

Table 21: Employment structure and contribution between 2011 and 2021 per economic sector

Sector	Mpumalanga		Gert Sibande District Municipality		Pixley Ka Seme Local Municipality	
	2011	2021	2011	2021	2011	2021
Agriculture and hunting	10,7%	11,7%	13,2%	14,2%	15,1%	16,7%
Mining and quarrying	9,7%	9,9%	11,5%	11,1%	0,8%	0,9%
Manufacturing	9,2%	8,0%	10,3%	8,7%	6,3%	5,2%
Electricity, gas, and water	1,1%	1,0%	1,0%	0,8%	1,9%	0,6%
Construction	6,6%	6,5%	5,3%	6,0%	6,6%	7,3%
Trade	21,2%	19,1%	20,7%	19,5%	22,6%	20,7%
Transport and communication	3,9%	3,4%	3,5%	3,1%	3,8%	3,4%
Finance and business services	11,1%	11,9%	9,7%	10,8%	9,9%	10,7%
Community services	5,4%	5,7%	4,9%	5,1%	5,9%	5,8%
General government	21,1%	22,9%	19,8%	20,7%	27,1%	28,8%
TOTAL EMPLOYMENT	**1 025 618**	**1 051 844**	**277 669**	**286 920**	**14 957**	**14 702**

The agricultural sector employs a large number of people across the province, district and local municipality. In general, agricultural activities are relatively labour intensive, thus a small decline in the size of the sector would generally lead to greater job losses than for example in manufacturing or utilities, which tend to be more capital intensive in nature. The agricultural sector is also frequently one of the largest employers in rural areas and it is for these two reasons that the sector is generally prioritised in development strategies.

9.1.3 Key Findings and Recommendations

A number of potential positive and negative social impacts have been identified for the project, which require further investigation as part of the EIA phase. Based on the findings of this Socio-Economic Impact Assessment Scoping Report, no red flags or fatal flaws have been identified from a socio-economic perspective which could preclude the development of the project. The specialist has recommended that a full EIA level Socio-Economic Impact Assessment be conducted as part of the EIA phase.

9.2 Cultural/Historical Environment

A Heritage Impact Assessment was undertaken by CTS Heritage (report dated April 2023).

9.2.1 Baseline Assessment

Cultural Landscape

According to the report, the site has a layered cultural landscape. Due to the scale of the proposed development, it is likely to change the sense of place associated with this landscape and may impact the way that this historic landscape reads by obscuring layers of the past. Cognisance must be taken of this unique cultural landscape, consisting of farm werfs etc in the proposed layout.

Archaeology

In a recent HIA completed for a nearby WEF completed by CTS Heritage, it was noted that "Even though the area is rich in history, no significant archaeological heritage resources were identified during the field assessment. No Stone Age or Iron Age heritage resources were identified during the survey. The few heritage resources that were identified consist of the ruins of older farm structures and kraals." None of the sites identified in the assessment referenced are located within or near the development area, however the text provides a good assessment of resources that may be present. According to the report, it is clear that the development area has not previously been assessed. It is therefore possible that the proposed development will impact negatively on archaeological resources associated with the Late Iron Age, burial grounds and graves as well as stone age archaeological resources. Further investigation of the archaeological significance of the development area is recommended.

Palaeontology

According to the SAHRIS Palaeosensitivity Map, the area proposed for development is underlain by sediments of zero, high and very high palaeontological sensitivity. According to the extract from the Council of Science Map for East Rand 2628 (Figure 4b), the very highly palaeontologically sensitive geology of the area is ascribed to the Vryheid Formation of the Ecca Group of sediments and the highly sensitive geology is ascribed to the Volksrust Formation.

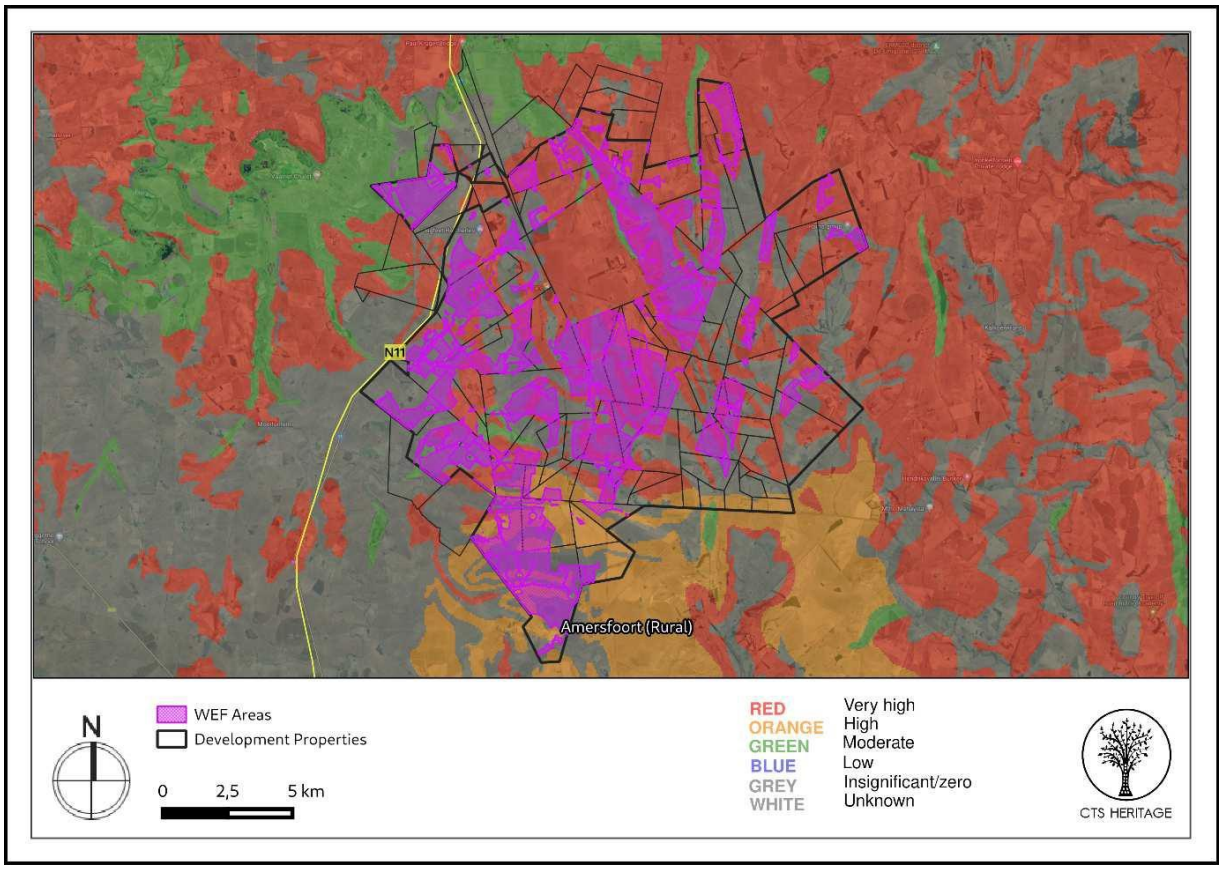

Figure 32: SAHRIS palaeosensitivity map for the site for the proposed Ujekamanzi WEFs shown within the lilac polygons

9.2.2 Heritage Fieldwork Findings in the study area

The survey proceeded with some constraints and limitations, yet the project area was comprehensively surveyed for heritage resources. Some Later Stone Age archaeology of limited scientific value was identified. However, the majority of the significant heritage resources identified relate to the historic farm occupation of this property. These resources include the remnants of old farm werfs as well as three burial sites that were identified.

9.2.3 Heritage Sensitivities

None of the heritage resources identified fall within the buildable areas for the WEFs provided. Buffer areas have been recommended to ensure that these sites are not negatively impacted by the proposed development. On condition that these buffer areas are respected, no direct impact to significant heritage resources is anticipated.

9.2.4 Preliminary Conclusions

Based on the nature of the project, surface activities may impact upon the fossil heritage if preserved in the development footprint. The geological structures suggest that the rocks are the correct age and type to preserve fossils. The site visit and walk through confirmed that there were NO FOSSILS of any significance in the project footprint. Furthermore, the surface material to be excavated is soil and this does not preserve fossils. Since there is a small chance that fossils from the Vryheid Formation might

occur below ground and might be disturbed by excavations for foundations and infrastructure, a Fossil Chance Find Protocol has been added to this report. Taking account of the defined criteria, the potential impact to fossil heritage resources is low to moderate.

9.3 Noise

A Site Sensitivity Verification Report was undertaken by Safetech (report dated 28 July 2022).

9.3.1 Baseline Assessment

According to the report, the sources of sounds emitted from operating wind turbines can be divided into two categories, firstly mechanical sounds, from the interaction of turbine components, and secondly aerodynamic sounds, produced by the flow of air over the blades and past the tower. Sound emitted from large modern wind turbines during constant speed operation tend to increase more slowly with increasing wind speed, than wind generated sound. As a result, wind turbine noise is more commonly a concern at lower wind speeds.

Infrasound was a significant characteristic of some wind turbine models that has been attributed to early designs in which turbine blades were downwind of the main tower. The effect was generated as the blades cut through the turbulence generated around the downwind side of the tower. Modern designs generally have the blades upwind of the tower. Wind conditions around the blades and improved blade design minimize the generation of the effect. The typical range of sound power level for wind turbine generators is in the range of 100 to 105 dB(A) – a much lower sound power level (10 dB or more) than the majority of construction machinery such as bulldozers. For infrasound to be audible even to a person with the most sensitive hearing at a distance of 300 m would require a sound power level of at least 140 dB at 10 Hz and even higher emission levels than this at lower frequencies and at greater distances. There is no information available to indicate that wind turbine generators emit infrasound anywhere near this intensity.

9.3.2 Noise sensitivities

According to the report, a total of 238 Noise Sensitive Areas (NSAs) were identified. The site study confirmed the primary land us of the area as agricultural. The farming activities are mixed-use consisting of cattle, sheep, game and crop production. The topography of the area is a combination of flat plains and undulating hills. The receptors identified during the desktop review and confirmed during the field study were mostly farmers and staff houses. Due to limited access, it was not feasible to confirm the occupancy of all structures identified.

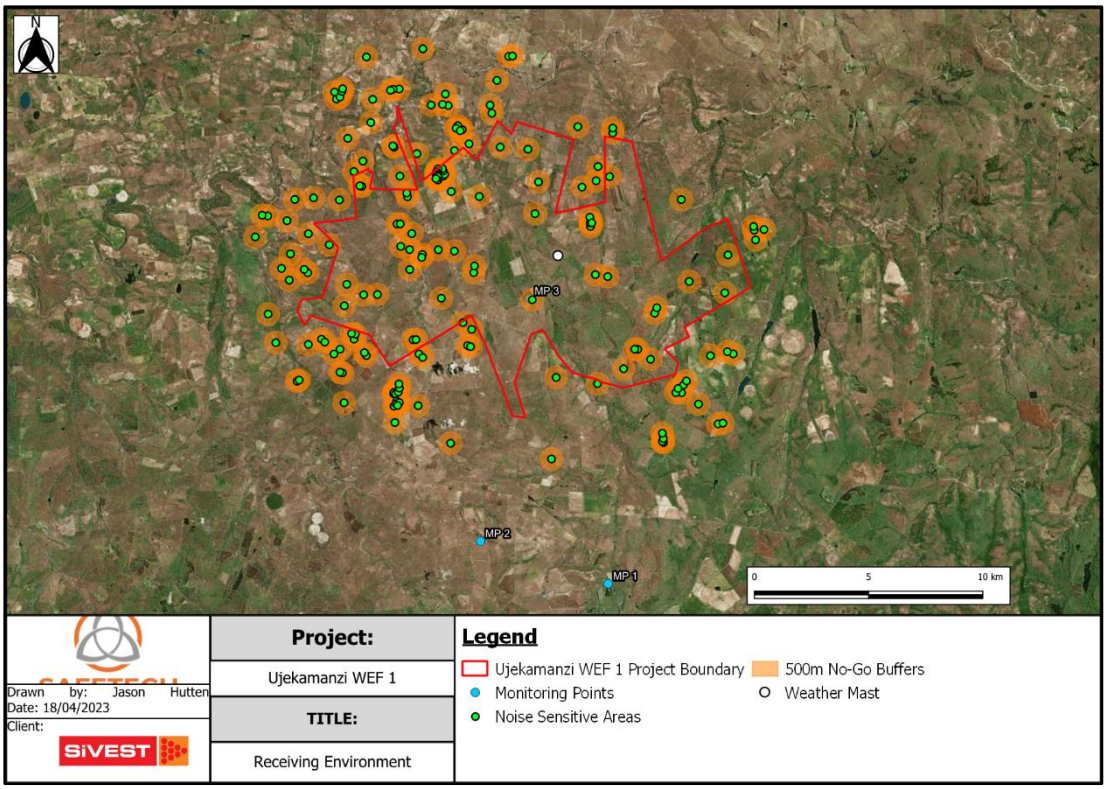

Figure 33: Noise sensitivity areas for the ABO Ujekamanzi WEF 1

9.3.3 Preliminary Conclusions

According to the report, the following is concluded and verified:

- The project site is situated in a rural district.
- The project could impact on several noise sensitive areas.
- It is recommended that a 500m buffer be placed around all noise sensitive receptors for planning purposes. The WTG layout for Ujekamanzi WEF 1 should adhere to this recommendation.

It is recommended that a full noise impact assessment, that includes emission modelling be conducted. A comprehensive report will be provided by the specialist, that will include noise mitigation measures to be included in the environmental management plan as well as predicted noise levels during the construction and operation phase.

9.4 Visual

A Landscape and Visual Impact Baseline Report was undertaken by Afzelia (report dated April 2023).

9.4.1 Baseline Assessment

<u>The Study Area</u>

According to the report, the Approximate Limit of Visibility (ALV) is dictated by height and visual mass of the proposed development, surrounding landscape and built features such as vegetation, ridgelines and buildings as well as the curvature of the earth. As the terrain is relatively flat, the vegetation

relatively low and built elements few and far between, the height of the highest proposed elements and the earth's curvature have been used to set the initial study area.
Whilst technical information was not available at the time of reporting, the highest elements of the proposed development are likely to be the wind turbines.

The specialist has used a mathematical calculation to indicate the Approximate Visual Horizon due to the earth's curvature as seen from the highest point of the proposed development. The formula used is a universally accepted formula that is used widely for navigation (indicated in Appendix III of the specialist report). This indicates that in a flat landscape the project elements are likely to be visible from the distances indicated below:

DEVELOPMENT ELEMENT (Assumed heights)	APPROXIMATE LIMIT OF VISIBILITY (ALV)
Wind Turbine Hub (180m high)	47.9km
Wind Turbine Tip (300m high)	59.8km
On-Site Substation Bus Bars (10m high)	11.3km
On-Site Substation transformers and buildings (5m high)	8.0km
BESS (8m high)	10.1km

Theoretically the proposed turbines may be visible from a distance of 59.8km, however, it is highly unlikely that they will be visible to the human eye from this distance. The ALV of the turbine hub (47.9km) is therefore used as the initial study area.

Landscape Character

Defining the character of the landscape is the first step in understanding the landscape and visual implications of the proposed development. Landscape character is defined as "a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another". Landscape character has been defined from the site visit, the author's knowledge of the area and from reference to available online mapping and aerial photography. Landscape Character is a composite of a number of influencing factors including;

- Landform and drainage.
- Nature and density of development.
- Vegetation patterns.

Landform and Drainage

The general landform in the vicinity of the project is undulating and is comprised of a series of similar size rounded ridgelines that extend approximately 50-100m above generally broad but sometimes steep valley lines. Approximately 19km to the east the land falls steeply to the Lowveld. The height difference is in the order of 100-200m. Approximately 1km to the north of the site the main regional drainage feature Vaal River flows roughly in a north-east to south-west direction and parallel to the northern boundary of the study area. In the vicinity of the project, the Vaal flows through a broad shallow sided valley.

Main tributaries including the Vaalbankspruit and the Rietspruit that flow through the proposed site in a north, north-westerly direction join the Vaal. This results in the main ridgelines running through and adjacent to the study area running in a generally north, north-west direction. The relatively broken landform described above could provide a large degree of screening particularly for smaller project elements. The wind turbines are likely to be located on or close to the ridgelines so screening these elements is likely to have a limited effect although where receptors are located in valley lines it could be significant.

Figure 34: Gently rolling landform

Nature of Development and Landcover

Land cover can broadly be divided into four main categories, including:

- Natural Grassland which is interspersed with areas of cultivation but is largely uninterrupted by cultivation. Grassland areas are largely used for cattle rearing;
- Arable agriculture / cultivation which in interspersed within the natural grassland matrix. Main crop types include sunflower seed production, sorghum, rye and potatoes;
- Settlement that occurs in the form of isolated homesteads throughout the study area that are generally related to agricultural uses. There is a tourism related establishment (Ons Pan) located within the Focus Area. This facility is focused around a small dam. The sign on the gate indicates that it is a catch and release fishing dam. The property includes a small number of Chalets and it is understood that fishing enthusiasts also camp at the dam.
- Settlement in the form of towns and villages is limited. The closest settlements include:
    - Amersfoort which is a small town on the N11 less than 1km to the west of the proposed focus area. Residential areas of the town are located on the eastern side facing towards the proposed site. Also on the eastern side of the settlement is a land fill site as well as industrial operations;

- Ermelo which is also a small town is located at the junction of the N11, the N2 and the R39 approximately 25km to the north of the proposed focus area. Residential areas are located on the eastern side of the town facing towards the proposed site. This settlement is the district centre of the Sibande District; and
- Daggakraal which is located approximately 16km to the south of the proposed focus area.

There are seven formally protected areas within the study area including:

- The Langgcarel Private Nature Reserve which is located approximately 7.5km to the north of the Focus Area;
- The Rietvlei Private Nature Reserve which is located approximately 30km to the north-west of the Focus Area; and
- The Majuba Nature Reserve which is located immediately adjacent to the Majuba Power Station approximately 20km to the south-west of the Focus Area.
- The Ahlers Private Nature Reserve that is located approximately 32km north of the Focus Area
- The Chrissiesmeer Protected Environment that is located approximately 42km to the north-north-east of the Focus Area;
- The Jericho Dam Nature Reserve that is located approximately 42km t the north-east of the Focus Area; and
- The Mabola Protected Environment that is located approximately 34.5km to the south-east of the Focus Area.

Local roads in the area include:

- The N11 and N2 that are major national distributor routes linking Ermelo to Volksruss in the south and Piet Retief in the east respectively. These are busy roads that carry business, tourism and local traffic. The N11 runs through and adjacent to the western side of the Focus Area;
- The R35 which links Bethal and areas to the north with Morgenzon and the N11 to the south. This regional distributor runs close to and through western sections of the proposed focus area;
- The R38 which links Bethal with the R39 and Standerton to the south west; and
- The R39 which links Morgenzon and Amersfoort to the south. At its closest this road runs approximately 8m south-west of the proposed focus area.

All of these roads are busy national / regional distributors that are likely to carry a full range of traffic types including tourism related traffic. However, it needs to be stated that tourism related traffic is most likely to be using these routes to travel to more distant attractions. It is unlikely that much of this traffic will view travelling through this area as a tourism experience.

Electrical infrastructure is relatively common in the area including coal fired power stations (Camden and Majuba) as well as low voltage and medium voltage lines in close proximity to roads.

Other land cover includes heavy industry including mining operations and electricity generation. However, these uses are generally located some distance from the proposed focus area. These industrial uses are generally large, isolated, individual industrial operations within the surrounding rural landscape.

Major high voltage overhead power lines cross the proposed focus area including:

- The Camden Chivelston 2 400kV power line; and
- The Camden Incandu 1 400kV power line.

These power lines run through the eastern section of the focus area.

Vegetation Patterns

The following vegetation types are evident within the proposed study area;

a) Natural vegetation that is generally associated with natural areas indicated on Map 3 (Landcover);
b) Agricultural vegetation that is comprised of cultivated fields as indicated on Map 3 and vegetation which is largely comprised of alien trees and shrubs around homesteads and on field boundaries; and
c) Vegetation associated with settlement areas which is generally comprised of alien vegetation.

a) Natural Vegetation

Mucina and Rutherford indicate that the predominant vegetation types within the vicinity of the proposed site include:

- Soweto Highveld Grassland;
- Amersfoort Highveld Clay Grassland; and
- Paulpietersburg Moist Grassland

Whilst botanically these vegetation types are different, from a visual perspective, they are all similar, appearing as monocultures of low grasses. This helps to create an open landscape within which vegetation contributes very little towards Visual Absorption Capacity.

b) Agricultural Vegetation

Agriculture in the proposed study area is largely arable crop production including sunflower seed, sorghum, rye and potatoes. Both Sorghum and Sun Flowers grow to approximately 1.5m. This means that views from areas planted with crops are likely to be screened as the crops reach their ultimate height but after harvesting and during the early growth stage, views are likely to be open. Within the agricultural areas there are small patches of alien species including gum trees on field edges, along roads and around homesteads. There are also patches of woody vegetation along main drainage lines. In visual terms therefore, agricultural areas generally contribute to an open landscape with occasional screening.

c) Vegetation Associated with Settlement Areas

This largely includes ornamental and alien shrubs and trees. Within and adjacent to settlement areas this vegetation can provide a large degree of screening.

Landscape Character

The affected landscape can be divided into the following general character types:

- **Rural Landscape Areas**. This is the type of landscape that dominates the affected landscape. It is typified by relatively uniform rolling topography that is covered by a matrix of arable agriculture set in a framework natural grassland. Due to the relatively low topography, and generally low vegetation, it is an open landscape over which long views are possible particularly when the viewer is located on the summit of a ridgeline. Within this general pattern homesteads are located that are

made obvious due to their associated alien and ornamental vegetation.There are also stands of alien trees many of which are Eucalyptus that are largely located along property boundaries and unused agricultural land.

- **Urban Landscape Areas** those are generally densely developed residential areas with small commercial areas. There are also small areas of industry also associated with urban areas. VAC is generally high, with views of the surrounding landscape generally only possible from urban edges.
- Industrial Landscape Areas Mpumalanga is known for its mining industry as well as other heavy industrial operations. These industries generally create their own visual presence that can over-ride surrounding characteristics. The closest large scale industrial operation is the Camden Power Station approximately 18km to the north-east of the Focus Area. There are also mining operations to the north and south of Camden. Other large scale industrial operations include the Majuba Power Station which is located approximately 22km to the south-west of the Focus Area.

Due to distance, these activities have no apparent influence on landscape character in the vicinity of the proposed site. They may however influence people's perception of landscape character for some of the longer views particularly for the Wind Energy Facility.

Figure 35: Rural Landscape Character Zone

Figure 36: Urban Landscape Character Zone (Amersfoort)

Figure 37: Industrial Landscape Character Zone (Large scale industry (Majuba Power Station) is located approximately 22km from the proposed Study Area)

9.4.2 Visual Receptors

According to the report, Visual Receptors are defined as “individuals and / or defined groups of people who have the potential to be affected by the proposal”.

Identified Visual Receptors

Area Receptors may include;

- The towns of Ermelo and Amersfoort;
- The Ons Pan Fishing Attraction; and
- Protected Areas.

Figure 38: The Urban Area of Amesfoort

Figure 39: The Ons Pan Fishing Attraction

Point Receptors include;

- There are a number of Local Farmsteads and Homesteads located both within the focus area and the surrounding landscape.

Figure 40: Homesteads including farm workers houses

Linear Receptors or routes through the area that include;

- The N11, the R35 and the unsurfaced local roads that that run through the study area. All of these are used mainly by local people with little tourism / recreational importance.

Figure 41: The N11

Figure 42: Unsurfaced Local Roads

9.4.3 Visual Sensitivities

The elements associated with the proposed WEF will be visible to varying degrees with the proposed turbines visible over an extensive area. It is unlikely to be possible to hide the proposed turbines, however, whilst they are likely to be visible, the existing landscape pattern will still be obvious beneath them for all but the closest views when the turbines themselves are likely to dominate. The approach therefore is to set back elements sufficiently from receptors so that the existing landscape pattern remains obvious and various ground level ancillary elements are not obvious. A key consideration is the potential for shadow flicker. Using internationally adopted guidelines will see the turbines set back approximately 2km from homesteads. This shadow flicker risk area is indicated on sensitivity mapping.

Normally, it would be recommended to keep development off ridgelines as this can make it more obvious over a distance. When dealing with wind turbines however, the height of the turbine can be critical in terms of performance and any potential visual benefit is marginal. Maintaining ridgelines free of ancillary infrastructure is however recommended. The directly affected landscape is neither protected nor is it rare so from a landscape perspective there are no no-go areas.

The sensitivity rationale that has been used is indicated in the descriptions of each area, it relates to:

- Protection of natural features; and
- Guiding development away from areas of the site that would make it most obvious to surrounding sensitive receptors.

Highly Sensitivity Areas include:

- Areas immediately surrounding settlement and homesteads development of which is likely to significantly change the character of views for residents. A 200m buffer is proposed which should be sufficient to ensure that there is separation between turbine blades and structures. It is possible that receptors (owners /residents) have no concern regarding the development of these areas, in which case the sensitivity rating will reduce; and
- Corridors beside the main roads that could be affected including the N11 and local roads. This is deemed sensitive because development in this corridor is likely to be highly obvious and could be distracting to people travelling along the roads the proposed 200m corridor should be sufficient to ensure that there is a minimum 100m between moving blades and the roads.
- Natural landscape features which on this site are primarily watercourses and wetlands. A buffer equal to the wetland specialists recommendation is proposed. The purpose is to maintain these natural landscape features throughout the life of the proposed project.

Medium Sensitivity Areas include:

- A 500m buffer between homesteads and turbine locations is recommended. This should be sufficient to ensure that development does not totally dominate views;

Low Sensitivity Areas include:

- Valley side slopes the development of which is likely to make the project least obvious from surrounding areas. The fact that development may be focused on areas with relatively low sensitivity does not preclude the necessity for mitigation.

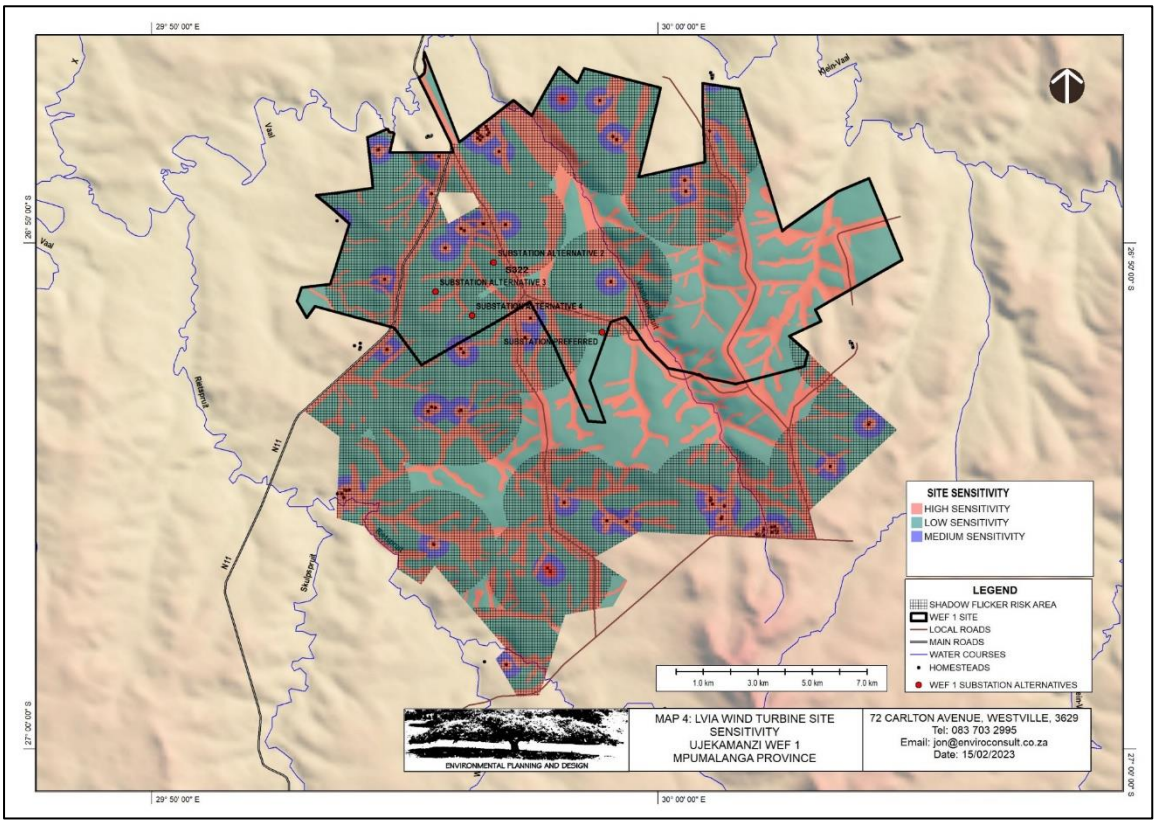

Figure 43: Visual Sensitivities

9.4.4 Preliminary Conclusions

Due to the nature of the proposed development, visual impacts are expected to relate largely to intrusion. The turbines associated with the proposed development are likely to be by far the largest structures and are therefore likely to be the most obvious elements that are visible for the greatest distance.

9.5 Shadow Flicker

A Shadow Flicker Assessment was undertaken by SRK (report dated 19 April 2023).

9.5.1 Baseline Assessment

According to the report, potentially sensitive receptors were identified based on surrounding land uses and through a desktop-based search primarily using GoogleEarth aerial imagery. The following receptors were identified:

- Residents: 84 dwellings and / or farmsteads were identified within and in close proximity to the project area for Ujekamanzi 1 WEF; and
- Motorists: The N11 national road bisects Ujekamanzi 1 WEF. Several regional and farm roads also traverse the Ujekamanzi 1 WEF.

9.5.2 Sensitivity of Receptors

The identified buildable area was informed by, inter alia, areas sensitive to shadow flicker. The areas identified as being sensitive to shadow flicker were based on the location of potential receptors; i.e. residents and motorists. The following buffers, informed by international guidelines, were considered when defining the buildable area:

- 300 m from public roads – based on the guideline that WTG should be setback from public roads by a distance 1.5x the hub height; and
- 500 m from offices and houses - based on the Best Practice Guidance to Planning Policy Statement 18 'Renewable Energy'.

After the buildable areas were identified, the potential receptors were refined to exclude receptors not located within 10x the rotor diameter from the buildable area (i.e. potential locations for WTG), reducing the number of potentially sensitive receptors to 74. The location of these receptors is shown in the figure below:

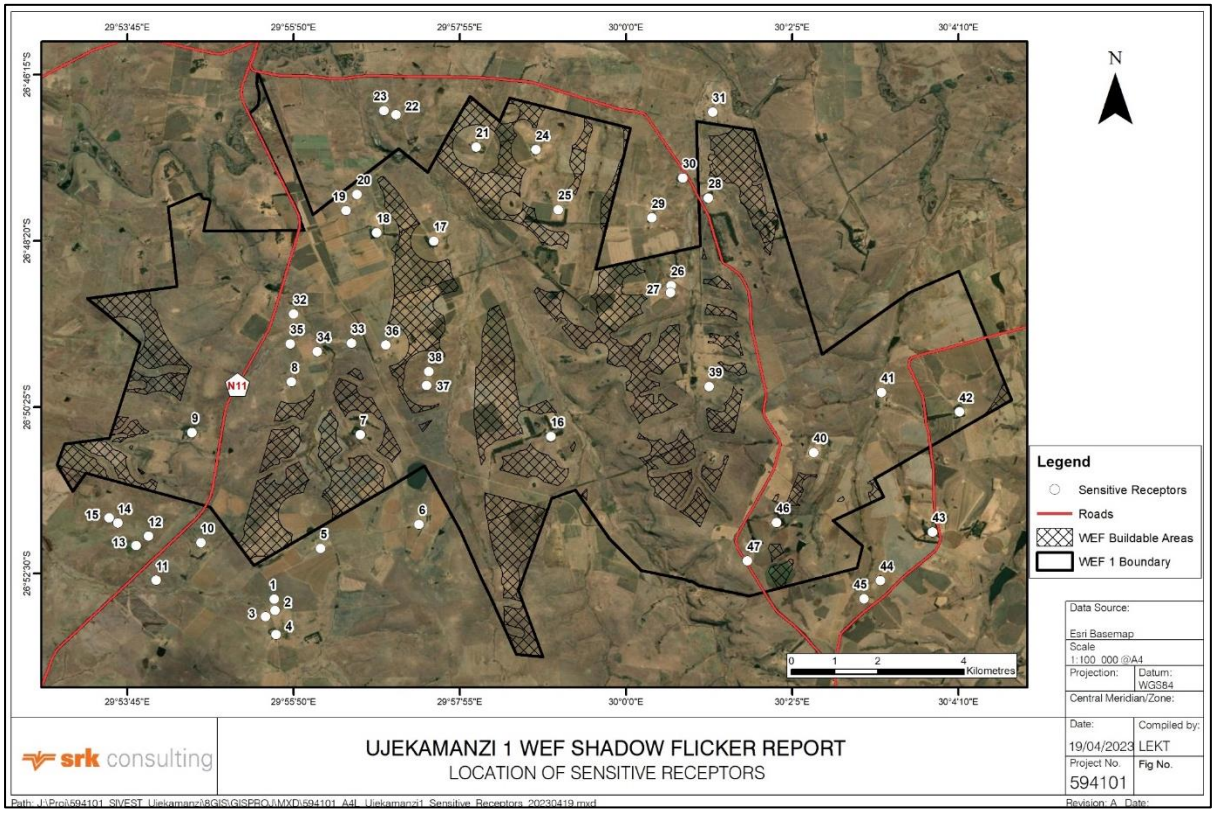

Figure 44: Location of sensitive receptors

9.5.3 Preliminary Conclusions

The modelling of shadow flicker will be undertaken prior to the EIA Phase of the project, as the preliminary locations of the WTG are still to be determined. It is expected that some of the identified receptors will experience shadow flicker to some degree. The number of affected receptors and the degree to which they are affected will be confirmed once the modelling has been completed.
It is possible to reduce the duration and / or experience of shadow flicker by implementing the following mitigation measures:

- Mitigation at affected receptors: provision of blinds, shutters or curtains;
- Mitigation on the pathway: provide screening, such as vegetation, close to the affected receptors; and
- Mitigation at the source: shut down turbines at times where shadow flicker exceeds thresholds.

No other approved or operational WEFs have been identified within 30 km of the proposed site. Therefore, it is assumed that there is currently no shadow flicker experienced by the receptors in the region. However, should Ujekamanzi 2 WEF be constructed on the neighbouring properties, it is anticipated that potentially affected receptors may experience an increased duration of shadow flicker.

9.6 Transportation

A Transport Impact Assessment was undertaken by iWink Consulting (report dated April 2023).

9.6.1 Baseline Assessment

The proposed Ujekamanzi WEF 1 project will be located near Ermelo in the Mpumalanga Province. The road classification of the surrounding road network was derived from the TRH 26 South African Road Classification and Access Management Manual.

National Route 11 (N11) traverses the western portion of the Ujekamanzi WEF 1 site area and is classified as a Class R1 rural principal arterial, which are principal arterials carrying typically countrywide traffic between:

- Metropolitan areas and large cities (population typically greater than about 500 000);
- Large border posts;
- Other Class 1 Arterials; and
- Smaller centres than the above when travel distances are very long (i.e., longer than 500 km).

Several public roads cross through the project site, which can be classified as Class R3 rural minor arterials, which typically carry inter-district traffic between:

- Small towns, villages and larger rural settlements (population typically less than about 25 000);
- Smaller commercial areas and transport nodes of local importance that generate relatively high volumes of freight and other traffic in the district (public transport and freight terminals, railway sidings, small seaports and landing strips);
- Very small or minor border posts;
- Tourist destinations;
- Other Class 1, 2 and 3 routes.
- Smaller centres than the above when travel distances are relatively long (longer than 50 to 100 km).

9.6.2 Proposed Access Points

To establish suitable accessibility of the Ujekamanzi WEF project, both wind energy facilities (i.e., WEF 1 and WEF 2) were assessed together as they are adjacent to each other and some of the possible access routes will be similar.

The proposed WEF projects can be approached from several directions and via several routes.

The access points to the sites will need to be able to cater for construction and abnormal load vehicles. It is recommended to allow for a minimum road width of 10 m for the access point(s) and 5 m for the internal roads The radius at the access point needs to be large enough to allow for all construction vehicles to turn safely.

It is further recommended that the site access point(s) be security controlled and security staff be stationed on site at the access during construction. A minimum stacking distance of 25 m needs to be kept between the road edge of the external road and the boom to allow for at least one large construction vehicle to stack in front of the access control without impeding the external road.

All road markings and signage need to be in accordance with the South African Road Traffic Signs Manual (SARTSM). According to the TRH 17 Geometric Design of rural roads guideline, the minimum shoulder sight distance at an access point for a Stop condition on a road with a speed limit of 80 km/h (assumed for the public roads), is 330 m for the largest design vehicle.

The possible access points onto the sites for WEF 1 and 2 were assessed at high-level (due to no turbine locations) and will need to be further investigated as part of the EIA stage of the application process.

Possible access options from the N11 towards the site as well as access points onto the site portions were chosen, keeping in mind minimum required sight distances, access spacing and road safety principles. Three suitable access options from the N11 are recommended.

The different coloured icons in the following Figure indicate the following:

- Red icon: Location not suitable for access due to either limited sight lines, difficult turning movements for trucks or non-overtaking sections on the N11.
- Green icon: Suitable access options towards site, which will be further discussed in the remainder of this report.
- Dark blue icon: Possible access points onto the site to be further investigated once turbine locations are known.

It is not advised to turn off the N11 in the centre of Amersfoort towards the site (see red icon in Amersfoort) to limit the impact on the community and reduce upgrading of the road surface needed. Instead, it is recommended to use Access option 3 to travel towards the southern portions of Ujekamanzi WEF 2 (see figures below).

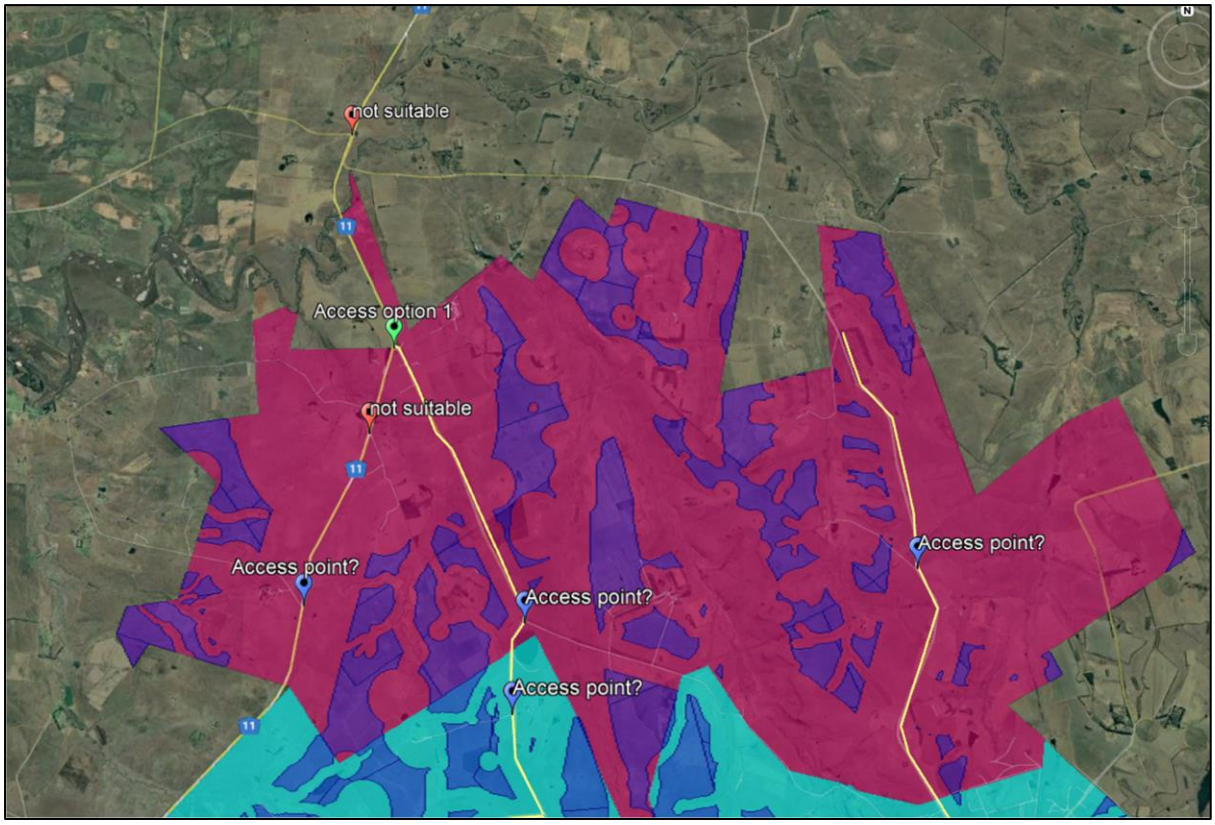

Figure 45: Aerial View of high-level Access assessment – 1

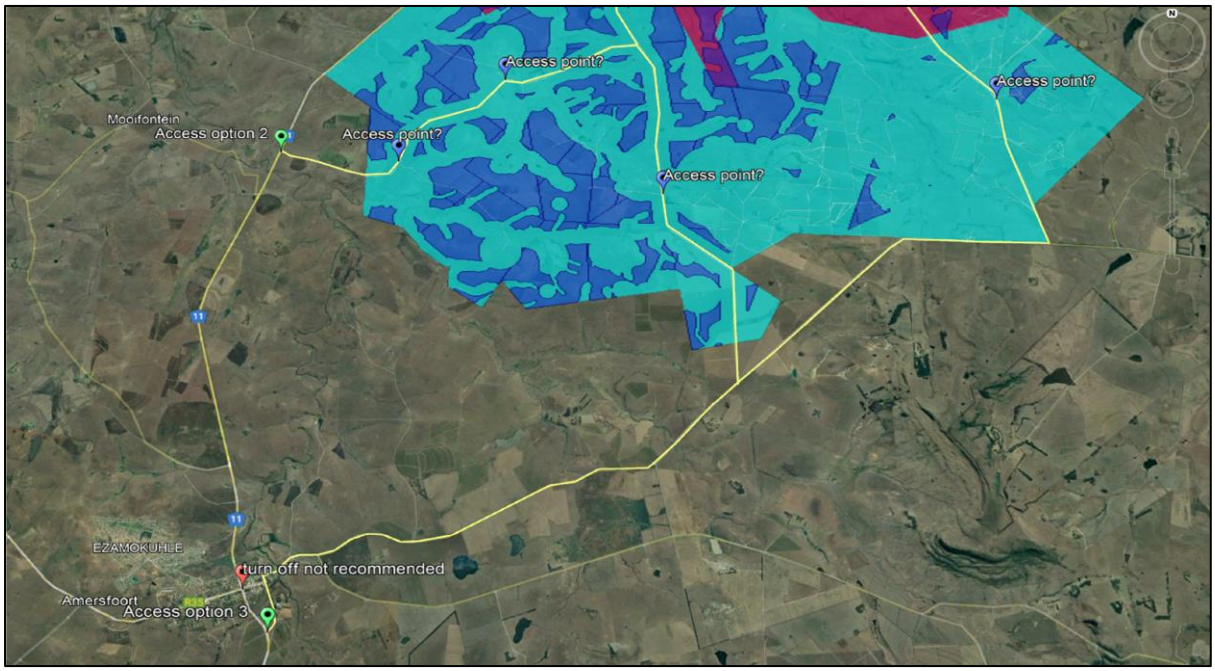

Figure 46: Aerial View of high-level Access assessment – 2

9.6.3 Internal Roads

The geometric design and layout for the internal roads from the access points needs to be established at detailed design stage. Existing structures and services, such as drainage structures, signage, street lighting and pipelines will need to be evaluated if impacting on the roads. It needs to be ensured that

gravel sections remain in good condition and will need to be maintained during the additional loading of the construction phase and then reinstated after construction is completed.

The geometric design constraints encountered due to the terrain should be taken into consideration by the geometric designer. Preferably, the internal roads need to be designed with smooth, relatively flat gradients (recommended to be no more than 8%) to allow a larger transport load vehicle to ascend to the respective laydown areas.

9.6.4 Preliminary Conclusions

The potential traffic and transport related impacts for the construction, operation and decommissioning phases of the proposed ABO Ujekamanzi WEF 1 Project were identified and assessed.

- The main impact on the external road network will be during the construction phase. This phase is temporary in comparison to the operational period. The number of abnormal loads vehicles was estimated and to be found to be able to be accommodated by the road network including the recommended mitigation measures.
- During operation, it is expected that besides any permanent staff on site, maintenance staff will periodically visit the facility. The generated trips can be accommodated by the external road network and the impacts are rated negative low.
- The traffic generated during the construction phase, although significant, will be temporary and impacts are considered to be of negative medium impact. However, after mitigation a rating of negative low impact is given.
- The traffic generated during the decommissioning phase will be similar to or even less than the construction phase traffic and the impact on the surrounding road network will also be considered to be of negative low impact after mitigation.
- For the cumulative impact, only one other renewable project was known at time of preparing this report. After mitigation, a rating of a negative low impact is given.

The proposed development of the ABO Ujekamanzi WEF 1 and associated infrastructure is supported from a transport perspective, provided that the recommendations and mitigations contained in this report are adhered to.

9.7 BESS

A MHI Risk Assessment was undertaken by ISHECON (report dated 27th April 2023). The purpose of the report is to provide a high-level safety and health risk assessment of the battery energy storage systems (BESS) proposed as part of the ABO Ujekamanzi WEF 1. According to the report, the following issues are of consideration:

Lithium-ion BESS:

- noxious smoke; and
- fires/explosions.

Redox flow BESS (assumed vanadium for now but may be alternative chemistry):

- suitable secondary spill containment for the large volume of electrolyte.

General:

- agricultural area – only commercial locations of interest.

- location of farmsteads and watering holes.

Ideally, due to the possibility of noxious smoke from fires, lithium BESS should be located over 500m from residential areas, in this case isolated farmhouses that are occupied. If this is not possible, it is noted that the risks are low and advice on mitigative measures should be provided to the farm occupants, e.g. shelter in place indoors. The currently proposed four alternative locations for the substation/BESS are shown on the map below. Based on the current separation distances (see red and blue circles), there are not expected to be any issues with BESS facilities being too close to farmsteads.

Due to the fact that South Africa is not a water rich country, supplies of water such as drinking water boreholes, as well as other surface water features, should be protected from possible chemical contamination. Should redox flow batteries (such as vanadium) be the chosen technology, it is suggested that the facilities be located a suitable distance away from water courses/sources. Refer to the Aquatic Biodiversity and Geohydrology specialist studies for specific details of separation distances. Ideally the BESS should be placed at least 50 m away from known boreholes and waterpoints, and 100 m away from major surface water features, such as major rivers and wetlands.

Following the identification of sensitivities during the Scoping Phase, the applicant has considered such sensitivities and formulated the Revised Scoping Buildable Areas, which will be further assessed during the EIA Phase. The Revised Scoping Buildable Areas are considered suitable from an SHE perspective, as the sensitivities identified above have been taken into consideration.

10. POLICY AND LEGISLATIVE CONTEXT

The relationship between the project and certain key pieces of environmental legislation is discussed in the subsections to follow.

10.1 The Constitution

The Constitution of the Republic of South Africa, Act 108 of 1996 sets the legal context in which environmental law in South Africa occurs and was formulated. All environmental aspects should be interpreted within the context of the Constitution, National Environmental Management Act 107 of 1998 and the Environment Conservation Act 73 of 1989.

The Constitution has enhanced the status of the environment by virtue of the fact that an environmental right has been established (Section 24) and because other rights created in the Bill of Rights may impact on environmental management through, for example, access to health care, food and water and social security (Section 27). An objective of local government is to provide a safe and healthy environment (Section 152) and public administration must be accountable, transparent and encourage participation (Section 195(1) (e) to (g)).

Section 24 of the Constitution states that:

"Everyone has the right –

- *To an environment that is not harmful to their health or well-being; and*
- To *have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:*

- Prevent pollution and ecological degradation;
- Promote conservation and
- Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

The Constitution is the overarching legislation for South Africa. Although it provides for certain rights and obligations, the NEMA has been promulgated in order to manage the various spheres of both the social and natural environment.

10.2 National Environmental Management Act (107 of 1998)

The National Environmental Management Act (Act No. 107 of 1998) was promulgated in 1998 but has since been amended on several occasions from this date. The act intends to provide for:

- co-operative environmental governance by establishing principles for decision-making on matters affecting the environment;
- institutions that will promote co-operative governance and procedures for coordinating environmental functions exercised by organs of state;
- to provide for the prohibition, restriction or control of activities which are likely to have a detrimental effect on the environment; and
- to provide for matters connected therewith.

NEMA is the overarching legislation which governs the EIA process and environmental management in South Africa. Sections 24 and 44 of NEMA make provision for the promulgation of regulations that identify activities which may not commence without an EA. Activities that may significantly affect the environment must be considered, investigated and assessed prior to implementation.

According to Section 2(3) of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), "development must be socially, environmentally and economically sustainable", which means the integration of these three factors into planning, implementation and decision-making so as to ensure that development serves present and future generations.

The EIA Regulations, 2014 (as amended) identify lists of activities which have the potential to result in detrimental environmental impacts and thus require EA, subject to either "Basic Assessment" or "Scoping and Environmental Impact Assessment". The Regulations prescribe the procedural and substantive requirements for the undertaking of EIAs and the issue of EA's.

The proposed project triggers listed activities under Listing Notice 1, 2 and 3 (as detailed in Section 6 above), and thus requires an EA subject to an Environmental Impact Assessment (EIA) Process.

10.3 Environmental Impact Assessment (EIA) Guideline for Renewable Energy Projects, DFFE Notice 989 of 2015

The purpose of this document is primarily to provide guidance on the environmental management legal framework applicable to renewable energy operations and all the role players in the sector. The guideline is principally intended for use by the following stakeholder groups:

- Public Sector Authorities (as regulator and/or competent authority);
- Joint public sector authorities and project funders (e.g., Eskom, IDC, etc.);
- Private Sector Entities (as project funder / developer / consultant); and

- Other interested and affected parties (as determined by the project location and/or scope).

This guideline seeks to identify activities requiring authorisation prior to commencement of that activity and provide an interface between national EIA Regulations and other legislative requirements of various authorities.

The guidelines are applicable for the construction, installation and/or development of the following renewable energy projects:

- Concentrating Solar Power (CSP) Plant;
- Wind Energy Facility (WEF);
- Hydropower Station; and
- Photovoltaic (PV) Power Plant.

10.4 National Water Act (Act 36 of 1998)

The National Water Act (NWA) No 36 of 1998 was promulgated on the 20th of August 1998. This Act is important in that it provides a framework to protect water resources against over exploitation and to ensure that there is water for socio-economic and economic development, human needs and to meet the needs of the aquatic environment. The Act also recognises that water belongs to the whole nation for the benefit of all people.

Water resources as defined include a watercourse, surface water, estuary or aquifer. Specifically, a watercourse is defined as (inter alia):

- A river or spring;
- A natural channel in which water flows regularly or intermittently; and
- A wetland, lake or dam into which, or from which water flows.

Due to the possible encroachment into the wetland areas, the following Section 21 water uses in terms of the NWA may be triggered and require licensing:

- (c) impeding or diverting the flow of water in a watercourse; and
- (i) altering the bed, banks, course or characteristics of a watercourse.

In light of the above, there are a number of stipulations within the NWA that are relevant to the potential impacts on rivers, streams and wetlands that may be associated with the proposed development. An Aquatic / Freshwater Impact Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on identified water resources as protected by the Act. Should the proposed development require a General Authorisation (GA) or Water Use Licence (WUL), it will be determined and applied for separately prior to construction**.**

10.5 The National Heritage Resources Act 1999 (25 of 1999)

The National Heritage Resources Act promotes good management of the heritage resources of South Africa which are deemed to have cultural significance and to enable and encourage communities to ensure that these resources are maintained for future generations.

The aim of the Act is to introduce an integrated, three-tier system for the identification, assessment and management of national heritage resources (operating at a national, provincial and local level). This

legislation makes provision for a grading system for the evaluation of heritage resources on three levels which broadly coincide with their national, provincial and local significance.

This Act requires investigation to determine the impact of heritage resources when developments exceed the thresholds list in section 38 (1) of the act:

a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300 m in length;
b) the construction of a bridge or similar structure exceeding 50 m in length;
c) any development or other activity which will change the character of a site—
   (i) exceeding 5 000 m^2 in extent; or
   (ii) involving three or more existing erven or subdivisions thereof; or
   (iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or
   (iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;
d) the re-zoning of a site exceeding 10 000 m2 in extent; or
e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority,

The proposed development would involve; (c) the development of a WEF and associated infrastructure that will change the character of more than 0.5ha, and (d), the rezoning of a site that will exceed 1ha.

Under the legislation the South African Heritage Resources Agency (SAHRA), was established, which replaced the National Monuments Council. SAHRA is responsible for the preservation of heritage resources with exceptional qualities of special national significance (Grade I sites). A Provincial Heritage Resources Authority, established in each province, will protect Grade II heritage resources which are significance within the context of a province or region. Buildings and sites of local interest (Grade III sites) is the responsibility of local authorities as part of their planning functions. In this case, the Heritage Western Cape (HWC) will need to be consulted with extensively throughout the process.

Within the scope of this project, Section 38 of the NHRA (25 of 1999), states that, as described above, an assessment of potential heritage resources in the development area needs to be done. A Heritage Impact Assessment (HIA), Archaeological Impact Assessment (AIA) and Paleontological Impact Assessment (PIA) has therefore been commissioned to explore how the proposed development may impact on heritage resources and potential cultural artefacts as protected by the Act.

10.6 National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004, as amended)

As the principal national act regulating biodiversity protection, the National Environmental Management: Biodiversity Act (NEM:BA) (Act No. 10 of 2004), which is administered by the DFFE, is concerned with the management and conservation of biological diversity, as well as the use of indigenous biological resources in a sustainable manner.

The overarching aim of the NEM:BA, within the framework of the NEMA, is to provide for:

- The management and conservation of biological diversity within South Africa, and of the components of such biological diversity;
- The use of indigenous biological resources in a sustainable manner; and

- The fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources.

In terms of this Act, the developer has a responsibility to:

- Conserve endangered ecosystems and restriction of activities according to the categorisation of the area (not just by listed activity as specified in the EIA regulations);
- Promote the application of appropriate environmental management tools in order to ensure integrated environmental management of activities thereby ensuring that all development within the area are in line with ecological sustainable development and protection of biodiversity; and
- Limit further loss of biodiversity and conserve endangered ecosystems.

The South African National Biodiversity Institute (SANBI) was established in terms of the NEM:BA, its purpose being (inter alia) to report on the status of the country's biodiversity and the conservation status of all listed threatened or protected species and ecosystems.

The NEM:BA provides for a range of measures to protect ecosystems and for the protection of species that are threatened or in need of protection to ensure their survival in the wild, including a prohibition on carrying out a 'restricted activity' involving a specimen of a listed threatened or protected species without a permit issued in terms of Chapter 7 of the Act. According to Section 57 of the Act, 'Restricted activities involving listed threatened or protected species':

A Terrestrial Ecological Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on biodiversity as protected by the Act.

In addition, all relevant conservation departments (such as the SANBI and DENC) will be invited to provide comments with regards to the proposed development.

10.7 National Environmental Management: Protected Areas Act, 2003 (Act No.57 of 2003 as amended)

The overarching aim of the National Environmental Management: Protected Areas Act (NEMPAA) Act No. 57 of 2003, within the framework of NEMA, is to provide for:

- the declaration and management of protected areas;
- co-operative governance in the declaration and management of protected areas;
- effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity;
- a representative network of protected areas on state land, private land and communal land;
- promote sustainable utilisation of protected areas for the benefit of people, in a manner that would preserve the ecological character of such areas;
- promote participation of local communities in the management of protected areas, where appropriate; and
- the continued existence of South African National Parks.

The proposed project is located within 15km of the Karoo National Park.

10.8 National Forests Act (NFA) (Act No. 84 of 1998)

The National Forest Act (NFA) (Act No. 24 of 1998) was enacted to:

- Provide for the protection, management and utilisation of forests;
- The protection of certain plant and animal life;
- The regulation of trade in forest produce; and
- The control and management of a national hiking way system and National Botanic Gardens.

The NFA enforces the necessity for a license to be obtained prior to destroying any indigenous tree in a natural forest and, subject to certain exemptions, cutting, disturbing, damaging, destroying or removing any protected tree. The list of protected trees is currently contained in GN 908 of 21 November 2014. Licenses are issued by the Minister and are subject to periods and conditions as may be stipulated.

Protected trees
According to this act, the Minister may declare a tree, group of trees, woodland or a species of trees as protected. The prohibitions provide that 'no person may cut, damage, disturb, destroy or remove any protected tree, or collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a licence granted by the Minister'.

Forests
Prohibits the destruction of indigenous trees in any natural forest without a licence.

The NFA is relevant to the proposed development as the removal and/or disturbance and/or clearance of indigenous vegetation will be required and a license in terms of the NFA may be required for this to be done.

A Terrestrial Ecological Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on vegetation as protected by the Act.

In addition, all relevant conservation departments (such as the SANBI and DENC) will be invited to provide comments with regards to the proposed development.

10.9 National Veld and Forest Fire Act (Act No. 101 of 1998)

Provides requirements for veldfire prevention through firebreaks and required measures for firefighting. Chapter 4 of the Act places a duty on landowners to prepare and maintain firebreaks. Chapter 5 of the Act places a duty on all landowners to acquire equipment and have available personnel to fight fires.

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

The Conservation of Agricultural Resources Act (CARA) (Act No. 43 of 1983) controls the utilisation of natural agricultural resources in South Africa. The Act promotes the conservation of soil, water sources and vegetation as well as the combating weeds and invader plants. The Act requires the protection of land against soil erosion and the prevention of water logging and salinization of soils by means of suitable soil conservation works to be constructed and maintained. The utilisation of marshes, water sponges and watercourses are also addressed.

The primary objective of the Act is to conserve natural agricultural resources by:

- maintaining the production potential of land;

- combating and preventing erosion and weakening or destruction of the water resources;
- protecting vegetation; and
- combating weeds and invaders plants.

In terms of this Act, no degradation of natural land is permitted. Rehabilitation after disturbance to agricultural land is also managed by this Act. The CARA is relevant to the proposed development as the construction of a WEF as well as other components (such as the on-site switching substation and permanent guard house) may impact on agricultural resources and vegetation on the site. The Act prohibits the spreading of weeds and prescribes control measures that need to be complied with in order to achieve this. As such, measures will need to be taken to protect agricultural resources and prevent weeds and exotic plants from invading the site as a result of the proposed development.

Declared Weeds and Invaders in South Africa are categorised according to one (1) of the following categories:

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

An Agricultural Agro-Ecosystem Specialist Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on the agricultural production potential of the proposed site.

10.11 National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended)

The National Road Traffic Act (NRTA) (Act No. 93 of 1996, as amended) provides for all road traffic matters and is applied uniformly throughout South Africa. The Act enforces the necessity of registering and licensing motor vehicles. It also stipulates requirements regarding fitness of drivers and vehicles as well as making provision for the transportation of dangerous goods.

All the requirements stipulated in the NRTA will need to be complied with during the construction and operational phases of the proposed development.

10.12 Civil Aviation Act (CAA) (Act No. 13 of 2009)

The Civil Aviation Act (CAA) (Act No. 13 of 2009) controls and regulates aviation within South Africa. It provides for the establishment of a South African Civil Aviation Authority (SACAA) and independent Aviation Safety Investigation Board in compliance with Annexure 13 of the Chicago Convention. It gives effect to various conventions related to aircraft offences, civil aviation safety and security, and provides for additional measures directed at more effective control of the safety and security of aircrafts, airports and matters connected thereto.

Although the Act is not directly relevant to the proposed development, it should be considered as the establishment of electricity distribution infrastructure (such as a substation and powerlines) may impact on aviation and air traffic safety, if located directly within aircraft flight paths.

The Air Traffic and Navigation Services Company Limited (ATNS) and the SACAA will be consulted throughout the EIA process and the required approvals will be obtained, where necessary.

10.13 Astronomy Geographic Advantage Act (Act No. 21 of 2007)

The Astronomy Geographic Advantage Act (Act No. 21 of 2007) provides for:

- The preservation and protection of areas that are uniquely suited for optical and radio astronomy; and
- Intergovernmental cooperation and public consultation on matters concerning nationally significant astronomy advantage areas and matters connected therewith.

Under Section 22(1) of the Act, the Minister has the authority to protect the radio frequency spectrum for astronomy observations within a core or central astronomy advantage area. As such, the Minister may under section 23(1) of the Act, declare that no person may undertake certain activities within a core or central Astronomy Advantage Area (AAA). These activities include the construction, expansion or operation; of any fixed radio frequency interference source, facilities for the generation, transmission or distribution of electricity, or any activity capable of causing radio frequency interference or which may detrimentally influence the astronomy and scientific endeavours.

In terms of section 7(1) and 7(2) of this Act, national government established the following AAAs:

- Karoo Central AAA (GN 198 of 2014) – proposed development falls outisde of this AAA
- Sutherland Central AAA – proposed development falls outside this AAA
- Northern Cape AAA (GN 115 of 2010) – proposed development falls outside of this AAA

10.14 National Energy Act (Act No. 34 of 2008)

South Africa has two (2) acts that direct the planning and development of the country's electricity sector, namely:

i. The National Energy Act of 2008 (Act No. 34 of 2008); and
ii. The Electricity Regulation Act (ERA) of 2006 (Act No. 4 of 2006).

The National Energy Act (Act No. 34 of 2008), promulgated in 2008, has, as one (1) of its key objectives, the promotion of diversity of supply of energy and its sources. From this standpoint, the Act directly references the importance of the renewable energy (RE) sector, with a mention of the solar energy sector included. The aim is to ensure that the South African economy is able to grow and develop, fast-tracking poverty alleviation, through the availability of a sustainable, diverse energy mix. Moreover, the goal is to provide for the increased generation and consumption of RE (Republic of South Africa, 2008).

10.15 Electricity Regulation Act (Act No. 4 of 2006)

In 2011, the electricity regulation on new generation capacity was published under Section 35(4) of the Electricity Regulation Act (ERA) (Act No. 4 of 2006). These regulations apply to the procurement of new generation capacity by organs of state.

The objectives of the regulations include:

- To facilitate planning for the establishment of new generation capacity;

- The regulation of entry by a buyer and a generator into a Power Purchase Agreement (PPA);
- To set minimum standards or requirements for PPAs;
- The facilitation of the full recovery by the buyer of all costs efficiently incurred by it under, or in connection with, a PPA including a reasonable return based on the risks assumed by the buyer thereunder and to ensure transparency and cost reflectivity in the determination of electricity tariffs; and
- The provision of a framework for implementation of an Independent Power Producer (IPP) procurement programme and the relevant agreements concluded.

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.

10.16 Protection of Public Information Act (Act No. 4 of 2013)

The Protection of Public Information Act (Act No. 4 of 2013) (POPIA) recognises the Constitutional requirement that everyone has a right to privacy.

Ultimately the Act promotes “the protection of personal information processed by public and private bodies; to introduce certain conditions so as to establish minimum requirements for the processing of personal information; to provide for the establishment of an Information Regulator to exercise certain powers and to perform certain duties and functions in terms of this Act and the Promotion of Access to Information Act, 2000 (PAIA); to provide for the issuing of codes of conduct; to provide for the rights of persons regarding unsolicited electronic communications and automated decision making; to regulate the flow of personal information across the borders of the Republic; and to provide for matters connected therewith”.

Due to the requirements around the Public Participation Process, SIVEST will process and capture information aligned to the POPIA and always obtain consent for I&APs information to be gathered, stored and distributed for the purpose of this project.

10.17 Renewable Energy Development Zones (REDZs) and Strategic Transmission Corridors

The Strategic Environmental Assessment (SEA) for Wind and Solar PV Energy in South Africa (CSIR, 2015) originally identified eight (8) formally gazetted Renewable Energy Development Zones (REDZs) that are of strategic importance for large-scale wind and solar PV development in terms of Strategic Integrated Project 8: Green Energy in Support of the South African Economy, as well as associated strategic transmission corridors, including the rollout of its supporting transmission and distribution infrastructure, in terms of Strategic Integrated Project 10: Electricity Transmission and Distribution.

- REDZs for large-scale wind and solar photovoltaic development;
- associated Strategic Transmission Corridors which support areas where long-term electricity grid will be developed;
- process of basic assessment to be followed and reduced decision-making timeframe for processing of applications for environmental authorisation in terms of the NEMA; and
- acceptance of routes which have been pre-negotiated with all landowners as part of applications for environmental authorisations for power lines and substations.

In addition to the eight (8) formally gazetted REDZs mentioned above, the Phase 2 SEA for Wind and Solar Photovoltaic Energy in South Africa (2019) identified three (3) additional REDZs (namely REDZ 9, REDZ 10 and REDZ 11) that are of strategic importance for large scale wind and solar photovoltaic energy development. These REDZs were published under Government Notice No. 786, Government Gazette No. 43528 of 17 July of 2020, and were officially gazetted under Government Notice No. 144, Government Gazette No. 44191 of 26 February 2021.

Table 22: The SEA for Wind and Solar PV Energy in South Africa (Phase 1 and Phase 2) (CSIR, 2015; CSIR, 2019) identified the following eleven (11) geographic areas for REDZs

REDZ Number	Name	Applicability of REDZ
REDZ 1	Overberg	Large-scale wind and solar photovoltaic energy facilities
REDZ 2	Komsberg	Large-scale wind and solar photovoltaic energy facilities
REDZ 3	Cookhouse	Large-scale wind and solar photovoltaic energy facilities
REDZ 4	Stormberg	Large-scale wind and solar photovoltaic energy facilities
REDZ 5	Kimberley	Large-scale solar photovoltaic energy facilities
REDZ 6	Vryburg	Large-scale solar photovoltaic energy facilities
REDZ 7	Upington	Large-scale solar photovoltaic energy facilities
REDZ 8	Springbok	Large-scale wind and solar photovoltaic energy facilities
REDZ 9	Emalahieni	Large scale solar photovoltaic energy facilities
REDZ 10	Klerksdorp	Large scale solar photovoltaic energy facilities
REDZ 11	Beaufort West	Large scale wind and solar photovoltaic energy facilities

The ABO Ujekamanzi WEF 1 site does not fall within a REDZ.

10.18 Additional Relevant Legislation

- White Paper on the Energy Policy of the Republic of South Africa (1998)
- Occupational Health and Safety Act (Act No. 85 of 1993) [OHSA];
- Environment Conservation Act (Act 73 of 1989) [ECA]
- Road Safety Act (Act No. 93 of 1996) [RSA];
- National Environmental Management: Air Quality Act (Act No. 39 of 2004) [NEM:AQA];
- National Environmental Management: Waste Act (Act No. 59 of 2008, as amended) [NEM;WA];
- Development Facilitation Act (Act No. 67 of 1995) [DFA];
- Promotion of Access to Information Act, (Act No. 2 of 2000); [PAIA]
- The Hazardous Substances Act (Act No. 15 of 1973) [HSA];
- Water Services Act (Act No. 108 of 1998) [WSA];
- Municipal Systems Act (Act No. 32 of 2000) [MSA];
- Subdivision of Agricultural Land Act, 70 of 1970, and
- Mineral and Petroleum Resource Development Act (Act No. 28 of 2002, as amended) [MPRDA].

11. KEY DEVELOPMENT STRATEGIES AND GUIDELINES

In his 2021 State of the Nation Address, President Cyril Rhamaposa announced government are taking the following measures to rapidly and significantly increase generation capacity outside of Eskom:

- *One of the priority investment areas is to rapidly expand energy generation capacity.*

- *Restoring Eskom to operational and financial health and accelerating its restructuring process is central to achieving this objective. Eskom has been restructured into three separate entities for generation, transmission and distribution.*
- *A Section 34 Ministerial Determination will be issued shortly to give effect to the Integrated Resource Plan 2019, enabling the development of additional grid capacity from renewable energy, natural gas, hydro power, battery storage and coal.*
- *We will initiate the procurement of emergency power from projects that can deliver electricity into the grid within 3 to 12 months from approval.*
- *The Department of Mineral Resources and Energy gazetted the Amended Schedule 2 of the Electricity Regulation Act 4 of 2006 on 12 August 2021, for 100 Megawatts of embedded electricity generation as approved by Minister Gwede Mantashe.*
- *We will negotiate supplementary power purchase agreements to acquire additional capacity from existing wind and solar plants.*
- *We will also put in place measures to enable municipalities in good financial standing to procure their own power from independent power producers.*

Policy decisions taken in the next decade will largely determine the dimension of the impact of climate change. Local government is in the front line of implementation and service delivery, and thus needs to pursue adequate mitigation and adaptation strategies which should include participation from the public sector, the private sector and NGOs.

The DoE gazetted its White Paper on Renewable Energy in 2003 and introduced it as a 'policy that envisages a range of measures to bring about integration of renewable energies into the mainstream energy economy.' At that time, the national target was fixed at 10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013. The White Paper proposed that this would be produced mainly from biomass, wind, solar and small-scale hydropower. It went on to recommend that this renewable energy should be utilised for power generation and non-electric technologies such as solar water heating and biofuels. Since the White Paper was gazetted, South Africa's primary and secondary energy requirements have remained heavily fossil-fuel dependent, both in terms of indigenous coal production and use, as well as the use of imported oil resources. Alongside this, the projected electricity demand of the country has led the National utility Eskom, to embark upon an intensive build programme to secure South Africa's longer-term energy needs, together with an adequate reserve margin.

The National Development Plan (NDP), 2011 – 2030, aims to address parts of the South African triple development challenges of poverty and inequality by 2030. In order to achieve this, numerous enabling milestones and critical actions have been formulated. One (1) of the critical actions is the formulation and implementation of interventions that aim to ensure environmental sustainability and resilience to future shocks.

The emphasis is on South African investment and assistance in the exploitation of various opportunities for low-carbon energy in the clean energy sources of Southern Africa (National Planning Commission, 2011).

A more efficient and competitive infrastructure is envisaged, particularly infrastructure that facilitates economic activity and is conducive to growth and job creation. The plan identifies key services that need strengthening; namely commercial transport, energy, telecommunications and water, while ensuring their long-term affordability and sustainability. The National Planning Commission maintains that South Africa has missed a generation of capital investment in many infrastructure opportunities

including electricity. Therefore, one (1) infrastructure investment priority is in the procurement of at least 20,000 MW of renewable energy-efficiency (National Planning Commission, 2011).

The proposed project is thus well aligned with the aims of the NDP which is further detailed in the following national and provincial policies/plans:

Policy	Key Policy Objectives	Source
National Policy: South Africa		
National Development Plan 2030	• Creating jobs and livelihoods • Expanding infrastructure • Transitioning to a low-carbon economy • Transforming urban and rural spaces • Improving education and training • Providing quality health care • Building a capable state • Transforming society and uniting the nation • Fighting corruption and enhancing accountability	(NPC, 2012)
New Growth Path Framework 2011	• Infrastructure investment • Main economic sectors as employment sectors • Seizing the potential of new economies • Investing in social capital and public services • Fostering rural development and regional integration	(South African Government, 2011)
Renewable Energy Vision 2030 South Africa	• Renewable energy as an exceptional source of flexible supply within the context of uncertain energy demand • Comprehensive renewable energy base will support a resilient South African future • A sustainable energy mix that excludes undue risks for the environment of society	(World Wildlife Fund, 2014)

Integrated Resource Plan 2019	• The IRP (2019) has indicated that South Africa should continue to track a diversified energy mix which lessens reliance on a few primary energy sources.
	• The IRP document expects a total of 9 980 MW of additional wind capacity to be introduced in South Africa by 2030. The wind Independent Power Producers (IPPs) constitute the largest single renewables technology procured to date under the Renewable Energy Independent Power Producer Procurement Programme.
	• Allocations to safeguard the development of wind energy projects aligned with the Integrated Resource Plan (IRP) 2010 should continue to be pursued:
	  ○ Ensure energy security and supply
	  ○ Reduce environmental impacts
	  ○ Endorse job creation and localisation
	  ○ Lessen cost of energy
	  ○ Reduce water consumption
	  ○ Diversify supply sources
	  ○ Promote energy efficiency
	  ○ Promote energy access
	
	Additionally, the IRP (2019) indicates that:
	• Wind energy will be 22.5% of the energy mix compared to solar at 11% by 2030
		(Department of Energy, 2019)

Policy	Key Policy Objectives	Source
The Constitution of South Africa 1996	• "Everyone has the right to an environment that is not harmful to their health or well-being" (S24) • The environment should be protected for the benefit of present and future generations, through reasonable legislative and other measures that: • Prevent pollution and ecological degradation • Promote conservation • Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development	(Republic of South Africa, 1996)
White Paper on Energy Policy of the Republic of South Africa 1998	• Seeks to ensure that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options • Aims to create energy security by diversifying the energy supply and energy carriers	(Department of Minerals and Energy, 1998)
White Paper on the Renewable Energy Policy of RSA 2003	• Pledges government support for the development, demonstration and implementation of renewable energy sources for both small and large-scale applications	(Department of Minerals and Energy, 2003)
Provincial Policy: Mpumalanga		
Mpumalanga Economic Growth & Development Path	• Highlights the current economic landscape of Mpumalanga with a view of the future growth and development of the province. The MEGDP identifies the following key sectors: • Infrastructure • Mining • Green Economy • Manufacturing • Agriculture • Tourism • The MEGDP focus on the production of technologies for solar, wind and biofuels and is also supported by the Energy on Integrated Resource Plan	(Mpumalanga Economic Growth & Development Path, 2011)
Mpumalanga Draft Green Economy Sector Plan, 2016	• The Plan aims to provide an integrated approach towards developing the green economy in Mpumalanga by 2030 in line with the Vision 2030. Specific objectives include: o Developing a sector plan based on the province's strengths in natural resources endowments o Expanding on the economic, green and environmental initiatives that are already underway in the province in order to facilitate quick wins o Support the DEDT's drive in sustainable economic development – Develop an action plan for implementation	(DNA Economics, 2016)
Mpumalanga Tourism and Parks Agency Strategic Plan, 2011	• The strategic plan emphasises that Mpumalanga possesses significant potential to capture large numbers of international and domestic tourists. In particular, the Kruger National Park, several other reserves, natural and cultural and historical heritage are attractions that are in demand by all tourist groups. • The plan states that the environmental sector often puts much emphasis on biodiversity conservation	(Mpumalanga Tourism and Park Agency, 2011)

Policy	Key Policy Objectives	Source
	without necessarily linking it with eco-tourism. The plan states that much naivety has been observed about what ecotourism can do. The plan calls for improved implementation of policy that will see biodiversity promotion being embraced by the broader tourism industry and the need for improved awareness from players within the sector to reduce the adverse environmental impacts of tourism.	
Mpumalanga Nature Conservation Act No. 10 of 1998	• This Act ensures that the government of the Province of Mpumalanga shall manage the environment in such a way that the basic right of every citizen can be realised. The Act seeks to ensure that an adverse impact on the environment is limited and that the rights of all that live in the province with regard to the environment are protected. • Applicable clauses within the bill in the context of this study include: o Provides for the transfer of hunting and other rights of a holder of a certificate of adequate enclosure. o Provides for the MEC's general powers in respect of wild animals. o Details restricted activities involving provincially protected and endangered species. o Stipulates obligations of holders of certificates of adequate enclosure. o Details permit requirements of persons and businesses operating game parks etc.	(Mpumalanga Nature Conservation Act 10 of 1998, 1999)
District & Local Municipal Policy: Gert Sibande DM & Dr Pixley Ka Seme LM's		
Gert Sibande District Municipality IDP 2021	• The Gert Sibande District IDP acknowledges green economy development as a primary objective as per the MEGDP. The IDP further states that investment in research for new technologies will be prioritised. • The IDP identifies the need in enhancing green economy to improve service delivery in all its seven local municipalities. • Interventions to facilitate growth and job creation in the manufacturing sector includes: o Supporting the development of clean forms of energy like wind and hydro power generations opportunities • The IDP indicated the following issues/strategic objectives i.t.o electricity supply: o Eradication of the remaining backlogs o Create capacity to accommodate new developments	(Gert Sibande District Municipality, 2021)
Pixley Ka Seme Local Municipality, SDF 2020	• The LMs SDF agrees with the NDP 2030, which states: o The upgrading of renewable energy is one of several of the prioritised investments.	(Dr Pixley Ka Isaka Seme Local Municiaplity, 2020)

12. NEED AND DESIRABILITY

SA is currently experiencing electricity supply challenges, which in turn is leading to periodic load shedding. The impact of load shedding has had massive effects on the economy and society at large. Furthermore, impacts of COVID-19, reduced business confidence and national sub-investment downgrades have all had impacts on the economy of the country. This section outlines the need and desirability of the proposed project based on the above-mentioned aspects.

12.1 National Renewable Energy Requirement

In 2010, South Africa had 44,157 MW of power generation capacity installed. Current forecasts indicate that by 2025, the expected growth in demand will require the current installed power generation capacity to be almost doubled to approximately 74,000 MW (SAWEA, 2010).

This growing demand, fuelled by increasing economic growth and social development within Southern Africa, is placing increasing pressure on South Africa's existing power generation capacity. Coupled with this, is the growing awareness of environmental impact, climate change and the need for sustainable development. Despite the worldwide concern regarding Greenhouse Gas (GHG) emissions and climate change, South Africa continues to rely heavily on coal as its primary source of energy, while most of the countries renewable energy resources remain largely untapped (DME, 2003). There is therefore an increasing need to establish a new source of generating power in SA within the next decade.

The use of renewable energy technologies, as one (1)10 of a mix of technologies needed to meet future energy consumption requirements is being investigated as part of Eskom's long-term strategic planning and research process. It must be remembered that wind energy is plentiful, renewable, widely distributed, clean and reduces GHG emissions when it displaces fossil-fuel derived from electricity. In this light, renewable wind energy can be seen as desirable.

The REIPPP programme and the competitive nature of the bidding process has resulted in significant lowering of solar and wind tariff prices since 2011. Further projects will increase the competitive nature of the REIPPP program and further result in cost savings to South African consumers.

12.2 National Renewable Energy Commitment

In support of the need to find solutions for the current electricity shortages, the increasing demand for energy, as well as the need to find more sustainable and environmentally friendly energy resources, South Africa has embarked on an infrastructure growth programme supported by various government initiatives. These include the National Development Plan (NDP), the Presidential Infrastructure Coordinating Commission (PICC), the DoE's IRP, the National Strategy for Sustainable Development, the National Climate Change Response White Paper, the Presidency of the Republic of South Africa's Medium-Term Framework, and the National Treasury's Carbon Tax Policy Paper.

The Government's commitment to growing the renewable energy industry in South Africa is also supported by the White Paper on Renewable Energy (2003) which sets out the Government's principals, goals and objectives for promoting and implementing renewable energy in South Africa. In order to achieve the long term goal of achieving a sustainable renewable energy industry, the DoE has set a target of contributing 17,8GW of renewable energy to the final energy consumption by 2030. This target is to be produced mainly through, wind and solar; but also through biomass and small scale hydro

(DME, 2003; IRP, 2010). Further renewable energy targets have been proposed within the latest IRP, which was gazetted in 2019.

The 2019 Integrated Resource Plan (2019) (IRP2019) was released on 18 October 2019 and includes the following capacity allocation:

- 1 500 MW of new coal power (noting that there will be decommissioning of coal capacity over the period);
- 2 50 0MW of hydro power;
- 6 000 MW solar;
- 14 400 MW wind;
- 2 000 MW of storage;
- 3 000 MW from gas.

12.3 SA Electricity Supply

According to the Socio-Economic Assessment undertaken by Urban Econ, SA's energy mix is largely focused on the use of non-renewable fossil fuels. The DoE notes that 83% of electricity production in SA is supplied by coal followed distantly by 6% pumped storage, 5% gas, 4% nuclear, 2% hydroelectric and 0.2% wind. It is noted by the DoE that renewables are the future of energy generation in SA especially as the costs of generating electricity through traditional means increases.

A critical variable published in the electricity, gas and water supply industry statistical report is electricity production. According to the survey, South African electricity generation declined by 7.4% between 2019 and 2021. In fact, taking a quick look at the 2006 survey, the country produced less electricity in 2021 than it did in 2006. In 2022 extended periods of load shedding were experienced, with electricity generation down by 3.6% year-on-year for the period January to September 2022 (Urban-Econ, 2023). SA is also considered to be the world's 14th largest emitter of GHGs. The carbon dioxide (CO2) emissions are principally due to a heavy reliance on coal to produce energy. SA has also pledged (through the Paris Accord) to reduce emissions and cap the amount of GHGs that would be emitted. This commitment was aligned to the national planning policy which promoted the utilisation of renewable resources to generate energy.

Globally, renewables experienced another year of record growth in electricity capacity, regardless of aftershocks from the pandemic and an increase in global commodity prices that troubled RE supply chains and postponed projects.

The responsibility of renewables in improving energy security and sovereignty by replacing fossil fuels became central to discussions, as energy prices increased sharply in late 2021 and as the Russian Federation's invasion of Ukraine unfolded in early 2022. Investment in renewable power and fuels rose for the fourth consecutive year, reaching USD 366 billion, and a record increase in global electricity generation led to solar and wind power providing more than 10% of the world's electricity for the first time ever.

Global renewable power capacity grew to around 3 146 GW in 2022. As per Urban-Econ (2023) around 175 GW of solar PV was installed in 2021, accounting for 56% of renewable capacity additions, followed by wind power (32%) and hydropower (9%). Overall, RE has grown to account for 12.6% of the world's total final energy consumption in 2020 (Urban-Econ, 2023).

Additionally, the supply of electricity in SA is currently exceptionally constrained. Load shedding in SA began in 2007 as a result of insufficient electricity generating capacity by the government-owned national power utility, Eskom. The advent of load shedding has brought numerous direct and indirect economic impacts, including social impacts to SA. These are outlined in the table below:

Table 23: The consequences of power interruptions

Direct Economic Impacts	Indirect Economic Impacts	Social Impacts
Loss of business and manufacturing production	Cost of postponed income	Loss of leisure time
Restart costs	Loss of market share	Risks to health and safety
Equipment damage	Limitations to expansion and growth of production	
Raw material spoilage	Loss of competitive advantages	
Cost of backup systems	Loss of investor confidence	

These costs are associated with losses to productivity and limitation of growth for companies and as a result limit the growth of the country. Load shedding thus threatens jobs, economic recovery, and the livelihood of many South Africans around the country.

Local research done through government agencies has also noted the need for change in the electricity industry. The National Energy Regulator of South Africa (NERSA) has examined the electricity supply industry challenges and possible solutions for those challenges and has maintained that continued price increases for electricity is unsustainable as it reduces demand. The increase in electricity prices has led to an increase in export of un-beneficiated ore which is likely to increase as the electricity price increases.

It has also been noted that there has been a reduction in export volumes of minerals which is likely a result of the increased price of electricity and unstable electricity supply. It has also been noted that the negative trend in exports mimic the GDP growth trends, which seems to be inversely proportional to electricity prices. NERSA has also noted that electricity price is a significant cost driver for some sectors. The increase in electricity cost has a greater impact on some sectors such as the metals, steel and mining industry and less of an impact on other industries such as the transport industry. New energy trends have also been noted by NERSA.

NERSA's position is that the obligation to supply the majority of domestic, commercial, and small industries energy (day load) should be removed from Eskom and be supplied by RE IPP sources. It can thus be assumed, that at a national level any additional energy production which is sustainable, and renewable would improve energy security, further Sa's goals towards international agreements, provide employment and assist in improving investor confidence in the country.

12.4 Just Energy Transition

According to International Institute for Sustainable Development (IISD), energy transitions are shifts in the way people produce and consume energy using different technologies and sources. A low-carbon energy transition is a type of energy transition involving a shift from high-carbon energy sources such as oil, gas and coal to low-carbon and zero-carbon energy sources such as renewables.

A just energy transition (JET) is a negotiated vision and process centred on dialogue, supported by a set of guiding principles, to shift practices in energy production and consumption. It aims to minimise

negative impacts on workers and communities with stakes in high-carbon sectors that will wind down, and to maximise positive opportunities for new decent jobs in the low-carbon growth sectors of the future. It strives to ensure that the costs and benefits of the transition are equitably shared.

Acting sooner rather than later can make energy transitions less expensive and more equitable, while also providing new opportunities for countries to build low-carbon industries. Nonetheless, overcoming "carbon lock-in" is difficult, and targeted political and media efforts are required to speed up JETs. Much may be done to help these processes, which are either underway or in the initial stages in many nations. Based on case studies and research, the table below lists concrete steps that governments can take to begin or accelerate a JET.

Table 24: Implementation Steps for JET

Understanding the context	• Map the political economy of an energy transition • Use detailed analyses of positive and negative impacts of an energy transition (at national, regional or even plant level)
Identifying champions	• Facilitate international and regional exchange and peer learning between countries at various stages of energy transition processes, including engagement with labour, businesses, civil society, especially for developing country contexts • Round tables at the country level to start or enhance a conversation on a just transition between all concerned stakeholders • High-level dialogue between countries in similar situations to promote the idea of a just transition at the highest levels of government (e.g., at the EU[1], OECD[2] or G20 level or bilaterally)
Making the case	• Develop communications strategies for JETs • Set up inclusive processes for “two-way communications” • Train government officials in communications
Implementing just transition measures	• Promote localized green jobs, including in decentralized energy and energy efficiency, and link this explicitly to the energy transition • Mobilize additional funding to promote visible and tangible just transition measures, and communicate about the benefits • Share best practices of just transition measures

According to Trade and Industry Policy Strategies, SA's just transition plan is both essential and conspicuously absent as the reality of a coal transition and coal power decommissioning approaches. The need to manage the transition's effects on employees and local economic development, particularly in coal-dependent regions and communities, is urgent. It is necessary to have a credible fact base from which to make suitable and widely supported decisions.

Several specific political consensuses must be brokered in this conceptual clearing in order to enable policy creation and execution, as well as investment, for a green and just transition.

[1] European Union

[2] Organisation for Economic Co-operation and Development

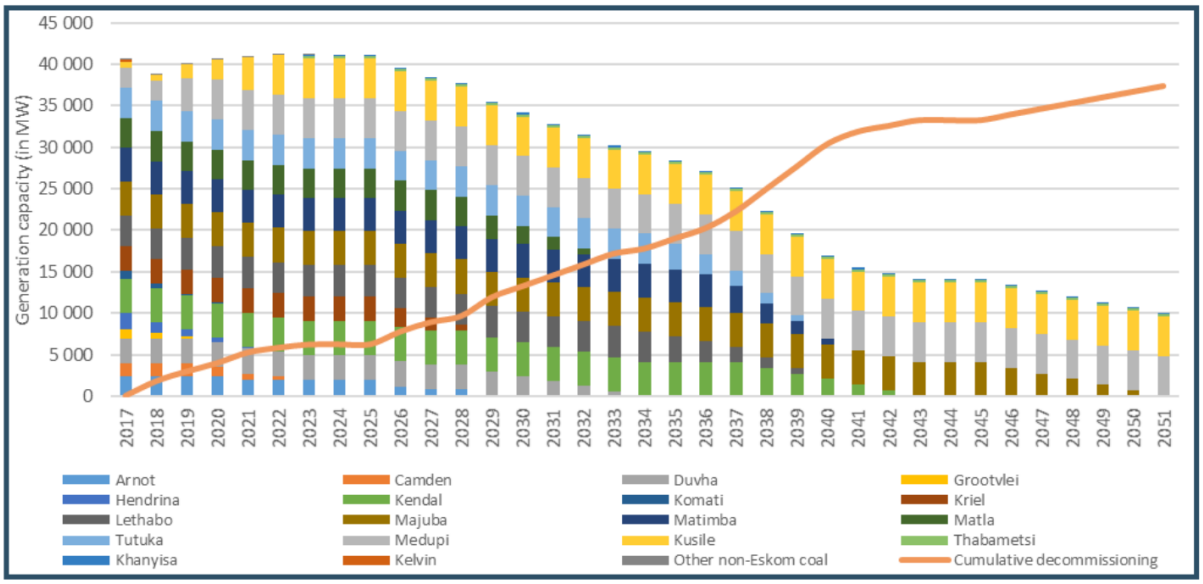

Figure 47: SA's coal-based generation capacity and scheduled decommissioning (Urban-Econ, 2023)

According to JET IS, the coal plant decommissioning will need R 4.1 billion between 2023 and 2027. Coal plant-decommissioning costs reflect what Eskom has currently provided for in its planning. These costs exclude the costs of repurposing or repowering retired plants and other infrastructure investments.

As per the JET IS, the infrastructure investment priorities are:

- To manage the decommissioning of the retiring coal generation fleet, in line with a revised IRP, and in tandem with the development of RE generation at scale and pace.
- To timeously strengthen the transmission grid infrastructure to accommodate the shift to RE.
- To modernise the electricity distribution system.

12.5 National Sub-Investments Downgrades

On March 27th 2020 Moody's Investor Service (Moody's) downgraded SA's long-term foreign-currency and local-currency issuer ratings to Ba1 from Baa3 (Junk Status). Moody's is the third and last of the major credit rating agencies to downgrade SA to junk status after Standard & Poor's and Fitch's both downgraded SA in 2017.

While these sub-investment ratings are worrying for the country, it is difficult to understand and predict what will happen to the currency in the short and medium term and currency fluctuations may occur. This is largely as a result of global dynamics that are currently in play, in particular the appetite for safe haven assets which is a far more powerful force than any of the local challenges that are emerging.

One of the known impacts of the downgrade was that SA fell out of the World Government Bond Index and other popular bond indexes, an index that measures the performance of fixed-rate, local currency, investment-grade sovereign bonds. The sub-investment rating means that SA has dropped out of some of the widely used global bond indexes and forced international funds which track these indexes to sell South African bonds. It is estimated that between $22-28 billion in capital has already flowed out of local markets since 2018 with the recent downgrade account for between $1.5 and 8 billion.

This will likely result in a rise in government debt-servicing costs which could bring strain to the already frail economic system with revenue shortfalls and contraction in GDP. Furthermore, on the 29th of April 2020, Standard & Poors Global Ratings further downgraded SA's sovereign credit rating into non-investment grade citing the impact of COVID-19 on SA's public finances and economic growth as one of the reasons for its ratings action.

The downgrade casts further doubt over SAs ability to recover post COVID-19. Some other impacts expected from the downgrade, include the deterioration of SA's credit reputation, less access to conventional credit markets; deterioration in consumer and business confidence leading to a potential contraction in private investment and consumption demand; SA losing its status in various bond indices whereby some bond investors with mandate limitations are prohibited from buying the country's bonds; and a large forex outflow as foreign investors dump South African debt. In terms of direct impacts on the construction of the proposed project, is that of currency fluctuations. With an unstable local currency, there may be unexpected and unplanned costs involved when importing technology for the project.

The development and utilisation of local supply chains could go a long way in minimising the risks associated with currency fluctuations.

12.6 Assessment of Business Confidence Level in SA

The South African Chamber of Commerce and Industry's Business Confidence Index (BCI) increased by 0.3 index points from an average of 108.5 index points in 2021 to 108.8 index points in January 2022. This was followed by an increase in BCI to 112.0 in February 2022. However, the average of 108.6 for the 1st half of 2022 was nevertheless 1.5 index points higher than the average for the 2nd half of 2021. It appears that the July 2022 BCI number indicates that the business climate is gradually returning to normality. Increased merchandise export and import volumes, and more new vehicles sold made positive contributions to the business climate in the short-term (month-to-month) in July 2022. Higher inflation, a weaker and volatile rand exchange rate, and higher real interest rates weighed negatively on the business environment. The terms of trade remained negative while electricity supply had an adverse bearing on doing business. The decline in share prices on the JSE in July maintained negative perceptions on SA.

The following indicators should be taken into consideration when analysing the business environment as they negatively contributed to the BCI:

- Energy Supply
- Manufacturing
- Exports
- Retail Sales
- Construction – buildings
- Inflation
- Share Prices
- Real financing cost
- Precious metal prices
- Rand exchange rate

However, there were positive contributors to the BCI, including:

- Tourism inwards
- Imports
- Vehicle sales
- Real private sector borrowing

The further development of RE would likely lead to an improved supply of electricity for the development of the economy. This is likely to improve business confidence in the country as sustainable energy supply is one of the key concerns of business moving forward. International investors have also noted, with concern, that the lack of availability of a consistent energy system does not lend itself to growth of Foreign Direct Investment. The development of RE systems is seen by local and foreign business owners as the future of energy generation and may increase business confidence both locally and internationally.

12.7 Wind Power Potential in South Africa and Internationally

Onshore wind energy technology is the most commonly used and commercially developed renewable energy technology in South Africa as wind is abundant and inexhaustible (DEA Guideline for Renewable Energy, 2015). Wind energy is one (1) of the lowest-priced renewable energy sources and is economically competitive (www.wasaproject.info).

12.8 Site Suitability

The location of the proposed Ujekamanzi WEF 1 (this application) included several key aspects including wind resource, grid connection suitability/infrastructure as well as environmental and social constraints, proximity to various planning units and strategic areas and topography and access.

12.8.1 Wind Resource

The applicant installed two met masts on the project site in September 2021. Wind speed trends have been monitored and data has been collected and analysed. The analysis of this data has confirmed that the proposed site is deemed suitable in terms of wind resource.

12.8.2 Site Access

The proposed WEF projects can be approached from several directions and via several routes. There are possible access options from the N11 towards the site as well as access points onto the site. Three suitable access options from the N11 have been recommended by the Transportation specialist which confirms that the site is easily accessible for the purposes of a WEF.

12.8.3 Topography and Land Use

The topography comprises low hills and undulating plains interspersed with tributaries of the upper Vaal River. Drainage in the study area is predominately north-westwards and associated with the Vaal, Klein Vaal and Vaalbankspruit Rivers. The altitude on site ranges from about 1590 m in the northern extent to about 1745 m in the south-east. The buildable areas are typically placed on the hilltops that are orientated on a north-south orientation with the valleys drained by the Vaalbankspruit and Klein Vaal Tributaries which flow in a northerly direction. The site is in the upper middle reaches of the tributaries where the watercourses are relatively small in the southern portion, becoming larger as one moves northwards.

The proposed project site has topography which is suitable for the development of a WEF.

12.8.4 Policy

The proposed ABO Ujekamanzi WEF 1 does not fall within a REDZ. However, the proposed project is well aligned with the aims of national and provincial policies/plans. Refer to **Section 11**.

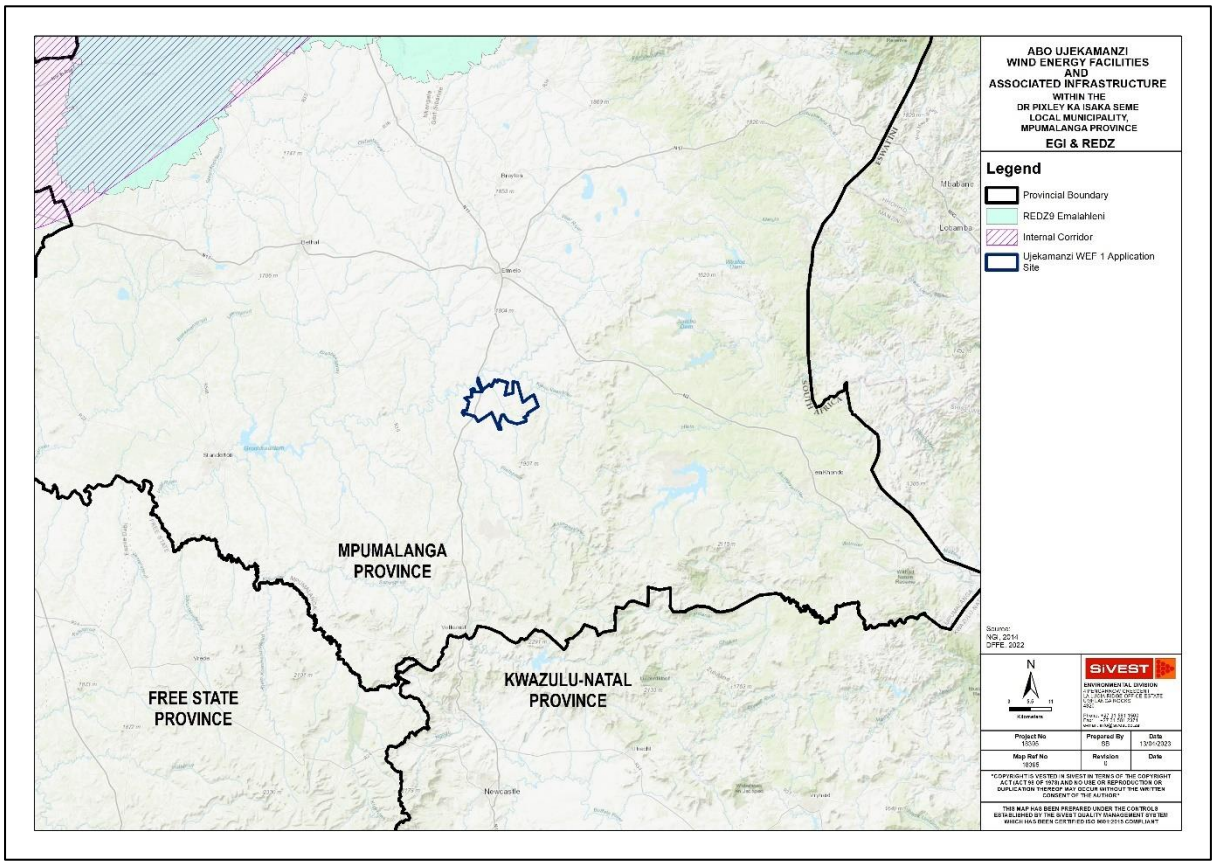

Figure 48: Location of the ABO Ujekamanzi WEF 1 in relation to the REDZ and Power corridors

12.8.5 Environmental

The applicant conducted an extensive environmental screening process using various available desktop data and tools to determine the suitability of the site. The National Department of Forestry, Fisheries and the Environmental (DFFE) screening tool was also utilized to generate a site sensitivity report for the proposed ABO Ujekamanzi WEF cluster. The outcome of the environmental screening were opportunities and constraints for development which informed the buildable areas for which authorisation is being applied for.

Table 25: Opportunities and Constraints

SPECIALIST STUDY	OPPORTUNITIES*	CONSTRAINTS
Agricultural	High sensitivity. These are dryland annual croplands. Should be avoided where possible but can be	Very high sensitivity. These are irrigated crops. Should be considered a no-go area for all

SPECIALIST STUDY	OPPORTUNITIES*	CONSTRAINTS
	used where necessary for the location of turbines. Turbine access roads and hard stands should avoid unnecessarily bisecting croplands, should minimise the length they travel within croplands, and should rather be located along the edges of croplands or on existing roads between croplands wherever possible. There are no restrictions on overhead power lines spanning croplands, but pylons should be located outside of croplands wherever possible. Substations should be located outside of croplands wherever possible.	infrastructure including overhead power lines, but exceptions can be made if critical.
Bat	- Infrastructure allowed in no go areas. - Turbines and infrastructure allowed in remaining areas.	No go areas as per shapefile (trees, reservoirs, buildings & watercourses) for turbines (subject to confirmation on alien trees, artificial reservoirs and buildings).
Biodiversity	High, Medium, Medium-Low and Low areas may be developed.	No go areas as per specialist shapefile (Rocky scarps and ridges, sensitive highland grassland, valley grassland, highland grassland, pans, spruits and drainage lines – no development (turbines and associated infrastructure) allowed.
Avifaunal	<u>Secretary bird Nest:</u> - 2.5km buffer (medium sensitivity) for turbines SDoD <u>Southern Bald Ibis Roost:</u> - 5km buffer (medium sensitivity) for turbines SDoD	<u>Martial Eagle Nest:</u> - 2.5km buffer for all infrastructure - 5km buffer for turbines <u>Grey Crowned Crane nest/roost:</u> - Nesting areas for all infrastructure - 1km buffer on nesting areas for turbines - 2km buffer on roosts for turbines <u>Secretary bird Nest:</u> - 1km buffer for all infrastructure - 2.5km buffer (medium sensitivity) for turbines SDoD <u>Lanner Falcon Nest:</u> - 750m buffer for all infrastructure and turbines

SPECIALIST STUDY	OPPORTUNITIES*	CONSTRAINTS
		Black Sparrow Hawk Nest: - 750m buffer for all infrastructure and turbines Southern Bald Ibis Roost: - 1km buffer for all infrastructure - 2.5km buffer for turbines - 5km buffer (medium sensitivity) for turbines SDoD Southern Bald Ibis Colony (northwest): - 1km buffer for all infrastructure - 5km buffer for turbines Southern Bald Ibis Colony (southeast): - 1km buffer for all infrastructure - 2.5km buffer for turbines Aquatic Sensitivity - Major watercourses (Wetlands) and 50m buffer for turbines and infrastructure.
Aquatic	Linear services may cross minor watercourses and buffers.	- Major watercourses (Wetlands) and 50m buffer for turbines and infrastructure. - Minor watercourses and 50m buffer for turbines
Heritage	All remaining areas may be developed .	Heritage observations (sites within the WEF boundary - 39, 49, 50, 51, 56, 61, 79, 124, 126 and 135) - Mooifontein ruined werf (x 3) and 100m buffer for all development (turbines and infrastructure). - Settlement and old kraal at Bloemfontein werf and 100m buffer for all development (turbines and infrastructure) - Ruined werf at Vaalkrans and 100m buffer for all development (turbines and infrastructure)

SPECIALIST STUDY	OPPORTUNITIES*	CONSTRAINTS
		- Ruin (sandstone walls in middle of maize fields) and 200m for all development (turbines and infrastructure) - Skoonheid ruins, kraals (x 3) and 50m buffer for all development (turbines and infrastructure)
Visual	Medium sensitivity areas may be developed.	- Visual receptors (homesteads) and 200m buffer for turbines and MTS. - Roads and 200m buffer for turbines. - MTS and LILO - MTS should be as close to the existing 400kV lines as possible in order to minimize the extent of the 400kV loop in loop out.
BESS	BESS may be placed in remaining areas.	<u>BESS separation distances</u> - 500m from farmhouses and residential areas (especially if solid state batteries - lithium). - 150m from main public roads (especially if solid state batteries - lithium). - 100m from water courses, bodies - 30 – 50m from Eskom power lines/substations as per Eskom guidelines
Flicker	2000m around houses/buildings – no shadow flicker expected.	- 500m around houses/buildings for turbines - 300m from roads for turbines
Noise	All remaining areas may be developed.	Noise sensitivity areas and 500m buffer for turbines (occupancy of NSA to be confirmed)

**Opportunities – remaining areas for development must adhere to the no-go areas prescribed by all specialists.*

12.8.6 Land Availability

Availability of land is a key feasibility criterion in the site selection process. The identified project site for the ABO Ujekamanzi WEF 1 is of a suitable land size for the proposed development. All affected landowners have either provided written consent or telephonic consent to the EIA process being undertaken. A larger area has been investigated for the Scoping Phase; however, the EIA phase will be undertaken only on properties where landowners have provided written consent.

12.8.7 Access to Grid

The electricity generated by the proposed wind energy facility project will be fed into the national grid via the proposed 400 kV Loop-In-Loop-Out (LILO) Power Line (part of a separate EIA Process, which will be undertake in parallel to the respective EIA Processes) which is proposed from the existing 400kV Overhead Power Line to the proposed MTS (part of a separate EIA Process, which will be undertaken in parallel to the respective EIA Processes). The existing 400kV Overhead Power Line is located within the WEF site boundary.

The site is considered suitable for the reasons provided above. The investigation of an alternative site of the WEF is not currently proposed within this Scoping Report. There is therefore no site alternative for the ABO Ujekamanzi WEF 1.

12.9 Reduce dependency on fossil fuels

At present, more than 90% of South Africa's energy is generated by coal-fired power stations. Apart from the fact that these are finite resources that will eventually run out, fossil fuels are also harmful to the environment when used to produce electricity. During combustion, fossil fuels such as coal emit many by-products into the atmosphere, two (2) of which are carbon dioxide (CO_2) and sulphur dioxide (SO_2). Both these gases have been shown to contribute to the worsening climate crisis. Wind is a free and infinite resource that occurs naturally in the environment. Converting wind energy into electricity releases no harmful by-products into the environment and will reduce the dependency on fossil fuels.

12.10 Stimulate the economy

The proposed development has the potential to stimulate the demand for other industries, among others construction services, engineering service, transport services, steel structures, cement and other aggregates, and electrical equipment. At the local level, increase in demand for accommodation, personal services, perishable and non-perishable goods is expected, which will stimulate the local economies of the towns and settlements, where labour will be procured from or where migrant workers will be temporarily located.

Some of the local businesses could benefit from sub-contracting opportunities, if the construction companies appointed by the developer implement a local community procurement policy, and consumer expenditure of the construction crew. Furthermore, the demand for hospitality services (including accommodation and catering in the towns Fraserburg and other nearby towns) is expected to increase and provide for much-needed stimulus for the local economy.

According to the Social Impact Assessment, any project which contributes positively towards the objectives mentioned within national policies could be considered strategically important for the country. A review of the national policy environment suggests that the increased utilisation of Renewable Energy (RE) sources is considered integral to reducing South Africa's carbon footprint, diversifying the national economy, and contributing towards social upliftment and economic development. As the project comprises a RE project and would contribute RE supply to provincial and national targets set out and supported within these national policies, it is considered that the project fits within the national policy framework.

12.11 Job opportunities

Given the local unemployment rate and limited job opportunities, this development will bring job opportunities in the area, that will represent a localized, social benefit. The construction of the project will create an estimated 470 project specific full time equivalent (FTE) employment positions respectively. Approximately 71 skilled jobs, 141 semi-skilled jobs and 259 unskilled jobs. The operations of the project will create an estimated 35 project specific full time equivalent (FTE) employment positions respectively. Approximately 4 skilled jobs, 14 semi-skilled jobs and 18 unskilled jobs.

13. DETAILS OF PROCESS FOLLOWED TO REACH THE PREFERRED OPTION

13.1 Details of alternatives

As per Chapter 1 of the EIA regulations (2014), as amended, feasible and reasonable alternatives are required to be considered during the EIA process. Alternatives are defined as "*different means of meeting the general purpose and requirements of the activity*". These alternatives may include:

(a) The property on which or location where it is proposed to undertake the activity;
(b) The type of activity to be undertaken;
(c) The design or layout of the activity;
(d) The technology to be used in the activity;
(e) The operational aspects of the activity; and
(f) The option of not implementing the activity.

Each of these alternatives are discussed in relation to the proposed development in the sections below. The EIA Regulations, 2010 guideline document stipulates that the environmental investigation needs to consider feasible alternatives for the proposed development. The developer should be encouraged to consider alternatives that would meet the objective of the original proposal and which could have an acceptable impact on the environment. The role of alternatives in the EIA process is therefore to find the most effective way of meeting the need and purpose of the proposal, either through enhancing the environmental benefits of the proposed activity, and/or through reducing or avoiding potentially significant negative impacts.

13.1.1 Location/Site alternatives

Prior to the initiation of the EIA, alternative properties / sites were considered for the location of the proposed development. As discussed above, the selection of a potential wind farm site includes several key aspects including wind resource, grid connection suitability/infrastructure as well as environmental and social constraints, proximity to various planning units and strategic areas and topography and access. This proposed project site was selected based on the above criteria ahead of other regional properties / sites due to the cumulative assessment of all criteria. This internal process takes several weeks to complete and ensures that the least environmentally sensitive property / site is selected in the specific region of development.

Based on the reasons above no site alternatives have been considered during the EIA process for this proposed development. The placement of wind energy facilities is dependent on the factors discussed above, all of which are favourable at the proposed site location. The proposed project site has topography which is suitable for the development of a WEF. In addition, the proposed project site also is easily accessible off the N11. The site is therefore considered highly suitable for the proposed development of a WEF, and no other locations have been considered.

13.1.2 The type of activity to be undertaken

No other activity alternatives have been considered. Renewable Energy developments in South Africa are highly desirable from a social, environmental and development perspectives respectively. The importance of renewable energy has been outlined in **Section 11** and **12** above highlighting national, district and local support. Wind energy installations are also more suitable for the proposed site because of the high wind resource.

South Africa is under immense pressure to provide clean sources of electricity generating capacity in order to reduce the current electricity demand from aging and polluting coal-fired power stations. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although wind energy is not the only solution to solving the energy crisis in South Africa, it is a suitable sustainable solution to the energy crisis and this project could contribute to addressing the problem. This project will thus aid in achieving South Africa's goals in terms of sustainability, energy security, mitigating energy cost risks, local economic development and national job creation.

13.1.3 The technology to be used in the activity

The importance of renewable energy has been outlined in **Section 11** and **12** above highlighting national, district and local support. Wind energy installations are also more suitable for the proposed site because of the high wind resource.

Wind turbine technology is developing at a rapid pace and could evolve by the time the project reached the construction phase. Therefore, various wind turbine designs and layouts will be considered for the site in order to maximise the electricity generation capacity and efficiency, whilst taking into account the environmental constraints. The turbine manufacturer and turbine model has not yet been determined and will not be decided upon until the completion of further wind analysis and competitive tendering.

Furthermore, from a policy perspective the 2019 IRP indicated a higher allocation target to wind energy compared to solar energy for new additional capacity from 2022 to 2030 (i.e., 14 400 MW as opposed to 6 000 MW) which further supports the development of a WEF at this location. Based on the above, a WEF at the proposed location is considered to be reasonable and feasible and therefore is selected as the preferred technology alternative as it would be able to generate sufficient energy to support an economically viable wind energy project.

13.1.4 Design or layout of the activity

Prior to the commencement of the EIA process, a single site boundary was investigated by all specialists to identify all sensitivities within the boundary. The sensitivities informed buildable areas on which development may proceed and also informed the site boundaries for the two WEF EIA's being undertaken (ABO Ujekamanzi WEF 1 (this application) and ABO Ujekamanzi WEF 2). Therefore, site layout alternatives will not be comparatively assessed, but rather a single layout will be refined as additional information becomes available throughout the EIA process (e.g., specialist input, additional site surveys, and ongoing stakeholder engagement). All constraints identified by the respective specialists are being considered and the layout is being refined to avoid all no-go areas.

The buildable areas presented in the Scoping Report has been selected as a practicable option for the ABO Ujekamanzi WEF 1 considering technical preference and constraints, as well as initial No-Go layers informed by the relevant specialist during the initial screening studies.

However, substation location alternatives within the site boundary are proposed and have been comparatively assessed by each of the respective specialists. A total of four (4) location alternatives have been assessed.

13.1.5 No – go option

The option of not implementing the activity, or the "no-go" alternative, has been considered in the EIA process. South Africa is under immense pressure to provide clean sources of electricity generating capacity in order to reduce the current electricity demand from aging and polluting coal-fired power stations. With the global focus on climate change, the government is under severe pressure to explore alternative energy sources in addition to coal-fired power stations. Although wind energy is not the only solution to solving the energy crisis in South Africa, not establishing the proposed WEF and associated infrastructure would be detrimental to the mandate that the government has set to promote the implementation of renewable energy. It is a suitable sustainable solution to the energy crisis and this project could contribute to addressing the problem. This project will thus aid in achieving South Africa's goals in terms of sustainability, energy security, mitigating energy cost risks, local economic development and national job creation.

The no-go alternative assumes that the proposed project will not go ahead i.e., it is the option of not developing the proposed ABO Ujekamanzi WEF 1. This alternative would result in no environmental, social or economic impacts (positive or negative) from the proposed project on the site or surrounding local area.

The following implications will occur if the no-go alternative is implemented (i.e., the proposed project does not proceed):

- Aquatic - The No-go Alternative would imply that the proposed WEF is not developed, and that the status quo is maintained. This would imply that the existing land use practice and the current activities with their associated aquatic ecosystem impacts would remain as is. The current land use activities have resulted in the present ecological condition of the aquatic features of moderately modified. It can be expected that the aquatic features will remain in the present ecological condition or even deteriorate as the observed trend in the ecological state of the aquatic ecosystems is negative. The proposed development provides the opportunity for some potential ecological improvement.
- Agricultural - The no-go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. There are no agricultural impacts of the no-go alternative. The development offers an additional income source to agriculture, without excluding agriculture from the land. Therefore, the negative agricultural impact of the no-go alternative is more significant than that of the development, and so, from an agricultural impact perspective, the proposed development is the preferred alternative between the development and the no-go. In addition, the no-go option would prevent the proposed development from contributing to the environmental, social and economic benefits associated with the development of renewable energy.
- Bat - The 'No-Go' alternative reduces the opportunity to progress the de-carbonisation transition of the economy and achieve various climate change mitigation targets outlined by (amongst others) the South Africa's Low Emission Development Strategy, The National Development Plan, The National Climate Change Response Policy, Integrated Resource Plan the National Climate Change Adaptation Strategy and ultimately South Africa's commitment to the Paris Agreement. The proposed development site appears to be well suited for the development of renewable energy facilities as proposed if best practice guidelines are followed.

- Avifaunal - The no-go alternative will result in the current status quo being maintained as far as the avifauna is concerned. The low human population in the area is definitely advantageous to sensitive avifauna, especially Red Data species. The no-go option would eliminate any additional impact on the ecological integrity of the proposed PAOI as far as avifauna is concerned.
- Socio-economic - The “no go” alternative is the option of declining to proceed with the proposed development, in which case the status quo and/or current activities on the project site would continue. If this option is chosen, there will be no impact on the existing environmental baseline and no benefits to the local economy and affected communities. The “no go” alternative thus bears the opportunity cost of socioeconomic benefits to the local community that will go unrealised. Since the positive effects and impacts of an expanded transport system are expected to outweigh the negative effects, the construction and operation of the proposed development is preferred over the “no go” alternative.

13.2 Details of Public Participation Process undertaken

Public participation is the cornerstone of any EIA. The principles of the National Environmental Management Act (NEMA) as well as the EIA Regulations (as amended 2017) govern the EIA process, including public participation. These include provision of sufficient and transparent information on an ongoing basis to stakeholders to allow them to comment, and ensuring the participation of previously disadvantaged people, women and the youth. All documents relating to the PP process have been included in **Appendix 5**.

The aim of the Scoping phase is to collect the issues, concerns and queries of interested and affected parties (I&APs) and determine the scope of the following phase of the EIA. The main objective of the Scoping phase is to:

- Inform the stakeholders about the proposed project and the environmental assessment process to be followed;
- Provide opportunity to all parties to exchange information and express their views and concerns;
- Obtain contributions from stakeholders (including the client, consultants, relevant authorities and the public) and ensure that all issues, concerns and queries raised are fully documented;
- Evaluate the issues raised and identify the significant issues; and
- Provide comment on how these issues are to be assessed as part of the Environmental Impact Assessment Process.

The public scoping processes undertaken are in accordance with the required EIA procedures prescribed within national legislation.

13.2.1 Identification of Key Stakeholder and I&AP’s

Liaison with the relevant authorities plays a crucial role in the successful completion of any environmental assessment process. In addition to the competent authority, DFFE, key stakeholders, the local municipality as well as other potentially affected I&APs, including adjacent property owners and dwellers, are identified.

This list will be updated as the project progresses and based on responses received.

13.2.2 Responsibilities of interested and affected parties (I&AP’s)

Members of the public who want to participate in the assessment process need to register and are referred as I&AP's. Registered I&AP's are entitled to comment, in writing, on all written submissions to the authority and to raise any issues that they believe may be significant, provided that:

- Comments are submitted within the timeframes set by the competent authority or extensions of timeframes agreed to by the applicant, Environmental Assessment Practitioner (EAP) and competent authority.
- A copy of the comments submitted directly to the competent authority is served on the applicant or EAP.
- The I&AP discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

13.2.3 Steps taken to notify key stakeholders and potential I&APs

The comment periods during the scoping phase were implemented according to the EIA Regulations, 2014 (as amended). The comment periods which have been implemented at this stage of the scoping phase (as set out by the EIA Regulations, 2014) were as follows:

- Comment and review period for the Draft Scoping Report (DSR): 30 days.

As stipulated in the EIA Regulations, 2014 (as amended), the DSR will undergo a 30-day comment and review period from the **26th of May 2023** until the **26th of June 2023** (excluding public holidays). Any I&APs and key stakeholders that wished to register on the project's database or comment on the DSR were encouraged to contact SiVEST Environmental Division at the contact details provided.

Notification of EIA process was undertaken as follows:

- An I&AP database was compiled which includes all affected landowners, adjacent landowners, occupiers of affected and adjacent land, other I&APs, key stakeholders (such as OoS) and other surrounding project developers. The I&AP database is included in **Appendix 5**.
- Issuing of the notifications and initial landowner consultation will be circulated to all I&APs on the **26th of May 2023** respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).
- Placement of site notices in English and Afrikaans (as per regulations) were placed along the entrance road to the application site and around the site itself on the 19th of April 2023 (proof included in the Scoping Report).
- Notification letters were sent via E-mail or sms (if cellphone number / email is available, it is assumed that the I&AP have an email or cellphone).
- Public notification of the EIA process was advertised in a local newspaper (namely Lowvelder) as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof included in **Appendix 5** of the Draft Scoping Report.

Availability of Draft Scoping report for review:

- The draft Scoping report will be made available on SiVEST's website for download.
- Electronic copies will be made available to parties upon request for the documentation.
- The Draft Scoping Report will be available for review at the following location:
  - Amersfoort Library, Bree Street, Mpumalanga, South Africa

13.2.4 Details of notification of landowners

Regulation 39 (1) of the EIA Regulations, 2014 (as amended), states that “if the proponent is not the owner or person in control of the land on which the activity is to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land”.

Regulation 39 (2) of the 2014 NEMA EIA Regulations, 2014 (as amended), further states that “sub-regulation (1) does not apply in respect of: (a) linear activities; (b) activities constituting, or activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral or petroleum resource; and (c) strategic integrated projects as contemplated in the Infrastructure Development Act, 2014”.

The proposed development does not constitute a linear development or SIP project and landowner consent is therefore required from the following land portions:

Table 26: Properties for Affected Landowners in the project area

LPI Code	Farm Name	Farm No	Portion No
T0IS00000000047600005	PIET ZYN DRIFT	476	5
T0IS00000000050000000	STRYDFONTEIN	500	RE
T0IS00000000050000002	STRYDFONTEIN	500	RE/2
T0IS00000000050000007	STRYDFONTEIN	500	7
T0IS00000000050000008	STRYDFONTEIN	500	8
T0IT00000000033300001	FAMILIEHOEK	333	1
T0IT00000000033300009	FAMILIEHOEK	333	9
T0IT00000000033500010	VYFHOEK	335	10
T0IS00000000049700010	MOOIFONTEIN	497	10
T0IS00000000050000009	STRYDFONTEIN	500	9
T0IS00000000049900000	VLAKFONTEIN	499	0
T0IT00000000033400014	VAALBANKSPRUITDRIFT	334	RE/14
T0IT00000000033400015	VAALBANKSPRUITDRIFT	334	15
T0IS00000000050000001	STRYDFONTEIN	500	RE/1
T0IT00000000033400008	VAALBANKSPRUITDRIFT	334	8
T0IT00000000033400010	VAALBANKSPRUITDRIFT	334	10
T0IT00000000033400009	VAALBANKSPRUITDRIFT	334	9
T0IS00000000049800001	GOEDERTROUW	498	1
T0IS00000000049700011	MOOIFONTEIN	497	11
T0IS00000000049800000	GOEDERTROUW	498	0
T0IS00000000047600002	PIET ZYN DRIFT	476	2
T0IS00000000047600021	PIET ZYN DRIFT	476	21
T0IS00000000047600022	PIET ZYN DRIFT	476	22
T0IT00000000033300004	FAMILIEHOEK	333	4
T0IT00000000033300005	FAMILIEHOEK	333	5
T0IT00000000033300006	FAMILIEHOEK	333	6

LPI Code	Farm Name	Farm No	Portion No
T0IS00000000053600003	ROLFONTEIN	536	3
T0IS00000000053600004	ROLFONTEIN	536	RE/4
T0IS00000000053600006	ROLFONTEIN	536	6
T0IT00000000037300004	GOEDEMOED	373	4
T0IT00000000037300005	GOEDEMOED	373	5
T0IS00000000053600005	ROLFONTEIN	536	5
T0IS00000000049700009	MOOIFONTEIN	497	9
T0IS00000000050600000	MOOIFONTEIN	506	0
T0IS00000000047500000	VAALKRANS	475	RE
T0IS00000000047600003	PIET ZYN DRIFT	476	3
T0IT00000000033500005	VYFHOEK	335	5
T0IT00000000033500006	VYFHOEK	335	RE/6
T0IT00000000033500007	VYFHOEK	335	7
T0IT00000000033500011	VYFHOEK	335	11
T0IS00000000047500002	VAALKRANS	475	2
T0IS00000000047500003	VAALKRANS	475	3
T0IS00000000047600001	PIET ZYN DRIFT	476	1
T0IS00000000047600011	PIET ZYN DRIFT	476	11
T0IS00000000047600012	PIET ZYN DRIFT	476	12
T0IS00000000047600025	PIET ZYN DRIFT	476	25
T0IS00000000049700016	MOOIFONTEIN	497	RE/16
T0IS00000000047600007	PIET ZYN DRIFT	476	7
T0IS00000000047600013	PIET ZYN DRIFT	476	13
T0IT00000000036800001	KNELPOORT	368	1
T0IT00000000036800002	KNELPOORT	368	RE/2
T0IT00000000036800003	KNELPOORT	368	3
T0IS00000000050300001	BLOEMFONTEIN	503	1
T0IS00000000050300004	BLOEMFONTEIN	503	4
T0IS00000000050300005	BLOEMFONTEIN	503	5
T0IT00000000036800004	KNELPOORT	368	4
T0IT00000000036800005	KNELPOORT	368	5
T0IT00000000036800007	KNELPOORT	368	7
T0IT00000000036800008	KNELPOORT	368	8
T0IT00000000036800018	KNELPOORT	368	18
T0IT00000000037000001	ELAINDSBERG	370	1

In terms of the Chapter 6, Section 39 of the EIA Regulations, 2014 (as amended), notification of directly adjacent landowners and occupiers is required. As a result, the affected and adjacent landowners were notified of the proposed development accordingly. Please refer to **Appendix 5** for proof of notification.

13.2.5 Summary of issues raised

Issues, comments and concerns raised during the public participation process to date will be captured in the Comments and Response Report (C&RR). The C&RR will provide a summary of the comments

received and issues raised by I&APs and key stakeholders, as well as the responses provided. This information will be used to feed into the evaluation of environmental and social impacts and will be taken into consideration when compiling the FSR.

13.3 Impact Assessment

The potential impacts for the identified environmental aspects have been assessed and mitigation measures identified below (refer **Appendix 6**).

13.3.1 Planning

None Identified.

13.3.2 Construction Phase

Environmental Aspect	Potential Impact	Mitigation
Agricultural	• Occupation of land: ○ Agricultural land directly occupied by the development infrastructure will become restricted for agricultural use, with consequent potential loss of agricultural productivity for the duration of the project lifetime.	• N/A

	• Soil erosion and degradation:
	  ○ Erosion can occur as a result of the alteration of the land surface run-off characteristics, predominantly through the establishment of hard surface areas including roads.
	  ○ Loss of topsoil can result from poor topsoil management during construction related excavations.
		• A system of storm water management, which will prevent erosion, will be an inherent 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.
		• 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.
		• 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 to 40 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.
		• Topsoil should only be stripped in areas that are excavated.

Environmental Aspect	Potential Impact	Mitigation
		• Across the majority of the site, including construction lay down areas, it will be much more effective for rehabilitation, to retain the topsoil in place. • If levelling requires significant cutting, topsoil should be temporarily stockpiled and then re-spread after cutting, so that there is a covering of topsoil over the entire cut surface. •
	• Interference with farming operations - Construction activities are likely to have some nuisance impact for farming operations but are highly unlikely to have an impact on agricultural production. •	•
Aquatic Biodiversity	• Disturbance and possibly loss of aquatic habitats within the watercourses with the associated impact to sensitive aquatic biota.	• Minimise any works within aquatic ecosystems.
	• The removal of indigenous riparian and instream vegetation has the potential to reduce the ecological integrity and functionality of the watercourses.	• Minimise any works within aquatic ecosystems. • Rehabilitate disturbed aquatic habitats by revegetating with suitable local indigenous vegetation.
	• Demand for water for construction could place stress on the existing available water resources.	• The water demand for WEF is very low and thus the associated construction water use is extremely unlikely to result in any impact. • The water should be obtained from an existing water allocation to the property or should be provided from a viable water source for construction purposes.
	• Road crossing structures if not adequately designed could impede flow in the watercourses.	• The road crossing structures should be designed in such a manner as to not impede flow in the watercourses. • For this area, a low water crossing, concrete slab through the watercourses are preferred.
	• Alien vegetation infestation within the aquatic features due to disturbance.	• Avoid disturbing aquatic habitats. • Make sure that any construction material brought onto the site are certified to be free of alien plant seed. • Rehabilitate disturbed aquatic habitats once construction works are complete.

Environmental Aspect	Potential Impact	Mitigation
	• Increased sedimentation and risks of contamination of surface water runoff during construction	• Construction near aquatic features should preferably be undertaken in the dry season. • If necessary, sediment traps should be placed downstream of works to capture sediment. • Construction sites and laydown areas should be placed at least 50m away from the delineated aquatic features. • Good housekeeping measures should be implemented at the construction sites that are set out in the EMPr and monitored by an appointed ECO for the project.
Avifaunal	• Displacement due to disturbance associated with the construction of the wind turbines and associated infrastructure.	• Construction activity should be restricted to the immediate footprint of the infrastructure as far as possible. Access to the remainder of the area 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. • No construction should take place in all infrastructure exclusion zones as indicated in Section 6.3 of Avifaunal Scoping Report.
	• Displacement due to habitat transformation associated with the construction of the wind turbines and associated infrastructure.	• Removal of vegetation must be restricted to a minimum and must be rehabilitated to its former state where possible after construction. • Construction of new roads should only be considered if existing roads cannot be upgraded. • The recommendations of biodiversity specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned to limit the impact of habitat transformation on priority species. • No construction should take place in all infrastructure exclusion zones as indicated in Section 6.3 of Avifaunal Scoping Report.
Bat	• Direct Habitat and Roost Destruction - Clearing of vegetation and/or destruction of roosting structures (especially large, mature trees, rocky outcrops, and buildings) for roads and infrastructure.	• During construction laydown areas and temporary access roads should be kept to a minimum in order to limit direct vegetation loss and habitat fragmentation. Construction of the infrastructure should, where possible, be situated in areas that are already disturbed.

Environmental Aspect	Potential Impact	Mitigation
		• This impact must be reduced by limiting the removal of vegetation, particularly large mature trees within 50 m of turbine positions. • Following construction, rehabilitation of all areas disturbed (e.g. temporary access tracks and laydown areas) must be undertaken and a habitat restoration plan must be developed by a specialist and included within the EMPr. • The WEF must be designed and constructed in such a way as to avoid the destruction of potential and actual roosts, particularly large mature trees, buildings, and rocky crevices (if blasting is required). • It is recommended that potential roosts, specifically buildings and rocky crevices, are buffered by 200 m, inside which no turbine infrastructure may be placed. No turbines should be installed within 200 • m of large mature trees.
	• Roost Disturbance and Displacement - Disturbance of bats or bat roosts from construction activities by way of excessive noise or dust.	• It may be possible to limit roost abandonment by avoiding construction activities near roosts. • Large mature trees within 200 m of the turbine positions should be inspected for roosting bats. • It is recommended that potential roosts, specifically buildings and rocky crevices, are buffered by 200 m, inside which no turbine infrastructure may be placed. No turbines should be installed within 200 m of large mature trees.
Biodiversity	• Vegetation and plant species in the Agricultural fields or Old Fields: 5169 ha Low species richness, Low ecological sensitivity.	• No or limited natural indigenous vegetation. Large areas not affected. • Disturbed areas around turbines and trenches for underground cables will be rehabilitated. • Agriculture will continue.
	• Vegetation and plant species in the Degraded Grassland: 2521 ha, Medium species richness, Medium-Low ecological sensitivity.	• Some natural vegetation. Large areas not affected. • Rehabilitate cleared areas at pylons. around turbines and trenches for underground turbines and trenches for underground cables will be rehabilitated.

Environmental Aspect	Potential Impact	Mitigation
		• Sow indigenous grass if needed. • Current land-use can continue.
	• Vegetation and plant species in the Wakkerstroom Grassland: 650ha, High species richness, Medium ecological sensitivity.	• Natural vegetation somewhat degraded. Large areas not affected. • Rehabilitate cleared areas at pylons. around turbines and trenches for underground turbines and trenches for underground cables will be rehabilitated. • Sow indigenous grass if needed. • Current land-use can continue.
	• Vegetation and plant species in the Valley Grassland: High species richness, Medium ecological sensitivity.	• If possible, avoid putting pylons in Valley Grassland, if on the edge, check wetness and if wet move slightly away, avoid access road in moist areas, use existing roads. • The clearing of vegetation must be kept to a minimum and remain within the turbine footprint development – leave the rest of the area with natural vegetation intact. • Remove alien invasive species wherever possible. • Disturbed open areas must be rehabilitated immediately after construction has been completed. • During the construction phase workers must be limited to areas under construction and access to adjacent Valley Grassland areas must be strictly controlled. • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. Plant only indigenous grass – no alien species. • Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Vegetation and plant species in the Highland Grassland: 1530 ha, Very High species richness, Medium-High ecological sensitivity. This area is an Optimal CBA.	• Natural vegetation. Large areas not affected. • Rehabilitate cleared areas at pylons. around turbines and trenches for underground turbines and trenches for underground cables. • Sow indigenous grass if needed. Current land-use can continue.

Environmental Aspect	Potential Impact	Mitigation
		• Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Vegetation and plant species in the Sensitive Highland Grassland: 1001 ha, Very High species richness, High ecological sensitivity. This area is an Irreplaceable CBA.	• Natural vegetation. Large areas not affected. • Rehabilitate cleared areas at pylons. around turbines and trenches for underground turbines and trenches for underground cables. • Sow indigenous grass if needed. Current land-use can continue. • Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Increase of alien and invasive plant species.	• An alien invasive management programme must be incorporated into the Environmental Management Programme. • Ongoing alien plant control must be undertaken. • Areas which have been disturbed will be quickly colonised by invasive alien species. • An ongoing management plan must be implemented for the clearing/eradication of alien species. • Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Avoid planting of exotic plant species, use indigenous grass species.
	• Mammals, unlikely to occur in the way of the construction, if present likely to move away.	• The managers must ensure that no indigenous mammal species are disturbed, trapped, hunted or killed during the construction phase. • Should any mammal species be encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. • Conservation-orientated clauses should be built into contracts for personnel, complete with penalty clauses for non-compliance. • Normal farming with livestock or game should continue.

Environmental Aspect	Potential Impact	Mitigation
	• Herpetofauna direct impact or habitat loss.	• Any reptile or amphibia species that are encountered or exposed during the construction phase, should be removed and relocated to natural areas in the vicinity. • The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the construction phase. • During the construction phase there may be increased surface runoff and a decreased water quality. • Completing construction during the winter months would mitigate the environmental impact. • The appropriate agency should implement an ongoing monitoring and eradication program for all invasive plant species growing on the site. • Any post-development re-vegetation or landscaping exercise should use species indigenous to South Africa. • Plant species locally indigenous to the area are preferred.
Heritage	• Construction activities that take place near to archaeological resources may result in their destruction.	• No development activities within the buffer areas identified. • Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted
	• Construction activities that take place near to palaeontological resources may result in their destruction.	• Implementation of the Chance Fossil Finds Protocol.
	• Construction activities that take place near to cultural landscape elements may result in their destruction.	• Implementation of the recommended buffer areas and recommendations included in the VIA.
Noise	• Noise associated with the construction phase.	• Conduct Noise Sensitivity Training for all construction staff where construction takes place close to sensitive receptors. • No construction should occur during night-time hours (22:00-06:00). • If possible, piling activities should occur during the hottest part of the day to take advantage of the unstable atmospheric conditions.

Environmental Aspect	Potential Impact	Mitigation
		• Residual Noise Monitoring should be conducted during the construction phase at sensitive NSAs.
Shadow Flicker	• N/A	• N/A
Socio-Economic	• Expenditure associated with the construction of the proposed 300MW Wind Farm will impact on the production of the local economy.	• The project developer should use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Sub-contracting of local construction companies to occur as far as possible for the construction of facilities.
	• Temporary increase in country's GDP due to capital expenditure during the construction period.	• The project developer is to use locally sourced inputs where feasible in order to maximize the benefit to the economy.
	• The construction of the 300MW Wind Farm will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).	• Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. • Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.
	• Employees will develop and enhance skills thereby increasing experience and knowledge.	• In order to maximise the positive impact, it is suggested that the project company provide training courses for employees where feasible to ensure that employees gain as much as possible from the work experience. • Facilitate the transfer of knowledge between experienced employees and the staff. • Perform a skills audit to determine the potential skills that could be sourced in the area.
	• Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Local employment will benefit local households and the local area.
	• The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.	• N/A
	• Negative impact on sense of place (noise, dust and visual) for farmers where construction activities will take place.	• Ensure proper health and safety plans in place during the construction period to ensure safety on and around site during construction.

Environmental Aspect	Potential Impact	Mitigation
		• Install screens around the construction site to reduce the visual impact of construction on surrounding properties. • Site watering (or use of appropriate dust suppressant) from time to time to reduce dust emitting from the construction site.
	• Farmers might feel that the increase of accessibility will increase theft in the area.	• Ensure proper 24/7 security is patrolling the construction sites, as well as controlled access.
	• Loss of agricultural space.	• Construct the wind turbines on parts where the least arable land will be affected.
	• An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.	• Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. • Train unemployed local community members with insufficient skills and increase absorption of local labour thereby decreasing in-migration.
	• An increase in traffic due to construction vehicles and heavy vehicles could create short-term disruptions and safety hazards for current road users.	• Provide public transportation service for workers in order to reduce congestion on roads. • Partner with local municipalities and other prominent users of the local roads to upgrade them to meet the required capacity and intensity of the vehicles related to the planned construction activities. • Transportation contractors must adhere to the road rules and regulations. • Utilise only designated access routes & entrance/exits from the site. • Implement appropriate signage & road safety measures at entrance/exit to the site and on site.
Transportation	• Temporary increase in traffic due to construction vehicle trips on the external road network / increase in noise and dust pollution levels during the construction period.	• Maintenance of haulage roads. • Design and maintenance of internal routes. • Dust suppression close to communities. • Stagger turbine component and material delivery to site. • Reduce construction period if possible. • Stagger construction of turbines.

Environmental Aspect	Potential Impact	Mitigation
		• Use mobile batch plants and quarries in close proximity to the site to decrease impact on surrounding road network. • Staff and general trips should occur outside of peak traffic periods as far as possible.

13.3.3 Operational Phase

Environmental Aspect	Potential Impact	Mitigation
Agricultural	• Increased financial security for farming operations - Reliable and predictable income will be generated by the farming enterprises through the lease of the land to the energy facility. This is likely to increase their cash flow and financial security and could improve farming operations and productivity through increased investment into farming. • Improved security against stock theft and other crime - Due to the presence of security infrastructure and security personnel at the energy facility. • Improved road network, with associated storm water handling system - the wind farm will construct turbine access roads of a higher standard than the existing farm roads which will give farming vehicles better access to farmlands. This will be especially relevant during wet periods when access to croplands for spraying etc is limited by the current farm roads. • Prevention of crop spraying by aircraft over land occupied by turbines – ground based or using drones for spraying are effective, alternative methods that can be used without implications for production or profitability. •	• N/A

Environmental Aspect	Potential Impact	Mitigation
	•	
Aquatic Biodiversity	• Ongoing disturbance of aquatic features and associated vegetation along access roads or adjacent to the infrastructure that needs to be maintained.	• The moderate to high sensitivity aquatic habitats should be avoided in the layout design such that it is only the low sensitivity habitats that would be disturbed during construction. • The disturbance of these habitats would only result in a slight (negligible) alteration to aquatic ecosystems and processes.
	• Modified runoff characteristics from hardened surfaces at the turbines and the substation as well along the access roads that have the potential to result in erosion of hillslopes.	• Develop a stormwater management plan for the proposed development that addresses the stormwater runoff from the developed site.
	• Possible increase in water consumption and potential for water quality impacts (such as contamination from sewage generated onsite) as a result of the operation of the site.	• The water consumption of the proposed WEF is low and unlikely to result in any water requirement that is more than the General Authorisation for groundwater use. • Nevertheless, a sustainable water supply should be sought. • The sewage generated within the site should be discharged to a conservancy tank that is properly serviced and the content timeously evacuated to a nearby wastewater treatment works.
Avifaunal	• Mortality of priority species due to collisions with the wind turbines.	• No turbines (including the rotor swept area) should be located in turbine exclusion zones as indicated in Section 6.3 of the Avifaunal Scoping Report. • Pro-active mitigation in the form of Shutdown on Demand (SDoD) or automated curtailment must be implemented in the medium risk zones as indicated in Section 6.3 of the Avifaunal Scoping Report. • Live-bird monitoring and carcass searches should 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 assess collision rates. • All wind turbines must have one blade painted according to a CAA approved pattern to reduce the risk of raptor collisions. It is acknowledged that blade painting as a mitigation strategy is still in an experimental phase in South Africa, but research indicates that it has a very good chance of reducing raptor mortality, based on research conducted in Norway (see Simmons et al. 2021

Environmental Aspect	Potential Impact	Mitigation
		(Appendix 8 of the Avifaunal Scoping Report) for an explanation of the science and research behind this mitigation method). • If at any time estimated collision rates indicate unacceptable mortality levels of priority species, i.e., if it exceeds the mortality threshold determined by the avifaunal specialist after consultation with other avifaunal specialists and BirdLife South Africa, additional measures will have to be implemented.
	• Mortality of priority species due to electrocutions on the overhead sections of the internal 33kV cables.	• Underground cabling should be used as much as is practically possible. • If the use of overhead lines is unavoidable due to technical reasons, the Avifaunal Specialist must be consulted timeously 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. • Regular inspections of the overhead sections of the internal reticulation network must be conducted during the operational phase to look for carcasses, as per the most recent edition of the Best Practice Guidelines at the time (Jenkins et al. 2015).
	• Mortality due to collisions with the overhead sections of the internal 33kV cables.	• Bird flight diverters should be installed on all the overhead line sections for the full span length according to the applicable Eskom standard at the time.
Bat	• Bat Mortality during Commuting and/ or Foraging - Fatality of bats due to barotrauma or direct collision with wind turbine blades.	• Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water features, large mature trees, buildings, and rocky crevices. These areas have been buffered by 200 m. No turbines are currently located within the buffers. • The height of the lower blade swept area must be maximised, and should try to be kept above 50 m. If the minimum blade sweep is lower than 50 m, the facility runs the risk of reaching fatality thresholds sooner.

Environmental Aspect	Potential Impact	Mitigation
		• Operational monitoring should be undertaken according to the guidelines for the first 2 years and every 5 years thereafter. During this monitoring fatality estimations must be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 2704 bat fatalities per year as per current threshold) to determine escalation of mitigation options. • Blade feathering should be implemented at the start of operation. • Apply curtailment during spring, summer and potentially autumn based on an appropriate curtailment plan and/or instal acoustic deterrents (based on input from an appropriate bat specialist) if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.
	• Bat Mortality during Migration - Fatality of migrational bat species due to barotrauma or direct collision with wind turbine blades while migrating	• Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water features, large mature trees, buildings, and rocky crevices. These areas have been buffered by 200 m. No turbines are currently located within the buffers. • The height of the lower blade swept area must be maximised, and should try to be kept above 50 m. If the minimum blade sweep is lower than 50 m, the facility runs the risk of reaching fatality thresholds sooner. • Operational monitoring should be done according to the guidelines for the first 2 years and every 5 years thereafter. During this monitoring fatality estimations would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 270 bat fatalities per year as per current threshold) to determine escalation of mitigation options.

Environmental Aspect	Potential Impact	Mitigation
		• Blade feathering should be implemented at the start of operation. • Apply curtailment during spring, summer and potentially autumn based on an appropriate curtailment plan and/or instal acoustic deterrents (based on input from an appropriate bat specialist) if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.
	• Light Pollution	• This impact can be mitigated by using as little lighting as possible, and only where essential for operation of the facility. • Where lights need to be used such as at the collector substation and switching station and elsewhere, these should have low attractiveness for insects such as low pressure sodium and warm white LED lights (Rydell 1992; Stone 2012). High pressure sodium and white mercury lighting is attractive to insects (Blake et al. 1994; Rydell 1992; Svensson & Rydell 1998) and should not be used as far as possible. • Lighting should be fitted with movement sensors to limit illumination and light spill, and the overall lit time. In addition, light spread should be directed downwards and below the horizontal plane to minimise light trespass and sky glow. • Increasing the spacing between lights, and the height of light units can reduce the intensity and volume of the light to minimise the area illuminated and give bats an opportunity to fly in relatively dark areas between and over lights.
Biodiversity	• Vegetation and plant species in the Agricultural fields or Old Fields: Low species richness, Low ecological sensitivity.	• Agriculture will continue - no natural indigenous vegetation. • No access to adjacent private agricultural land.
	• Vegetation and plant species in the Degraded Grassland: Medium species richness, Medium-Low ecological sensitivity.	• Remain in designated area. • No access to adjacent private grassland veld.

Environmental Aspect	Potential Impact	Mitigation
		• Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Vegetation and plant species in the Wakkerstroom Grassland: High species richness, Medium-Low ecological sensitivity.	• Remain in designated area. • No access to adjacent private grassland veld. • Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Vegetation and plant species in the Valley Grassland: High species richness, Medium ecological sensitivity.	• Avoid moist areas as far as possible. • Rehabilitate any disturbed areas as soon as possible. • Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Vegetation and plant species in the Highland Grassland: Very High species richness, Medium-High ecological sensitivity. This area is an Optimal CBA.	• Remain in designated area. • No access to adjacent private grassland veld. • Land-use grazing by livestock or game continue. • Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Vegetation and plant species in the Sensitive Highland Grassland: Very High species richness, High ecological sensitivity. This area is an Irreplaceable CBA.	• Remain in designated area. • No access to adjacent private grassland veld. • Land-use grazing by livestock or game continue. • Actions that would cause or enhance erosion must at all times be avoided, and where it occurs, must be corrected and rehabilitated.
	• Increase of alien and invasive plant species.	• An alien invasive management programme must be incorporated into the Environmental Management Programme. • Ongoing alien plant control must be undertaken. • Areas which have been disturbed will be quickly colonised by invasive alien species. • An ongoing management plan must be implemented for the clearing/eradication of alien species.

Environmental Aspect	Potential Impact	Mitigation
		• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. • Avoid planting of exotic plant species, use indigenous grass species.
	• Impact on Mammals - unlikely to occur in the way of the construction, if present likely to move away.	• The managers must ensure that no indigenous mammal species are disturbed, trapped, hunted or killed during the operational phase. • Conservation-orientated clauses should be built into contracts for personnel, complete with penalty clauses for non-compliance. • Normal farming with livestock or game should continue. • Access to adjacent farming land should be strictly controlled to prevent hunting or poaching of any kind.
	• Impact on Herpetofauna direct impact or habitat loss.	• Reptile or amphibia species must be protected. • The contractor must ensure that no indigenous herpetofauna species are disturbed, trapped, hunted or killed during the operational phase. • Normal land-use (livestock or game farming) should continue.
Heritage	• Operational activities that take place near to archaeological resources may result in their destruction.	• No development activities within the buffer areas identified. • Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted.
	• Operational activities that take place near to palaeontological resources may result in their destruction.	• Implementation of the Chance Fossil Finds Protocol.
	• Operational activities that take place near to cultural landscape elements may result in their destruction.	• Implementation of the recommended buffer areas and recommendations included in the VIA
Noise	• Noise associated with the operation of the WEF.	• Wind Turbine Generators (WTGs) should not be placed within a no-go area of 500m to any occupied Noise Sensitive Area (NSA). • If the night-time noise rating limit for rural areas (35dB(A)) is exceeded, the WTGs could be operated in a lower power mode at certain wind speeds or be relocated further away from an NSA.

Environmental Aspect	Potential Impact	Mitigation
Shadow Flicker	• Light Variation caused by Shadow Flicker from the WTG.	• Mitigation at affected receptors: provision of blinds, shutters or curtains. • Mitigation on the pathway: provide screening, such as vegetation, close to the affected receptors. • Mitigation at the source: shut down turbines at times where shadow flicker exceeds thresholds.
Socio-Economic	• Expenditure associated with the operations of the proposed 300MW Wind Farm will impact on the production of the local economy.	• The project developer should make effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.
	• Temporary increase in country's GDP due to operational expenditure.	• The project developer is to make an effort to use locally sourced inputs where feasible in order to maximize the benefit to the local economy. • Local Small and Medium Enterprises are to be approached to investigate the opportunities for supplying inputs required for the maintenance and operation of the facility, as far as feasible.
	• The operation of the 300MW Wind Farm will positively impact the community and beyond by creating a number of job opportunities.	• Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.
	• Employed individuals will increase the income of their respective households and thereby experience an improvement in their standard of living.	• Employing locally will increase benefit to local households and the local area.
	• The investment in the facility will generate revenue for the government during the construction period through a combination of personal income tax, VAT, companies' tax etc.	• N/A
	• The landowners will receive monthly/ annual compensation for the wind turbines situated on their farms, this will help to increase the landowner's revenue to ensure sustainability on the farms.	• N/A

Environmental Aspect	Potential Impact	Mitigation
	• The additional electricity that will be generated will increase electricity supply in the country.	• N/A
	• Negative impact on sense of place (noise and visual).	• N/A
	• Loss of agricultural space.	• Construct the wind turbines on parts where the least arable land will be affected.
Transportation	• Increase in trips on external roads due to maintenance and permanent staff travelling to and from site.	• Staff and general maintenance trips to occur outside peak traffic periods as much as possible.
Visual	• Potential change to the rural landscape; • Potential visual impacts as experienced by visitors to Protected Areas • Potential visual impacts as experienced by visitors to the Ons Pan; • Potential visual impacts as experienced by users of adjacent local roads particularly users of the N11, the N2, and the R39; • Potential visual impacts as experienced by residents of homesteads; • Potential visual impacts as experienced by residents of local settlements particularly residents on the south-eastern edge of Amersfoot, Ermelo and Daggakraal; • Lighting impacts; and • Potential Shadow Flicker impacts particularly affecting local homesteads.	• N/A at this stage – mitigation is dependent on turbine locations.

13.3.4 Decommissioning

Environmental Aspect	Potential Impact	Mitigation
Agricultural	• Interference with farming operations - Decommissioning activities are likely to have some	• N/A

Environmental Aspect	Potential Impact	Mitigation
	nuisance impact for farming operations but are highly unlikely to have an impact on agricultural production.	
Aquatic Biodiversity	• Increased disturbance of aquatic habitat due to the increased activity on the site.	• Minimise works within aquatic ecosystems as far as possible. • If the layout of the WEF would also be able to avoid aquatic habitats on the property. • Rehabilitate disturbed areas.
	• Increased sedimentation and risks of contamination of surface water runoff.	• Decommission works near aquatic features should preferably be undertaken in the dry season, if necessary. • Sediment traps should be placed downstream of works to capture sediment. • Laydown areas should be placed at least 30m away from the delineated aquatic features. • Good housekeeping measures should be implemented for the decommissioning activities that are set out in the EMPr and monitored by an appointed ECO for the project.
Avifaunal	• Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure.	• Dismantling activity should be restricted to the immediate footprint of the infrastructure as far as possible. • Access to the remainder of the area 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
Bat	• Disturbance and Displacement - Displacement and disturbance of bats and due to disturbance associated with the decommissioning activities.	• The impacts to bats during this phase are likely to be restricted to disturbance. Provided decommissioning activities are restricted to daylight hours, the impact to bats is predicted to be negligible.
Biodiversity	• Demolishment and removal of infrastructure by heavy machinery, transport by heavy vehicles, presence of employees may influence vegetation and plants.	• Rehabilitation of disturbed and degraded areas by sowing indigenous grass. No plant species (except alien plants or weeds) may be removed.
	• Fauna will be negatively affected by the decommissioning of the wind farm due to the human disturbance, the presence and operation of vehicles and heavy machinery on the site and the noise generated.	• Take care that no fauna species be trapped caught or killed.

Environmental Aspect	Potential Impact	Mitigation
Heritage	• Decommissioning activities that take place near to archaeological resources may result in their destruction.	• No development activities within the buffer areas identified. • Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted.
	• Decommissioning activities that take place near to palaeontological resources may result in their destruction	• Implementation of the Chance Fossil Finds Protocol.
	• Decommissioning activities that take place near to cultural landscape elements may result in their destruction.	• Implementation of the recommended buffer areas and recommendations included in the VIA.
Noise	• N/A	• N/A
Shadow Flicker	• N/A	• N/A
Socio-Economic	• N/A	• N/A
Transportation	• Temporary increase in traffic due to construction vehicle trips on the external road network / increase in noise and dust pollution levels during the construction period.	• Maintenance of haulage roads. • Design and maintenance of internal routes. • Dust suppression close to communities. • Stagger turbine component and material delivery to site. • Reduce construction period if possible. • Stagger construction of turbines. • Use mobile batch plants and quarries in close proximity to the site to decrease impact on surrounding road network. • Staff and general trips should occur outside of peak traffic periods as far as possible.

13.3.5 Cumulative

There are no other WEF projects located within a 35km radius of the ABO Ujekamanzi WEF 1 Project. However, one solar PV facility falls within the 35km radius of the project.

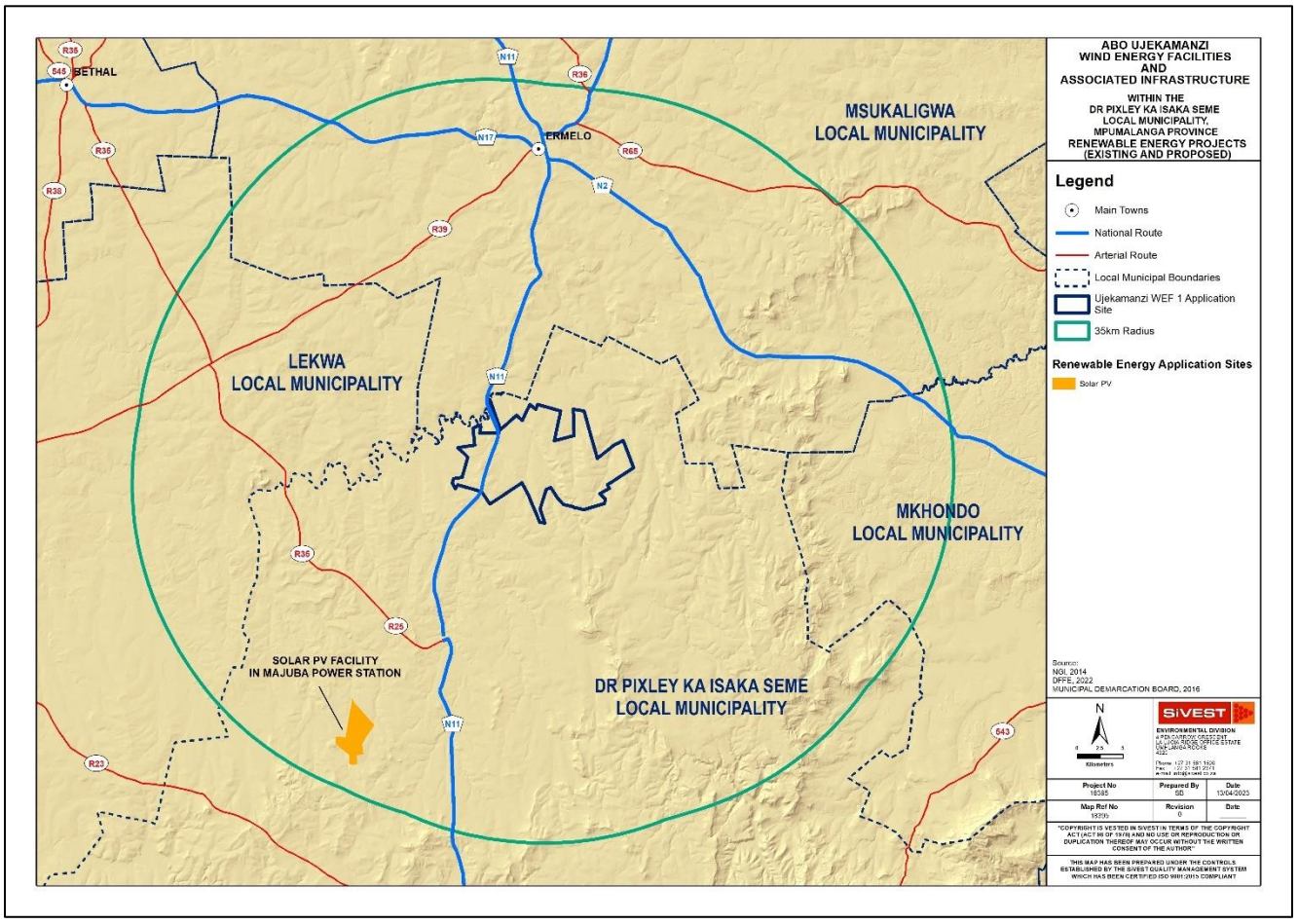

Figure 49: Renewable Energy Projects within 35km of the ABO Ujekamanzi WEF 1

Environmental Aspect	Potential Impact	Mitigation
Agricultural	• Regional loss (including by degradation) of agricultural land, with a consequent decrease in agricultural production.	• N/A
Aquatic Biodiversity	• Increased disturbance of aquatic habitat due to the increased activity in the wider area.	• Minimise works within aquatic ecosystems as far as possible. • Construct in the dry season. • Rehabilitate disturbed areas. • Rationalise infrastructure as far as possible by sharing of the infrastructure of using existing disturbed areas. • Manage stormwater impacts.
	• Degradation of ecological conditions of aquatic ecosystems.	• Monitor and mange for impacts such as alien vegetation growth and erosion. • Limit disturbance and rehabilitate disturbed areas. • Ensure there is sufficient stormwater management to prevent erosion along roads. • Ensure road crossing structures are properly designed to not result in blockage in the watercourses or erosion. • Limit and monitor water uses.
	• Increased disturbance of aquatic habitat due to the increased activity in the wider area.	• Decommission works near aquatic features should preferably be undertaken in the dry season. • Minimise disturbance and rehabilitate.
Avifaunal	• N/A	• N/A
Bat	• Transformation from and presence of the facility will contribute to cumulative habitat loss and impacts on broad-scale ecological processes with regards to bats such as fragmentation, multiple roost destruction and disturbance, and mortalities at multiple facilities.	• Designing the layout of the project to avoid areas that are more frequently used by bats will reduce the likelihood of mortality and should be the primary mitigation measure. These areas include key microhabitats such as water features, large mature trees, buildings, and rocky crevices. These areas have been buffered by 200 m. No turbines are currently located within the buffers. • The height of the lower blade swept area must be maximised, and should try to be kept above 50 m. If the minimum blade sweep is lower than 50 m, the facility runs the risk of reaching fatality thresholds sooner. • Operational monitoring should be done according to the guidelines for the first 2 years and every 5 years thereafter. During this monitoring

Environmental Aspect	Potential Impact	Mitigation
		fatality estimations would need to be evaluated every 3 – 4 months against the South African Bat Assessment Association fatality threshold guidelines (i.e. if they exceed an estimated 270 bat fatalities per year) to determine escalation of mitigation options. • Blade feathering should be implemented at the start of operation. • Apply curtailment during spring, summer and potentially autumn based on an appropriate curtailment plan and/or instal acoustic deterrents (based on input from an appropriate bat specialist) if mortality occurs beyond threshold levels as determined based on applicable guidance (MacEwan et al. 2018). The threshold calculations must be done at a minimum of once a quarter (i.e. not only after the first year of operational monitoring) so that mitigation can be applied as quickly as possible should thresholds be reached.
Biodiversity	• Transformation and presence of the facility will only slightly contribute to cumulative habitat loss and impacts on broad-scale ecological processes such as fragmentation.	• If possible, avoid putting turbines in Valley Grassland, if not possible rehabilitate grassland at turbines. • Use existing roads as far as possible, construct minimum new roads. • Use underground cables but restrict trenches to the roads where possible. • The clearing of vegetation must be kept to a minimum and remain within the footprint development – leave the rest of the area with natural vegetation intact. • Remove alien invasive species wherever possible. • Construction must be completed as quickly as possible. • Disturbed open areas must be rehabilitated immediately after construction has been completed. • During the construction phase workers must be limited to areas under construction and access to adjacent private areas must be strictly controlled • Rehabilitated areas must be monitored to ensure the establishment of re-vegetated areas. • Plant only indigenous grass – no alien species.
Heritage	• Cumulative destruction of significant archaeological heritage.	• No development activities within the buffer areas identified.

Environmental Aspect	Potential Impact	Mitigation
		• Should any previously unknown archaeological resources be impacted during construction, work must cease in the vicinity of the find and the relevant heritage authority must be contacted.
	• Cumulative destruction of significant palaeontological heritage.	• Implementation of the Chance Fossil Finds Protocol.
	• Cumulative impact to the cultural landscape.	• Implementation of the recommended buffer areas and recommendations included in the VIA.
Noise	• As per the Screening Report, there is one Solar PV energy project proposed within 35km of the Ujekamanzi WEF 1 development. The cumulative impacts of the proposed 65MW Solar PV Facility at Majuba Power Station (DFFE Ref No.: 14/12/16/3/3/2/752) will not need to be assessed as it is approximately 30km from the Ujekamanzi WEF 1 site. At this distance, the noise impacts will be negligible due to noise attenuation.	
Shadow Flicker	• No other approved or operational WEFs have been identified within 30 km of the proposed site. Therefore, it is assumed that shadow flicker is not currently experienced by the receptors in the region. However, should Ujekamanzi 2 WEF be constructed on the neighbouring properties, potentially affected receptors may experience an increased duration of shadow flicker.	
Socio-Economic	• Expenditure associated with the construction of the Projects will have an impact on the production of the local economy.	• N/A
	• Temporary increase in country's GDP due to capital expenditure.	• N/A
	• The construction of the MTS will positively impact the community and beyond by creating a number of job opportunities (albeit temporary).	• Organise local community meetings to advise the local labour on the project that is planned to be established and the jobs that can potentially be applied for. • Where feasible, effort must be made to employ locally in order to create maximum benefit for the communities.
	• An impact on the demographics of the area as a result of in-migration in response to job opportunities will occur.	• Where feasible, effort must be made to employ local labour in order to create maximum benefit for the communities and limit in-migration. • Train unemployed local community members with insufficient skills and increase absorption of local labour thereby decreasing in-migration.
Transportation	• Traffic impact due to all planned and approved renewable developments in a 35km radius being developed at the same time (construction phase).	• See mitigation measures included for the construction phase.

Environmental Aspect	Potential Impact	Mitigation
	• Traffic impact due to all planned and approved renewable developments in a 35km radius being developed at the same time (operational phase)	• See mitigation measures included for the operational phase.

13.3.6 No-go Alternative

Environmental Aspect	Potential Impact	Mitigation
Agricultural	• The no-go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. There are no agricultural impacts of the no-go alternative.	
Aquatic Biodiversity	• The No-go Alternative would imply that the proposed WEF is not developed, and that the status quo is maintained. This would imply that the existing land use practice and the current activities with their associated aquatic ecosystem impacts would remain as is. The current land use activities have resulted in the present ecological condition of the aquatic features of moderately modified. It can be expected that the aquatic features will remain in the present ecological condition or even deteriorate as the observed trend in the ecological state of the aquatic ecosystems is negative. The proposed development provides the opportunity for some potential ecological improvement.	
Avifaunal	• The no-go alternative will result in the current status quo being maintained as far as the avifauna is concerned. The low human population in the area is definitely advantageous to sensitive avifauna, especially Red Data species. The no-go option would eliminate any additional impact on the ecological integrity of the proposed PAOI as far as avifauna is concerned.	
Bat	• The 'No-Go' alternative reduces the opportunity to progress the de-carbonisation transition of the economy and achieve various climate change mitigation targets outlined by (amongst others) the South Africa's Low Emission Development Strategy, The National Development Plan, The National Climate Change Response Policy, Integrated Resource Plan the National Climate Change Adaptation Strategy and ultimately South Africa's commitment to the Paris Agreement. The proposed development site appears to be well suited for the development of renewable energy facilities as proposed if best practice guidelines are followed.	
Biodiversity	• N/A	• N/A
Noise	• N/A	• N/A
Shadow Flicker	• Should the application for the Ujekamanzi 1 WEF be refused the shadow flicker impacts will not be realised.	
Socio-Economic	• N/A	• N/A
Transportation	• The no-go alternative implies that the proposed development of the Ujekamanzi WEF 1 does not proceed. This would mean that there will be no negative environmental impacts and no traffic impact on the surrounding network during the construction and decommissioning phases. However, this would also mean that there would be no socio-economic benefits to the surrounding communities, and it will not assist government in meeting its targets for renewable energy.	

13.3.7 Comparative Assessment of Alternatives

Location alternatives for the WEF will not be comparatively assessed. The buildable areas within the WEF site boundary will be refined as additional information becomes available throughout the EIA process (e.g., specialist input, additional site surveys, and ongoing stakeholder engagement). All constraints identified by the respective specialists are being considered and the layout is being refined to avoid all no-go areas.

However, alternatives for the location of the onsite substation hubs within the WEF 1 site boundary have been comparatively assessed. A total of four (4) location alternatives have been assessed by the respective specialists:

Key:

PREFERRED	The alternative will result in a low impact / reduce the impact
FAVOURABLE	The impact will be relatively insignificant
LEAST PREFERRED	The alternative will result in a high impact / increase the impact
NO PREFERENCE	The alternative will result in equal impacts

Specialist Assessment	**Substations**			
	Option 1 (Preferred)	**Option 2**	**Option 3**	**Option 4**
Agricultural Assessment	Least Preferred	Preferred	Preferred	Least Preferred
Aquatic Assessment	No Preference	No Preference	No Preference	No Preference
Avifaunal Assessment	Favourable	Least Preferred	Least Preferred	Favourable
Bat Assessment	Preferred	No Preference	No Preference	No Preference
Biodiversity Assessment	Preferred	Least Preferred	Least Preferred	Least Preferred
Heritage Assessment	No Preference	No Preference	No Preference	No Preference
Visual Assessment	Favourable	No Preference	No Preference	No Preference

13.4 Concluding statement for preferred alternative

No activity alternatives are being considered. Renewable Energy development in South Africa is highly desirable from a social, environmental and development point of view. Wind energy installations are more suitable for the site because of the high wind resource. The choice of technology selected for ABO Ujekamanzi WEF 1 was based on environmental constraints as well as technical and economic considerations.

The preliminary layout has been assessed by the specialists in their respective specialist studies. All constraints identified to date as indicated in the sensitivity mapping (**Figure** below) were taken into account to inform the buildable areas and locations of the onsite substation hubs for the ABO Ujekamanzi WEF 1 (**Figure** below). The

preferred substation location alternative is least preferred from an agricultural sensitivity perspective. The layout will be further refined for assessment in the DEIR phase.

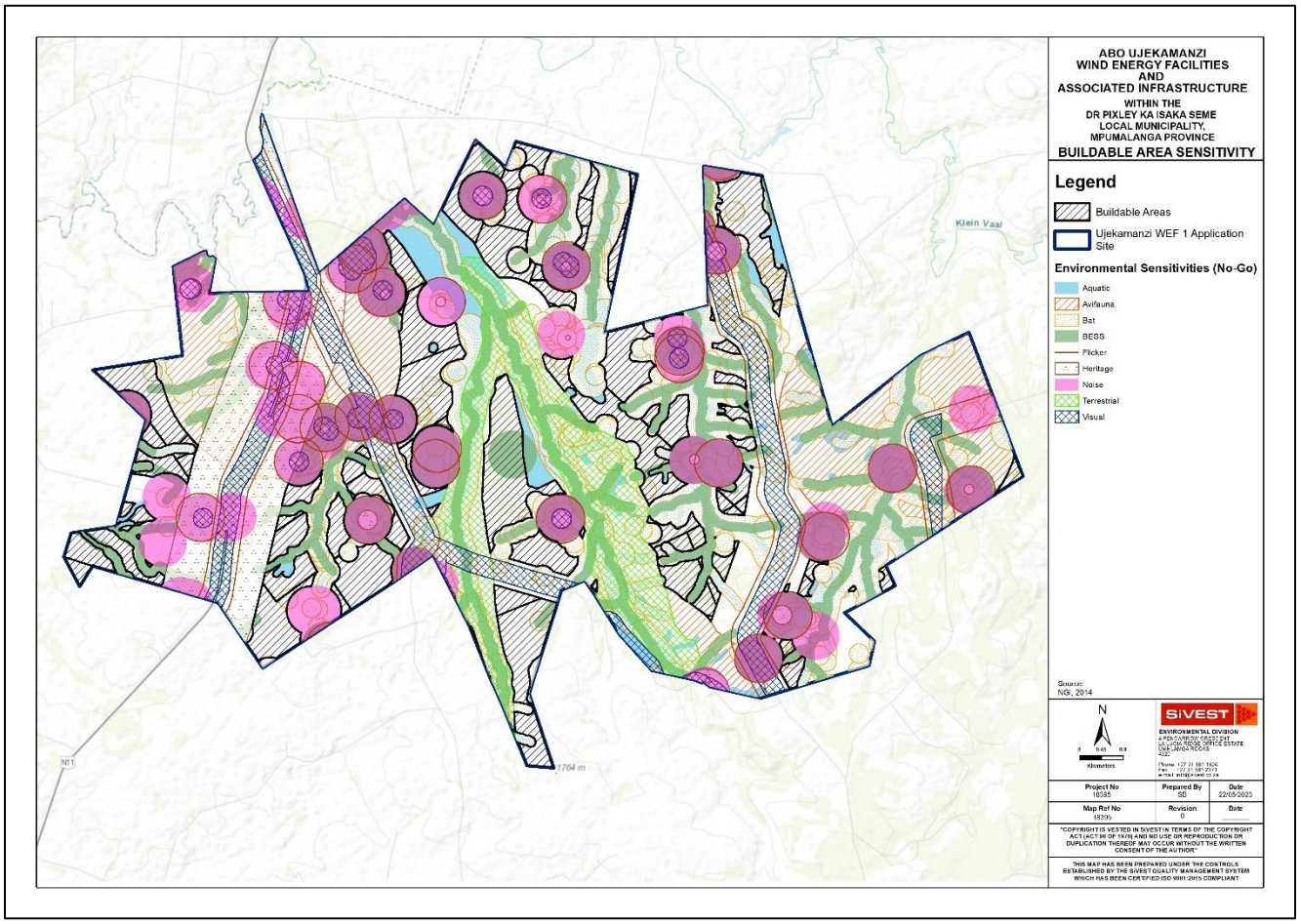

Figure 50: Preliminary Layout (buildable areas) with sensitivities

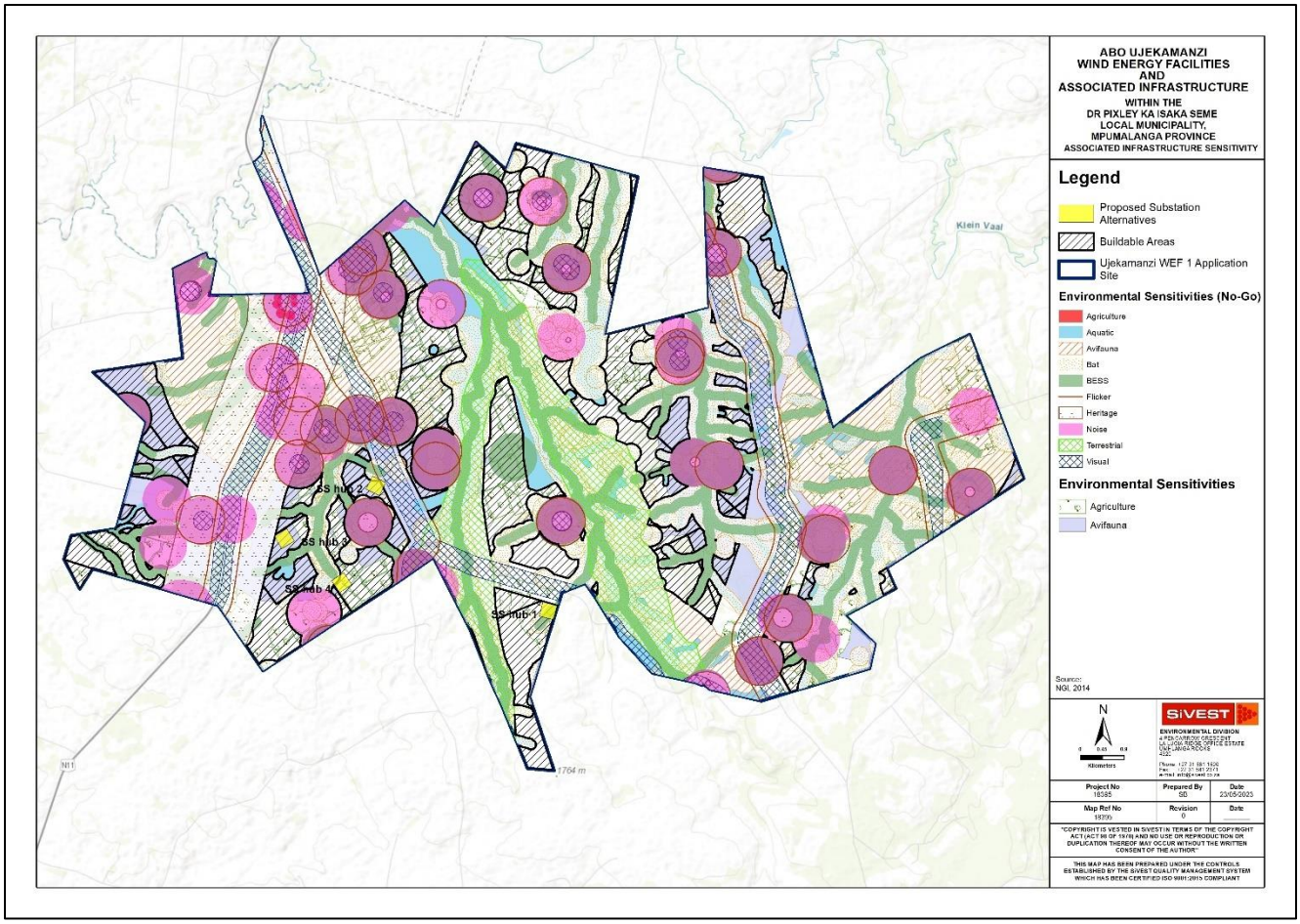

Figure 51:Preliminary Layout (Substation Alternatives and Buildable Areas) with sensitivities

All recommended buffers provided by the specialists in their respective assessments (described in Section 8) are incorporated into the environmental sensitivity layers included in the layout above. The sensitivity layers are made up of the buffers prescribed by the specialists.

14. PLAN OF STUDY FOR EIA

This Plan of Study, which explains the approach to be adopted to conduct the EIA for the proposed ABO Ujekamanzi WEF 1 Project was prepared in accordance with Appendix 2 of GN No. 326 (7 April 2017).

The purpose of the EIA Phase is to:

- *determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;*
- *describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the development footprint on the approved site as contemplated in the accepted scoping report;*

- *identify the location of the development footprint within the approved site as contemplated in the accepted scoping report based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;*
- *determine the—*
    - *(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and*
    - *(ii) degree to which these impacts—*
        - *(aa) can be reversed;*
        - *(bb) may cause irreplaceable loss of resources, and*
        - *(cc) can be avoided, managed or mitigated;*
- *identify the most ideal location for the activity within the development footprint of the approved site as contemplated in the accepted scoping report based on the lowest level of environmental sensitivity identified during the assessment;*
- *identify, assess, and rank the impacts the activity will impose on the development footprint on the approved site as contemplated in the accepted scoping report through the life of the activity;*
- *identify suitable measures to avoid, manage or mitigate identified impacts; and*
- *identify residual risks that need to be managed and monitored.*

The EIA Phase consists of the following processes:

- Undertaking of specialist studies that provide additional information/assessments required to address the issues raised in the Scoping Phase.
- Undertaking of a PPP process where findings of the EIA Phase are communicated and discussed with I&APs and responses are documented.
- An assessment process whereby inputs are presented in an EIA Report that is submitted for approval to DFFE and other authorities.

14.1 Tasks to be undertaken

The EIA report will be informed by the scoping phase. The following steps will be undertaken as part of the EIA phase:

- The proposed final layout will be further investigated in order to avoid or minimize negative impacts and maximize potential benefits;
- Environmental impact statements regarding the potential significance of residual impacts, taking into account proposed mitigation measures will be provided in the EIA;
- An Environmental Management Programme (EMPr) covering construction and decommissioning phases of the proposed development will be prepared. The EMPr will include input from specialists and will incorporate recommendations for mitigation and monitoring.

14.2 Description of alternatives to be considered and assessed

The EIA phase will include a detailed analysis of the proposed layout for the project which will include environmental (with specialist input) and technical evaluations. Any additional alternatives identified through this process will be reported on in the EIA report.

14.2.1 Location Alternatives

As mentioned in Section 13.1.1, no location alternatives are being considered for the ABO Ujekamanzi WEF 1 as these sites were selected prior to the commencement of the EIA Process.

14.2.2 Layout Alternatives

The overall site boundary for the ABO Ujekamanzi WEF cluster has been assessed by specialists to identify no-go areas and potential impacts that may arise from the development. Based on the findings of the specialists (site sensitivities), a preliminary layout has been prepared to include constraints which has informed the site boundaries for the two WEF's (ABO Ujekamanzi WEF 1 and ABO Ujekamanzi WEF 2) and the buildable areas within each respective WEF site boundary. This layout will also be further refined based on the outcomes of the public participation process of the Scoping phase and thereafter further assessed in the DEIR phase.

Refer to Figure 50 and Figure 51 for the preliminary layouts.

14.2.3 Technology Alternatives

No technology alternatives will be considered. The choice of turbine to be used will ultimately be determined by technological and economic factors at a later stage.

14.2.4 No-go Alternatives

The option of not implementing the activity, or the "no-go" alternative and associated potential impacts, have been discussed in **Section 13**. Based on the specialist's assessment, no significant impacts have been identified should the development of the WEF not proceed. There is however a significant negative impact from a social perspective for the no-go alternative as the socioeconomic benefits to the local community that will go unrealised.

14.3 Specialist Studies

The following specialist studies have been undertaken for the project and the significant environmental aspects identified will be further assessed in the EIA Phase:

- Agricultural Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Aquatic/Freshwater Assessment;
- Terrestrial Ecological Assessment;
- Heritage Assessment;

- Noise Assessment;
- Transport Assessment;
- Visual Assessment;
- Flicker Assessment;
- Social Impact Assessment;
- BESS Risk Assessment.

The findings of the specialist studies have been included in the Scoping Phase of this project. The associated Impact Assessment tables will be included in the draft EIA report. Should the need for additional specialist studies be identified through the consultation process, these studies will be commissioned in the EIA Phase to further advise on the potential impacts that may arise from the proposed development. The specialist studies may identify further opportunities and constraints as associated with the site and the proposed development.

The specialists have undertaken the following scope of work:

Table 27: Specialist Scope of Work

Scope of Work
Specialists are requested to provide one (1) scoping phase report and / or compliance statement that provides an assessment of the proposed ABO Ujekamanzi WEF 1. During the EIA phase, specialists will be required to update the scoping phase specialist report to provide a review of their findings in accordance with revised site layouts, to assess and rate significant impacts with mitigation measures and to address any comments or concerns arising from the public participation process. The specialist report must include an explanation of the terms of reference (TOR) applicable to the specialist study. The gazetted Environmental Assessment Protocols of the NEMA EIA Regulations (2014, as amended), prescribes Procedures for the Assessment and Minimum Criteria for Reporting on the Identified Environmental Themes in terms of Sections 24(5)(A) and (H) and 44 of the National Environmental Management Act, 1998. These procedures must be considered. Where a specialist assessment is required and no specific environmental theme protocol has been prescribed, the required level of assessment must be based on the findings of the site sensitivity verification and must comply with Appendix 6 of the EIA Regulations; and any relevant legislation and guidelines deemed necessary. Where relevant, a table must be provided at the beginning of the specialist report, listing the requirements for specialist reports in accordance with Appendix 6 of the EIA Regulations, 2014 (as amended) and cross referencing these requirements with the relevant sections in the report.

14.4 EIA methodology

The Environmental Impact Assessment (EIA) Methodology assists in evaluating the overall effect of a proposed activity on the environment. Determining of the significance of an environmental impact on an environmental parameter is determined through a systematic analysis. Refer to **Appendix 7** for the EIA methodology to be adopted.

14.5 Consultation with Competent Authority, Key Stakeholders and I&APs

SiVEST will undertake the following:

- Submission of application form to obtain EIA reference number.
- The Draft Scoping report will be made available for comment to I&APs, key stakeholders and the authorizing authority.
- After the Draft Scoping Report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final Scoping Report.
- The Final Scoping Report will then be submitted to DFFE for approval.
- The Draft EIA report will be made available for comment to I&APs, key stakeholders and the authorizing authority.
- After the Draft EIA report has been made available for comment within the public domain, comments will be incorporated into the Issues and Response Report and Final EIA Report for submission to DFFE.
- Notify I&APs of the decision.
- Apart from the above-mentioned occasions, further consultation with authorities will occur whenever necessary.

14.6 Public Participation Process to be undertaken for the EIA Phase

Public participation forms a critical component of the EIA process, as it provides all interested and affected parties with an opportunity to learn about a project, but more importantly to understand how a project will impact on them. The following will be undertaken during the EIA Phase.

14.6.1 Updating of IAP Database

The I&AP database will be updated as and when necessary during the execution of the EIA.

14.6.2 Review of Draft EIA Report

A 30-day period will be provided to I&APs to review the Draft EIA Report. Copies of the Draft EIA Report will be provided to the regulatory and commenting authorities as well. The Draft EIA Report will also be available for download on a link to be provided.

All parties on the I&AP database will be notified via email, sms or fax of the opportunity to review the Draft EIA Report, the review period and the process for submitting comments on the report.

All comments received from I&APs and the responses thereto will be included in the final EIA Report, which will be submitted to DFFE.

14.6.3 Public meetings/consultation

No public meetings are proposed. Virtual meetings if required will be conducted using an appropriate platform agreeable to all parties (such as Zoom, Skype or Microsoft Teams).

14.6.4 Inclusion of comments into the Final EIA

A Comments and Responses Report will be compiled and included in the EIA Report, which will record the date that issues were raised, a summary of each issue, and the response of the team to address the issue. The Final EIA report with all comments included will be submitted to DFFE for review and approval.

14.6.5 Notification of Environmental Authorisation

All I&APs will be notified via email, sms or fax after having received written notice from DFFE on the final decision on the application. These notifications will include the process required to lodge an appeal, as well as the prescribed timeframes in which documentation should be submitted.

15. EAP DECLARATION

The EAP declarations, CV's and qualifications for the EAP's responsible for the preparation of this report have been attached in **Appendix 1**.

16. INFORMATION REQUIRED BY CA (IF APPLICABLE)

Currently n/a.

17. CONCLUSION

This Scoping Report was compiled to meet the requirements of NEMA, with the primary aim of informing I&APs of the proposed project and allowing for an opportunity to comment on the project and the plan of study for the EIA Phase.

This Scoping Report has covered activities and findings related to the scoping process for the proposed ABO Ujekamanzi WEF 1 Project. Professional experience, specialist knowledge, relevant literature and local knowledge of the area have all been used to identify the potential issues associated with the proposed project. There is no guarantee that all the potential impacts arising from the proposed WEF project have been identified within the scoping phase, however the report provides an outline of the established measures that were taken to best identify all the potential impacts.

Based on the findings of the specialists and the potential impacts identified, the preliminary layout has been updated to include constraints. This layout will be further refined based on the outcomes of the public participation process of the Scoping phase. The final layout will then be assessed by all specialists in the EIA Phase. At this stage based on specialist findings and recommendations, no fatal flaws have been identified and the project may proceed to the EIA phase.

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