



SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

Proposed Development of the Kraaltjies Wind Energy Facility (WEF) and Associated Infrastructure near Beaufort West in the Western Cape Province

Draft Scoping Report

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KEY PROJECT INFORMATION

Component	Description / Dimensions
Location of site (centre point)	32°52'47.24"S 22°34'48.12"E
Application site area	3, 994.9ha
Turbine development area	Hard standing Area = 90m x 50m x up to 60 turbines
SG codes	C00900000000037400010 C00900000000037400025
Export capacity	Up to 240 megawatts
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	120m to 200m
Rotor diameter	Up to 200m
Substation and O&M building area	This will be included in the 11-33kV portion/yard of the 25 ha on-site substation area on the IPP portion of the onsite substation.
Construction laydown area	Approximately 3ha
Permanent laydown area	To be determined based on final layout
Hard stand areas	Approximately 4 500m ²
Battery Energy Storage System (BESS)	A Battery Energy Storage System (BESS) will be located next to the onsite 11-33/132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.
Width of internal access roads	Road servitude of 8m
Length of internal access roads	To be determined based on final layout
Site Access / Internal Roads	<p>The main access road will be approximately 8 - 12 m wide. During construction the roads will be up to 13.5m in some parts (i.e., for bringing in transformers etc), after construction they will be rehabilitated back down to 8m or less.</p> <p>Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N12 National Route.</p> <p>During operation, internal roads with a width of up to approximately 5m (excluding reserves) wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary.</p>
Proximity to grid connection	Approximately 7-10km
Height of fencing	Approximately 1m – 1.5m high

Component	Description / Dimensions
Type of fencing	No new fencing is envisaged at this stage. Current fencing is a standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height.

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

KRAALTJIES WIND ENERGY FACILITY (WEF)

DRAFT SCOPING REPORT

EXECUTIVE SUMMARY

INTRODUCTION AND PROJECT DESCRIPTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as 'Mainstream') is proposing the Kraaltjies Wind Energy Facility (WEF) and associated infrastructure near the town of Beaufort West in the Beaufort West Local Municipality, which falls within the Central Karoo District Municipality (**DFFE Reference Number**: To be Allocated). 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 240 megawatts (MW).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the EIA process for the proposed construction of the Kraaltjies WEF and associated infrastructure.

The proposed development requires an Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the Western Cape Department of Environmental Affairs and Development Planning - WC DEADP) as well as CapeNature will also be consulted. The Environmental Impact Assessment (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 National Environmental Management Act (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.

A 132kV overhead power line and Eskom portion of the on-site substation (namely the associated grid connection infrastructure) is also being proposed to feed the electricity generated by the proposed Kraaltjies WEF into the national grid. The project, which will form a part of separate EA application, is as follows:

- Kraaltjies Grid connection – **DFFE Reference Number**: To be Allocated (part of separate BA process / application).

The associated grid connection infrastructure will require a separate EA and will be subject to a separate Basic Assessment (BA) process to allow for handover to Eskom. The proposed grid connection infrastructure will include an Eskom portion of the on-site substation and a 132kV powerline (including associated infrastructure) to facilitate the connection. Following construction, the grid connection infrastructure will be owned and managed by Eskom. The current applicant will remain in control of the 11kV - 33/132kV portion of the on-site substation which forms part of this EIA application.

Although the WEF and associated electrical infrastructure will be assessed separately, a single public participation process is being undertaken to consider all of the proposed developments [i.e. WEF EIAs and grid connection infrastructure BAs]. The potential environmental impacts associated with all of the developments will be assessed as part of the cumulative impact assessment.

APPLICABILITY OF NEMA EIA REGULATIONS, 2014 (AS AMENDED)

The following activities are applied for:

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Relevant Basic Assessment Activities as set out in Listing Notice 1		
11 (i)	GN R. 327 (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.	One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (11-33kV portion of the shared 11-33kV/132kV portion) and an Eskom portion (132kV portion of the shared 11-33kV/132kV portion which will be prepared and assessed under separate BA) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e., 250 000m ²).
12 (ii) (a) (c)	GN R. 327 (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.	Drainage lines and watercourses are scattered across the proposed site. Roads, underground cables and/or powerlines will cross these watercourses or drainage lines or be within 32m thereof. The proposed developments will therefore entail the construction of 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.
14	GN R. 327 (as amended) Item 14: The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80m ³ or more but not exceeding 500m ³ .	The proposed development will include the construction of an on-site BESS. The storage capacity and type of technology for the proposed BESS will be determined at a later stage during the development phase, but most likely

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		<p>will comprise an array of containers, outdoor cabinets and/or storage tanks.</p> <p>It should be noted that no stand-alone facilities for the storage of dangerous goods external to the BESS will be constructed as part of the proposed development.</p>
19	<p>GN R. 327 (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;</p>	<p>The proposed development involves the construction of a WEF as well as other associated infrastructure (including the IPP portion/ yard of the 11-33kV/132kV shared on-site substation, up to 33kV overhead and / or underground cabling, roads and BESS) within the proposed project site.</p> <p>Although the development footprint of the site area has been designed to avoid the identified surface water features / watercourses as far as possible, some of the internal infrastructure to be constructed will need to traverse surface water features / watercourses. In addition, during construction, soil will need to be removed from surface water features / watercourses for construction purposes where unavoidable.</p>
24 (ii)	<p>GN R. 327 (as amended) Item 24: The development of a road -</p> <p>ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.</p>	<p>Internal roads are required within the project site to provide access to each wind turbine, the shared 11-33kV/132kV on-site substation, as well as to facilitate access throughout the WEF.</p> <p>The main access road will be approximately 8 - 12 m wide. During construction the roads will be up to 13.5m in some parts (i.e. for bringing in transformers etc), after construction they will be rehabilitated back down to 8m or less.</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		<p>Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N12 National Route;</p> <p>During operation, internal roads with a width of up to approximately 5m (excluding reserves) wide will provide access to each wind turbine. Internal roads will have a final servitude of 8m during operation. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary</p>
28 (ii)	<p>GN R. 327 (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:</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;</p>	The total area to be developed for the proposed renewable energy facilities is greater than 1ha and occurs outside an urban area in an area currently zoned as agricultural land.
56 (ii)	<p>GN R. 327 Item 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 metres –</p>	Existing roads may require widening of up to 12m and/or lengthening by more than 1km, to accommodate the movement of heavy vehicles and cable trenching activities associated with the WEF and associated infrastructure.
Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	<p>GN R. 325 (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,</p>	The proposed development will entail the construction of a WEF where the respective electricity output will be approximately 240MW. In addition, the proposed WEF developments will be located outside urban areas.

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
15	GN R. 325 (as amended) Item 15: The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed WEF development will involve the clearance of more than 20ha of indigenous vegetation. Clearance will also be required for the proposed 33/132kV shared on-site substation, O&M building, internal access roads and other associated infrastructure.
Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
3 (i)	GN R. 324 (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— (b) will exceed 15 metres in height— i. Western Cape i. All areas outside urban areas.	The development of the WEF facility and associated infrastructures will consist of a mast tower used for telecommunication broadcasting and will exceed 15 metres in height. The mast will be located outside urban areas.
4 i. (ii) (aa)	GN R. 324 (as amended) Item 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres. i. Western Cape ii. Areas outside urban areas; (aa) Areas containing indigenous vegetation;	The development of the WEF facilities and associated infrastructures is likely to require the development of roads wider than 4m with a reserve of less than 13.5m within areas classified as CBA. These roads will occur within the Western Cape Province, outside urban areas.
10(i)(ii)	GN R. 324 (as amended) Item 10: The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres i. Western Cape ii. All areas outside urban areas	The proposed WEF and associated infrastructures will include the storage and handling of goods such as transformer oils and lubricants (considered dangerous) between 30 to 80 cubic metres in the substation area that will need to be authorised.
12(i)(ii)	GN R. 324 (as amended) Item 12: The clearance of an area of 300 square metres or	The proposed WEF development will involve the clearance of more than

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	<p>more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape ii. Within critical biodiversity areas identified in bioregional plans</p>	<p>300m² or more for the proposed on-site substation, BESS, internal roads and other associated infrastructure.</p> <p>The provincial CBA spatial data for the Western Cape indicates that majority of the project site falls within the Ecological Support Areas and a small portion of the site overlaps with areas classified as Critical Biodiversity Areas.</p>
<p>14(ii)(a)(c)(i)(ii) (ff)</p>	<p>GN R. 324 (as amended) Item 14: The development of—</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—</p> <p>(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>i. Western Cape i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	<p>The proposed development will entail the development of infrastructure with physical footprints of 10m² or more within a watercourse / surface water feature or within 32m from the edge of a watercourse / surface water feature.</p> <p>Although the layouts of the respective proposed developments will be designed to avoid the identified surface water features / watercourse as far as possible, some of the infrastructure / structures will likely need to traverse the identified surface water features / watercourses.</p> <p>The construction of the infrastructure (Substation, BESS, O&M building, MV cabling / powerlines and roads) for the development will occur within Critical Biodiversity Areas (CBAs) located outside of urban areas.</p>
<p>18 i. ii. (aa)</p>	<p>GN R. 324 (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-</p> <p>i. Western Cape ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation</p>	<p>Internal access roads will be required to access the wind turbines as well as the respective 11-33kV/132kV shared substations and BESS.</p> <p>Existing roads will be used wherever possible. Internal access roads will thus likely be widened by more than 4m or lengthened by more than 1km. These roads will occur within the Western</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		Cape Province, outside urban areas. Western Cape Province, outside urban areas.

DETAILS OF ALTERNATIVES CONSIDERED

No location alternatives are being considered for the Kraaltjies Wind Farm as these sites were selected prior to the commencement of the EIA Process.

The layout for the development of the Kraaltjies WEF will be designed in line with the environmental sensitivities identified during this Scoping Phase. The detailed facility layout will be made available as a layout alternative for assessment and ground-truthing by the independent specialists in the EIA Phase. Where further conflicts are predicted, a mitigation strategy will be developed to meet the objectives of the mitigation hierarchy (avoid, minimise, mitigate), thereby ensuring that the layout plan taken forward for consideration during the EIA Phase is the most optimal from an environmental perspective.

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.

The option of not implementing the activity, or the “no-go” alternative and associated potential impacts, have been discussed. Based on the specialist’s assessment, no significant impacts have been identified from an ecological perspective should the development of the WEF not proceed. There is however a high negative impact from a social perspective for the no-go alternative. As such, the no-go alternative will not be taken forward to the EIA Phase for further assessment.

POTENTIAL IMPACTS IDENTIFIED FOR THE PROPOSED DEVELOPMENT

Planning Phase

Environmental Aspect	Potential Impact during Planning	Mitigation
Geotechnical	None	None
Social	None	None
Transport	None	None
Visual	None	None
Avifaunal	None	None
Bat	None	None
Agricultural	n/a	
Surface Water	None	None
Heritage – Palaeontological	None	None
Heritage – Archaeological	<ul style="list-style-type: none"> Damage to 2 sites containing graves and burial grounds (K027 and KC001) 	<ul style="list-style-type: none"> The grave site should be demarcated with a 50m no-go-buffer-zone and the grave should be avoided. A Grave Management Plan should be developed for the graves, to be implemented during the construction and

Environmental Aspect	Potential Impact during Planning	Mitigation
	<ul style="list-style-type: none"> The graves and burial grounds are located less than 100m away from existing farm roads within the proposed development area. The expansion of existing farm roads may impact the sites. 	<p>operation phases (which needs to be approved by HWC prior to construction).</p>
	<ul style="list-style-type: none"> Damage to one historical farmstead (KC001) One historical homestead is located less than 100m away from existing farm roads within the proposed development area. The expansion of existing farm roads may impact the sites 	<ul style="list-style-type: none"> A no-go-buffer-zone of at least 30m should be kept to the closest WEF infrastructure (incl. roads). If development occurs within 30m of KC001, the structures will need to be satisfactorily studied and recorded before impact occurs. Recording of the structure i.e. (a) map indicating the position and footprint of the structure (b) photographic recording of the structure (c) measured drawings of the floor plans of the structure.
	<ul style="list-style-type: none"> Damage to four historical structures (K012/1, K012/2, K012/3, K012/4) Four structures are located less than 100m away from existing farm roads within the proposed development area. The expansion of existing farm roads may impact the sites. 	<ul style="list-style-type: none"> A no-go-buffer-zone of at least 30m should be kept to the closest WEF infrastructure (incl. roads). If development occurs within 30m of H002, the structure will need to be satisfactorily studied and recorded before impact occurs. Recording of the structure i.e. (a) map indicating the position and footprint of the structure (b) photographic recording of the structure (c) measured drawings of the floor plans of the structure
	<ul style="list-style-type: none"> Two Stone Age site (K033, K022) These sites are located within proposed buildable areas, and it is possible that there will be an impact on these sites. 	<ul style="list-style-type: none"> A no-go-buffer-zone of 30m should be demarcated. If the site can't be avoided, then it must be sampled by a qualified specialist under a permit issued by SAHRA
	<ul style="list-style-type: none"> Unidentified heritage resources Due to the size of the area assessed, there's a possibility of encountering heritage features in un-surveyed areas does exist. 	<ul style="list-style-type: none"> A management plan, after a walkdown of the final layout, for the heritage resources needs then to be compiled and approved for implementation during construction and operations.

Environmental Aspect	Potential Impact during Planning	Mitigation
Heritage – Cultural Landscape	<ul style="list-style-type: none"> Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape. Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape. Non-landowner residents' lack of representation in planning and public participation process leads to loss of local knowledge, socio-economic empowerment and character of the cultural landscape. 	<ul style="list-style-type: none"> Appropriate planning, construction and management of the WEF infrastructure will prevent degradation of the historic elements of the cultural landscape. Appropriate consultation and inclusion of local communities, including non-landowner residents on site and in the region, in all phases will prevent degradation of the socio-economic elements of the cultural landscape as well as potential loss of intangible indigenous knowledge. Loss of historic local inhabitants of the area due to reduction in economic opportunity or places for habitation and cultivation as a result of the WEF development will negatively impact on the character of the Koup landscape. Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges. Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within farmstead and N12 buffers and 300m of the regional farm roads. Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads. Duration and magnitude of operational activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible. The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.
Noise	<ul style="list-style-type: none"> Noise impacts relating to planning activities - Light delivery vehicles moving around onsite 	<ul style="list-style-type: none"> No mitigation measures recommended for the planning stage.

Environmental Aspect	Potential Impact during Planning	Mitigation
Biodiversity	None	None

Construction Phase

Environmental Aspect	Potential Impact during Construction	Mitigation
Geotechnical	<ul style="list-style-type: none"> Ground disturbance during access road construction, foundation earthworks, platform earthwork Increased erosion due to vegetation clearing, alteration of natural drainage 	<ul style="list-style-type: none"> Design access roads and turbine locations (including crane pads) to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management Materials utilisation to minimise opening of borrow pits or creation of spoil. Avoid development in preferential drainage paths Appropriate engineering design of road drainage and watercourse crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. revegetation) Use designated access and laydown areas only to minimise disturbance to surrounding areas
Social	<ul style="list-style-type: none"> An increase in human presence during construction may increase the risk of veld fires. These dangers could be caused by open fires used for cooking and warmth, cigarettes, the burning of fire breaks, and the use of flammable liquids. Uncontrolled fires in project areas could cause neighbouring landowners to lose infrastructure, grazing land, crops, or livestock. Non-project workers, such as farm labourers, could wander onto the construction site and stockpiles without PPE and knowledge of the dangers. Due to increased traffic volumes and the presence of heavy motor vehicles (HMs), the transportation of construction materials and 	<ul style="list-style-type: none"> No open fires allowed. Construction sites and vehicles should have firefighting equipment. The contractor should brief farmers' workers on project safety risks. If possible, fence off stockpiles. Enforce strict speed limits. All on-site and material-transporting vehicles should be roadworthy. High-danger areas should have road and warning signs. Establish communication protocols to manage Mainstream, landowners, and contractors during construction. Appropriate mitigation measures are implemented to mitigate biophysical, visual, and cultural heritage impacts, per the BA for the proposed project. Ensure a clean site during construction and operation to reduce the project's impact on the area's character. Mainstream and its contractors should be required to hire locals during construction. When possible, promote labour-intensive construction. Mainstream should consult the local DOL and neighbouring businesses to see if they will share their skills registers/databases with the Project, especially if any employees have been laid off. Recruitment during the construction phase should be coordinated through the local DoL or institutions recommended by local authorities (if applicable). Recruitment procedures must be fair and transparent and follow Mainstream's labour and procurement policies. A monitoring system should ensure contractors follow local employment policy. Local contract/temporary workers should

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>machinery on roads used by private motorists poses a safety risk. however, this is unlikely due to the sparse population.</p> <ul style="list-style-type: none"> • Property owners and land users on neighbouring properties may experience direct or indirect impacts differently. • Construction causes noise and visual changes, for example. These activities could affect "Sense of place," the identity and character of a landscape felt by locals and visitors (e.g. farmer, tourists, and community members). This attribute is derived from the natural environment, a mix of natural and cultural landscape features, and the people who live there. • During construction, the project will create direct and indirect jobs. When this report was written, it wasn't known how many jobs the proposed development would create. • Although limited, new employment opportunities may be significant in study areas with small populations. These are temporary, unskilled jobs (which will be available for members of local communities). • The proposed project may also create indirect informal sector jobs, such as food stalls for construction workers. Due to high unemployment, any formal employment, 	<p>be given reference letters after construction is complete. On-the-job training should be certified.</p> <ul style="list-style-type: none"> • If subcontractors are appointed, the project should give preference to subcontractors/SMEs in the surrounding communities (Ward 1 & 6), then in the DM, and then outside the province. • Construction contractors should monitor their procurement practises and prefer local suppliers. When non-local service providers are awarded contracts, contractors must show they tried to find a local provider. • Visual and aesthetic impacts are subjective and considered most significant when the development is different from others or its surroundings. • Large electrical infrastructure elements are visually intrusive. However, mitigating measures should be used. • A separate flora & fauna and visual Assessment studies will determine mitigation that should be considered. • Close communication with farm managers. Establish protocols and/or communication channels to access farms and reduce damage. • Repair any unintended damage to private property, including fences, immediately. When working between construction areas, leave farm gates as found. • Once construction stops each day, the landowner should confirm this. If security is compromised by unintended damage to control measures, appropriate security should be provided until repairs are made. • If project activities cause damages to private property, the landowner should be compensated.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>even for a short time, will likely be beneficial.</p> <ul style="list-style-type: none"> • Local SMEs providing transport, security, accommodation, catering, etc. may have more opportunities. • Such opportunities will lead to secondary multiplier effects like more employment and disposable income. • The construction of the project will most likely degrade the scenery that has made the area popular among hikers, birders, and other outdoor enthusiasts. • Tourism revenue generated by these visitors in the form of lodging and food may be reduced as a result of changes to the local flora and fauna and/or the visual landscape. • Due to vibrations and ground instability, construction equipment like heavy-duty vehicles can damage nearby properties. Abnormally heavy vehicles can damage farm roads, fences, and gates. Littering during construction could damage farmland and harm domestic and game animals. 	
Transport	<ul style="list-style-type: none"> • Additional Traffic Generation – Increase in traffic 	<ul style="list-style-type: none"> • Ensure staff transport is done in the 'off peak' periods and by bus as far as practically possible. • Stagger material, component and abnormal loads delivery as far as practically possible. • Construction of an on-site batching plant and tower construction to reduce trips, where required and if practically possible
	<ul style="list-style-type: none"> • Additional Traffic Generation – Increase of 	<ul style="list-style-type: none"> • Upgrade of existing / new access points

Environmental Aspect	Potential Impact during Construction	Mitigation
	Incidents with pedestrians and livestock	<ul style="list-style-type: none"> Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences & access cattle grids where and if required Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible
	<ul style="list-style-type: none"> Additional Traffic Generation – Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Upgrade of existing / new access point Reduction in speed of the vehicles Construction of gravel roads in terms of TRH20 Implement a road maintenance program under the auspices of the respective transport department Possible use of an approved dust suppressant techniques, where required and if practically possible. Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible.
	<ul style="list-style-type: none"> Additional Traffic Generation – Increase in Road Maintenance 	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible.
	<ul style="list-style-type: none"> Abnormal Loads – Additional Abnormal Loads 	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery as far as practically possible. Adequate enforcement of the law
	<ul style="list-style-type: none"> Internal Access Roads – Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Appropriate, timely and high-quality maintenance required in terms of TRH20 Possible use of an approved dust suppressant techniques, where required and if practically possible.
	<ul style="list-style-type: none"> Internal Access Roads – New / Larger Access points 	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM Approval from the respective roads department
Visual	<ul style="list-style-type: none"> Potential alteration of the visual character and sense of place. Potential visual impact on receptors in the study area. 	<ul style="list-style-type: none"> Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction. Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment.

Environmental Aspect	Potential Impact during Construction	Mitigation
		<ul style="list-style-type: none"> Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.
Avifaunal	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 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 the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned
Bat	<ul style="list-style-type: none"> Loss of existing roosts and/or potential roosts: Some of the bat species that occur on the proposed site are known to roost in rock formations, crevices, derelict aardvark holes and under the bark of tree. Any disturbance of these natural roosting opportunities might have a negative impact on bats. Demolition of the few existing buildings will destroy bat roosts in those buildings (Barclay and Harder, 2003). Attracting bats by artificially creating new roosting areas: The presence of new buildings within the study area may provide additional roost sites for those species making use of man-made structures. 	<ul style="list-style-type: none"> Possible mitigation measures will be recommended in the final bat monitoring report.
Agricultural	n/a	
Surface Water	<ul style="list-style-type: none"> The construction activities will result in the disturbance of aquatic habitats that may contain listed and or protected 	<ul style="list-style-type: none"> Develop and implement a Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>plant or animal species. However, none of these were observed during this assessment within the tower positions proposed</p>	<p>protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site.</p> <ul style="list-style-type: none"> • Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and • Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion.
	<ul style="list-style-type: none"> • Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem service within the site especially where new access roads are required, or road upgrades will widen any current bridges or drifts. • Loss can also include a functional loss, through change in vegetation type via alien encroachment for example. 	<ul style="list-style-type: none"> • A pre-construction walkthrough with an aquatic specialist is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. • All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Prosopis (alien invasive riparian tree) is prevalent in areas to the north of the site, thus care in transporting any material, while ensuring that such materials is free of alien seed, coupled with pre and post alien clearing must be stipulated in the EMP. • Where roads and crossings are upgraded, the following applies: <ul style="list-style-type: none"> • Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. • River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. • Where large cut and fill areas are required, these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). • A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system 	<ul style="list-style-type: none"> All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting. Littering and contamination associated with construction activity must be avoided through effective construction camp management. No stockpiling should take place within or near a water course All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;
Heritage – Paleontological	<ul style="list-style-type: none"> Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations. 	<ul style="list-style-type: none"> Cross checking of final approved footprint by palaeontological specialist, if necessary, pre-construction walkdown (with fossils recording/ collection) of final footprint by specialist palaeontologist. Chance Fossils finds procedure during construction phase.
Heritage – Archaeological	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None

Environmental Aspect	Potential Impact during Construction	Mitigation
Heritage – Cultural Landscape	<ul style="list-style-type: none"> • Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment • WEF infrastructure construction activity degrades the character of the cultural landscape and the sense of place Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities. • Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities. 	<ul style="list-style-type: none"> • Appropriate construction and management of the WEF infrastructure will prevent degradation of the historic elements of the cultural landscape. • Appropriate consultation and inclusion of local communities, including non-landowner residents on site and in the region, in all phases will prevent degradation of the socio-economic elements of the cultural landscape as well as potential loss of intangible indigenous knowledge. • Loss of historic local inhabitants of the area due to reduction in economic opportunity or places for habitation and cultivation as a result of the WEF development will negatively impact on the character of the Koups landscape. • Encourage mitigation measures (for instance use of vegetation) to ‘embed’ or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc; • The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers or highly reflective untreated corrugated sheeting that clutters the landscape and is exacerbates the foreign intrusion on the natural matte landscape. • Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site. • The local material such as the rocks found within the area could be applied to address storm water runoff from the road to prevent erosion. • Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. • Construction/ decommissioning traffic must operate at speeds that reduce dust and noise as far possible.
Noise	<ul style="list-style-type: none"> • Noise impacts during the day – Construction activities relating to hardstand areas, digging of foundations for wind turbines, civil works as well as erection of wind turbines 	<ul style="list-style-type: none"> • No mitigation measures recommended for construction activities at the WTG locations or for substations
	<ul style="list-style-type: none"> • Noise impacts at night – Construction activities relating to civil works as well as erection of wind turbines 	<ul style="list-style-type: none"> • Night-time construction activities closer than 1,000 m from and NSD to be minimized.

Environmental Aspect	Potential Impact during Construction	Mitigation
Biodiversity	<ul style="list-style-type: none"> The construction activities will result in the disturbance of terrestrial habitats that contain listed and or protected plant or animal species. However, none of the plant species were observed during this assessment within the tower positions proposed. Loss of terrestrial habitats – flora and vegetation – The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors. Loss of terrestrial species – fauna – Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities. 	<ul style="list-style-type: none"> A pre-construction walkthrough by the ecologist is recommended, who can assist with the development of the Rehabilitation and Monitoring plan, coupled to micro-sitting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re-establishment of plant cover is desirable to prevent erosion Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers EO must be present on a daily basis to remove any reptiles such as the Karoo Padloper. Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff. Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.

Operational Phase

Environmental Aspect	Potential Impact during Operation	Mitigation
Geotechnical	Soil Erosion	<ul style="list-style-type: none"> Maintain drainage channels Monitor for erosion and remediate and rehabilitate timeously

Environmental Aspect	Potential Impact during Operation	Mitigation
	<ul style="list-style-type: none"> Increased erosion due to alteration of natural drainage 	
Social	<ul style="list-style-type: none"> The proposed WEF may lower farm property values directly and indirectly. This may be due to the WEF's appearance and infrastructure within the natural environment. It also hinders the owner's ability to market the land for hiking, bird watching, and other activities. Littering may occur during maintenance, which could damage farmland or harm domestic and game animals. Farm gates may be left open, allowing animals to escape. Stray animals are valuable assets, and rounding them up is inconvenient and may stress the animals. 	<ul style="list-style-type: none"> Continuous communication with municipal and district spatial planning departments. In the event of property prices being significantly reduced, affected landowners should be consulted with regard to the value of compensation. Mainstream must ensure that the value of compensation is agreed by all parties.
Transport	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Traffic 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase of Incidents with pedestrians and livestock 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Dust from gravel roads 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Road Maintenance 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Abnormal Loads - Additional Abnormal Loads 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Internal Access Roads - New / Larger Access points 	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM
Visual	<ul style="list-style-type: none"> The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. 	<ul style="list-style-type: none"> The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. The night time visual environment could be altered as a result of operational and security lighting at the proposed substation.

Environmental Aspect	Potential Impact during Operation	Mitigation
	<p>The night time visual environment could be altered as a result of operational and security lighting at the proposed substation.</p>	
Avifaunal	<ul style="list-style-type: none"> • 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 11-33kV cables. • Mortality due to collisions with the overhead sections of the internal 11-33kV cables. 	<ul style="list-style-type: none"> • No turbines should be located in the buffer zones around major drainage lines, waterpoints and dams. • A 5km circular No-Go (no turbines) buffer zone must be implemented around the Martial Eagle nest on Tower 162 of the Droërvier Proteus 1-400kV transmission line. • 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. • If estimated annual 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 which could include shut down on demand or other proven recommended measures • 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). • Bird flight diverters should be installed on all the overhead line sections for the full span length according to the applicable Eskom standard. These devices must be installed as soon as the conductors are strung.

Environmental Aspect	Potential Impact during Operation	Mitigation
Bat	<ul style="list-style-type: none"> • Direct collisions with rotating turbine blades: The most important feature of the project that affects bats adversely are the operation of wind turbines, particularly direct collisions from the operational rotating blades. • Fatalities from barotrauma: As the air moves over the turning turbine blades, an area of low pressure is created. Barotrauma occurs when bats experience a sharp decrease in atmospheric pressure near rotating turbine blades. This pressure drop causes a rapid expansion of the lungs, which is unable to be remedied through proper exhalation (Baerwald et al., 2008), thus resulting in haemorrhage of the lungs and ultimately mortality. • Loss of foraging habitat: The turbines, during operation, will influence the natural foraging space of bats. Disturbance resulting from operational activities, such as noise after sunset from engines or generators might also deter bats, resulting in loss of feeding habitat. 	<ul style="list-style-type: none"> • Possible mitigation measures will be recommended in the final bat monitoring report.
Agricultural	None	
Surface Water	<ul style="list-style-type: none"> • Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities. 	<ul style="list-style-type: none"> • Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers. • EO must be present on a daily basis to remove any reptiles such as the Karoo Padloper. • Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; • All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; • Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.
Heritage – Paleontological	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Heritage – Archaeological	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None

Environmental Aspect	Potential Impact during Operation	Mitigation
Heritage – Cultural Landscape	<ul style="list-style-type: none"> • Inappropriate operational activities degrade the significant ecological elements of the cultural landscape • Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place • Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place • Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape 	<ul style="list-style-type: none"> • Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges. • Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within farmstead and N12 buffers and 300m of the regional farm roads. • Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads. • Duration and magnitude of operational activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible. • The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.
Noise	<ul style="list-style-type: none"> • Noise Impacts during the day - Noises from operating wind turbines • Noise Impacts at night - Noises from operating wind turbines 	<p>None</p> <ul style="list-style-type: none"> • The noise levels at these NSD are the cumulative effect of three WTG operating within 1,000 m. The noise level is higher than the estimated residual noise level and it is

Environmental Aspect	Potential Impact during Operation	Mitigation
		recommended that the applicant consider the use of a mitigated WTG (with a SPL level less than 107.2 dBA re 1 pW) within 1,000 m from the identified NSD, or, the applicant can reduce the number of WTG within 1,000 m from NSDs 1 - 3 from three to two, without increasing the total number of WTG locating within 2,000 m from this NSD (from five to four WTG within 2,000 m).
Biodiversity	Loss of terrestrial species – fauna Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	<ul style="list-style-type: none"> • Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers. • Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them. • All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; • Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.

Decommissioning Phase

Environmental Aspect	Potential Impact during decommissioning	Mitigation
Geotechnical	<ul style="list-style-type: none"> • Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure. • Increased erosion due to ground disturbance during rehabilitation activities. 	<ul style="list-style-type: none"> • Temporary berms and drainage channels to divert surface runoff where needed • Restore natural site topography • Use designated access and laydown areas only to minimise disturbance to surrounding areas.
Social	Same as Construction Phase	Same as Construction Phase
Transport	<ul style="list-style-type: none"> • Additional Traffic Generation - Increase in Traffic 	<ul style="list-style-type: none"> • Ensure staff transport is done in the 'off peak' periods and by bus. • Stagger material, component and abnormal loads

Environmental Aspect	Potential Impact during decommissioning	Mitigation
		<ul style="list-style-type: none"> Construction of an on-site concrete batching plant to reduce trips.
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase of Incidents with pedestrians and livestock 	<ul style="list-style-type: none"> Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences & access cattle grids Construction of an on-site concrete batching plant to reduce trips.
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Reduction in speed of the vehicles Use of dust suppressant techniques Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site concrete batching plant to reduce trips.
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Road Maintenance 	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant to reduce trips.
	<ul style="list-style-type: none"> Abnormal Loads - Additional Abnormal Loads 	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. Adequate enforcement of the law
	<ul style="list-style-type: none"> Internal Access Roads - New / Larger Access points & Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Use of dust suppressant techniques Adequate watering by means of water bowser
<p>Visual</p> <ul style="list-style-type: none"> Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and Potential visual intrusion of any remaining infrastructure on the site. 	<ul style="list-style-type: none"> Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. Decommissioning activities may be perceived as an unwelcome visual intrusion. Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke 	<ul style="list-style-type: none"> All infrastructure that is not required for post-decommissioning use should be removed. Carefully plan to minimize the decommissioning period and avoid delays. Maintain a neat decommissioning site by removing rubble and waste materials regularly. Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. All cleared areas should be rehabilitated as soon as possible. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.

Environmental Aspect	Potential Impact during decommissioning	Mitigation
	<p>negative sentiments from surrounding viewers.</p> <ul style="list-style-type: none"> • Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. • Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 	
Avifaunal	<ul style="list-style-type: none"> • Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure. 	<ul style="list-style-type: none"> • 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	None	None
Agricultural	None	
Surface Water	<ul style="list-style-type: none"> • Same as construction phase 	<ul style="list-style-type: none"> • Same as construction phase
Heritage – Archaeological	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Heritage – Palaeontological	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Heritage – Cultural Landscape	<ul style="list-style-type: none"> • Same as construction phase 	<ul style="list-style-type: none"> • Same as construction phase
Biodiversity	<ul style="list-style-type: none"> • Same as construction phase 	<ul style="list-style-type: none"> • Same as construction phase

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 on 14 December 2022 respectively as part of the Draft Scoping Report (proof to be included in Final Scoping Report).

SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

Prepared by:



Project No. 16170
Description Proposed Kraaltjies Wind Energy Facility
Revision No. 1.0

Date: 14 December 2022

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- 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 09 December 2022 (proof included in the Scoping Report).
- Notification letters to be 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 Scoping & EIA process will be advertised in a local newspaper (namely Die Courier) on 16 December 2022, as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in the Final Scoping and EIA Report.

Availability of report for review:

- Report available on SiVESTs website for download.
- Electronic copies can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Scoping Report will be located and available for review at the following locations:
 - Beaufort West Library, 15 Church Street, Beaufort West, Western Cape, South Africa; and
 - Prince Albert Public Library, Church Street, Prince Albert, Western Cape.

PLAN OF STUDY

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.
- A Facility Environmental Management Programme (EMPr) as well as a Generic EMPr for the substation 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 identified will be further assessed in the EIA Phase:

- Geotechnical Assessment;
- Social Impact Assessment;
- Transport Assessment;
- Visual Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Agricultural Assessment;
- Surface Water Assessment;
- Heritage Assessment;
- Noise Assessment;

- Biodiversity 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 will further consult with DFFE as follows:

- 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.
- 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.

**SOUTH AFRICA MAINSTREAM RENEWABLE POWER
DEVELOPMENTS (PTY) LTD**

KRAALTJIES WIND ENERGY FACILITY (WEF)

DRAFT SCOPING REPORT

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SOUTH AFRICA MAINSTREAM RENEWABLE POWER DEVELOPMENTS (PTY) LTD

KRAALTJIES WIND ENERGY FACILITY (WEF)

DRAFT SCOPING REPORT

1. INTRODUCTION

South Africa Mainstream Renewable Power Developments (Pty) Ltd (hereafter referred to as 'Mainstream') is proposing the Kraaltjies Wind Energy Facility (WEF) and associated infrastructure near the town of Beaufort West in the Beaufort West Local Municipality, which falls within the Central Karoo District Municipality (**Figure 1**) (**DFFE Reference Number**: To be Allocated). 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 240 megawatts (MW).

SiVEST Environmental Division has subsequently been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the EIA process for the proposed construction of the Kraaltjies WEF and associated infrastructure. The proposed development requires an Environmental Authorisation (EA) from the National Department of Forestry, Fisheries and the Environment (DFFE). However, the provincial authority (i.e. the Western Cape Department of Environmental Affairs and Development Planning - WC DEADP) as well as CapeNature will also be consulted. The Environmental Impact Assessment (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 National Environmental Management Act (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.

A 132kV overhead power line and Eskom portion of the on-site substation (namely the associated grid connection infrastructure) is also being proposed to feed the electricity generated by the proposed Kraaltjies WEF into the national grid. The project, which will form a part of separate EA application, is as follows:

- Kraaltjies Grid connection – **DFFE Reference Number**: To be Allocated (part of separate BA process / application).

The proposed grid connection infrastructure will require a separate EA and will be subject to a separate Basic Assessment (BA) process to allow for handover to Eskom. The proposed grid connection infrastructure will include an Eskom portion of the on-site substation and a 132kV powerline (including associated infrastructure) to facilitate the connection. Following construction, the grid connection

infrastructure will be owned and managed by Eskom. The current applicant will remain in control of the 11kV - 33/132kV portion of the on-site substation which forms part of this EIA application.

Although the WEF and associated electrical infrastructure will be assessed separately, a single public participation process is being undertaken to consider all of the proposed developments [i.e. WEF EIAs and grid connection infrastructure BAs]. The potential environmental impacts associated with all of the developments will be assessed as part of the cumulative impact assessment.

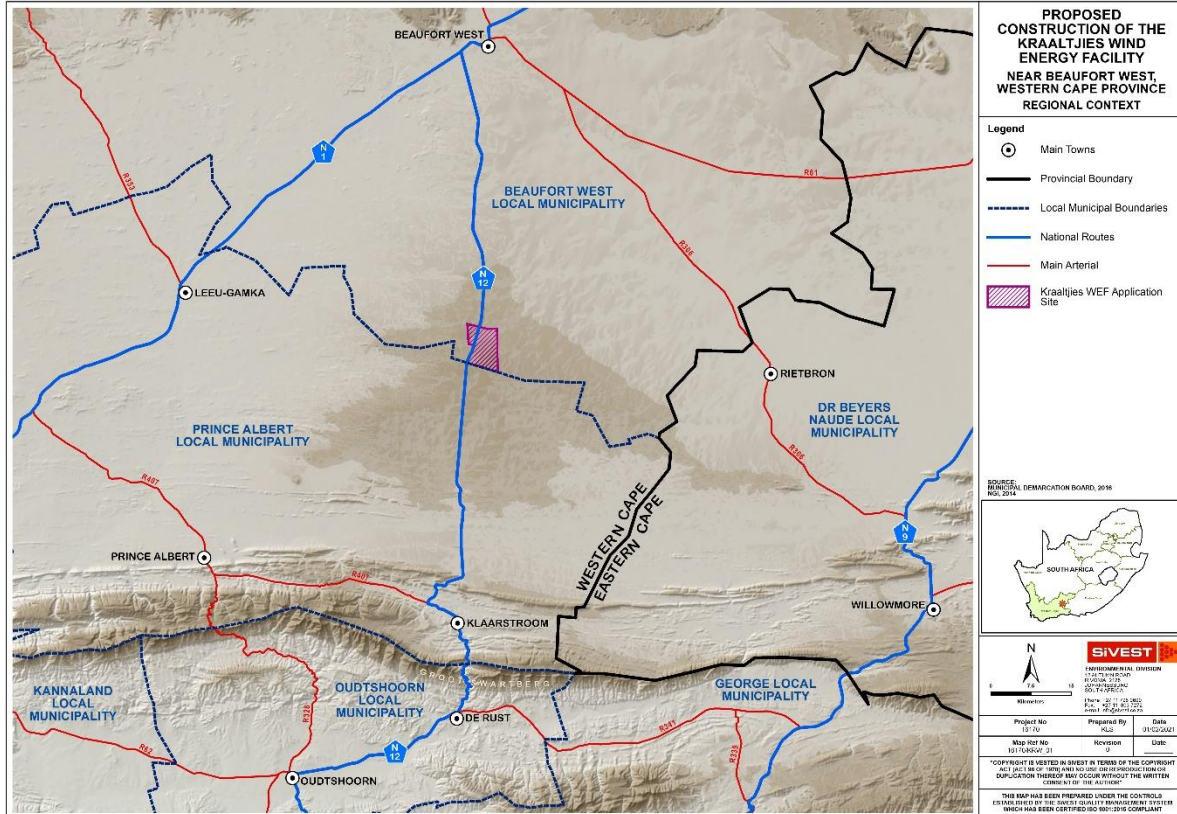


Figure 1: Kraaltjies Regional Context

The project site has been identified by the applicant as a technically feasible site which has the potential for the development of a WEF and associated infrastructure. The full extent of the project site has been considered within this Scoping Report with the aim of determining the suitability from an environmental, technical and social perspective and identifying areas that should be avoided in development planning.

In order to evaluate the project, the following is considered through this Scoping/EIA process:

Project Site	Portion 10 of the Farm Brits Eigendom 374 and Portion 25 of the Farm Brits Eigendom 374 (3994.9ha in extent).
--------------	---

Development area	That identified area (to be located within the project site) where the Kraaltjies WEF and associated infrastructure is planned to be positioned. This area will be selected as a practicable location option for the facility, considering technical preference and environmental constraints. The development area will be demarcated as a result of the findings of the Scoping Phase.
Development footprint (facility layout)	The defined area (located within the development area) where the wind turbines and other associated infrastructure for the WEF is planned to be constructed. This is the facility footprint, and the area which would be disturbed by project-related infrastructure.

1.1 Content Requirements for a Scoping Report

A Scoping Report must contain the information that is necessary for a proper understanding of the process, informing all preferred alternatives, including location alternatives, the scope of the assessment, and the consultation process to be undertaken through the EIA process. 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;	6.2
(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;	6.2
(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;	9
(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

Content Requirements	Applicable Section
<p>(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 -</p> <ul style="list-style-type: none"> (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- <ul style="list-style-type: none"> (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
<p>(h) a plan of study for undertaking the environmental impact assessment process to be undertaken, including-</p> <ul style="list-style-type: none"> (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; 	13

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	16
(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 F

2. PROJECT TITLE

Proposed Development of the Kraaltjies 240MW Wind Energy Facility (WEF) and Associated Infrastructure near Beaufort West in the Western Cape 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	South Africa Mainstream Renewable Power Developments (Pty) Ltd
Physical Address	4th Floor Mariendahl House, Newlands on Main, Cnr Main Road and Campground, Claremont, Cape Town
Postal Address	PO Box 45063, CLAREMONT, Cape Town
Postal Code	7735
Telephone	021 657 4045
Email	eugene.marais@mainstreammrp.com

4. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER 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
Name of Lead EAP	Rendani Rasivhetshele
Physical Address	12 Autumn Road, Rivonia
Postal Address	PO Box 2921, Rivonia
Postal Code	2128
Telephone	011 798 0600
Email	rendanir@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)
Michelle Nevette	MEnvMgt. (Environmental Management)	SACNASP ¹ Registration No. 120356 EAPASA ² Registration No. 2019/1560 IAIAsa ³	19
Natalie Pullen	MSc (Environmental Biotechnology)	EAPASA Registration No. 2018/132 IAIAsa	18
Rendani Rasivhetshele	BSc Hons Environmental Management	EAPASA Registration No. 2019/1729	6

CV's of SiVEST personnel is attached in **Appendix 1**. The EAP declaration is attached in **Appendix 1**.

¹ South African Council for Natural and Scientific Professions

² Environmental Assessment Practitioners Association of South Africa

³ International Association for Impact Assessment South Africa

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)
Gage Consulting (Pty) Ltd	Duan Swart	Desktop Geotechnical Assessment	Professional registered SACNASP, PrNatSci (137543), MSAIEG, Master of Science (Engineering Geology), *Doctoral Candidate (Engineering Geology)	4
ACER (Africa) Environmental Consultants	Lloyd McFarlane	Social Impact Assessment	MSc. Environmental Science (Sustainable development).	10
Enviro Acoustic Research	Morné de Jager	Noise Impact Assessment	B. Ing (Chemical) SAAI, ASA	14
EnviroSci	Dr Brian Colloty	Surface Water Impact Assessment/ Biodiversity Impact Assessment	Ph D (Botany – Estuaries & Mangroves) Pr. Sci. Nat. 400268/07	25
Johann Lanz	Johann Lanz	Agriculture and Soils Impact Assessment (desktop)	M.Sc. (Environmental Geochemistry)	24
PGS Heritage (Pty) Ltd	Wouter Fourie	Heritage Impact Assessment	Professional Archaeologist (ASPA) Accredited Professional Heritage Practitioner with the Association of Professional Heritage Practitioners (APHP)	22
	John Almond	Palaeontological Impact Assessment	PhD (Palaeontology)	40

Company	Name of representative of the specialist	Specialist	Educational Qualifications	Experience (years)
			Palaeontological Society of South Africa, Associated of Professional Heritage (W Cape)	
	Nikki Mann	Archaeological Assessment	Msc Archaeology Professional Archaeologist with the Associated of Southern African Professional Archaeologists (ASAPA)	7
	Emmylou Bailey	Cultural Landscape Assessment	MA Archaeology and Heritage Management APHP, ASAPA	15
Chris Van Rooyen Consulting	Chris van Rooyen	Avifaunal Impact Assessment	BA LLB	22
	Albert Froneman	Avifaunal Impact Assessment	MSc (Conservation)	22
Stephanie Dippenaar Consulting	Stephanie Dippenaar	Bat Impact Assessment	MEM (master's in environmental management)	22

5. LOCATION OF THE ACTIVITY

5.1 21 Digit Surveyor General Codes and Farm names of the sites

Table 6: 21 Digit Surveyor General Code

SG CODE	DESCRIPTION
C00900000000037400010	Portion 10 of the Farm Brits Eigendom No. 374
C00900000000037400025	Portion 25 of the Farm Brits Eigendom No. 374

5.2 Coordinates of the site

The co-ordinates for the sites are as follows:

32°52'47.24"S

22°34'48.12"E

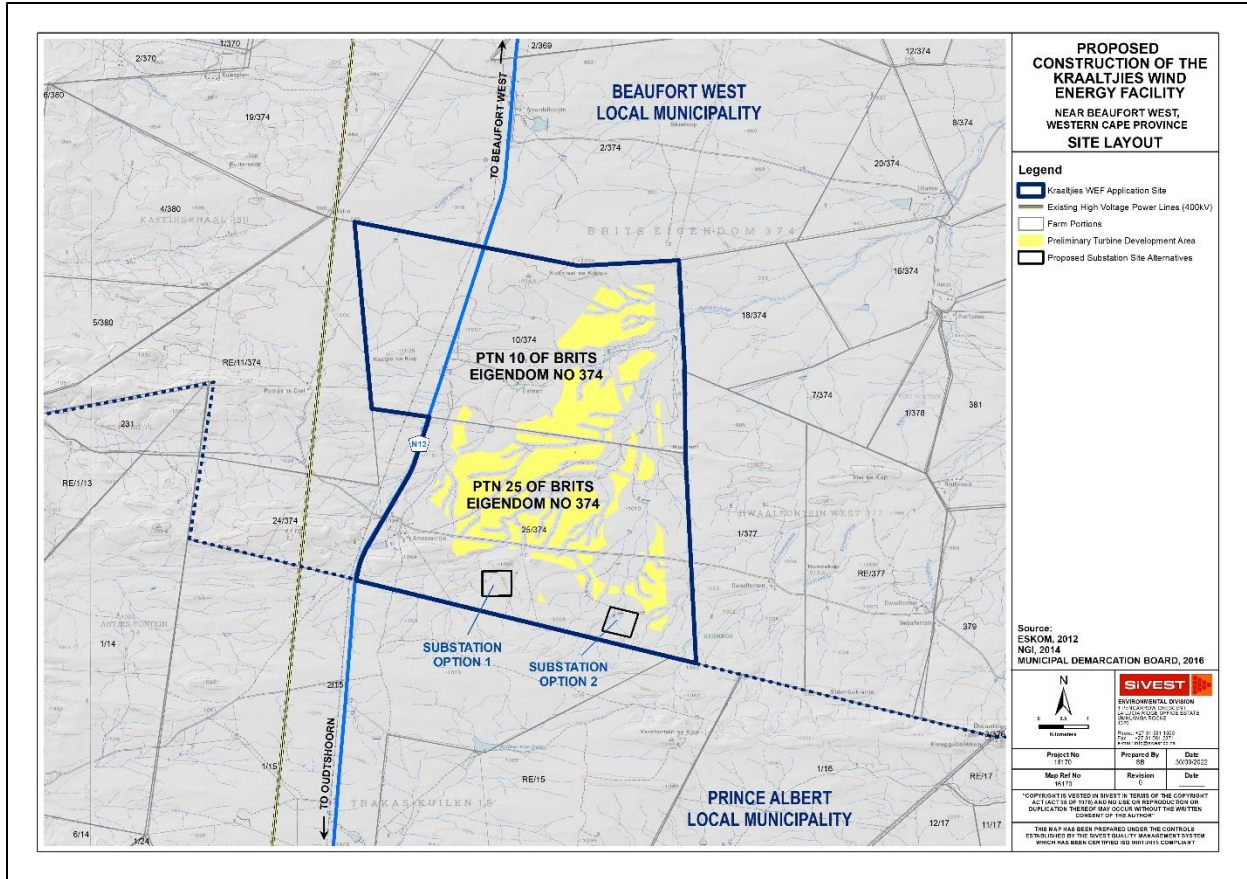


Figure 2: Site locality

6. ACTIVITY INFORMATION

6.1 Project Description

It is anticipated that the proposed Kraaltjies WEF will comprise of up to sixty (60) wind turbines with a maximum total energy generation capacity of up to approximately 240MW. The electricity generated by the proposed WEF development will be fed into the national grid via a 132kV overhead power line. The 132kV overhead power line will however require a separate EA and is subject to a separate BA process, which is currently being undertaken in parallel to the EIA process. In summary, the proposed Kraaltjies WEF will include the following components:

- Up to 60 wind turbines, with a maximum export capacity of approximately 240MW. This will be subject to allowable limits in terms of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The final number of turbines and layout of the WEF will, however, be dependent on the outcome of the Specialist Studies conducted during the EIA process.

- Each wind turbine will have a hub height of 120 to 200m and rotor diameter of up to approximately 200m.
- Permanent compacted hardstanding areas / platforms (also known as crane pads) of approximately 90m x 50m (total footprint of approx. 4 500m²) per turbine during construction and for on-going maintenance purposes for the lifetime of the proposed development.
- Each wind turbine will consist of a foundation of up to approximately 15m x 15m in diameter. In addition, the foundations will be up to approximately 3m in depth.
- Electrical transformers (690V/11-33kV) adjacent to each wind turbine (typical footprint of up to approximately 2m x 2m) to step up the voltage between 11kV to 33kV.
- One (1) new 11-33kV/132kV on-site substation including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e., 250 000m²).
- The wind turbines will be connected to the proposed on-site substation via medium voltage (11-33kV) underground cabling and/or overhead powerlines. Cables will be buried along access roads wherever technically feasible. A Battery Energy Storage System (BESS) will be located next to the onsite 132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.
- The main access road will be approximately 8 - 12 m wide. During construction the roads will be up to 13.5m in some parts (i.e. for bringing in transformers etc.), after construction they will be rehabilitated back down to 8m or less. Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N12 National Route. During operation, internal roads with a width of up to approximately 5m (excluding reserves) wide will provide access to each wind turbine. Internal roads will have a servitude of 8m. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary.
- One (1) construction laydown / staging area of up to approximately 3ha to be located on the site identified for the substation. It should be noted that no construction camps will be required in order to house workers overnight as all workers will be accommodated in the nearby town; Operation and Maintenance (O&M) buildings, including offices, a guard house, operational control centre, O&M area / warehouse / workshop, and ablution facilities to be located on the site identified for the substation. This will be included in the 11-33kV portion/yard of the on-site substation area 25 ha of the IPP portion of the onsite substation.
- 20m underground 11-33kV cable or overhead line servitude.
- A wind measuring lattice (approximately 140m in height) mast has already been strategically placed within the wind farm application site in order to collect data on wind conditions.
- No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1- 1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height; and
- Water will either be sourced from existing boreholes located within the application site or it will be trucked in, should the boreholes located within the application site be limited.

Through the process of determining constraining factors and environmentally sensitive areas, the detailed layout of the Kraaltjies Wind Farm and infrastructure will be planned and adjusted if necessary to ensure the avoidance of no-go areas and mitigation of sensitive environmental features. The wind turbines and all other project infrastructure will be placed strategically within the development area based on

environmental constraints. The exact location of the turbines and associated infrastructure will be determined during the final design stages of the WEF design process.

Please refer to **Figure 3** below for the typical components of a wind turbine.

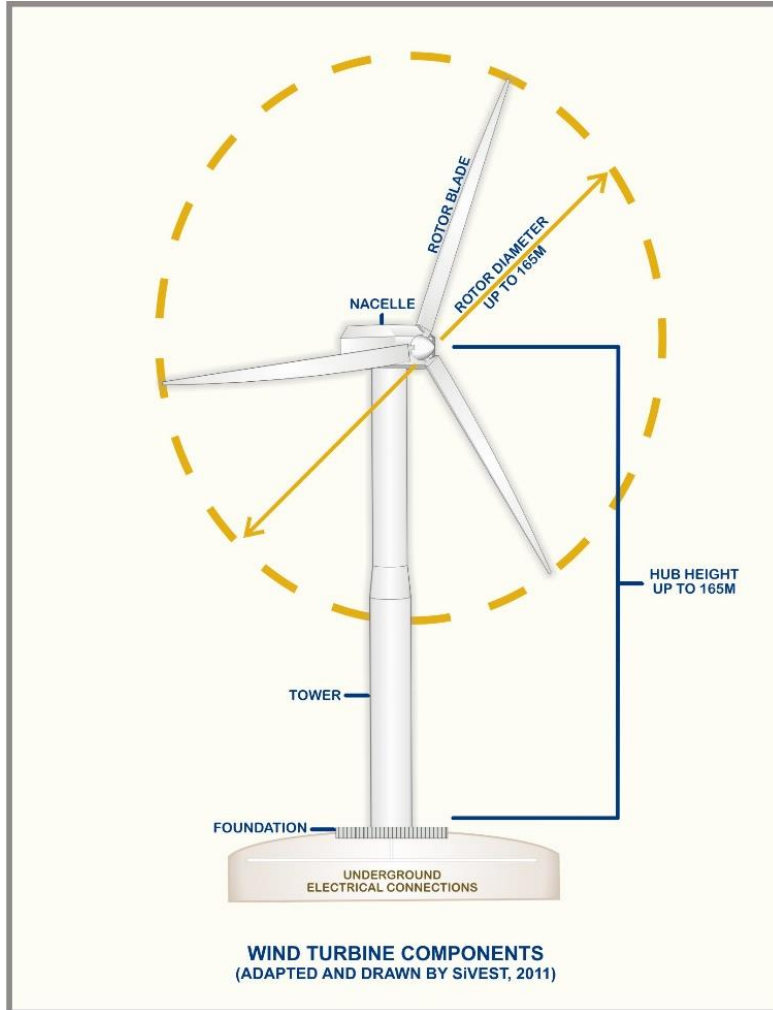


Figure 3: Example of the typical components of a Wind Turbine⁴

A summary of the project technical details is provided in **Table 7** below.

Table 7: Technical Detail Summary

⁴ the specifications shown in the figure are for illustrative and example purposes only, these do not represent the dimensions that are being applied for environmental authorisation for this WEF.

Component	Description / Dimensions
Location of site (centre point)	32°52'47.24"S 22°34'48.12"E
Application site area	3, 994.9ha
Turbine development area	Hardstand Area = 90m*50m*up to 60 turbines
SG codes	C00900000000037400010 C00900000000037400025
Export capacity	Up to 240 megawatts
Proposed technology	Wind turbines and associated infrastructure
Hub height from ground	120m to 200m
Rotor diameter	Up to 200m
Substation and O&M building area	This will be included in the 11-33kV portion/yard of the 25 ha on-site substation area on the IPP portion of the onsite substation.
Construction laydown area	Approximately 3ha
Permanent laydown area	To be determined based on final layout
Hard stand areas	Approximately 4 500m ²
Battery Energy Storage System (BESS)	A Battery Energy Storage System (BESS) will be located next to the onsite 11-33/132kV substation. The storage capacity and type of technology would be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.
Width of internal access roads	Road servitude of 8m
Length of internal access roads	To be determined based on final layout
Site Access / Internal Roads	<p>The main access road will be approximately 8 - 12 m wide. During construction the roads will be up to 13.5m in some parts (i.e., for bringing in transformers etc), after construction they will be rehabilitated back down to 8m or less.</p> <p>Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N12 National Route.</p> <p>During operation, internal roads with a width of up to approximately 5m (excluding reserves) wide will provide access to each wind turbine. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary.</p>
Proximity to grid connection	Approximately 7-10km
Height of fencing	Approximately 1m – 1.5m high

Component	Description / Dimensions
Type of fencing	No new fencing is envisaged at this stage. Current fencing is standard farm fence approximately 1-1.5m in height. Fencing might be upgraded (if required) to be up to approximately 2m in height.

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 (i.e. DFFE). The proposed activity is identified in terms of Government Notice No. R. 327, 325 and 324 for activities which must follow a full Environmental Impact Assessment Process. The project will trigger the following listed activities:

Table 8: Listed activities in terms of NEMA: EIA Regulations 2014 (as amended), applicable to the proposed project

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Relevant Basic Assessment Activities as set out in Listing Notice 1		
11 (i)	GN R. 327 (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.	One (1) new 11kV - 33/132kV on-site substation consisting of two (2) portions: IPP portion / yard (11-33kV portion of the shared 11-33kV/132kV portion) and an Eskom portion (132kV portion of the shared 11-33kV/132kV portion which will be prepared and assessed under separate BA) including associated equipment and infrastructure, occupying a total area of approximately 25ha (i.e., 250 000m ²).
12 (ii) (a) (c)	GN R. 327 (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.	Drainage lines and watercourses are scattered across the proposed site. Roads, underground cables and/or powerlines will cross these watercourses or drainage lines or be within 32m thereof. The proposed developments will therefore entail the construction of infrastructure with physical footprints

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
		of approximately 100m ² or more within a surface water feature / watercourse or within 32m of a surface water feature / watercourse.
14	GN R. 327 (as amended) Item 14: The development and related operation of facilities or infrastructure, for the storage, or for the storage and handling, of a dangerous good, where such storage occurs in containers with a combined capacity of 80m ³ or more but not exceeding 500m ³ .	<p>The proposed development will include the construction of an on-site BESS. The storage capacity and type of technology for the proposed BESS will be determined at a later stage during the development phase, but most likely will comprise an array of containers, outdoor cabinets and/or storage tanks.</p> <p>It should be noted that no stand-alone facilities for the storage of dangerous goods external to the BESS will be constructed as part of the proposed development.</p>
19	GN R. 327 (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;	<p>The proposed development involves the construction of a WEF as well as other associated infrastructure (including the IPP portion/ yard of the 11-33kV/132kV shared on-site substation, up to 33kV overhead and / or underground cabling, roads and BESS) within the proposed project site.</p> <p>Although the development footprint of the site area has been designed to avoid the identified surface water features / watercourses as far as possible, some of the internal infrastructure to be constructed will need to traverse surface water features / watercourses. In addition, during construction, soil will need to be removed from surface water features / watercourses for construction purposes where unavoidable.</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
24 (ii)	<p>GN R. 327 (as amended) Item 24: The development of a road -</p> <p>ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres.</p>	<p>Internal roads are required within the project site to provide access to each wind turbine, the shared 11-33kV/132kV on-site substation, as well as to facilitate access throughout the WEF.</p> <p>The main access road will be approximately 8 - 12 m wide. During construction the roads will be up to 13.5m in some parts (i.e. for bringing in transformers etc), after construction they will be rehabilitated back down to 8m or less.</p> <p>Turns will have a radius of up to 50m for abnormal loads (especially turbine blades) to access the various wind turbine positions. It should be noted that the proposed application site will be accessed via the N12 National Route;</p> <p>During operation, internal roads with a width of up to approximately 5m (excluding reserves) wide will provide access to each wind turbine. Internal roads will have a final servitude of 8m during operation. Existing site roads will be used wherever possible, although new site roads will be constructed where necessary</p>
28 (ii)	<p>GN R. 327 (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:</p>	<p>The total area to be developed for the proposed renewable energy facilities is greater than 1ha and occurs outside an urban area in an area currently zoned as agricultural land.</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare;	
56 (ii)	<p>GN R. 327 Item 56: The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre -</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 metres –</p>	Existing roads may require widening of up to 12m and/or lengthening by more than 1km, to accommodate the movement of heavy vehicles and cable trenching activities associated with the WEF and associated infrastructure.
Relevant Scoping and EIA Activities as set out in Listing Notice 2 of the EIA Regulations, 2014 as amended		
1	GN R. 325 (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 development will entail the construction of a WEF where the respective electricity output will be approximately 240MW. In addition, the proposed WEF developments will be located outside urban areas.
15	GN R. 325 (as amended) Item 15: The clearance of an area of 20 hectares or more of indigenous vegetation.	The proposed WEF development will involve the clearance of more than 20ha of indigenous vegetation. Clearance will also be required for the proposed 11-33/132kV shared on-site substation, O&M building, internal access roads and other associated infrastructure.
Relevant Basic Assessment Activities as set out in Listing Notice 3 of the EIA Regulations, 2014 as amended		
3 (i)	<p>GN R. 324 (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—</p> <p>(b) will exceed 15 metres in height—</p> <p>i. Western Cape</p> <p>i. All areas outside urban areas.</p>	The development of the WEF facility and associated infrastructures will consist of a mast tower used for telecommunication broadcasting and will exceed 15 metres in height. The mast will be located outside urban areas.

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
4 i. (ii) (aa)	<p>GN R. 324 (as amended) Item 4: The development of a road wider than 4 metres with a reserve less than 13,5 metres.</p> <p>i. Western Cape</p> <p>ii. Areas outside urban areas;</p> <p>(aa) Areas containing indigenous vegetation;</p>	<p>The development of the WEF facilities and associated infrastructures is likely to require the development of roads wider than 4m with a reserve of less than 13.5m within areas classified as CBA.</p> <p>These roads will occur within the Western Cape Province, outside urban areas.</p>
10(i)(ii)	<p>GN R. 324 (as amended) Item 10: The development and related operation of facilities or infrastructure for the storage, or storage and handling of a dangerous good where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic metres</p> <p>i. Western Cape</p> <p>ii. All areas outside urban areas</p>	<p>The proposed WEF and associated infrastructures will include the storage and handling of goods such as transformer oils and lubricants (considered dangerous) between 30 to 80 cubic metres in the substation area that will need to be authorised.</p>
12(i)(ii)	<p>GN R. 324 (as amended) Item 12: The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape</p> <p>ii. Within critical biodiversity areas identified in bioregional plans</p>	<p>The proposed WEF development will involve the clearance of more than 300m² or more for the proposed on-site substation, BESS, internal roads and other associated infrastructure.</p> <p>The provincial CBA spatial data for the Western Cape indicates that majority of the project site falls within the Ecological Support Areas and a small portion of the site overlaps with areas classified as Critical Biodiversity Areas.</p>
14(ii)(a)(c)(i)(ii) (ff)	<p>GN R. 324 (as amended) Item 14: The development of—</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more;</p> <p>where such development occurs—</p>	<p>The proposed development will entail the development of infrastructure with physical footprints of 10m² or more within a watercourse / surface water feature or within 32m from the edge of a watercourse / surface water feature.</p> <p>Although the layouts of the respective proposed developments will be</p>

Activity No(s):	Relevant activities as set out in Listing Notices 1, 2 and 3 of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
	<p>(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p>i. Western Cape i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans;</p>	<p>designed to avoid the identified surface water features / watercourse as far as possible, some of the infrastructure / structures will likely need to traverse the identified surface water features / watercourses.</p> <p>The construction of the infrastructure (Substation, BESS, O&M building, MV cabling / powerlines and roads) for the development will occur within Critical Biodiversity Areas (CBAs) located outside of urban areas.</p>
18 i. ii. (aa)	<p>GN R. 324 (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-</p> <p>i. Western Cape ii. All areas outside urban areas: (aa) Areas containing indigenous vegetation</p>	<p>Internal access roads will be required to access the wind turbines as well as the respective 11-33kV/132kV shared substations and BESS.</p> <p>Existing roads will be used wherever possible. Internal access roads will thus likely be widened by more than 4m or lengthened by more than 1km. These roads will occur within the Western Cape Province, outside urban areas. Western Cape Province, outside urban areas.</p>

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.

7.1 Kraaltjies WEF

According to the DFFE Screening Tool Report (attached in **Appendix 9**), the following themes described in the table below are applicable to the proposed development:

Table 9: Site Sensitivity Verification

Theme	Sensitivity	Comment
Agriculture Theme	Medium	<p>The Agricultural Compliance Statement is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>The medium agricultural sensitivity, as identified by the screening tool, is confirmed by the specialist. The motivation for confirming the sensitivity is predominantly that the climate data (low rainfall of approximately 160 mm per annum and high evaporation of approximately 1,390 mm per annum) proves the area to be arid, and therefore of limited land capability. Moisture availability is insufficient for the cultivation of crops without irrigation. In addition, the land type data shows the dominant soils to be very shallow soils on underlying rock.</p>
Animal Species Theme	High	<p>The Terrestrial Ecological Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>The DFFE screening tool indicates a high & medium sensitivity rating for the study.</p> <p>The DFFE screening tool results include important species (High Sensitivity), namely the Critically Endangered Riverine Rabbit (<i>Bunolagus monticularis</i>). Riverine rabbits are habitat-specific associated with dense patches of riverine bush along seasonal rivers similar to those found downstream of the site. The Riverine rabbit is the only indigenous burrowing species in Africa, and thus requires deep, soft alluvial soils. It is therefore important that the Alluvial Wash Floodplains with riparian areas, which also contain both <i>Lycium</i> and <i>Salsola</i> plant species, a favoured food source for this rabbit, are avoided as far as possible by the proposed development.</p> <p>Furthermore, species of conservation concern (SCC), namely, Martial Eagle (Globally and Regionally Endangered), Karoo Korhaan (Regionally Near Threatened) and Ludwig's Bustard (Globally and</p>

Theme	Sensitivity	Comment
		<p>Regionally Endangered) were observed on the project site during the field survey.</p> <p>The classification of High Sensitivity is confirmed. Species of conservation concern have been observed at the application site and were recorded during the pre-construction monitoring surveys conducted across four seasons in 2020 and 2021.</p> <p>This site sensitivity verification verifies the site as being of high sensitivity.</p>
Aquatic Biodiversity Theme	Very High	<p>The Aquatic Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>The DFFE screening tool indicated that several Very High aquatic sensitivity features were located within the study area. The DFFE ratings were based on the presence of Rivers and NFEPA's. Although there is some overlap with the findings on site and the Screening Tool's outcome, the extent of the Very High sensitivity areas was found to be greater than the extent in the Screening Tool.</p>
Archaeological and Cultural Heritage Theme	Low	<p>The Heritage Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>The DFFE screening tool indicated low sensitivity rating for the project site. The low rating as provided by the Environmental Screening Tool possibly reflects scarcity of heritage reports conducted in the region. The field work that was conducted in the study area demonstrates that there are in fact burial grounds and historical structures of heritage significance that warrant conservation.</p> <p>The site sensitivity verification concluded that the low rating as provided by the Environmental Screening Tool likely reflects the scarcity of heritage reports conducted in the region. The DFFE screening tool is not fully supported based on the findings of the field work.</p>
Avian (Wind) Theme	High	<p>The Avifaunal Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p>

Theme	Sensitivity	Comment
		According to the DFFE national screening tool, the habitat within the development site is classified as High sensitivity for birds according to the Animal Species Theme. The High sensitivity classification for birds is linked to Martial Eagle. The Medium classification is linked to Black Harrier, Southern Black Korhaan and Ludwig's Bustard. The High classification is confirmed based on the observed presence of Martial Eagle, Karoo Korhaan and Ludwig's Bustard during the field surveys carried out at the WEF application site. The classification of High Sensitivity is confirmed. Species of conservation concern have been observed at the application site and were recorded during the pre-construction monitoring surveys conducted across four seasons in 2020 and 2021.
Bats (Wind) Theme	High	<p>The Bat Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>As indicated in the Screening Tool Site Sensitivity Map, the project site is classified as high sensitivity mainly due to the availability of natural water resources. Although the 12 months of bat monitoring data analyses have not been completed yet, the investigation has confirmed the high sensitivity, with added sensitivity zones. Some environmental features, amongst others, may be favourable to bats. The bat index for the whole monitoring year for Nama Karoo has not been calculated yet, and one can only truly confirm or reject the screening tool classification when a year's data, including all seasons, is available. Up to now, there is an indication of high bat activity, but the study also shows that there are areas between the high sensitivity zones, which could be utilised for wind turbine development.</p> <p>At present, the site sensitivities have been verified to be high by the specialist, but this can only be confirmed after the full twelve months of monitoring have been incorporated into the study.</p>
Civil Aviation (Wind) Theme	Low	The proposed development is not located close to any major airport and the entire site has a low sensitivity in terms of the civil aviation theme. No further specialist study required.

Theme	Sensitivity	Comment
Defence (Wind) Theme	Low	The entire site has a low sensitivity in terms of the defence theme. No further specialist study required.
Flicker Theme	Very High	<p>The Visual Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>The areas of Very High Sensitivity identified by the Screening Tool on the Kraaltjies WEF application site largely align with the presence of natural features such as mountain tops, high ridges and steep slopes,</p> <p>The flicker theme demarcates areas (1 km buffers) of sensitivity around identified receptors in the area. Under this theme, potential flicker receptors have been identified on the site, or within 1 km of the site boundary. Buffers demarcated around these receptors have been assigned a “very high” sensitivity rating.</p> <p>The presence of receptors, either on the Kraaltjies WEF application site, or within 1km of the site boundary, was confirmed by the site sensitivity verification exercise. However, an assessment of receptor locations using Google Earth showed that there were no receptors present at some of the locations identified by the National Screening Tool. The remaining (confirmed) receptors were factored into the sensitivity analysis, together with a 1km buffer. As such, the areas identified as sensitive during the course of the specialist Visual Impact Assessment and associated field work have been verified.</p>
Landscape (Wind) Theme	Very High	As above for the flicker theme.
Palaeontology Theme	Very High	<p>The Heritage Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>DFFE Screening Tool indicated that the entire project areas are of Very High Palaeosensitivity. Due to the scarcity of well-preserved, scientifically important fossils over much of this region, based on desktop studies and fieldwork, it is inferred that most parts of the project areas are in practice of LOW palaeontologically sensitivity. Areas underlain by thick alluvial sediments here are generally of LOW</p>

Theme	Sensitivity	Comment
		sensitivity, although important concentrations of Caenozoic mammal remains might occur here. The palaeosensitivity mapping shown by the DFFE Screening Tool is contested here.
Noise Theme	Very High	<p>The Noise Report is included in Appendix 6 of the Draft Scoping Assessment Report.</p> <p>The project could impact on several noise sensitive areas. A full noise impact assessment has been undertaken. It was found that there are a number of areas identified (by the online screening tool) to have a “Very High” sensitivity to noise. The site assessment highlighted that these are not sensitive to noise, as there are no structures used for residential activities or any other use that are considered to be noise sensitive. In other areas defined to be of very high sensitivity by the screening tool there are permanent residential activities. These locations are considered to have a “Very High” sensitivity to noise.</p>
Plant Species Theme	Medium	<p>The Terrestrial Ecological Report is included Appendix 6 of the Draft Scoping Assessment Report.</p> <p>Based on the DFFE Screening Tool, the site contains areas of very high sensitivity due to the presence of CBAs, Ecological Support Areas, NFEPAs and rivers. The remaining area within the development footprint is deemed to be of Medium or Low sensitivity.</p> <p>The DFFE Screening Tool lists Plants <i>Peersia frithii</i>, Species 383, Species 1039, which were actively searched for, but suitable habitat and or the presence / absence of this species was not confirmed. Most of these are associated with fynbos and or rocky outcrop environments, not found within the proposed development areas.</p> <p>Similar to the screening tool the area within the development is deemed to be of Medium, therefore the medium sensitivity for the plants theme was confirmed.</p>
RFI (Wind Theme)	Low	The screening tool described the study area as low Radio Frequency Interference Theme (RFI) sensitivity. The site is located 60km from a Weather

Theme	Sensitivity	Comment
		Radar installation. No further specialist study required. Similar to the screening tool the area within the development is deemed to be of low RFI theme sensitivity.
Terrestrial Biodiversity Theme	Very High	<p>The Terrestrial Ecological Report is included Appendix 6 of the Draft Scoping Assessment Report.</p> <p>Based on the DFFE Screening Tool, the site contains areas of very high sensitivity due to the presence of CBAs, Ecological Support Areas, NFEPAs and rivers.</p> <p>The DFFE Screening Tool identified three sensitivity ratings within the development study area, very high, medium and low. Although there is some overlap with the findings on site and the Screening Tool's outcome, the extent of the Very High sensitivity areas was found to be greater than the extent in the Screening Tool. The presence of these Very High Sensitivity features was confirmed during the assessment.</p> <p>However, and appropriate layout can be developed to minimise the impact on the Very High areas but must be verified once the final layout inclusive of roads has been developed.</p>

8. DESCRIPTION OF THE PHYSICAL ENVIRONMENT

8.1 Geographical

The proposed WEF is located approximately 52km south of Beaufort West in the Western Cape Province and is within the Beaufort West Local Municipality, in the Central Karoo District Municipality. The regional context of the proposed application site is shown in **Figure 4** below.

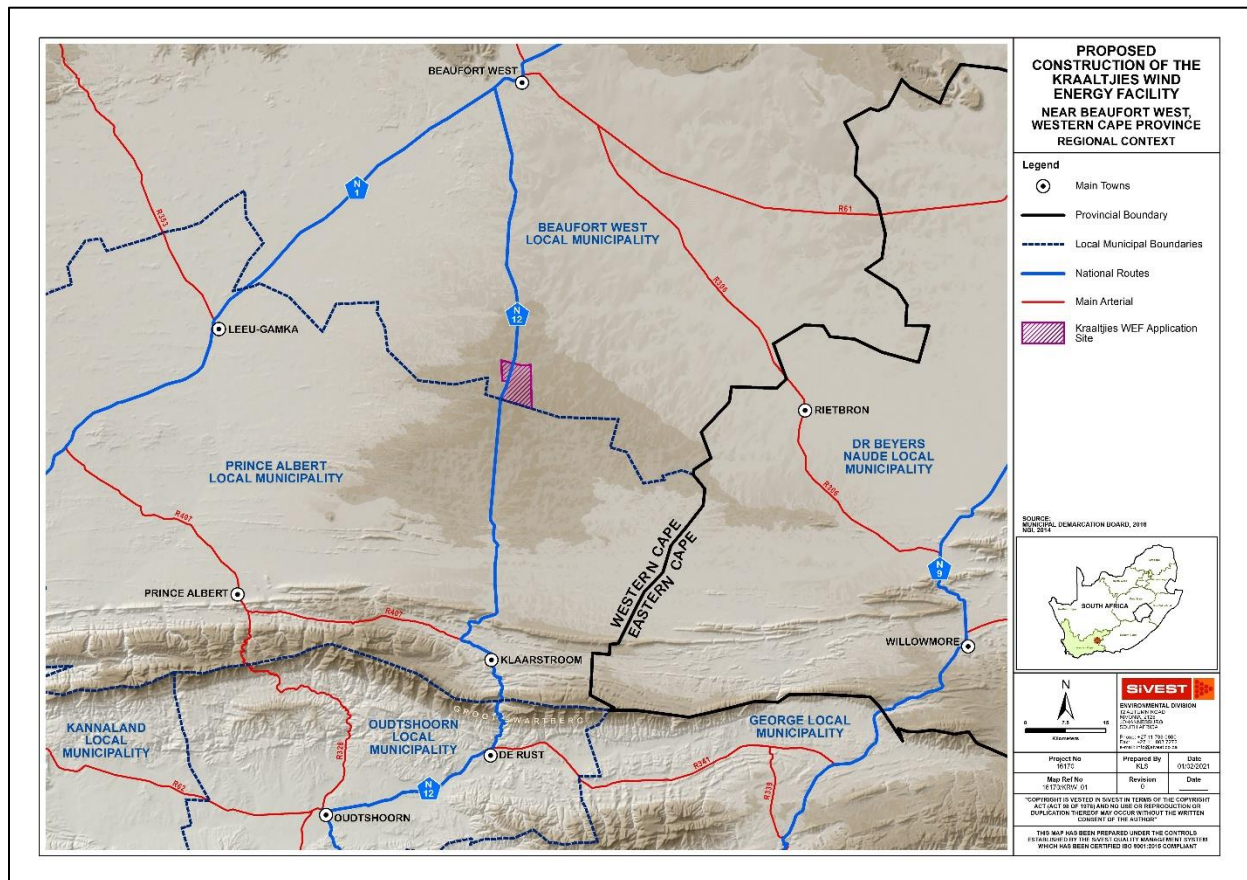


Figure 4: Regional context

8.2 Land Use

According to the South African National Land Cover dataset (Geoterrimage 2018), much of the assessment area is classified as “Bare / Barren Land”, interspersed with patches of low shrubland. While some of these bare / barren areas are representative of transformation due to human activity, in most cases these patches of land are merely undisturbed areas with very sparse vegetation cover. Small tracts of grassland and forested land occur along drainage lines throughout the study area.



Figure 6: Sheep grazing in the study area



Figure 7: Isolated farmsteads typical of the Kraaltjies WEF study area



Figure 8: Typical farm buildings and associated infrastructure

8.3 Climate

The climate of the area is characterized by a hot semi-arid climate. Beaufort West receives a relatively low mean annual precipitation of 392 mm. The average lowest rainfall is received in June (15 mm) and the highest in March (57 mm), which is a seasonal variation of 42 mm. The maximum midday temperatures for Beaufort West ranges from 31.7°C in January to 18°C in July. The minimum temperatures for Beaufort West ranges from 16.6°C in February to 4.4°C in July. The average temperatures vary during the year by 12.9°C.

8.4 Topography

The site proposed for the Kraaltjies WEF development is located in an area largely characterised by flat to gently undulating plains interspersed with low ridges and dry river courses (**Figure 9**). Areas of slightly greater relief associated with marginally higher elevations are largely concentrated in the southern sector of the study area. Flat to undulating terrain prevails across much of the WEF development site and along the grid connection corridors, with no steep slopes in evidence (**Figure 9**)



Figure 9: Typical terrain in the Kraaltjies WEF study area including undulating plains interspersed with low ridges.



Figure 10: View north across the Kraaltjies WEF project site

8.5 Geology and Soils

A desktop geotechnical assessment was undertaken by Gage Consulting (Pty) Ltd (December 2021). According to the report, the study area is underlain by Permian-aged alternating bluish-grey, greenish grey or greyish red mudrocks and grey, very fine to medium-grained lithofeldspathic sandstone of the Teekloof and Abrahamskraal Formations that form the Adelaide Subgroup of the Beaufort Group found in the Karoo Supergroup (**Figure 11**). The formations boundaries are linked to specific sandstone-rich marker units (Johnson et al 2006). A number of greenish chert bands, existing from a few centimetres to two metres thick, and pink tuff beds have been recorded to exist in the Abrahamskraal Formation. Calcareous nodules and concretions occur in mudstones throughout the Beaufort Group.

Adelaide Subgroup is highly faulted with numerous anticline and syncline formations, as well as a few faults, striking generally in an east-west direction. The rock units of the Beaufort Group in the vicinity of the site dip towards the north and south, due to numerous anticline and synclines, varying between dip angles of 10° and 40°. The rocks in the Beaufort Group are fossil bearing and fossil locations near the site have been noted, as show in the local geology map.

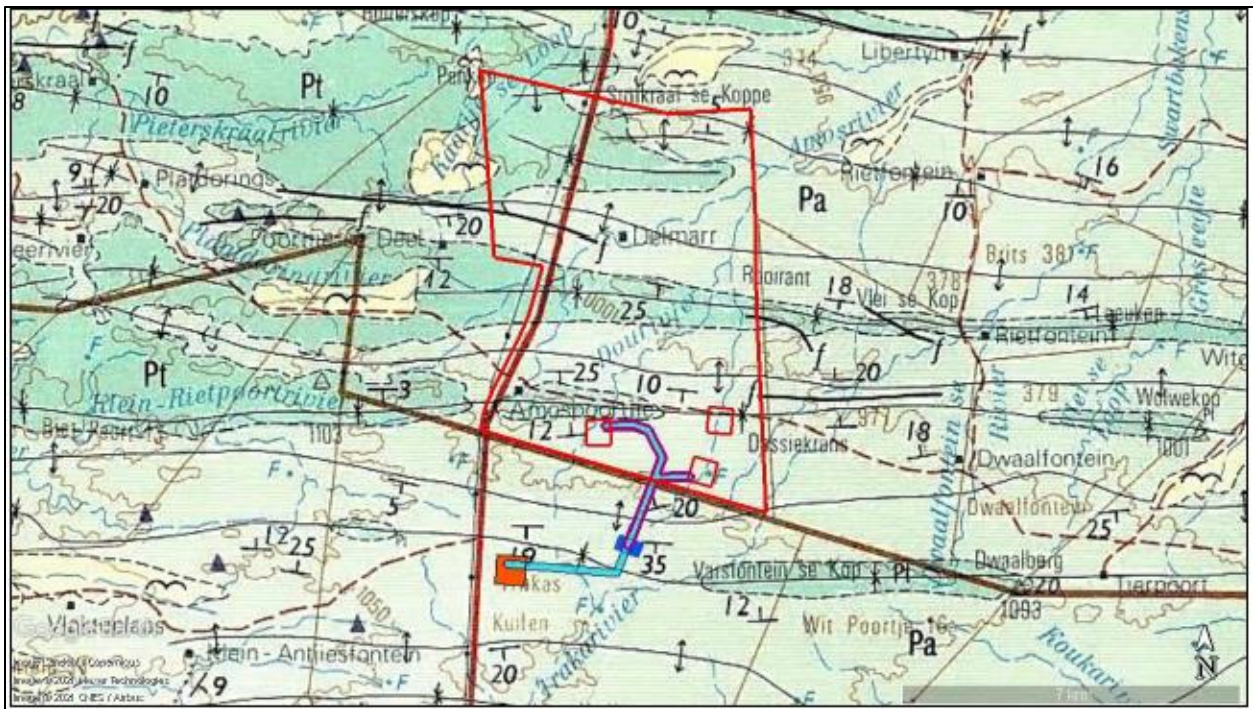


Figure 11: Extract from the 1:250 000 Geologic Map sheets 3222 Beaufort West and 3322 Oudtshoorn

8.6 Surface Water

An Aquatic Impact Assessment was undertaken by EnviroSci (Pty) Ltd (August 2022). According to the assessment, the study area contains variety of aquatic features associated, characterised as follows:

- Non perennial rivers alluvial dominated channels with or without riparian vegetation (**Figure 12 & Figure 13**). These ranged from narrow channels within small canyons with steep cliffs to broad flood plain areas in the lower valleys. Many these systems with and without riparian vegetation are connect via the mainstem river systems listed below, thus with direct linkages. Only some of the bare alluvial systems in the southern portion of the site lack any direct connectivity.
- Minor drainage lines (**Figure 14**), with no obligate aquatic vegetation and were mostly 2 – 8m in width
- Dams or weirs with no wetland or aquatic features, although not many of these were located within the study area.

The features listed above, drain the study area in a north easterly region, forming part of the following Quaternary Catchments (**Figure 15**):

- L32A Amos / Swartbakens rivers (WEF)



Figure 12: A watercourse with defined riparian zone associated with a Swartbakens River near the N12



Figure 13: Sandy/alluvial channel associated with the upper reaches of the Amos River that will be traversed by internal access roads



Figure 14: A view of a minor drainage with no obligate aquatic vegetation or habitats

Furthermore, the study area is located within the Great Karoo Ecoregion of the Tsitsikamma-Mzimvubu Water Management Area.

No wetlands were found within the proposed development areas, only the riverine features such as alluvial floodplains and riparian thickets dominated by *Vachellia karroo*, *Searsia lancea*, *Euclea undulata*, *Gymnosporia buxifolia*, *Ficinia nodosa*, *Carex spp*, *Centella asiatica*, *Erianthus capensis*, *Sporobolus fimbriatus*, *Cynodon incompletes*, *Prosopis spp* (Exotic,) *Eragrostis curvula*, *Erharta calcyni*, *Merxmuellera disticha*, and *Cynodon dactylon* are found in close proximity to any of the proposed towers.

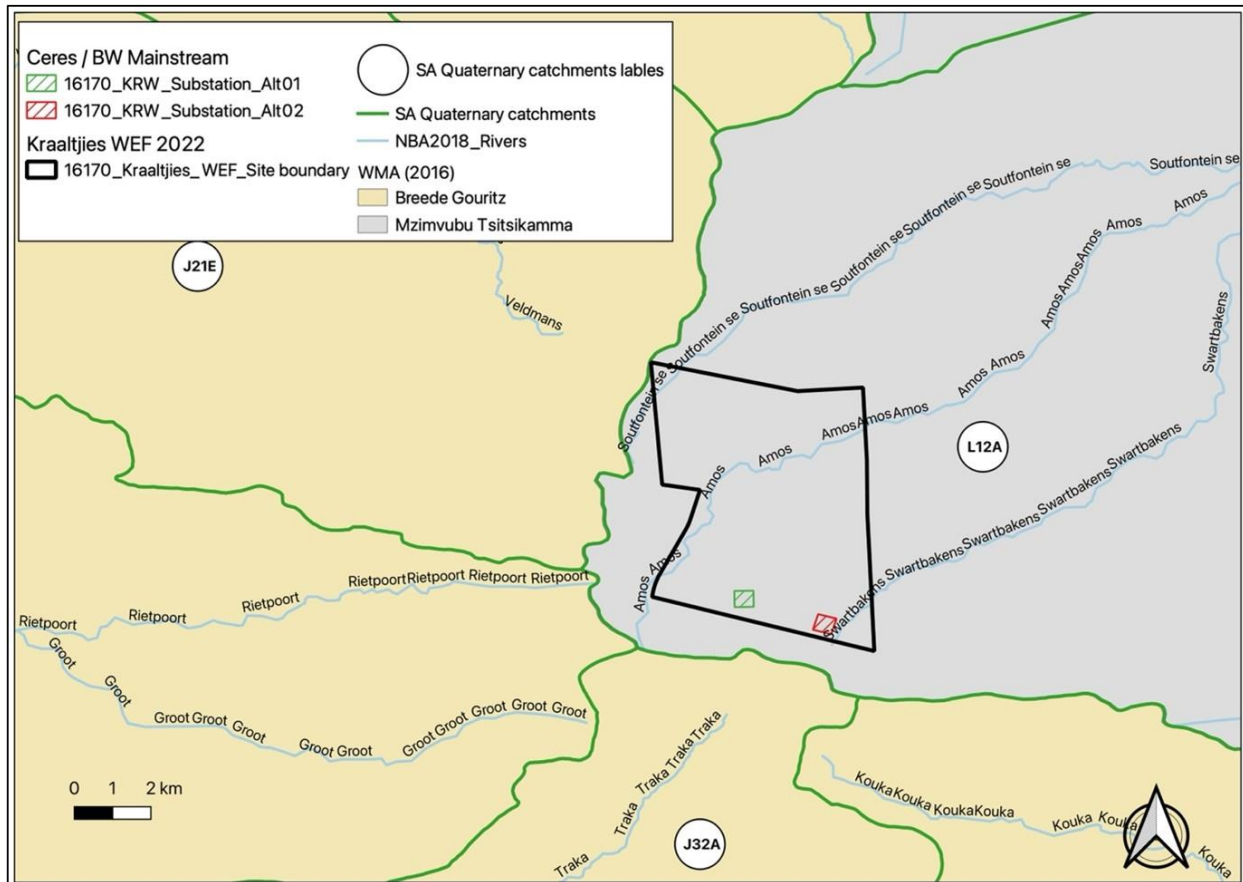


Figure 15: Project locality map indicating the various quaternary catchments and mainstem rivers (Source DWS and NGI) within the project boundary

Figure 16 indicates the available spatial data with regard potential wetlands and or riverine systems within the study area (van Deventer et al., 2020). During the field work, the site was then groundtruthed as well as compared to 1: 50 000 topocadastral surveys mapping data and that which was observed on site. A baseline map was then refined using the November 2021/February 2022 survey data (**Figure 17**).

As indicated previously, three natural aquatic systems were observed within the study area, namely the broader non-perennial rivers (with & without riparian vegetation) and the minor drainage lines. The fine scale delineation of the broader systems was focused on the proposed wind farm infrastructure, to ensure that turbines, buildings and any new internal access roads (as far as possible) avoided these areas. Due to the nature of the landscape, the small drainage lines are unavoidable, but these have also been avoided by the developable area as far as possible and most of the proposed buildings.

The presence of broader Alluvial wash floodplains, as these (although carrying water during high rainfall periods) are largely colonised by terrestrial species, and also form important potential Riverine Rabbit habitat when accompanied by riverine thicket dominated channels. These systems, which are considered part of the aquatic environment, exhibit little in terms of any functional obligate aquatic habitats and only

have water during very high rainfall periods. These systems, although different from the Riverine riparian channels are thus broadly associated with these systems. Both are dominated by sandy silts, but the Riverine riparian areas are dominated by taller stands of *Vachellia karroo* trees, supported by an understorey dominated by *Searsia lancea*, *Euclea undulata*, *Gymnosporia buxifolia* *Ficinia nodosa*, *Carex spp*, *Centella asiatica*, *Erianthus capensis*. The Alluvial Wash Floodplains are mostly barren sandy area, dominated by low growing shrubs such as, as well as *Pteronia pallens* and *Eriocephalus ericoides* species.

Although this habitat type could be rehabilitated easily, the conservation importance based on habitat function resulted in this unit being rated as Very High Sensitivity, represented in its status as a ESAs. For this reason, no towers are to be placed in any of these areas, however any internal roads should avoid these areas and make use of existing tracks or disturbed areas as far as possible.

The substation options do however intersection with one of the alluvial systems and for this reason should be relocated and or avoided in the alternative selection process.

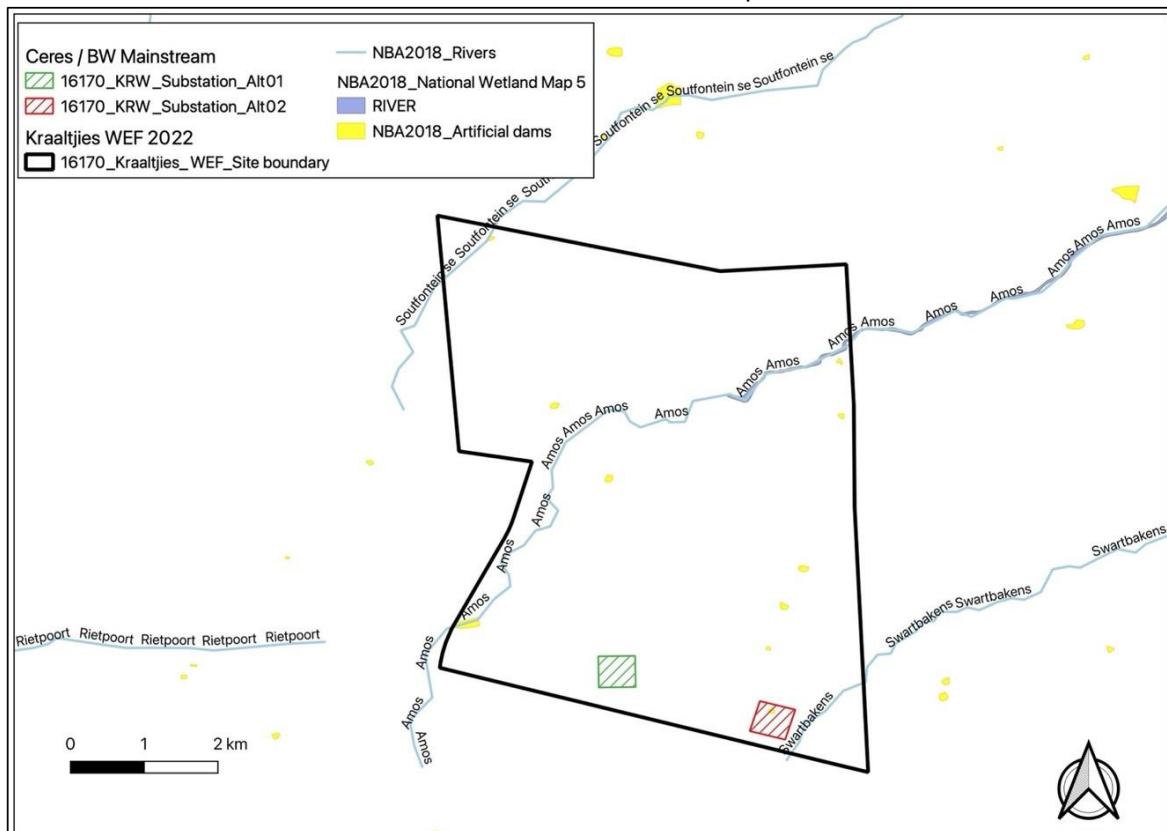


Figure 16: National Wetland Inventory wetlands and waterbodies (van Deventer et al., 2020)

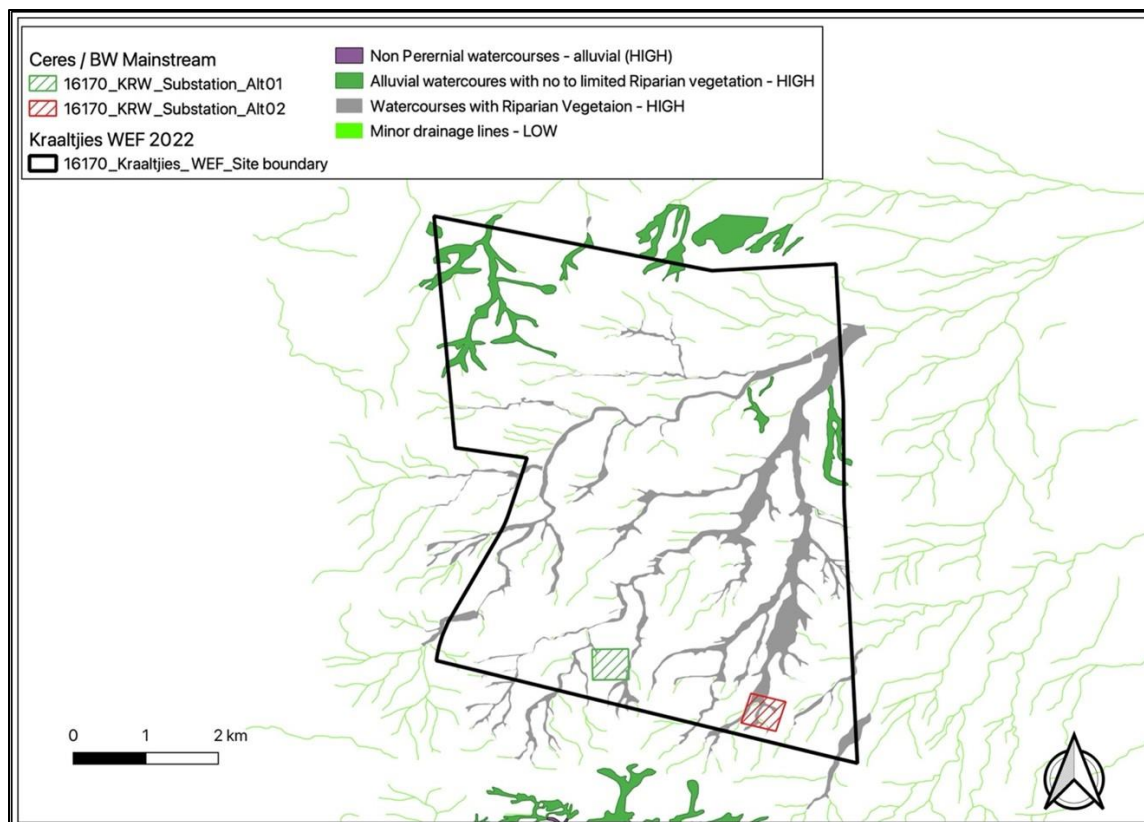


Figure 17: Waterbodies delineated in this assessment based on groundtruthing information collected

The DFFE screening tool indicated that several Very High aquatic sensitivity features were located within the study area. The DFFE ratings were based on the presence of Rivers and NFEPA. The presence of these Very High Sensitivity features was confirmed during this assessment, but also extended to include additional areas.

The study area is also not located within an International Bird Area (IBA) or a Strategic Water Resource Area and did not contain any wetland clusters or listed Threatened Ecosystems.

However, the present layout (except for several new watercourse crossings within or near existing roads/tracks) could avoid the High sensitivity areas, with the activities thus located within the Lower sensitivity areas according to the DFFE Screening Tool, once the suggested road and building placement has taken place.

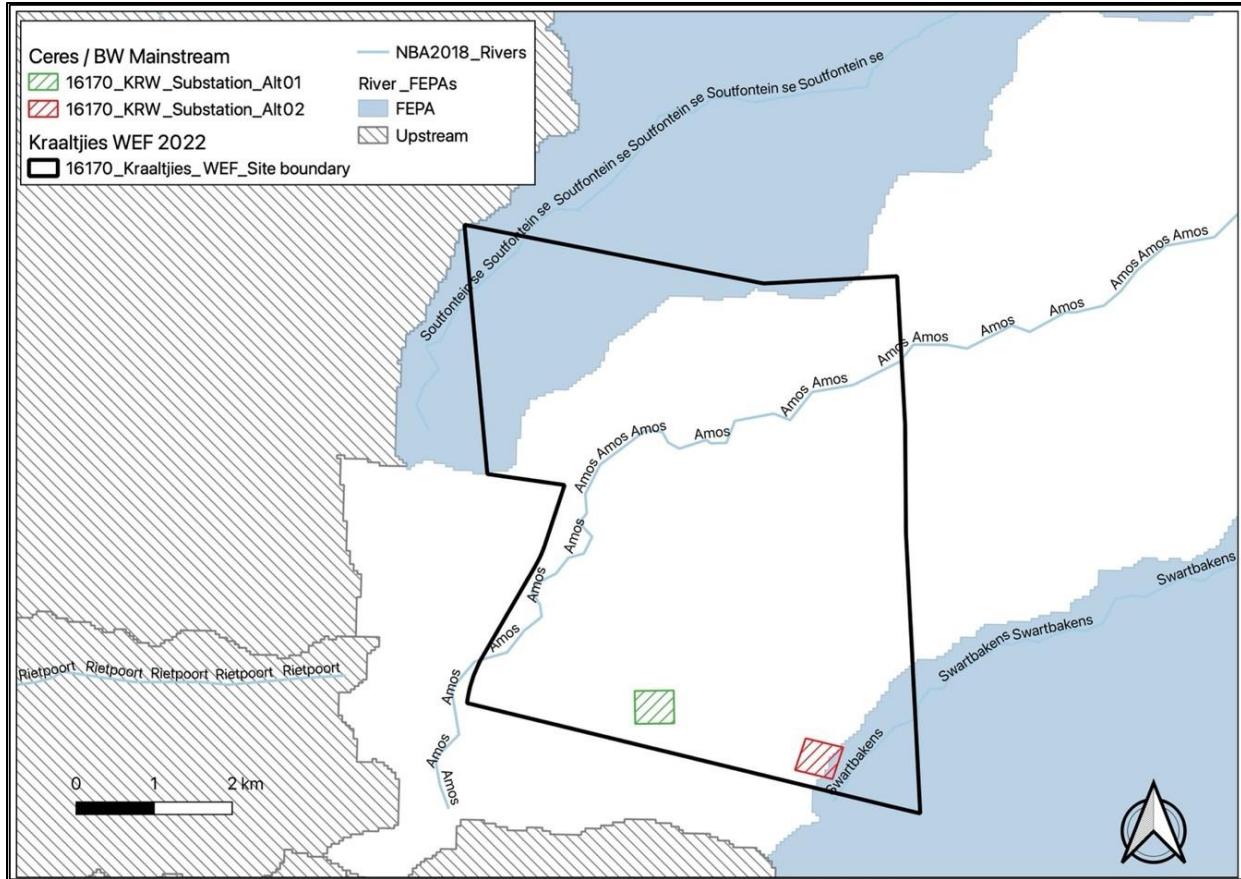


Figure 18: The Freshwater Ecosystem Priority Areas for the study site (Nel et al, 2011).

With regard the aquatic environment, there are no formalised riverine or wetland buffer distances provided by the provincial authorities and as such the buffer model as described Macfarlane & Bredin (2017) for wetlands, rivers and estuaries was used. These buffer models are based on the condition of the waterbody, the state of the remainder of the site, coupled to the type of development, as well as the proposed alteration of hydrological flows. Based then on the information known for the site the buffer model provided the following:

- Construction period = 10m
- Operation period = 8m
- Final = 10m

Artificial dams were not buffered.

Table 10 below provides an overview of the sensitivity of various features (with buffers distances where relevant) as it relates to the main project component types for the project. The sensitivity ratings of No go, High, Medium and Low were determined through an assessment of the habitat sensitivity and related constraints. However, these No-Go areas relate in general terms to the project and there are areas where encroachment on these areas would occur (i.e., existing road crossings within High sensitivity areas) but this is only considered acceptable if these areas have already been impacted.

Table 10: Overview of sensitivity of various features as it relates to main project component types

Development Component	Waterbody type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
WTG areas	Alluvial watercourses with limited riparian vegetation	No-Go with 10m buffer	N/A
	Watercourses with / riparian vegetation	No-go with 10m buffer	N/A
	Minor drainage lines	LOW with 10m buffer but should be avoided	N/A
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	N/A
Hardstands, Buildings / Substations & BESS	Alluvial watercourses with limited riparian vegetation	No-Go with 10m buffer	N/A
	Watercourses with / riparian vegetation	No-go with 10m buffer	N/A
	Minor drainage lines	LOW with 10m buffer but should be avoided	N/A
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	N/A
Roads	Alluvial watercourses with limited riparian vegetation	No-Go with 10m buffer	LOW if an existing crossing / road or impact is already present, that must then be included in the potential road network
	Watercourses with / riparian vegetation	No-Go with 10m buffer	
	Minor drainage lines	LOW with 10m buffer	

Development Component	Waterbody type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
	Artificial dams	Not Applicable = If these systems have no biological value, structures could be placed within the dams, or dams could be demolished if required	N/A
	Watercourses with / riparian vegetation	N/A	
	Minor drainage lines		
	Artificial dams		

8.7 Terrestrial Biodiversity

An Ecological Study was undertaken by EnviroSci (August 2022). According to the report, the Kraaltjies site is dominated by one terrestrial vegetation type, according to Mucina to and Rutherford (2007 – amended 2018) namely Gamka – Karoo (NKI1).

The Gamka-Karoo vegetation spans the entire site / study area with the presence / absence and abundance of plant species dependent on the slope and stability of the soils found present. Thus, the flat plains areas contained most of the plant and animal species known to occur within region, while the steep rock cliffs were more devoid of species. This is possibly linked to the fact that the soils in these areas are composed mostly of mudrock (shales), that weather and decompose easily, thus unstable, only allowing more hardy succulent species to colonise these areas.

None of these are listed as a Threatened Ecosystem as per the National Environmental Management Biodiversity Act, this is due to the vast area these vegetation units occupy, with little in terms of human / agricultural use.

A potential 900 species has been previously recorded in the Quarter Degree Square grid that cover the site (3222DA), of which ca. 80% are plant species. The remainder, which excludes birds and bats as these are assessed separately, include the following taxa:

- Mammals 36 Species
- Reptiles 16 Species
- Amphibians 5 Species

- Fish 0 Species
- Insects 74 Species
- Spiders / Scorpions 2 Species
- Fungi 2 Species

This was then compared to observation made within a 4-day site-specific assessment conducted in November 2021, and again in February 2022, conducted after a period of significant winter rains, more than previous years, which some response by the flora, but the prolonged drought in the region has affected that growth of the plants, especially those in the low-lying plains areas, that have shallow soils.

The vegetation observed within the study area corresponds with the descriptions associated with the National Vegetation Map (NSBA, 2018) and Mucina and Rutherford (2007) (**Figure 19**). In other words, an area that is covered by sparse dwarf shrubland on undulating plains, dominated by *Chrysocoma oblongifolia*, *Eriocephalus microphyllus* *E. ericoides* and *Searsia undulata*.

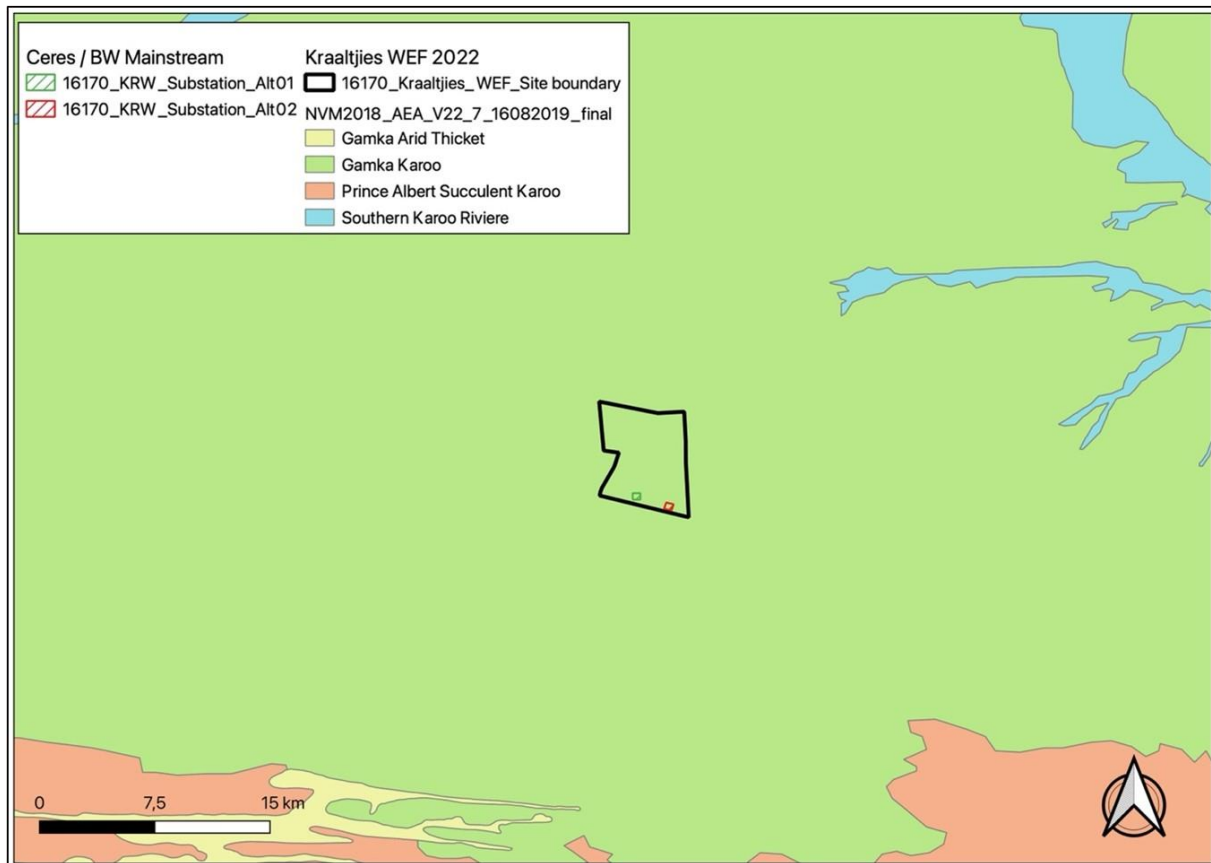


Figure 19: National Vegetation Map as per Mucina and Rutherford (2007) amended NBSA 2018

Based on observations made during the site visits, two key terrestrial habitats and the aquatic habitats (**Figure 20**) were observed and then rated based on their sensitivity to the proposed development. These habitats included:

1. Gamka Karoo vegetation unit
 - a. Shale / Mudrock Plains
 - b. Small ridges / inselbergs

2. Alluvial rivers with and without riparian vegetation (discussed in Aquatic Assessment)

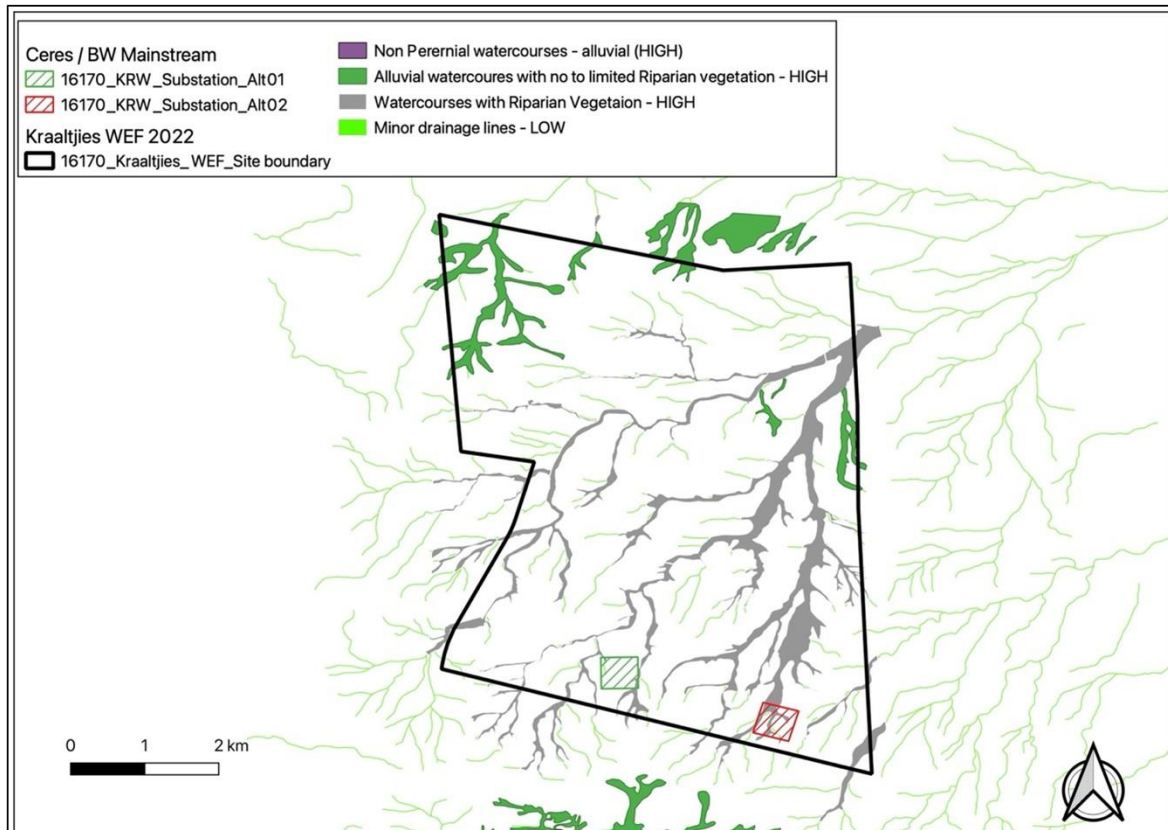


Figure 20: Spatial representation of the observed habitats, with the open remaining areas dominated by the plains Nama-Karoo vegetation type



Figure 21: A view from the northern of the site, dominated by the shale /mudstone (purple) soils and isolated ridges/cliffs and inselbergs in the background. The site is further dominated by the alluvial watercourses as shown in the foreground



Figure 22: A view of one the few cliffs within the site, that will be avoided by the placement of any turbines, and it's assumed that any of the proposed roads will also avoid any areas with any such slopes

Vegetation

No rare or listed plant species were observed during the survey period within the proposed buildable area; however, several species are protected in terms of the Western Cape legislation. The disturbance, destruction and/or relocation, whichever is more relevant, of these species would require the relevant permits from the provincial authority. The specialist has recommended that a detailed walkdown of the final layout is conducted, during a suitable time of the year. This will result in a complete species list for the actual turbine footprints and / or assist with any micro-siting that may be required to avoid any important habitat, as the relocation of certain species during a search and rescue operation is not always successful, thus avoidance is found to be a better solution.

The DFFE Screening Tool lists Plants *Peersia frithii*, *Species 383*, *Species 1039*, which were actively searched for, but suitable habitat and or the presence / absence of this species was not confirmed. Most of these are associated with rocky outcrop environments and can be avoided by the proposed development areas once the layout has been micro-sited.

Fauna

As previously mentioned approximately 135 animal species have been previously observed within the quarter degree square area associated with the study area. These are predominantly Mammal (26%), Reptile (12%) and Insect species (55%), which for the most part highly mobile and or habitat specific. These as listed in the Species Checklist created for the assessment were then searched for during the site

visit. The only exception being the fish and amphibian species as no permanent or suitable habitat was observed within the study area, although habitats do occur downstream of the project area.

The DFFE screening tool results only include one important mammal species (High Sensitivity), namely the Critically Endangered Riverine Rabbit (*Bunolagus monticularis*). Riverine rabbits are habitat-specific associated with dense patches of riverine bush along seasonal rivers similar to those found downstream of the site. The Riverine rabbit is the only indigenous burrowing species in Africa, and thus requires deep, soft alluvial soils. It is therefore important that the Alluvial Wash Floodplains with riparian areas, which also contain both *Lycium* and *Salsola plant species*, a favoured food source for this rabbit, are avoided as far as possible by the proposed development.

Two of the Endangered reptile *Cherobius boulengeri* (“Dwarf” Karoo padloper) were observed outside of the proposed wind farm boundary, but within the adjacent farm portions, thus it must be assumed that this species will occur within the site. Therefore, considerable caution is advised during the construction period for the potential disturbance of this small animal species, especially during the vegetation clearing process, thus an Environmental Officer must ensure that none are present during this phase within the proposed works area for the day.

In terms of fauna, the following are species which potentially occur at the site and are listed as protected species, with those species highlighted in BOLD being observed in this and past assessments:

Schedule 1: Specially Protected Fauna as per the Western Cape Nature Conservation Ordinance (No. 3 of 2000) that may occur within the region or have suitable habitat present

- *Felis nigripes* - Black-footed cat/Miershooptier
- *Felis silvestris* - African wild cat/Afrika wildekat
- *Ictonyx striatus* - Striped polecat/Stinkmuishond
- *Mellivora capensis* - Honey badger/Ratel
- *Otocyon megalotis* - Bat-eared fox/Bakoovos
- *Proteles cristatus* – Aardwolf/Maanhaarjakkals
- *Vulpes chama* - Cape fox / Silver jackal Silwervos
- *Orycteropus afer* - Aardvark / Ant-bear Erdvark / Aardvark
- *Atelerix frontalis* – South African hedgehog
- *Family: Chamaeleonidae* - Chamaeleons, all species
- *Family: Cordylidae* Girdled lizards, all species

Virtually all indigenous fauna which do not fall under Schedule 1 are classified under Schedule 2, except those species classified as pests. In terms of mammals most rodents, shrews, elephant shrews, bats, hares and rabbits, carnivores such as mongoose, genets, and meerkat, antelope such as klipspringer, steenbok, Mountain reedbuck and duiker are included. In terms of other vertebrates, all tortoises, lizards, most harmless snakes and all frogs are listed under Schedule 2.

In terms of fauna, the following, inter alia, are protected and may not be hunted, captured or harmed without a permit:

- All tortoises [2 species observed which include Angulate tortoise (*Chersina angulate* - Plate 3), Dwarf Karoo Padloper (*Cherobius boulengeri*);
- All lizards;
- All frogs;
- Most snakes [2 species have been observed in the past on site, namely Cape cobra (*Naja nivea*) and Mole snake (*Pseudoaspis cana*);
- All indigenous antelope;
- Aardvark;
- Most small carnivores such as Honey Badger, Cape Fox, Bat-eared Fox;
- Large Grey Mongoose etc.; and

With the exception of the tortoises, lizards and snakes, the species listed above typically leave the area once construction commences, thus permits for the relocation of lizards, snakes and tortoises must be obtained.



Figure 23: A common site with the study area, namely Angulate tortoises (*Chersina angulata*) and Corncricket (*Hetrodes pupus pupus*)



Figure 24: Several interesting plants occur within the region and include in a clockwise direction, *Eriospermum paradoxum*, remnants of a *Gonialoe variegata* (syn. *Aloe variegata*) specimen, also known as tiger aloe and partridge-breasted aloe, *Mesembryanthemum resurgens* and *Hoodia dregei*, an endemic to the greater study area.

The provincial Biodiversity Spatial Plan Critical Biodiversity Area (CBA) spatial layers. Noting that with the exception of the substations all of the proposed towers are located outside of any of the areas shown in the below figure.

The study area is also not located within an International Bird Area (IBA) or a Strategic Water Resource Area and did not contain any wetland clusters or listed Threatened Ecosystems.

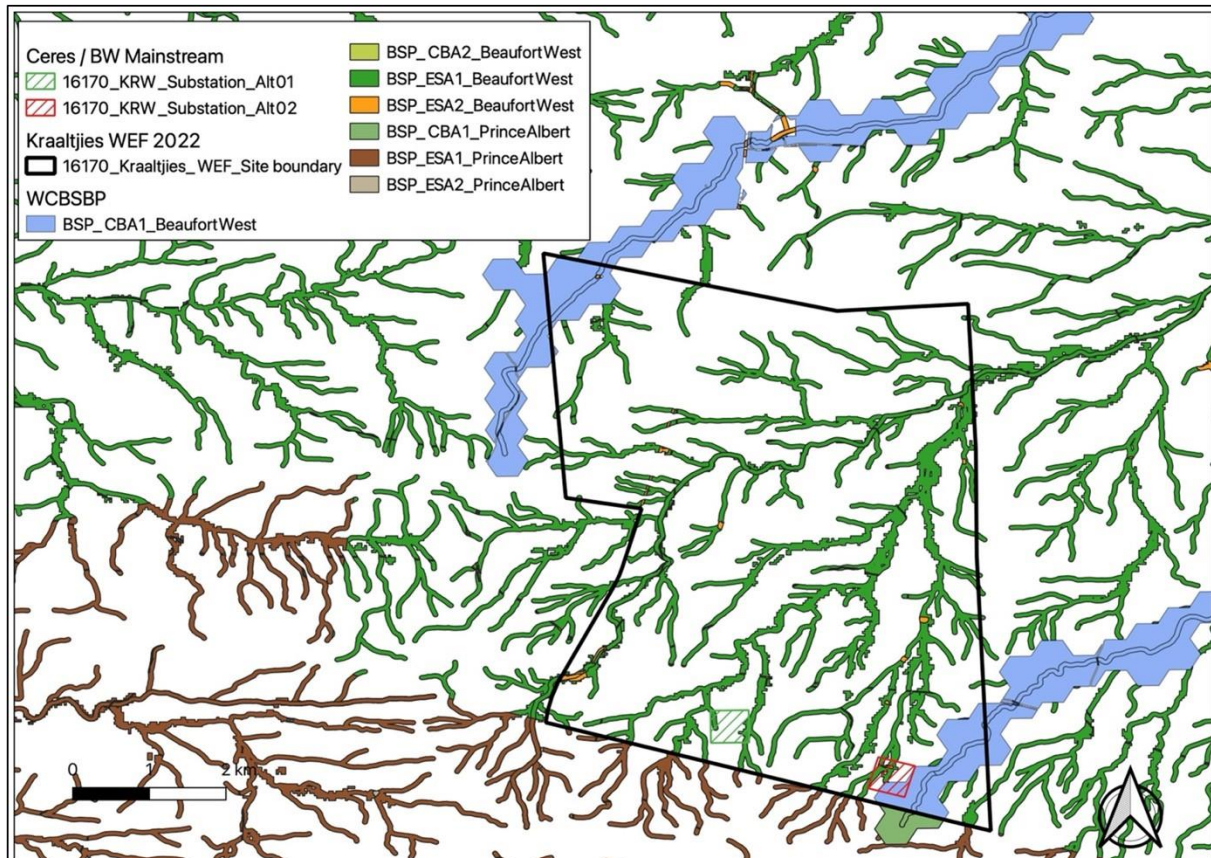


Figure 25: The Critical Biodiversity Areas as per the Western Cape Biodiversity Spatial Plan (2017)

Table 11 below provides an overview of the sensitivity of various features (with buffers distances where relevant) as it relates to the main project component types for the project. The sensitivity ratings of No go, High, Medium and Low were determined through an assessment of the habitat sensitivity and related constraints. However, these No-Go areas relate in general terms to the project and there are areas where encroachment on these areas would occur (i.e., existing road crossings within Very High sensitivity areas) but this is only considered acceptable if these areas have already been impacted.

Table 11: Overview of sensitivity of various features as it relates to main project component types

Development Component	Habitat type	Sensitivity rating of the respective waterbody type against the development type and the required buffer	Sensitivity rating override if an impact such as a road already occurs within the proposed footprint
WTG areas	Steep slopes / cliffs and small Inselbergs	No-go	N/A
	Remaining areas	Low – thus acceptable	N/A
Hardstands, Buildings / Substations & BESS	Steep slopes / cliffs and small Inselbergs	No-go	N/A
	Remaining areas	Low – thus acceptable	N/A
Roads	Steep slopes / cliffs and small Inselbergs	No-go	Unless an existing track is used
	Remaining areas	Low – thus acceptable	
Overhead Lines	Steep slopes / cliffs and small Inselbergs	These should be spanned with no towers	
	Remaining areas	Low – thus acceptable	

8.8 Agricultural

An agricultural compliance statement and site sensitivity verification was undertaken by Johann Lanz. According to the report, the site has very low agricultural potential because of, climate constraints, but also because of soil constraints. The site is unsuitable for cultivation, and agricultural land use is limited to grazing.

Cultivation within the application area is confined to small, isolated patches of mostly pasture or fodder crops around farmsteads. There are three farmsteads across the site that have such cultivated land, only one of which is identified on the screening tool in the south-west corner of the site. Across the rest of the site, agricultural sensitivity is purely a function of land capability. The land capability of the site on the screening tool is predominantly 5 but varies from 2 to 9. Values of 2 to 5 translate to a low agricultural sensitivity, values of 6 to 8 translate to a medium agricultural sensitivity, and values of 9 translate to a high agricultural sensitivity. There are only scattered pixels of 9 (high sensitivity), associated with one of the land types, across the site. (Refer to **Figure 26**).

As the environment is unsuited to cultivation, the differences in land capability across the project area are not very significant and are more a function of how the land capability data is generated by modelling, and strongly influenced by terrain in this environment, than actual meaningful differences in agricultural potential on the ground.

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

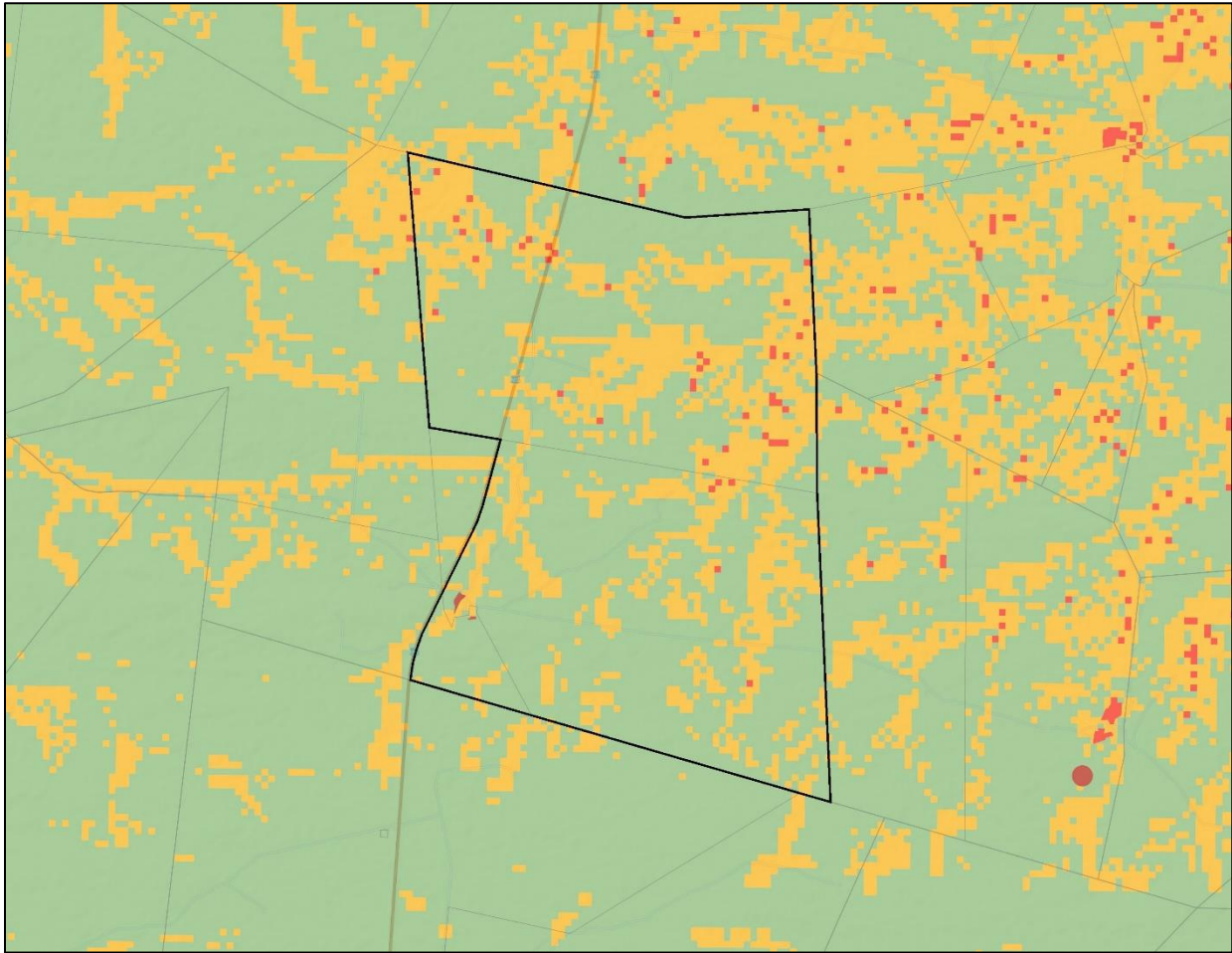


Figure 26: Agricultural sensitivity as given by the screening tool (green = low; yellow = medium; red = high; dark red = very high).

8.9 Avifauna

An Avifaunal Assessment was undertaken by Chris van Rooyen Consulting (September 2022). According to the assessment, it is estimated that a total of 168 bird species could potentially occur in the broader area. Of these, 20 species are classified as priority species for wind developments. The Karoo National Park Important Bird Area (IBA) SA102 is the closest IBA and is located approximately 50km north of the application site at its closest point (Marnewick et al. 2015). The development is not expected to have any impact on the avifauna in this IBA due to the distance from the project site. **Table 12** below list all the priority species and the possible impact on the respective species by the proposed WEF.

LC = Least Concern

H = High

NT = Near threatened

M = Medium

VU = Vulnerable

L = Low

EN = Endangered

Table 12: Wind energy priority species recorded in the broader area.

Species	Taxonomic name	SABAP2 Reporting rate		Conservation Status		Recorded during field surveys	Likelihood of regular occurrence at site	Habitat						Impacts				
		Full protocol	Ad hoc protocol	Global status	Regional status			Karoo scrub	Surface water	Drainage line woodland	Alien trees	Agricultural fields	High voltage power lines	Collisions with turbines	Displacement: Habitat transformation	Displacement: Disturbance	Electrocution: MV lines	Collisions: MV lines
African Harrier-Hawk	<i>Polyboroides typus</i>	0,00	0,45	-	-		L		x	x	x			x	x	x	x	
Amur Falcon	<i>Falco amurensis</i>	0,00	0,45	-	-		L			x	x	x	x	x	x			
Black Harrier	<i>Circus maurus</i>	2,53	0,00	EN	EN		L	x	x					x	x		x	
Black-winged Kite	<i>Elanus caeruleus</i>	1,27	0,45	-	-		L	x		x	x	x	x	x	x			
Blue Crane	<i>Grus paradisea</i>	2,53	0,45	VU	NT		L	x	x				x	x	x	x		x
Booted Eagle	<i>Hieraaetus pennatus</i>	5,06	0,45	-	-	x	M	x	x	x	x	x		x	x		x	
Common Buzzard	<i>Buteo buteo</i>	1,27	0,00	-	-		L	x	x	x	x	x	x	x	x		x	
Double-banded Courser	<i>Rhinoptilus africanus</i>	11,39	2,25	-	-		M	x						x	x	x		x
Greater Kestrel	<i>Falco rupicoloides</i>	12,66	10,36	-	-	x	H	x		x	x	x		x	x		x	
Jackal Buzzard	<i>Buteo rufofuscus</i>	1,27	0,90	-	-		L	x	x	x	x	x	x	x	x		x	
Karoo Korhaan	<i>Eupodotis vigorsii</i>	72,15	21,62	-	NT	x	H	x						x	x	x		x
Kori Bustard	<i>Ardeotis kori</i>	2,53	0,45	NT	NT		M	x		x				x	x	x		x
Lanner Falcon	<i>Falco biarmicus</i>	1,27	0,00	-	VU		L	x	x	x	x	x	x	x	x		x	
Ludwig's Bustard	<i>Neotis ludwigii</i>	13,92	2,70	EN	EN	x	H	x					x	x	x	x		x
Martial Eagle	<i>Polemaetus bellicosus</i>	5,06	1,35	EN	EN	x	H	x	x	x	x	x		x	x	x	x	
Pale Chanting Goshawk	<i>Melierax canorus</i>	54,43	14,86	-	-	x	H	x	x	x	x	x		x	x	x	x	
Secretarybird	<i>Sagittarius serpentarius</i>	2,53	0,00	EN	VU		L	x	x		x			x	x	x		x
Southern Black Korhaan	<i>Afrotis afra</i>	0,00	0,45	VU	VU		L	x						x	x	x		x
Spotted Eagle-Owl	<i>Bubo africanus</i>	6,33	1,80	-	-		M	x		x	x	x	x	x	x	x	x	
Verreaux's Eagle	<i>Aquila verreauxii</i>	2,53	1,35	-	VU		L	x	x		x	x		x	x		x	

8.9.1 Transects

The results of the transect counts are tabled in **Table 13** and **Table 14**:

Table 13: The result of the drive transects

DRIVE TRANSECTS			
	Total number of records - all species	Total number of species	Total number of wind priority species
Wind farm	1452	78	2
Control site	1079	77	2

Table 14: The result of the walk transects

WALK TRANSECTS			
	Total number of records - all species	Total number of species	Total number of wind priority species
Wind farm	641	78	2
Control site	401	77	2

An Index of Kilometric Abundance (IKA = birds/km) was calculated for each priority species recorded during transects over all four seasons (**Figure 28** and **Figure 29**).

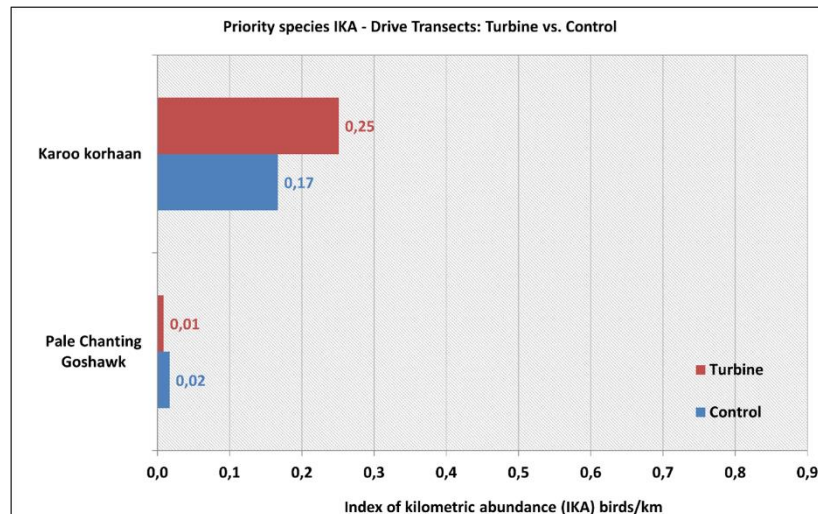


Figure 27: Index of kilometric abundance of priority species recorded at the WEF and control site with drive transect surveys across four seasons.

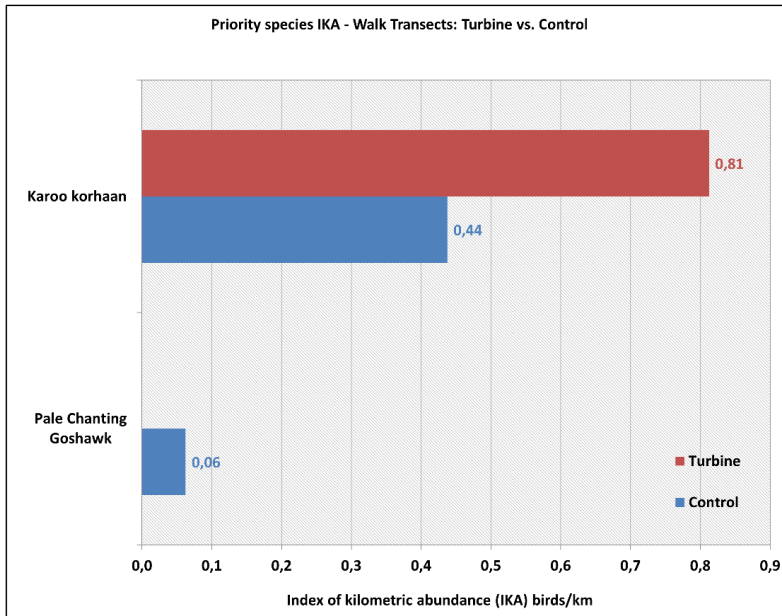


Figure 28: Index of kilometric abundance of priority species recorded at the WEF and control site with walk transect surveys across four seasons.

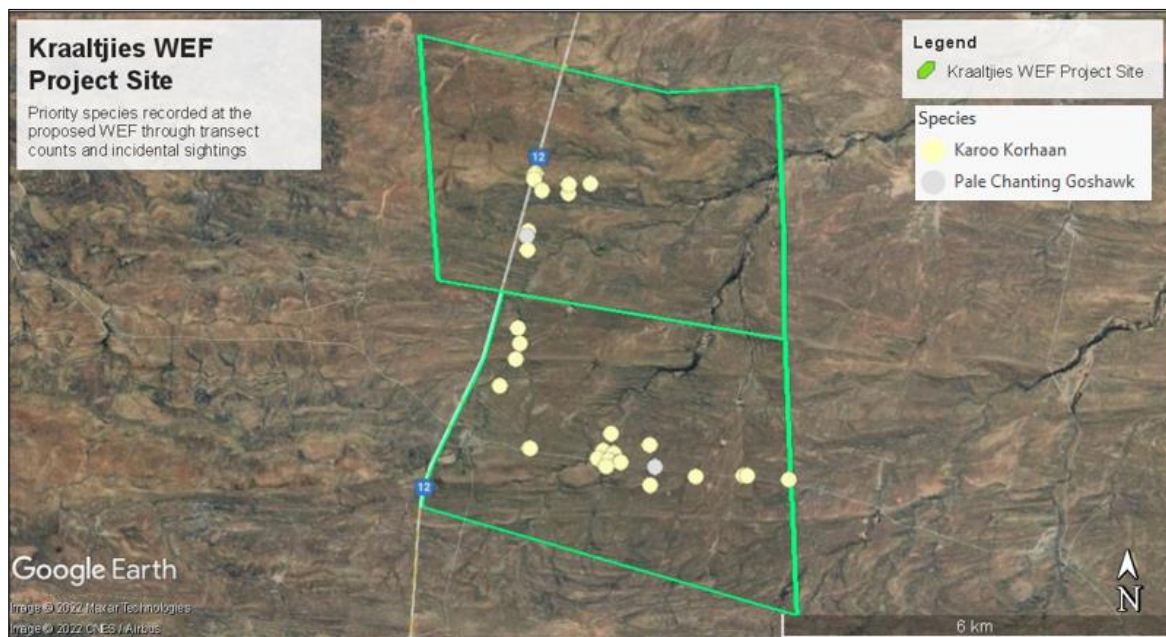


Figure 29: The location of priority species recorded at the proposed WEF through transect counts and incidental sightings

8.9.2 Focal points

A total of two potential Focal Points (FPs) of bird activity, i.e., earth dams, were identified and monitored at the turbine site during four seasons of monitoring. A Martial Eagle nest located on Tower 108 of the Droërivier-Proteus 1400kV transmission line was also chosen as a Focal Point and monitored. The Martial Eagle nest is located approximately 5km from the application site.

The following species were recorded at the focal points:

Table 15: Species observed at the Focal Points during four seasons of monitoring.

Survey	Focal Point	Description	Species	Number	Comments
SPRING August/September 2020	FP1	Martial Eagle nest on Tower 108	Martial Eagle		No birds were recorded in the area.
	FP2	Earth dam	South African Shelduck Red-billed Teal Pied Avocet Egyptian Goose Three-banded Plover South African Shelduck Egyptian Goose Pied Avocet Three-banded Plover	2 2 4 2 2 2 1 5 2	Dam was about 5% full.
SUMMER December 2020	FP1	Martial Eagle nest on Tower 108	Martial Eagle	-	No birds were recorded in the area.
	FP2	Earth dam	-	-	Dam was completely dry. No birds were recorded.
AUTUMN March 2021	FP1	Martial Eagle nest on Tower 108	Martial Eagle		No birds were recorded in the area.
	FP2	Earth dam	-		Dam was completely dry. No birds were recorded.
WINTER June 2021	FP1	Martial Eagle nest on Tower 108	Martial Eagle	1	Martial Eagle observed perched on the tower above nest
	FP2	Earth dam	Three-banded Plover Pied Avocet Little Grebe Cape Wagtail Kittlitz's Plover Egyptian Goose	6 10 5 4 8 2	Dam about 55% full.

8.9.3 Vantage point observations

A total of 96 hours of vantage point watches were completed at two vantage points within the WEF application site in order to record flight patterns of priority species. For the four sampling periods, the duration of priority species flights amounted to 21 minutes and 30 seconds with 13 minutes being at wind turbine rotor altitude (i.e., medium height flights). A total of 17 individual flights were recorded.

The passage rate for priority species was 0.17 birds/hour, which is the 15th lowest passage rate measured for the 66 instances where we did a year vantage point watches at a project site. This amounts to approximately 2.3 birds per day.

8.9.4 Site specific collision risk rating

A site-specific collision risk rating for each priority species recorded during VP watches was calculated to give an indication of the likelihood of an individual of the specific species to collide with the turbines at these sites. This was calculated taking into account the following factors:

- The duration of flights;
- The susceptibility to collisions, based on morphology (size) and behaviour (soaring, predatory, ranging behaviour, flocking behaviour, night flying, aerial display and habitat preference) using the ratings for priority species in the Avian Wind Farm Sensitivity Map of South Africa (Retief et al. 2012); and
- The number of turbines.

This was done in order to gain some understanding of which species are likely to be most at risk of collision. The formula used is as follows:

Duration of flights (in decimal hours) x collision ratings in the Avian Wind Farm Sensitivity Map x number of turbines ÷100.

The results are presented in **Table 16** and **Figure 30** below.

Table 16: Site specific collision risk rating

Species	Duration of all flights (hr)	Avian Wind Farm Sensitivity Map collision susceptibility rating	Site specific collision risk rating
Karoo Korhaan	0.001	65	0.03
Pale Chanting Goshawk	0.004	70	0.12
Greater Kestrel	0.010	57	0.22

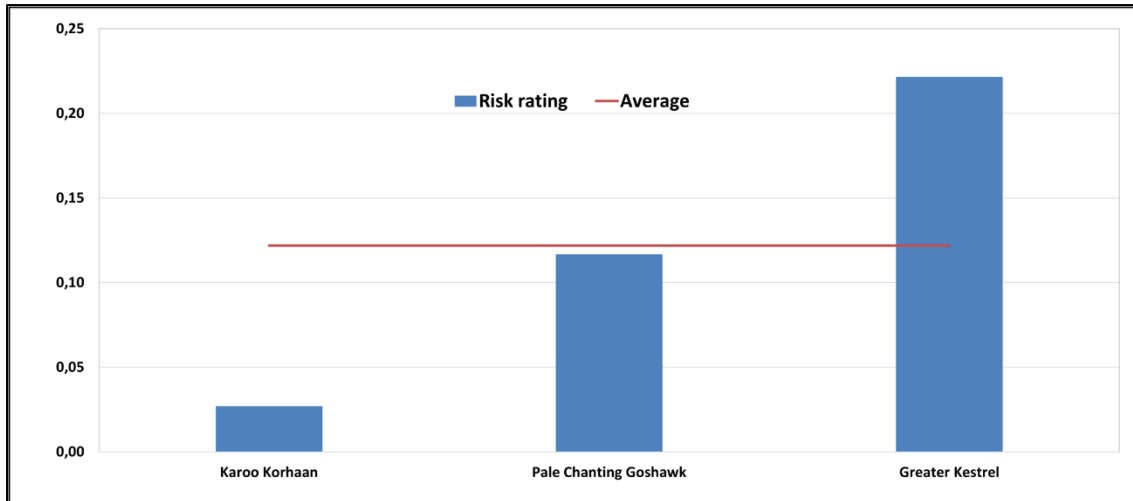


Figure 30: Site specific collision risk rating for priority species. The red line indicates the average collision risk rating for priority species at the application site, based on recorded flight behaviour in four seasonal surveys.

8.9.5 Spatial distribution of flights over the turbine area

Flight maps were prepared for the species with higher than zero collision risk indices, indicating the spatial distribution of flights observed from the various vantage points. This was done by overlaying a 100m x 100m grid over the survey area. Each grid cell was then given a weighting score (Very High; High; Medium; Low) taking into account the flight intensity i.e. the duration and distance of individual flight lines through a grid cell and the number of individual birds associated with each flight crossing the grid cell, in order to give an indication where the observed flight activity was most concentrated (see **Figure 31, Figure 32 and Figure 33**).



Figure 31: Intensity of flight activity of Greater Kestrel across four seasons of monitoring



Figure 32: Intensity of flight activity of Karoo Korhaan over four seasons of monitoring



Figure 33: Intensity of flight activity of Pale Chanting Goshawk over four seasons of monitoring

8.9.6 The identification of environmental sensitivities

High sensitivity No-turbine buffer: Surface Water

The following environmental sensitivities were identified from an avifaunal perspective for the proposed wind energy facility:

Included in this category are areas within 200m of water troughs and earth dams, and 150m from all major drainage lines. Surface water in this arid habitat is crucially important for priority avifauna, including several Red Data species such as Martial Eagle, Lanner Falcon and Secretarybird, and many non-priority species, including several waterbirds. Drainage lines, when flowing, attract waterbirds on occasion, as do the large pools that remain in the channel after the flow has stopped. Wind turbines that are placed near these sources of surface water pose a collision risk to birds using the water for drinking and bathing, and drainage lines, when flowing, are natural flight paths for birds.

High sensitivity No-turbine buffer: Breeding Red Data Species nests

Transmission lines are an important breeding substrate for raptors in the Karoo, due to the lack of large trees (Jenkins *et al.* 2013). A Martial Eagle nest is present on Tower 108 of the Droërvier Proteus 1400kV transmission line, 5km from the closest proposed turbine location, and approximately 1km from the closest border of the proposed application site. In May 2020, both adult birds were observed perching on the towers around the nest, indicating that the territory is active. A 5km No-turbine buffer zone must be implemented around the nest to reduce the risk of turbine collisions.

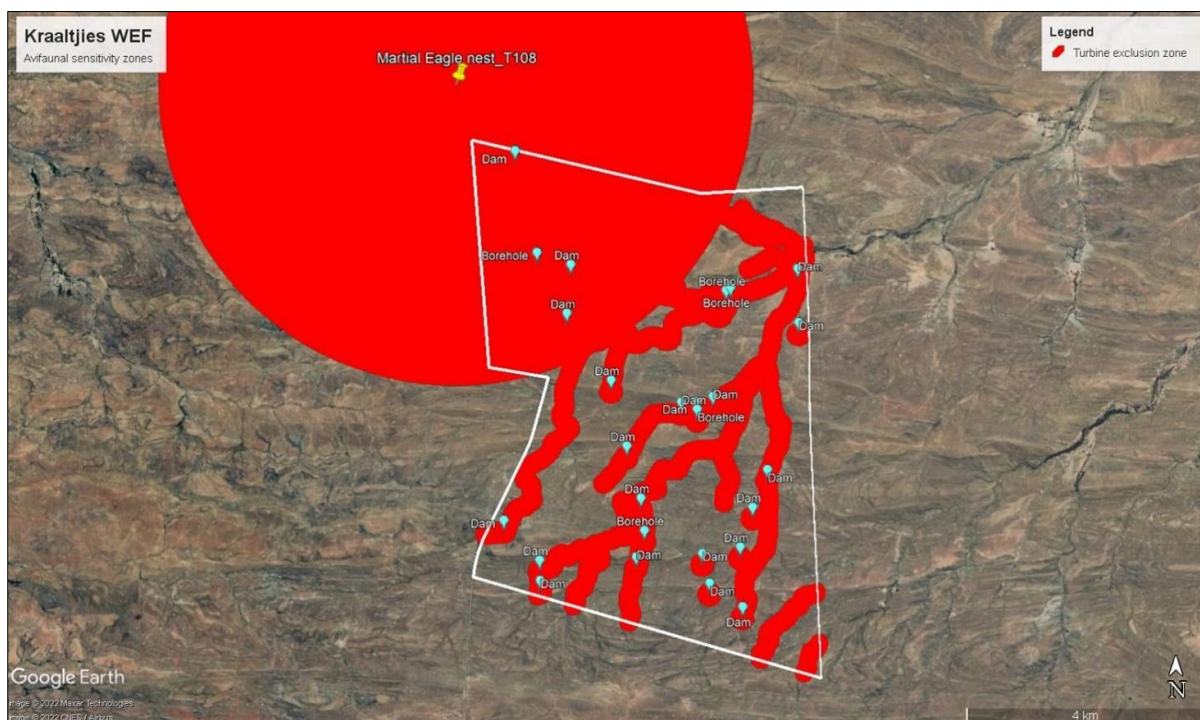


Figure 34: Proposed no-turbine zones. Other infrastructure is allowed

8.10 Bat

A bat specialist study was undertaken by EkoVler (August 2022). Bats are adversely affected by the wind turbines that encroach on air space where they forage and commute. A summary of bat species distribution, their feeding behaviour, preferred roosting habitat. The bats identified have distribution ranges that include the Heuweltjies 240MW Wind Energy Facility development site. Bat presence confirmed on the site itself, or other wind farms in the area, are marked as such. The proposed WEF is located within the distribution range of six families and approximately 12 species. The below table is informed by the most recent distribution maps of Monadjem et al. (2010) and will be updated as required, based on the outcomes of the monitoring programme.

Of the 12 species which have distribution maps overlaying the proposed development area, four have a conservation status of Near Threatened in South Africa and one Vulnerable, while three have a global conservation status of Near Threatened. Two of these are endemic to Southern Africa and have limited suitable habitat left. Two of the bat species found at Kraaltjies have a high risk, five a medium to high risk and two a medium risk of collision with the turning turbine blades.

The latest Pre-Construction Guidelines identify the likelihood of fatality risk (Sowler, et al, 2017). Based on this, two species have a high risk of fatality due to their foraging habitat at high altitudes. These species are *Tadarida aegyptiaca* (Egyptian free-tailed) and *Sauromy petrophilus* (Roberts's flat-headed bat). Five more species, *Miniopterus natalensis* (Natal long-fingered bat), *Neoromicia capensis* (Cape serotine) and *Myotis tricolor* (Temminck's myotis bat), and two fruit bat species, *Eidolon helvum* (African straw-coloured fruit bat) and *Rousettus aegyptiacus* (Egyptian rousette) have a medium to high risk of fatality. Fruit bats are not considered high risk in the dry Karoo area, but the proximity of the mountains towards the south, and the possibility that they might migrate over the development area, should not be ruled out.

Table 17: Potential bat species occurrence at the proposed Kraaltjies WEF site. Highlighted yellow cells indicate confirmed presence at the development site. Information about the species is from Monadjem, et al. 2010 and 2020.

Family	Species	Common Name	SA conservation status	Global conservation status (IUCN)	Roosting habitat	Functional group (type of forager)	Migratory behaviour	Likelihood of fatality risk*	Bats confirmed in vicinity
PTEROPODIDAE	<i>Eidolon helvum</i>	African straw-coloured fruit bat	Not evaluated	Least Concern	Little known about roosting behaviour	Broad wings adapted for clutter. Studies outside of South Africa list fruit and flowers in diet	Migrater. Recorded migration up to 2 518 km in 149 days, and 370 km in one night	Medium-High	
	<i>Rousettus aegyptiacus</i>	Egyptian rousette	Least Concern	Least Concern	Caves	Broad wings adapted for clutter. Fruit, known for eating ficus species	Seasonal migration up to 500 km recorded. Daily migration of 24 km recorded	Medium-High	
MINIOPTERIDAE	<i>Miniopterus natalensis</i>	Natal long-fingered bat	Near Threatened	Near Threatened	Caves	Clutter-edge, insectivorous	Seasonal, up to 150 km	Medium-High	✓
NYCTERIDAE	** <i>Nycteris thebaica</i>	Egyptian flit-faced bat	Least Concern	Least Concern	Cave, aardvark burrows, road culverts, hollow trees; known to make use of night roosts	Clutter, insectivorous, avoids open grassland, but may be found in drainage lines	Not known	Low	✓
MOLISSIDAE	<i>Tadarida aegyptiaca</i>	Egyptian free-tailed bat	Least Concern	Least Concern	Roofs of houses, caves, rock crevices, under exfoliating rocks, hollow trees	Open-air, insectivorous	Not known	High	✓
	<i>Sauromys petrophilus</i>	Robert's Flat-faced	Least Concern	Least Concern	Narrow cracks, under exfoliating of rocks, crevices	Open-air, insectivorous		High	✓
RHINOLOPHIDAE	<i>Rhinolophus capensis</i>	Cape horseshoe bat (endemic)	Near Threatened	Near Threatened	Night roosts in caves and old mines	Clutter, insectivorous	Not known	Low	

Family	Species	Common Name	SA conservation status	Global conservation status (IUCN)	Roosting habitat	Functional group (type of forager)	Migratory behaviour	Likelihood of fatality risk*	Bats confirmed in vicinity
	<i>Rhinolophus clivosus</i>	Geoffroy's horseshoe bat	Near Threatened	Least Concern	Night roosts in caves and old mines	Clutter, insectivorous		Low	
VESPERTILIONIDAE	<i>Neoromicia capensis</i>	Cape serotine	Least Concern	Least Concern	Roofs of houses, under bark of trees, at basis of aloes	Clutter-edge, insectivorous	Not known	Medium-High	✓
	<i>Myotis tricolor</i>	Temminck's myotis	Near Threatened	Least Concern	Roosts in caves, but also in crevices in rock faces, culverts, and manmade hollows	Limited information available	Not known	Medium-High	
	<i>Eptesicus hottentotus</i>	Long-tailed serotine (endemic)	Least Concern	Least Concern	Caves, rock crevices, rocky outcrops	Clutter-edge, insectivorous	Not known	Medium	✓
	<i>Cistugo seabrae</i>	Angolan wing-gland bat (endemic)	Vulnerable	Near Threatened	Possibly buildings, but no further information	Clutter-edge, insectivorous	Not known	Low	

8.10.1 Transects

Transects are a snapshot in time however the data from this sampling assist confirm species present at the site. The transect route, with the stationary monitoring points. A SM4 GPS was linked to the detectors so that the route is recorded while driving. The detector was calibrated each time at the start of the transect.

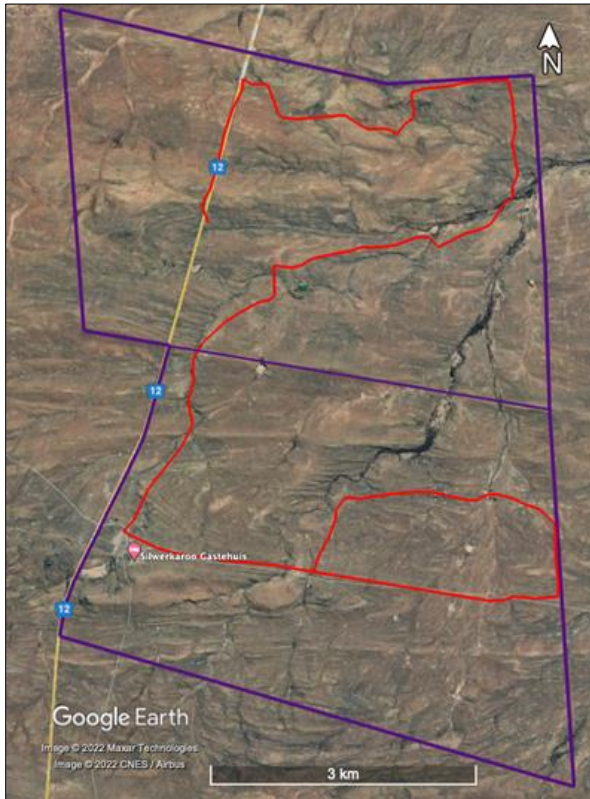


Figure 35: Transect route with the positions where bats had been recorded

A transect was conducted during November 2021, under optimal weather conditions, but no bats were recorded during the transect.

9. DESCRIPTION OF THE SOCIO- ECONOMIC ENVIRONMENT

9.1 Socio economic characteristics

9.1.1 Western Cape Province

The Western Cape is located on the southern tip of the African continent between the Indian and Atlantic Oceans. It is bordered by the Northern Cape and Eastern Cape provinces. The Western Cape's natural beauty makes the province one of the world's greatest tourist attractions. The region is topographically and

climatically diverse. It has a temperate southern coastline fringed with mountains. To the north it stretches deep into the Karoo plateau, while the west coast is extremely dry.

It covers an area of 129 462km² and has a population of 6 279 730. It is the fourth-largest province in South Africa by surface area and also ranks fourth in population. The capital is Cape Town. Other major cities and towns include George, Knysna, Paarl, Swellendam, Oudtshoorn, Stellenbosch, Worcester, Mossel Bay and Strand.

The Western Cape is rich in agriculture and fisheries. The climate of the peninsula and the mountainous region beyond it is ideal for grape cultivation, with a number of vineyards producing excellent wines. Other fruit and vegetables are also grown here, and wheat is an important crop to the north and east of Cape Town. Fishing is the most important industry along the west coast and sheep farming is the mainstay of the Karoo. The province has a well-established industrial and business base, and the lowest unemployment rate in the country. Sectors such as finance, real estate, ICT, retail and tourism have shown substantial growth, and are the main contributors to the regional economy. Many of South Africa's major insurance companies and banks are based in the Western Cape. The majority of the country's petroleum companies, and the largest segment of the printing and publishing industry are located in Cape Town.

The Western Cape is divided into one metropolitan municipality (City of Cape Town Metropolitan Municipality) and five district municipalities, which are further subdivided into 24 local municipalities (refer to **Figure 35**).

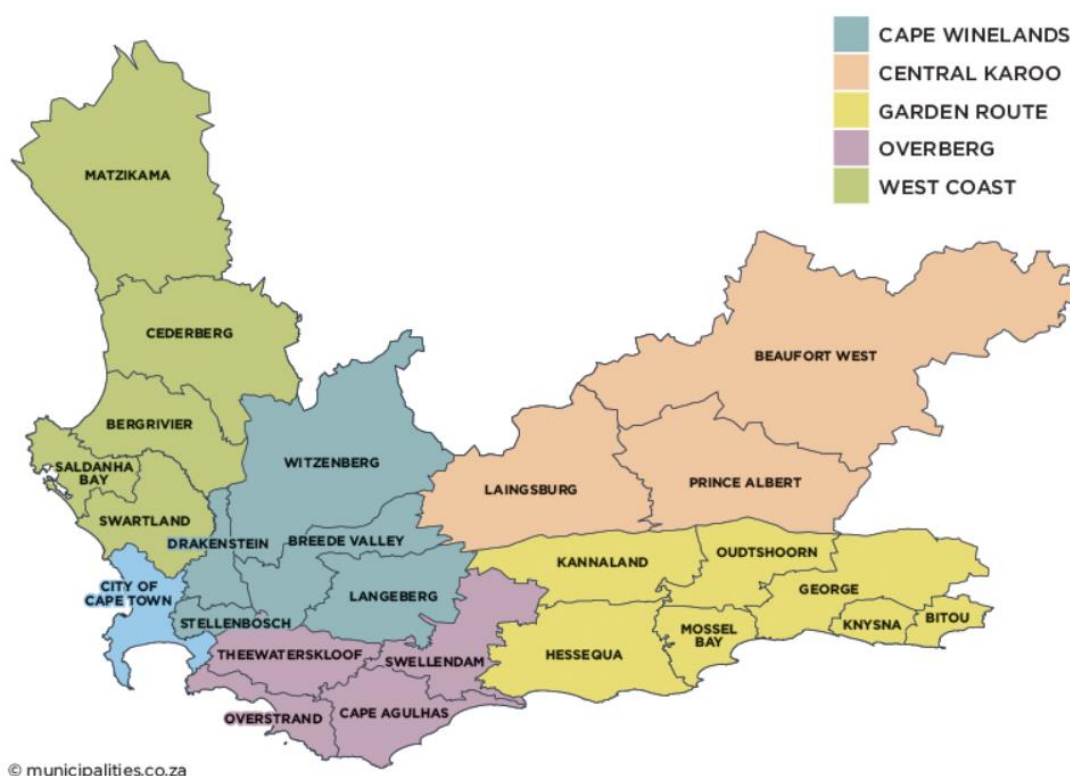


Figure 36: Map showing the District Municipalities of the Western Cape Province
(Source: www.municipalities.co.za)

9.1.2 Central Karoo District Municipality

Central Karoo District Municipality is a Category C municipality located in the Western Cape Province. It is bordered by the Pixley Ka Seme District Municipality in the north, Namakwa District Municipality in the north-west, Garden Route District Municipality in the south, Sarah Baartman District Municipality in the east and Cape Winelands District Municipality in the west. The Central Karoo is the largest district in the province, making up a third of its geographical area and covering an area of 39 073.1 km² in 2016. It is comprised of three local municipalities: Laingsburg, Prince Albert and Beaufort West. Other major cities and towns include Beaufort West, Murraysburg, Merweville, Prince Albert and Laingsburg.

The main economic sectors of the district include agriculture (47%), some of the main economic sector include finance and business (22%), Community services (19%) and construction (7%). With a population of 74 247 people, the Central Karoo district has a population density of 1.9/km². According to the Community Survey, 2016; the district has a sex ratio of 93.8 with 25.4% of the population being under 15 years; 67.4% being between 15 and 65 years and 7.2% being over 65 years of age.

9.1.3 Beaufort West Local Municipality

The project site is located within the Beaufort West Local Municipality. The Beaufort West Local Municipality is a Category B municipality within the Central Karoo District. It is bordered by the Northern Cape to the north and west, Prince Albert to the south, and the Eastern Cape to the east. It is the largest municipality of three in the district, making up more than half its geographical area. Beaufort West is the oldest municipality in South Africa. The new district was proclaimed on 27 November 1818. The then governor of the Cape, Lord Charles Somerset, named the town and district 'Beaufort' in honour of his father, the 5th Duke of Beaufort. To avoid confusion with Fort Beaufort and Port Beaufort, the name 'Beaufort' was changed to Beaufort West in the 1860s. In December 1994, the former black township Kwa-Mandlenkosi was amalgamated with Beaufort West Municipality. In December 2000, the rural towns of Merweville and Nelspoort were also incorporated as part of the Beaufort West Municipality.

The Beaufort West municipality area currently has a population of 51 074. This total is expected to decrease to 50904 by 2024, equating to an average annual growth rate of 0.1 percent, in comparison to the other municipalities in the area. The main economic sectors of the municipality include Community services (29.1%), transport (17.0%), trade (14.0%), finance (13.5%)

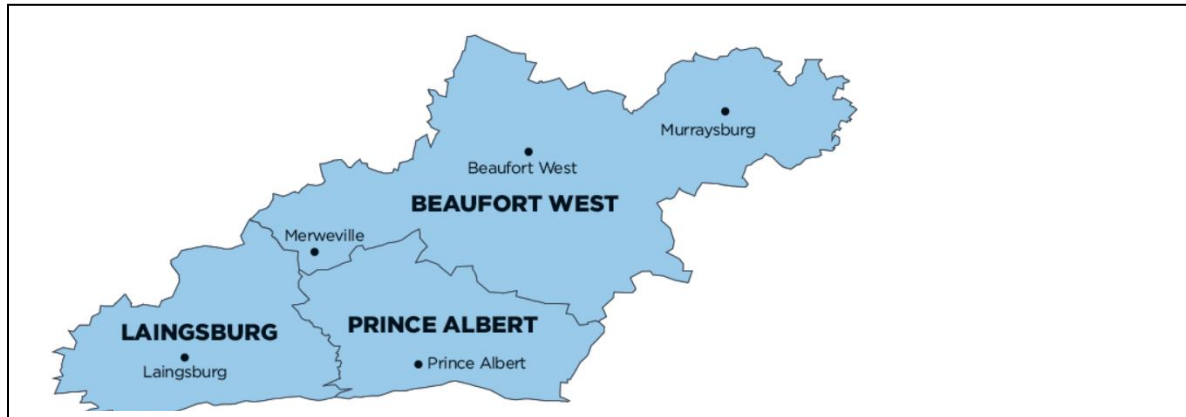


Figure 37: Map showing the Prince Albert Local Municipality of the Waterberg DM

(Source: www.municipalities.co.za)

9.2 Cultural/Historical Environment

9.2.1 Archaeological

The examination of heritage databases, historical data and cartographic resources represents a critical additional tool for locating and identifying heritage resources and in determining the historical and cultural context of the study area. Therefore, an internet literature search was conducted, and relevant archaeological and historical texts were also consulted. Relevant topographic maps and satellite imagery were studied.

Historical topographic maps (1:50 000) for various years (1965, 1987, 2005) were assessed to observe the development of the area, as well as the location of possible historical structures and burial grounds that could possibly be older than 60 years and thus protected under Section 34 and 36 of the NHRA.

There were several structures identified within the vicinity of the proposed development area. Most of the structures were identified as farmsteads.

It is well known that the Karoo contains a long and rich archaeological record dating from the ESA to the historic period. However, vast areas of the region have yet to be subjected to systematic analytical research.

Scatters of ESA through to LSA artefacts have been widely reported in the general vicinity of Beaufort West. This is a result of the erosional nature of the environment, which tends to leave artefacts exposed on the surface rather than buried beneath layers of sediment. To date, heritage studies in the area have shown that these artefacts have occurred in secondary contexts, often associated with gravel deposits, having been subjected to erosion of the soils in which they were once deposited (Dreyer 2005; Halkett 2009; Kaplan 2006, 2007; Orton 2010; Webley & Hart 2010a, 2010b; Webley & Lanham 2011). Although

context is generally poor, the Karoo is still regarded as a region that is very rich in archaeological and historical heritage.

Historical resources, such as farmsteads, kraals and graves, are also observed within the Beaufort West region (Halkett 2009; Webley & Hart 2010b). To the northeast of Beaufort West, rock engravings have been identified on dolerite boulders that are characteristic of parts of the Karoo (Orton, 2010; Parkington *et al.*, 2008). The lack of caves and rock shelters in the Karoo region, results in the majority of archaeological sites in the area being classified as open-air sites. As such, the artefacts are generally not *in-situ* and organic remains are rarely preserved.

The evaluation of satellite imagery and the analysis of the studies previously undertaken in the area has indicated that certain areas may be sensitive from a heritage perspective. Archaeological surveys and studies in the area have shown rocky outcrops, dry riverbeds, riverbanks and confluence to be prime localities for archaeological finds and specifically Stone Age sites (Kinahan, 2008; Halkett, 2009; Webley & Halkett, 2015).

The analysis of the studies conducted in the area assisted in the development of the following landform to heritage find matrix in **Table 18**. Dry river courses have been referenced as having possible heritage sensitivity within the study area (**Figure 38**). It must be noted that the proposed development layout for the most part has excluded river courses from the footprint.

Table 18: Landform type to heritage find matrix

LAND FORM TYPE	HERITAGE TYPE
Crest and foot hill	MSA scatters
Pans/ dry river courses	LSA/MSA scatters
Outcrops	Occupation sites dating to LSA
Farmsteads	Historical archaeological material



Figure 38: Possible heritage sensitivity areas; Farmstead (red polygon) and graves (green polygon) within the Kraaltjies WEF study area..

A selective survey of the study area was conducted in February 2021. Focus was placed on the areas identified for the placement of the proposed turbines and associated substation sites within the larger assessment area. Heritage resources are unique and non-renewable and as such any impact on such resources must be seen as significant.

The fieldwork conducted for the evaluation of the possible impact of the new Kraaltjies WEF and associated infrastructure has revealed the presence of sixty (60) heritage resources.

Burial Grounds and graves

Two (2) burial grounds (**K027, KC001**) were rated as having high heritage significance.

Historical structures

The farmstead at **KC001** was rated as having high heritage significance. Four (4) structures (**K012(K012/1, K012/2, K012/3, K012/4)**) were rated as having medium heritage significance and three (3) structures (**K026 (K026/1), K036**) were rated as having low heritage significance.

Archaeological features

Three (3) Stone Age sites (**K022, K033, K039**) were rated as having medium heritage significance and two (2) Stone Age sites (**K001, K003**) were rated as having low heritage significance.

Twenty-nine (29) find spots (**K002, K004-5, K007-8, K010-11, K013-21, K023-25, K028-32, K034-35, K038, K040**) comprise a number of low-density Stone Age surface artefact scatters and were rated as having low heritage significance. These are primarily from the Middle Stone Age (MSA), although both Later Stone Age (LSA) and earlier Early Stone Age (ESA) material was identified. All of these artefact assemblages occur in heavily deflated and eroded areas, so their scientific potential and heritage significance is somewhat lowered. Based on findings from a range of other heritage reports in the area, these types of sites are to be expected in this region.

9.2.2 Palaeontological

The Kraaltjies WEF project area is underlain by continental (fluvial / lacustrine) sediments of the Abrahamskraal Formation and lowermost Teekloof Formation (Lower Beaufort Group, Karoo Supergroup) which are of Middle Permian age. These bedrocks contain sparse, unpredictable to locally concentrated vertebrate fossils as well as rare trace fossils (*e.g.*, tetrapod trackways and burrows, lungfish burrows) and plant material of scientific and conservation value. Comparatively few new fossil vertebrate sites - most notably a partial, articulated skeleton of a predatory therocephalian - have been recorded during within the WEF project area during the short site visit, while several more sites have previously been mapped in the vicinity during recent palaeontological surveys of adjoining WEF project areas. No fossil sites have been recorded within the associated infrastructure project area during recent palaeontological field surveys (Almond 2021f, 2022d). The few new palaeontological sites, together with their sedimentological context, provide important data for on-going research into the pattern and causes of the Middle Permian Mass Extinction Event on land around 260 million years ago. All the recorded fossil sites lie *outside* the WEF and Grid Connection Infrastructure project footprints.

Selected examples of key geological features within the Kraaltjies WEF project area are illustrated below (**Figure 39** to **Figure 40**), with explanatory figure legends.



Figure 39: Possible but equivocal sandstone cast of an inclined tetrapod burrow embedded within crumbly, dark grey overbank mudrocks.



Figure 40: Strap-shaped fossil structure (c. 3 cm wide) – possibly an invertebrate burrow – within grey-green overbank mudrocks, locally showing a dark, pearly phosphatic sheen.

It is concluded that, in practice, the Kraaltjies WEF project areas have an overall LOW Palaeosensitivity as far as palaeontological heritage is concerned. The potential for rare, and largely unpredictable, unrecorded fossil sites preserved within bedrocks and consolidated older alluvial sediments the project areas cannot be entirely discounted, however. The provisional palaeosensitivity mapping shown by the DFFE Screening Tool is accordingly *contested* here.

9.2.3 Cultural Landscape

A Cultural Landscape Assessment was undertaken by Hearth Heritage as part of the Heritage Impact Assessment (September 2022). The cultural landscape is a composition of a series of natural layers that have both informed and been formed by the patterns of human use and habitation on that place over time. The nature and shape of the landscape has informed the way in which it has been used, in turn ascribing cultural values to these place-specific features. Through unpacking the layers, landscape character units can be identified which need to be carefully considered in proposed alterations to the landscape.

Cultural landscapes are a significant factor in the evaluation of the impact of proposed development on cultural heritage resources, tangible (e.g., Historic settlements, landscapes, technological) and intangible (e.g. language, indigenous knowledge systems, oral traditions). The area investigated for the proposed Kraaltjies WEF is considered as having a high cultural landscape heritage significance.

The Kraaltjies site can be divided into landscape character areas with cultural heritage resource types. These units were determined by taking the larger landscape context into consideration in order to understand the character and cultural heritage values that underpin the proposed development site.

9.2.3.1 Regional Cultural Landscape Elements

A description of the regional cultural landscape elements are as follows:

- “A magnificent natural setting” (Abrahamse, 2013) of arid plains with gently undulating ridges and koppies, framed by the dramatic mountain ranges of the Nieuweveld and Swartberg. This landscape element is the main drawcard for tourism to the area and a national narrative of identity for many South Africans. This scenic beauty and natural sense of place has been celebrated in no less than three national parks being proclaimed in the Koup region, the Karoo National Park, the Gamkapoort Nature Reserve and the Swartberg Nature Reserve, not to mention the various private nature reserves in the area.
- Some of the world’s most significant geological and palaeontological sites are located in the Great Karoo, specifically between Beaufort West and Nelspoort, and include ancient rock formations and Late Permian fossils which record the evolution from reptiles to mammals.
- The distinct remoteness of the semi-arid Karoo provided a refuge for the displaced San and later the Khoekhoen. The remote settings of mission settlements are associated with the role of religion and an emphasis on social engineering and self-sufficiency (Winter and Oberholzer, 2014). This remote desert wilderness is an essential element to the Central Karoo cultural landscape’s sense of place.
- Low shrubby vegetation dominates the landscape allowing for distant views of mountain ranges, with taller clusters of trees marking historic points such as cemeteries or farmsteads. Many of the endemic species hold medicinal value for local communities, making these significant as cultural resources.
- Although not immediately apparent on travelling through the landscape, significant stone age archaeology, which includes petroglyphs and rock engravings, is common in the area; material cultural remnants of the prehistoric inhabitants of the landscape who lived in intimate dependence on and knowledge of the natural environment, shaping it and being shaped by it over time. This relatively undisturbed area is rich in archaeology, especially near dolerite outcrops due to the presence of underground water and includes stone tool scatters, rock engravings and herder kraals.

- Poorts and drifts which navigate the topography of ridges and riverine corridors. These natural crossing points, gaps between the mountain ranges, ridges and undulating hills, and shallower sections of river, have been used by animals and people as the places to traverse the landscape to water, forage, safety or settlements for centuries. These places, acting as funnels of movements across the landscape, therefore, may hold the material scatter of those who passed over them and, where identified historic tracks are still used, these are heritage elements of land use and one of the ways in which the landscape would have determined the movement and, therefore, settlement and interaction of people on the landscape.
- Scenic historic movement routes, tarred, gravel and rail, connect the regional towns over the Central Karoo landscape with distant dramatic views of mountain ranges. These movement routes and patterns to access have informed the settlement patterns of the region. Many of the roads and farm tracks in the study site as well as surrounding area are visible on maps dating back to the 18th and 19th centuries. As a landscape that maintains a dominant characteristic of survival, conflict and change, the roads and paths that cross this landscape are an essential element, connecting the significant points, places of refuge and conflict, trade and subsistence, to each other in a challenging space over time.
- A combination of the poort and scenic historic route elements, the historic Swartberg Pass, is an identified historic scenic route and declared Provincial Heritage Site. Further east on the N12 lies Meiringspoortpass, which predates the Swartberg Pass, and connects Beaufort West with De Rust and Oudtshoorn. Other passes in the region include the Gamkasloof Pass, Seweweekspoort in the Swartberg and the Molteno Pass in the Nuweveld range to the north. Historic mountain passes provided access between coastal plains and the remote interior, and their gateway conditions are typically associated with historical patterns of settlement (Winter and Oberholzer, 2014).
- Historic farmsteads with their associated agricultural structures and linking farm roads. Many of the farm werfs include historic structures, built in the regional architecture of packed local stone, now converted into dwellings or sheds. These farmsteads are mostly situated at points of lower elevation, nestled against the hills and ridges where the soils are more suitable for agriculture, and where nearby springs or other water sources supply water for livestock and limited cultivation of crops. Amandelhoogte and Vlieefontein have been identified as “significant Cape farmsteads” in Abrahamse’s Beaufort West Municipal Heritage Survey (2013).
- Stone walls and kraals dot the landscape as remnants of stock keeping, road building and fortifications in the area.
- Agricultural landscape with livestock, mostly sheep and cattle; fencing and associated structures line and dot the landscape. These are evidence of the human landscape modifications and patterns of land use over millennia, including seasonal grazing and pastoral uses.
- Game and nature reserves with live game and associated high fencing, drawing tourists to the region for game viewing and hunting. Game hunting has been continuous on this landscape for millennia since pre-historic inhabitants to the most recent tourist hunters and attests to the ongoing relationship between humans and the environment in this region. Although a sense of wilderness is experienced when travelling within these reserves, the height of the fences and their increased occurrence does detract from the ‘wild’ sense of place when travelling the roads around them.
- Historic town settlements and landscapes, such as Beaufort West, Prince Albert and Leeu-Gamka, associated to significant events in South Africa’s history of survival, conflict and nation-building, including many provincial heritage sites which mark people and places of value to our national estate. Matjiesfontein and the isolated Gamkaskloof Cultural Landscape have Provincial Heritage Site status.

- Military posts and forts, historic and current, constructed of local stone; material remains to the frontier zone of conflict and survival that dominated this landscape for so long. Evidence of the Anglo-Boer War in the early 1900s still remains in the form of grave sites and blockhouses along the railway line, and places such as Matjiesfontein and Prince Albert were used as garrisons by the British.
- Uranium mining sites dot the region around Beaufort West. Historic gold and diamond prospecting in the region add an additional cultural layout to this element.
- Industrial elements of transmission lines and associated infrastructure are evident along the N12 and N1. Due to their limited scale and massing along the N12 currently, they do not overwhelm or detract from the rural and historic sense of place in the area.

9.2.3.4 Heritage Receptors

While the site has been found to have the capacity to accommodate development of this nature due to other WEF facilities that have been approved in the immediate area, the broader landscape is regarded as having a high degree of sensitivity. The landscape comprises heritage receptors of varying degrees of sensitivity to this type of development. These receptors are identified below as well as their varying degree of sensitivity to the location of wind turbines. This information serves as a guide to an assessment of the carrying capacity of the cultural landscape to accommodate the proposed development and the assessment of heritage impacts on the cultural landscape.

Table 19: Heritage receptors adapted from Oberholzer 2020

Resource	No-go areas	High sensitivity	Medium sensitivity
Heritage sites worthy of Grade I, II and IIIA heritage sites <ul style="list-style-type: none"> • Amospoortjie 	0-1km	1-2km	2-5km
Heritage sites worthy of grade IIIB and IIIC heritage status <ul style="list-style-type: none"> • Dankbaar (IIIC) • Trakaskuilen (IIIB) • Historic farm roads • Crop gardens and associated infrastructure 	0-500m	500m-1km	1-1.5km
Historic scenic routes <ul style="list-style-type: none"> • N12 	0-1km	1-3km	3-5km
Slopes and ridges	>30%	>10%	<10%
Water features <ul style="list-style-type: none"> • Amosrivier • Dourivier • Farm dams 	0-250m	250-500m	-
Topographical features such as poorts, koppies and significant ridges <ul style="list-style-type: none"> • Amospoort • Amandelhoogte 	0-500m	500m-1km	-

Resource	No-go areas	High sensitivity	Medium sensitivity
• East-West ridges			

9.3 Noise

A Noise Impact Assessment was undertaken by Enviro-Acoustic Research (November 2021). Ambient (background) noise levels were measured during June 2021 in accordance with the South African National Standards (SANS), also considering the protocols defined in Government Gazette (GN) 43110.

All the data indicated an area with a high potential to be quiet both day and night. The visual character of the study area is rural, and it was accepted that the SANS 10103 noise district classification could be rural during low wind conditions. Considering sound level data measured in similar areas, ambient sound levels will increase as wind speeds increase, and noise limits were proposed considering all available data and guidelines.

Potential Noise Sensitive Development (NSD) in the area were initially identified using aerial images as well as the Online Environmental Screening Tool, with the statuses of NSD defined based on the experience gained during previous site visits.

Also indicated on this figure are generalized 500 m, 1,000 m and 2,000 m buffer zones. Generally, noises from wind turbines:

- Could be significant within 500 m, with receptors⁵ staying within 500 m from operational wind turbines subject to noises at a potentially sufficient level to be considered disturbing;
- Are normally limited to a distance of approximately 1,000m from operational wind turbines. Night-time ambient sound levels are elevated and the potential noise impact measurable;
- May be audible up to a distance of 2,000m at night; and
- Are of a low concern at distanced greater than 2,000m.

The output of the Screening Tool is presented on **Figure 41** highlighting a number of areas with a high noise sensitivity. The statuses of the sensitive areas were investigated during a previous site visit as well as using latest available aerial images.

Ambient (background) noise levels were measured in June 2021 in accordance with the South African National Standard SANS 10103:2008 "The measurement and rating of environmental noise with respect to land use, health, annoyance and to speech communication". The long-term measurements were done as per the protocols defined in GG 43110.

During the site visit, residual noise levels were measured over at least two full night-time periods as per the protocol defined by GNR 320 of 2020 (promulgated as GG 43110 of March 2020). Measurements were

⁵ Depending on the layout as well as the specific sound power emission levels of the selected wind turbine.

done at seven location using class-1 Sound Level Meters (SLMs) with the measurement localities presented in **Figure 42** as blue circles. The SLMs would measure “average” sound levels over 10-minute periods, save the data and start with a new 10-minute measurement till the instrument was stopped. The SLMs were referenced at 1,000 Hz directly before and after the measurements were taken. In all cases drift was less than 1.0 dBA.

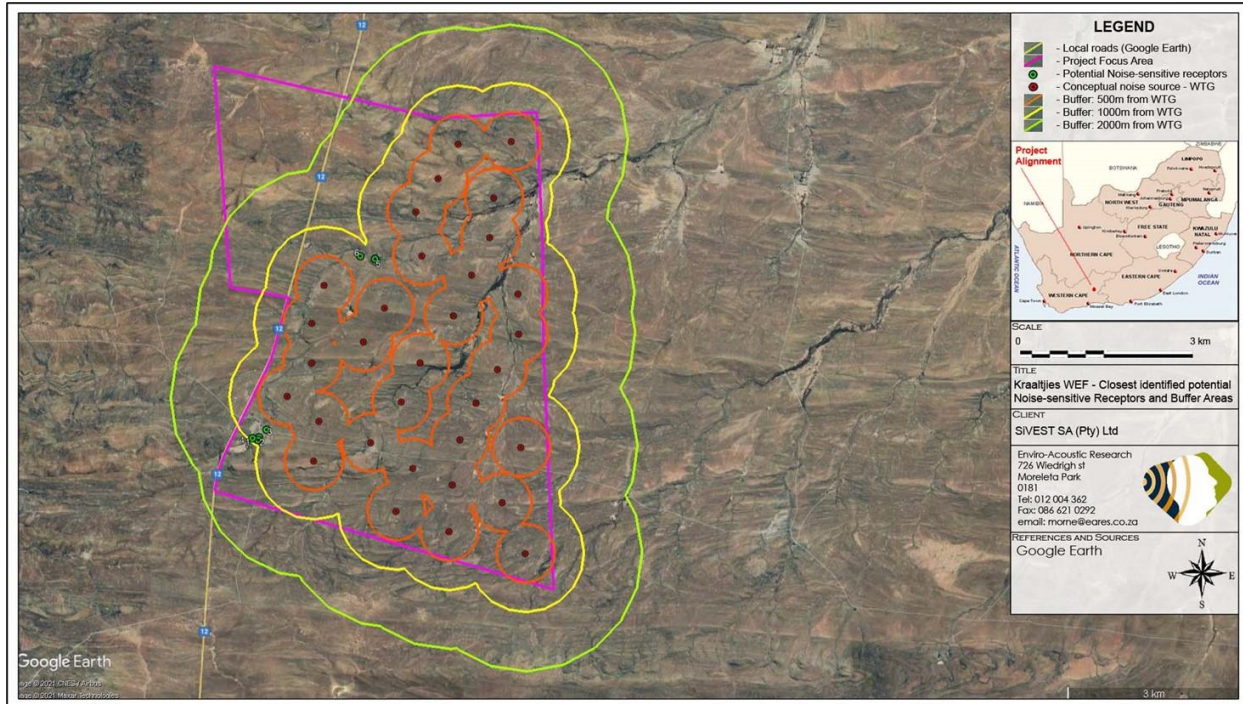


Figure 41: Aerial image indicating site sensitivity and closest identified NSD

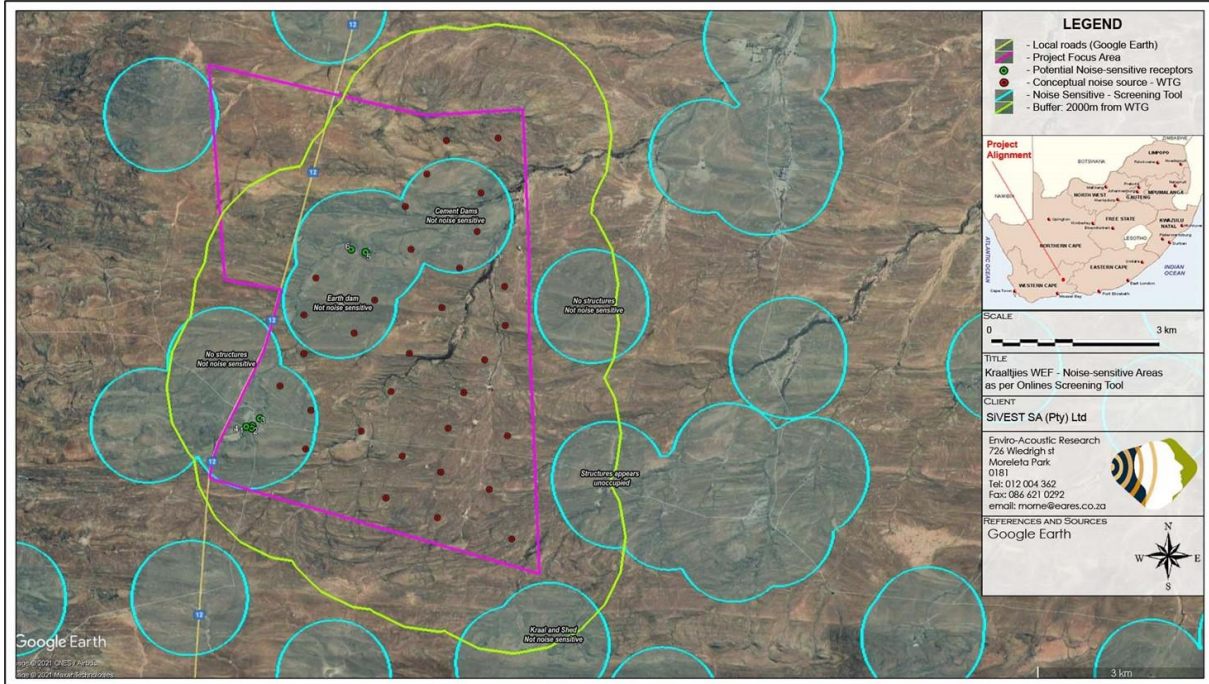


Figure 42: Aerial image indicating areas with “Very High” sensitivity to noise as per online screening tool

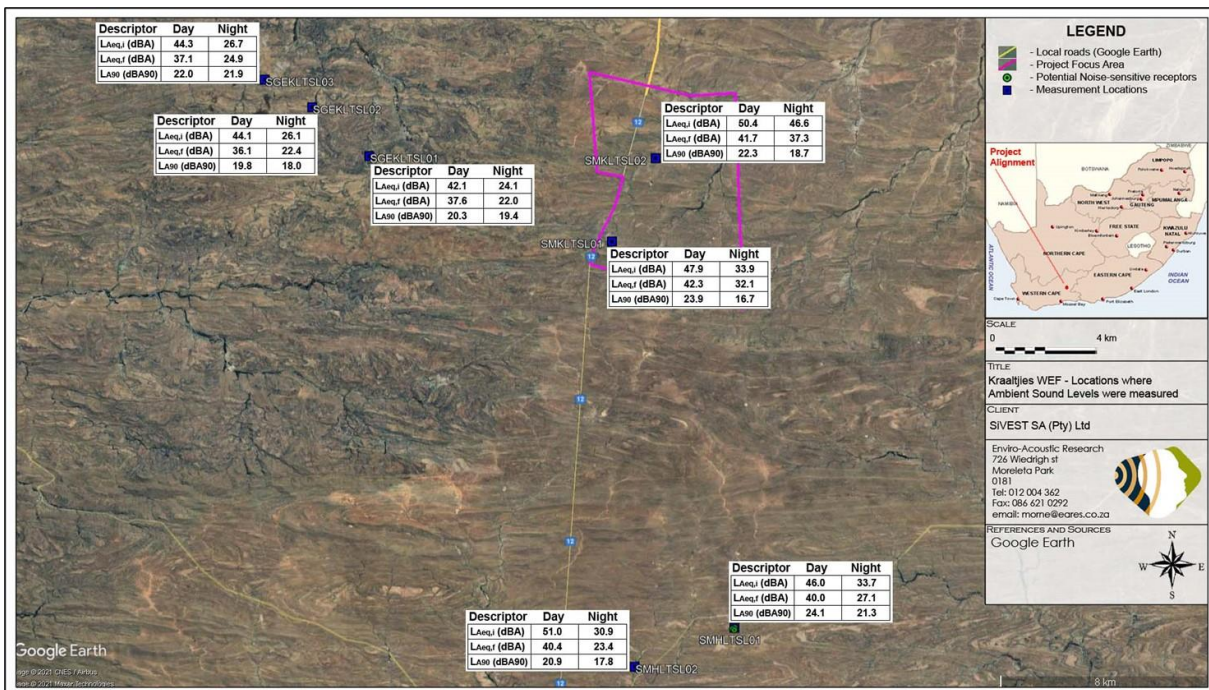


Figure 43: Localities where residual noise and noise levels were measured for atleast 2 nights (40 hours)

9.4 Transport

A Transportation Impact Assessment was undertaken by SiVEST SA (Pty) Ltd (September 2021). According to the report, the Western Cape Provincial Government makes use of a Traffic Counting System (TCS) and has served the Western Cape Provincial Network since 1999. The main emphasis of the system is on Trunk, Main and Divisional roads and at the present time only Minor roads that intersect with more important roads are on the system.

The data indicated below are from two stations on the N12 Freeway, immediately north and south of the proposed development at Km 79.41 and Km 33.23 respectively.

Table 20: Traffic Station Data / Counts

	Light Vehicles	Heavy Vehicles	Total Vehicles	Station Count Chart
N12 @ DR02304 Junction Km 79.41 Station No: 2126A Date: 12/09/2016				
Morning 7:00-8:00	19	6	25	
Weekday Midday 10:00-15:00	261	34	295	
Afternoon 16:00-17:00	35	8	43	
Average Annual Daily Trips	629	136	765	
N12 @ DR02301 Junction Km 33.23 Station No: 2125C Date: 25/10/2017				
Morning 7:00-8:00	24	11	35	

	Light Vehicles	Heavy Vehicles	Total Vehicles	Station Count Chart
Weekday Midday 10:00-15:00	177	57	234	
Afternoon 16:00-17:00	31	15	46	
Average Annual Daily Trips	537	240	777	

Based on the table above, it can be concluded that the existing peak traffic on this section of road is a 'Weekday Midday' peak hour traffic between 10:00 – 16:00.

The Kraaltjies WEF is made up of two farms: - PTN 10 of Eigendom No 374 to the north and PTN 25 of Eigendom No 374 to the south. The N12 freeway (Road No: TR03305) runs north south and bisects PTN 10 to the west of the farm while the same freeway is located on the western boundary of PTN 25. Both farms have access points emanating from the N12 freeway.

The N12 freeway is classified as a Class 2 in terms of the RCAM Classification – Minor Arterial and has an average road reserve width of 30m and is surfaced 7.2m wide with a 1.2m wide gravel shoulder on both sides with a design speed of 120km/h.

Various secondary access points exist along the farm boundary of the N12 with the major access point for PTN 10 located at Km 55.46 as indicated on the image below. As a result of the minimum prescribed sight distances for access points on Class 2 roads being 400m, the current sight distance of ±240m between the access and the ridge to the south, is sub-standard and therefore will need to be relocated. between the access and the ridge to the south, is sub-standard and therefore will need to be relocated.



Figure 44: Existing Portion 10 Access – North Approaching



Figure 45: Existing Access to Portion 25 – South Approaching



Figure 46: Existing Access to Portion 25 – South Approaching

9.5 Visual

A Visual Impact Assessment was undertaken by SLR (Pty) Ltd (February 2022). According to the report, areas of flat relief, including the flat plains and higher-lying plateaus, are characterised by wide ranging vistas, although views northwards will be slightly marginally constrained by the higher lying terrain in the northern sector of the study area. However, the position of the viewer within the landscape will influence the types of vistas typically present. Viewers located within a more incised valley for example would have limited vistas, whereas much wider vistas would be experienced by viewers on higher-lying ridge tops or slopes. Importantly in the context of this study, the same is true of objects placed at different elevations and within different landscape settings. Objects placed on high-elevation slopes or ridge tops would be highly visible, while those placed in valleys or enclosed plateaus would be far less visible.

Bearing in mind that wind turbines are very large structures (potentially up to 200m in height including the rotor blades), these could be visible from a considerable area around the site. Although localised topographic variations may limit views of wind turbines from some areas in the northern sector of the study area, there would be very little topographic shielding across the remainder of the study area to lessen the visual impact of the turbines from any locally occurring receptor locations.

The high degree of visibility was confirmed by way of a preliminary visibility analysis for the proposed turbine positions as provided by Mainstream. A worst-case scenario was assumed when undertaking the analysis, in which the proposed turbines were assigned a maximum height 200 m (maximum height at blade tip). The resulting viewshed, as shown in **Figure 47** indicates that the blade tips of wind turbines positioned on the application site would be visible from most parts of the study area.

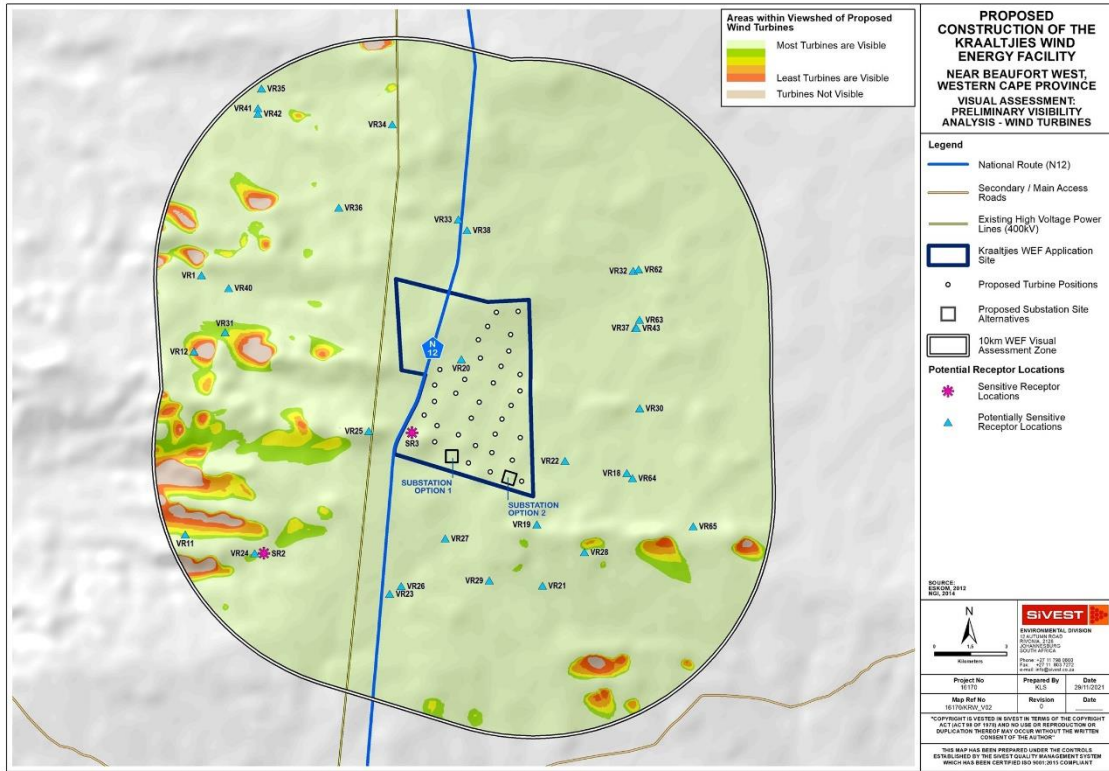


Figure 47: Potential visibility of wind turbines

Sparse human habitation and the predominance of natural vegetation cover across much of the study area would give the viewer the general impression of a largely natural setting with some pastoral elements. In addition, there are no towns or settlements in the study area and thus, there are very low levels of human transformation and visual degradation across much of the study area.

The short, scrubby, or grassy vegetation that occurs over the entire study area offers no visual screening in itself, and thus terrain / topography is the most important factor in limiting vistas. Exceptions to this situation occur at some local farmsteads where trees and shrubs have been established around the farmstead, providing some screening from the surrounding areas.

There are however prominent anthropogenic elements in the study area which include the N12 National Route which traverses the study area in a south to west direction (**Figure 48**) In addition, existing, electrical infrastructure, including 22kV power lines and associated substation (**Figure 49**) and 400kV power lines. Other, less prominent elements present in the area include lower voltage power lines, telephone poles, windmills, gravel farm access roads and farm boundary fences.



Figure 48: View southwards along the N12 National Route on the south-western boundary of Kraaltjies WEF application site.



Figure 49: 22kV power lines and associated substation north of the Kraaltjies WEF application site adjacent to the N12.

The closest built-up area is the town of Beaufort West which is situated approximately 52km north of the Kraaltjies WEF application site. The town is well outside the study area for this project and is thus not expected to have an impact on the visual character of the study area.

9.5.1 The identification of visual sensitivities

Using GIS-based visibility analysis, it was possible to determine that the tip of at least one turbine blade (i.e., at a maximum height of 300m) would be visible from most of the identified potentially sensitive receptors in the study area and as such, no areas on the site are significantly more visible than the remainder of the site. It should be noted however that the visual prominence of a very tall structure such as a wind turbine would be exacerbated if located on a ridge top or a relatively high lying plateau. As such, it is recommended that wind turbines should preferably not be located on the highest ridges within the WEF development area, as far as possible. While these ridges could be seen as areas of potentially higher visual sensitivity, the study area as a whole is rated as having a low to moderate visual sensitivity, and as such, the sensitivity rating would be reduced to “Medium-High”. Hence the ridges are not considered to be “no go areas”, but rather should be viewed as zones where turbine placement would be least preferred.

The preclusion of turbine development from these zones would reduce the direct impact of the turbines on the occupants of the farmsteads and on passing motorists, especially those impacts related to shadow flicker. At this stage however, the visual sensitivity zones are not considered “no go” areas, but rather should be viewed as zones where development should be limited. It should be stressed that these zones on the WEF development site apply to turbine development only. The visual impacts resulting from the associated on-site infrastructure are considered to have far less significance when viewed in the context of multiple wind turbines and as such the associated on-site infrastructure has been excluded from the sensitivity analysis

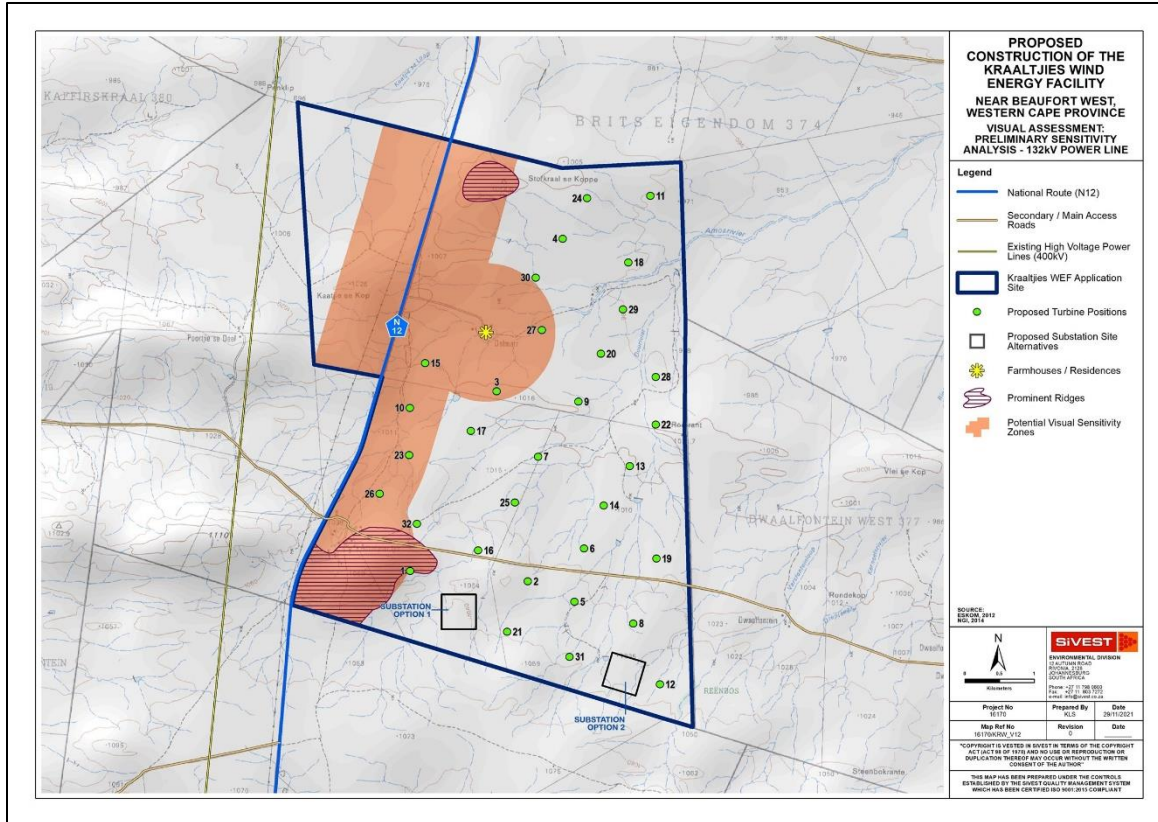


Figure 50: Visual sensitivity on the Kraaltjies WEF application site

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 7 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. A Surface Water 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 300m 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 m² 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.

A Notice of Intent to develop (NID) was submitted to HWC by PGS Heritage on the **01 December 2022**.

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), Paleontological Impact Assessment (PIA) and Cultural Landscape Assessment (CLA) 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 Biodiversity Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on biodiversity as protected by the Act. Should the proposed development require offsets or permits, it will be determined and applied for separately prior to construction.

In addition, all relevant conservation departments (such as the SANBI and Cape Nature) 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 not located in close proximity to any protected areas.

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 Biodiversity Assessment (**Appendix 6**) has been conducted to explore how the proposed development may impact on vegetation as protected by the Act. Should the proposed development require offsets or permits, it will be determined and applied for separately prior to construction.

In addition, all relevant conservation departments (such as the SANBI and Cape Nature) 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 and Soils Site Verification and Compliance Statement (**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:

- Central Karoo AAA (GN 198 of 2014) – proposed development falls outside 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

Even though the proposed development falls outside the respective AAAs, the relevant authorities, including the Square Kilometre Array (SKA) and South African Large Telescope (SALT), will be consulted throughout the EIA process.

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 Additional Relevant Legislation

- 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];
- Spatial Planning and Land Use Management Act (Act No. 16 of 2013) [SPLUMA];
- 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 the 2021 State of the Nation Address, President Cyril Ramaphosa 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 000GWh (0.8Mtoe) 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 000MW 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 plans:

- National Integrated Resource Plan for Electricity (2010-2030);
- Integrated Resource Plan (IRP 2019)
- National Infrastructure Plan 2012, as amended;
- Western Cape Strategic Plan 2019-2024 (refer section 10.1)
- The Western Cape Spatial Development Framework (SDF) 2014 (refer section 10.1.1)
- Central Karoo District Municipality Integrated Development Plan, 2020 – 2021 (refer section 10.2)

11.1 Western Cape Strategic Plan 2019 - 2024

The Western Cape Strategic Plan 2019-2024, highlights the need for energy security and for diversification of the regional energy mix, emphasizing support for the Green Economy and stating that.

“The growth of the renewable energy sector has the potential for high labour absorption and can also link to increased opportunities for SMMEs, especially for SSEG” (Western Cape Government, 2020, p. 48).

11.1.1 The Western Cape Spatial Development Framework (SDF) 2014

The proposed project falls within the Western Cape Province. According to the Western Cape Spatial Development Framework (SDF), the Western Cape's energy sources are mostly drawn from the national grid which is dominated by non-renewable sources. According to the SDF, the Province has a small emergent sustainable energy sector in the form of wind and solar generation facilities located in the more rural, sparsely populated areas. One of the key transitions in terms of the Western Cape Infrastructure Framework is to *"Promote the development of renewable energy plants in the Province and associated manufacturing capability"*.

The SDF also mentions the challenges around Climate Change and that the focus areas for mitigation are energy efficiency, demand management and renewable energy. Through climate change mitigation they hope to *"encourage and support renewable energy generation at scale"*.

The Western Cape Strategic Plan 2019-2024, also highlights the need for energy security and for diversification of the regional energy mix, emphasising support for the Green Economy and stating that: *"The growth of the renewable energy sector has the potential for high labour absorption and can also link to increased opportunities for SMMEs, especially for SSEG"* (Western Cape Government, 2020, p. 48).

11.2 Central Karoo District Municipality Integrated Development Plan, 2020 – 2021

The Central Karoo DM has identified the "potential and impact of renewable energy resource generation, as part of the district's economic profile (Central Karoo District Municipality, 2019, pp. 16, 79, 80 & 81)

The Municipality indicates that it will move to less carbon-intensive electricity production through procuring at least 20 000MW of renewable energy by 2030, increased hydro-imports from the region and increased demand-side measures, including solar water heating.

The IDP further mentions that the introduction of renewable energy generation and the Square Kilometer Array project in the greater Karoo region, as well as possible exploration for shale gas, will add value to the Gross Domestic Product (GDP) within certain economic sectors and, by implication, change the composition and character of the towns. Further suggestions are at developing an Alternative Energy Strategy for the Central Karoo.

11.2.1 Beaufort West Local Municipality Integrated Development Plan (2013 - 2016)

The Municipality has a responsibility to take care of the natural environment for future generations to enjoy a clean and safe environment, in which biodiversity is conserved and tourism is maximised. The Beaufort West Integrated Development Plan 2018/19 Review therefore lists Clean Energy as its Sustainable Development Goal 7 (Beaufort West District Municipality, 2018, p. 20 & 21).

The IDP indicates that natural resources should be used more efficiently and investment in green technologies pursued in order to ensure that there is enough water and energy for the growing economy.

The Municipality needs to be more robust and resilient so that it can respond to the challenges of climate change and other natural hazards.

In terms of major infrastructure projects planned for the municipality, they also hope to “*Promote domestic and large wind and solar energy projects subject to appropriate guidelines and siting principles*”.

12. NEED AND DESIRABILITY

12.1 National Renewable Energy Requirement

In 2010, South Africa had 44,157MW 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 74,000MW (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.

12.3 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).

12.4 Site Suitability

The location of the proposed Kraaltjies WEF (this application) and the proposed Eskom portion of the on-site Substation (including the associated 132kV power line development that will serve the Kraaltjies WEF (part of separate respective BA process)) include several key aspects which underpin it's suitability such as wind resource, grid connection suitability as well as environmental, competition, topography and access.

1. Wind resource is the first of the main drivers of determining viability of the wind farm development across South Africa. The developer has confirmed suitability of the area from a wind resource perspective.
2. Environmental suitability is the second key aspect that the Applicant considers when evaluating a wind energy project. The project should be developed in a sustainable and ecologically friendly manner ensuring its development has the least possible impact on the land on which it will be built.
3. The third primary driver of site selection is capacity on the local transmission system to evacuate the power into the national grid. In this case, the Kraaltjies WEF will be connected to the national grid through a 132kV distribution line from the 11-33kV/132kV Project on-site substation (this application) / Eskom substation (Eskom substation and 132kV powerline to form part of the separate BA process). The grid connection solution proposed herein is considered to be a benefit as the connection proposed seeks to reduce the power line extent as far as possible from that required to connect the facility to the national grid.
4. Other key criteria which refine the site selection on a micro level include competition, topography, land use, access and availability of land.

The site proposed for the Kraaltjies development is located in the scenic Karoo region of the Western Cape Province, which is generally associated with wide vistas and mountainous landscapes. The topography in the immediate vicinity of the site is however characterised by flat to gently undulating plains interspersed with areas of localised hills and koppies. The flat plains that make up the project area make it a good site to establish a WEF from a technical perspective as it is strategically located

away from the localised hills and koppies as far as possible, but to harness the wind resource available in the surrounding area.

The farm is located in a sheep farming agricultural region and grazing of sheep and game is the dominant agricultural land use on the site and surrounds. Grazing capacity of the site is low at 32 hectares per large stock unit. Due to the extreme aridity constraints as well as the poor soils, agricultural land use is restricted to low intensity grazing only. It should be noted that the area is not valued for its agricultural potential and the proposed development will only impact agricultural land which is of extremely low agricultural potential and is unsuitable for cultivation. Furthermore, the current agricultural activities in the form of grazing can co-exist with the wind farm making dual use of the land possible for both renewable energy production as well as agricultural production.

The affected properties desirable for and available for the wind farm development cover an area of ~3,994.9ha. This area is sufficient to accommodate the wind farm and considered to be sufficient space for the development footprint to be designed from the current buildable area (~735ha) which will consider the identified environmental sensitivities. The properties affected by the wind project site are some of the few available privately-owned land parcels suitable for a wind farm development. The applicant has obtained the required landowner's consent from the affected landowners which confirm the availability of the project site for the development.

12.5 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 (CO₂) and sulphur dioxide (SO₂). 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.

12.6 Stimulate the economy

A significant portion of the capital expenditure envisaged for the project will be spent on procurement of goods and services within South Africa and specifically within the Western Cape Province. If goods and services are procured locally (i.e. within South Africa), it increases the production of the respective industries. This has a positive impact on the national economy and economies of the municipalities where inputs are procured.

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 Beaufort West and other nearby towns) is expected to increase and provide for much-needed stimulus for the local economy.

Apart from jobs the project is also likely to stimulate the local economy, which is likely to be most significant at a cumulative level. Nevertheless, there will be a significant economic contribution attached to the Kraaltjies Wind Facility. This contribution will be in the form of disposable salaries and the purchases of services and supplies from the local communities in and around the towns of Beaufort West and Prince Albert. The capital expenditure on completion of the project is anticipated to be in the region of R 2.5 billion.

Apart from job creation and procurement spend; the project will also have broader positive socio-economic impacts as far as socio-economic development contributions are concerned. Although, at the point of writing, the project developer had not as yet put a corporate social responsibility plan in place, the intention is to either fall in line with the REIPPP BID guidelines or to put an equivalent plan in place. This will create an opportunity to support the local community over the life span of the operational phase of the project, which will stretch over a 20-year period. At a national level the project also has the potential to contribute towards the national grid requirements as part of the Government's vision to source 15.1% of the country's energy through wind power (Department of Energy Republic of South Africa, 2018, p. 41).

12.7 Job opportunities and household livelihoods

Wind energy projects create both temporary and permanent job opportunities in South Africa for both skilled and unskilled workers. According to the Social Impact Assessment that was undertaken (May 2021), *the project will lead to the creation of both direct and indirect jobs which will have a positive economic benefit within the region. In this regard, there are approximately 300-400 jobs associated with the construction phase of the project and approximately 20 jobs associated with the operational phase. Of these jobs approximately 165-220 (55%) of the employment opportunities will be available to low-skilled workers (construction labourers, security staff etc.), ~90-120 (30%) to semi-skilled workers (drivers, equipment operators etc.), and ~45-60 (15%) for skilled personnel (engineers, land surveyors, project managers etc.). Many of the low and semi-skilled employment opportunities will probably be available to residents in the area, specifically residents from Beaufort West and Prince Albert. Many of the beneficiaries are likely to be historically disadvantaged members of the community and the project will provide opportunities to develop skills amongst these people. The operational phase will employ approximately 20 people full time for a period of up to 20 years. Of this, approximately 4 are low skilled, ~10 are semi-skilled and 6 are skilled.*

In addition to those benefitting from direct employment created at the project, various multiplier effects will assist in temporarily supporting existing jobs in the businesses offering services and goods that will be procured during construction activities. The increased temporary income earned by these businesses will, in turn, stimulate consumer spending, creating another round of multiplier effect, positively impacting on the employment situation in the area.

Household earnings are linked closely with trends in employment and, as such, will be affected positively by the creation of jobs as discussed above. The creation of temporary jobs during the construction period

will temporarily increase affected households' income. Some of this income will be earned by workers from the local communities. Given that the average household income in the area is R29 400, a significant boost in household income may prevail. A temporary increase in living standards based on the additional monthly income will thus ensue. Employees working for local businesses that will be sub-contracted to supply goods and services to the WEF during construction are also expected to benefit indirectly.

12.8 Skills development

In addition to the job creation, there is valuable opportunities for skills enhancement and knowledge transfer as quite often input from experts are required in this field. Therefore, opportunities for guiding and training of local workers is created. A variation of skill sets is required ranging from semi-skilled construction workers to highly skilled engineers. The skill set of the majority of the municipality's residents comprises of low skills, which means that with proper planning and recruitment strategies, many of the local unemployed residents could be hired as temporary construction workers on site provided they satisfy any other recruitment criteria.

Those employed will either develop new skills or enhance current skills. This insinuates that inexperienced workers will have the opportunity to attain and develop new skills, while experienced workers will further improve their existing skills. Albeit the employment is temporary, the skills attained will be of long-term benefit to employees. However, as any skills set it will need to be supported and practised on a regular basis to maintain its currency.

12.9 Proximity to substation

The area is well situated, as described above, with good wind resources suitable for the installation of a large WEF. In addition to this, the project area is in close proximity to connectivity opportunities. The surrounding area is not densely populated and should therefore not impact on people's livelihoods living in the area. The development will be connecting to the Beaufort West/Trakas wind farm Varsfontein substation or the Galenia MTS (whichever Eskom prefer) which is located approximately 6km south of the site. This will be further assessed in the EIA Phase.

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. The selection of a potential wind project site includes several key aspects including wind resource, environmental, grid connection suitability as well as competition, 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.

No site alternatives have been considered during the EIA process for this proposed development. The placement of wind energy installations 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 has a low agricultural intensity. The project site is easily accessible off the N12.

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. Wind energy installations are more suitable for the proposed site because of the high wind resource.

13.1.3 The technology to be used in the activity

The choice of technology selected for the Kraaltjies WEF was based on environmental constraints and technical and economic considerations. The size of the wind turbines will depend on the development area and the total generation capacity that can be produced as a result. Therefore, no technology alternatives will be considered.

13.1.4 Design or layout of the activity

The development area and the on-site substation locations has been informed by screening and assessed by the specialists in their respective specialist studies for the Scoping Phase and will be further refined and assessed in the EIA Report, once the EIA Phase studies have been completed.

Two (2) on-site substation alternatives are being considered and will be comparatively assessed by the EAP and various environmental specialists. Each on-site substation proposed is approximately 25 ha in extent, split into two (2) portions: The IPP 11-33kV portion and the Eskom 132kV switchyard portion. As noted above, the Eskom 132kV switchyard portion will form part of a separate environmental authorisation application.

Based on the findings of the specialist, the development area and the on-site substation locations will be further updated to include constraints of sensitive flora, avifauna, and bats, surface water features, sensitive heritage areas, and associated buffer areas. Input from all specialists, stakeholders, and competent authority will be considered in the final layout design and selection of the preferred alternative.

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 will result in the current status quo being maintained as far as the avifauna, bats and the aquatic systems are concerned. The low human population in the area is definitely advantageous to sensitive avifauna, especially Red Data species. The no-go option would therefore eliminate any additional impact on the ecological integrity of the proposed development site.

With regard to heritage resources, even without development, fossils will still be destroyed by natural weathering and erosion. In the case of the No-Go Alternative the possible loss of local heritage resources through construction activities would be avoided, however potential improvements in palaeontological understanding through professional mitigation - i.e. recording and collection of palaeontological material and data would be lost. The slow destruction of fossils exposed at the surface through natural weathering and erosion would continue, but at the same time new fossils are revealed for scientific study. On balance, it is concluded that no-go alternative would have a neutral impact on palaeontological heritage.

From a noise perspective, existing residual noise levels will remain as is within the project focus area. The specialist noted that it is difficult to assess how the no-go option will impact on the soundscape, as different people will value the existing residual noise levels differently. A person that retired to the area (within 2,000

m from the closest wind turbine) will set a high value to the existing residual noise levels, while the land owner that may financially benefit from the project will have a much lower appreciation of existing residual noise levels. Based on the specialist's opinion, the no-go option will result in a positive benefit of low significance.

From an agricultural perspective the no-go alternative considers impacts that will occur to the agricultural environment in the absence of the proposed development. The one identified potential impact is that due to continued low rainfall in the area, which is likely to be exacerbated by climate change, agriculture in the area will come under increased pressure in terms of economic viability. 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, purely from an agricultural impact perspective, the proposed development is the preferred alternative.

From an avifaunal perspective, the no-go alternative will result in the current status quo being maintained. 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 development site as far as avifauna is concerned.

From a bats perspective, if the development does not progress, the status quo is expected to prevail, and no negative impact is expected. The ideal concerning managing the impact of WEFs on bats throughout the project's lifespan is to maintain bat populations as they occur on site and avoid attracting more bats to the area of potential collision.

From a landscape perspective, the no-go alternative will result in the current *status quo* being maintained as far as the cultural landscape is concerned and it should continue to operate in the similar way maintaining the current significance. If the project is not developed, infrastructure will not be built to the west of the N12 and the aesthetic and visual impact of new RE developments will be contained to the eastern viewshed.

From an aquatic perspective, Should the project not proceed, then current status quo with regard the aquatic environment would remain unchanged. Overall, these catchment and subsequent rivers / watercourses are largely in a natural state. Present day impacts do occur in localised areas and include the following:

- Erosion as a result of road crossings;
- Several farm dams; and
- Undersized culverts within present day road crossings, although very few occur on site

The no-go option would also mean that the social environment is not affected as the status quo remains. On a negative basis, it 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. Considering that Eskom's coal-fired power stations are a huge contributor to carbon emissions, the loss of a chance to supplement the National Grid through renewable energy would be significant at a national, if not at a global level.

The area would also retain its visual character and sense of place and no visual impacts would be experienced by any locally occurring receptors.

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 as well as best practises relating to PP.

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.

The following key stakeholders were identified for this project:

- Agri SA;
- ATNS – Cape Town International Airport;
- Birdlife South Africa;
- Breede Valley Local Municipality;
- Cape Nature;
- Central Karoo District Municipality;
- Air Traffic Navigation Services;
- Beaufort West Local Municipality;
- Breede Gouritz Catchment Management Agency;
- Breede Valley Municipality;
- Cape Winelands District Municipality;
- DAFF Provincial Department;

- Department of Agriculture;
- Department of Environmental Affairs;
- Department of Public Works;
- Department of Transport and Public Works WC
- Eskom Transmission Limited;
- Heritage Western Cape;
- SALT – The Southern African Large Telescope;
- South African Weather Services;
- South African Astronomical Observatory;
- Telkom SA;
- WESSA;
- Department of Environmental Affairs and Development Planning;
- Department of Mineral Resources;
- Department of Transport;
- Department of Water and Sanitation;
- Endangered Wildlife Trust;
- National Department of Economic Development;
- SA Civil Aviation Authority;
- SANRAL
- Sentech;
- Square Kilometre Array
- Transnet;
- Western Cape Provincial Government;

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 to 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

Notification of EIA process to be undertaken as follows:

- Issuing of the notifications and initial landowner consultation (to be circulated to all I&APs on **14 December 2022** 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 **09 December 2022** (proof included in the Scoping Report).

- Notification letters to be 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 will be advertised in a local newspaper (namely **Die Courier**) on **16 December 2022**, as required according to Regulation 41(2) (c) of the EIA Regulations (2014), as amended. Proof to be included in the Final Scoping and EIA Report.

Availability of report for review:

- Report available on SiVESTs website for download.
- Electronic copies can be made available to parties via a secure digital link that will be emailed upon request for the documentation.
- CDs / Flash drive to be posted, only if requested.
- The Draft Scoping Report will be located and available for review at the following locations:
 - Beaufort West Library, 15 Church Street, Beaufort West, Western Cape, South Africa; and
 - Prince Albert Public Library, Church Street, Prince Albert, Western Cape.

13.2.4 Summary of issues raised

To be updated once the Scoping Phase Public Comment Period has been completed.

13.3 Impact Assessment

The potential impacts for the identified environmental aspects have been assessed and available mitigation measures identified below. The detailed impact assessments on the preliminary layouts are in the respective specialist studies (**Appendix 6**).

Table 21: Planning Phase

Environmental Aspect	Potential Impact during Planning	Mitigation
Geotechnical	None	None
Social	None	None
Transport	None	None
Visual	None	None
Avifaunal	None	None
Bat	None	None
Agricultural	n/a	
Surface Water	None	None
Heritage – Palaeontological	None	None
Heritage – Archaeological	<ul style="list-style-type: none"> • Damage to 2 sites containing graves and burial grounds (K027 and KC001) • The graves and burial grounds are located less than 100m away from existing farm roads within the proposed development area. The expansion of existing farm roads may impact the sites. 	<ul style="list-style-type: none"> • The grave site should be demarcated with a 50m no-go-buffer-zone and the grave should be avoided. • A Grave Management Plan should be developed for the graves, to be implemented during the construction and operation phases (which needs to be approved by HWC prior to construction).
	<ul style="list-style-type: none"> • Damage to one historical farmstead (KC001) • One historical homestead is located less than 100m away from existing farm roads within the proposed development area. The expansion of existing farm roads may impact the sites 	<ul style="list-style-type: none"> • A no-go-buffer-zone of at least 30m should be kept to the closest WEF infrastructure (incl. roads). • If development occurs within 30m of KC001, the structures will need to be satisfactorily studied and recorded before impact occurs. • Recording of the structure i.e. (a) map indicating the position and footprint of the structure (b) photographic recording of the structure (c) measured drawings of the floor plans of the structure.

Environmental Aspect	Potential Impact during Planning	Mitigation
	<ul style="list-style-type: none"> • Damage to four historical structures (K012/1, K012/2, K012/3, K012/4) • Four structures are located less than 100m away from existing farm roads within the proposed development area. The expansion of existing farm roads may impact the sites. 	<ul style="list-style-type: none"> • A no-go-buffer-zone of at least 30m should be kept to the closest WEF infrastructure (incl. roads). • If development occurs within 30m of H002, the structure will need to be satisfactorily studied and recorded before impact occurs. • Recording of the structure i.e. (a) map indicating the position and footprint of the structure (b) photographic recording of the structure (c) measured drawings of the floor plans of the structure
	<ul style="list-style-type: none"> • Two Stone Age site (K033, K022) These sites are located within proposed buildable areas, and it is possible that there will be an impact on these sites. 	<ul style="list-style-type: none"> • A no-go-buffer-zone of 30m should be demarcated. • If the site can't be avoided, then it must be sampled by a qualified specialist under a permit issued by SAHRA
	<ul style="list-style-type: none"> • Unidentified heritage resources • Due to the size of the area assessed, there's a possibility of encountering heritage features in un-surveyed areas does exist. 	<ul style="list-style-type: none"> • A management plan, after a walkdown of the final layout, for the heritage resources needs then to be compiled and approved for implementation during construction and operations.

Environmental Aspect	Potential Impact during Planning	Mitigation
Heritage – Cultural Landscape	<ul style="list-style-type: none"> • Inappropriate infrastructure layout planning degrades ecological elements of the cultural landscape • Inappropriate infrastructure layout planning negates aesthetic and sense of place requirements of the cultural landscape. • Inappropriate infrastructure layout planning degrades historic elements of the cultural landscape. • Non-landowner residents' lack of representation in planning and public participation process leads to loss of local knowledge, socio-economic empowerment and character of the cultural landscape. 	<ul style="list-style-type: none"> • Appropriate planning, construction and management of the WEF infrastructure will prevent degradation of the historic elements of the cultural landscape. • Appropriate consultation and inclusion of local communities, including non-landowner residents on site and in the region, in all phases will prevent degradation of the socio-economic elements of the cultural landscape as well as potential loss of intangible indigenous knowledge. Loss of historic local inhabitants of the area due to reduction in economic opportunity or places for habitation and cultivation as a result of the WEF development will negatively impact on the character of the Koup landscape. • Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges. • Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within farmstead and N12 buffers and 300m of the regional farm roads. • Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads. • Duration and magnitude of operational activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible. • The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.

Environmental Aspect	Potential Impact during Planning	Mitigation
Noise	<ul style="list-style-type: none"> Noise impacts relating to planning activities - Light delivery vehicles moving around onsite 	<ul style="list-style-type: none"> No mitigation measures recommended for the planning stage.
Biodiversity	None	None

Table 22: Construction Phase

Environmental Aspect	Potential Impact during Construction	Mitigation
Geotechnical	<ul style="list-style-type: none"> Ground disturbance during access road construction, foundation earthworks, platform earthwork Increased erosion due to vegetation clearing, alteration of natural drainage 	<ul style="list-style-type: none"> Design access roads and turbine locations (including crane pads) to minimise earthworks and levelling based on high resolution ground contour information Correct topsoil and spoil management Materials utilisation to minimise opening of borrow pits or creation of spoil. Avoid development in preferential drainage paths Appropriate engineering design of road drainage and watercourse crossings Temporary berms and drainage channels to divert surface runoff where needed Landscape and rehabilitate disturbed areas timeously (e.g. revegetation) Use designated access and laydown areas only to minimise disturbance to surrounding areas
Social	<ul style="list-style-type: none"> An increase in human presence during construction may increase the risk of veld fires. These dangers could be caused by open fires used for cooking and warmth, cigarettes, the burning of fire breaks, and the use of flammable liquids. Uncontrolled fires in project areas could cause neighbouring landowners to lose infrastructure, grazing land, crops, or livestock. Non-project workers, such as farm labourers, could wander onto the construction site and stockpiles 	<ul style="list-style-type: none"> No open fires allowed. Construction sites and vehicles should have firefighting equipment. The contractor should brief farmers' workers on project safety risks. If possible, fence off stockpiles. Enforce strict speed limits. All on-site and material-transporting vehicles should be roadworthy. High-danger areas should have road and warning signs. Establish communication protocols to manage Mainstream, landowners, and contractors during construction. Appropriate mitigation measures are implemented to mitigate biophysical, visual, and cultural heritage impacts, per the BA for the proposed project. Ensure a clean site during construction and operation to reduce the project's impact on the area's character.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>without PPE and knowledge of the dangers.</p> <ul style="list-style-type: none"> • Due to increased traffic volumes and the presence of heavy motor vehicles (HMTVs), the transportation of construction materials and machinery on roads used by private motorists poses a safety risk. however, this is unlikely due to the sparse population. • Property owners and land users on neighbouring properties may experience direct or indirect impacts differently. • Construction causes noise and visual changes, for example. These activities could affect "Sense of place," the identity and character of a landscape felt by locals and visitors (e.g. farmer, tourists, and community members). This attribute is derived from the natural environment, a mix of natural and cultural landscape features, and the people who live there. • During construction, the project will create direct and indirect jobs. When this report was written, it wasn't known how many jobs the proposed development would create. • Although limited, new employment opportunities may be significant in study areas with small populations. These are temporary, unskilled jobs 	<ul style="list-style-type: none"> • Mainstream and its contractors should be required to hire locals during construction. • When possible, promote labour-intensive construction. • Mainstream should consult the local DOL and neighbouring businesses to see if they will share their skills registers/databases with the Project, especially if any employees have been laid off. • Recruitment during the construction phase should be coordinated through the local DoL or institutions recommended by local authorities (if applicable). • Recruitment procedures must be fair and transparent and follow Mainstream's labour and procurement policies. • A monitoring system should ensure contractors follow local employment policy. Local contract/temporary workers should be given reference letters after construction is complete. On-the-job training should be certified. • If subcontractors are appointed, the project should give preference to subcontractors/SMEs in the surrounding communities (Ward 1 & 6), then in the DM, and then outside the province. • Construction contractors should monitor their procurement practises and prefer local suppliers. When non-local service providers are awarded contracts, contractors must show they tried to find a local provider. • Visual and aesthetic impacts are subjective and considered most significant when the development is different from others or its surroundings. • Large electrical infrastructure elements are visually intrusive. However, mitigating measures should be used. • A separate flora & fauna and visual Assessment studies will determine mitigation that should be considered. • Close communication with farm managers. Establish protocols and/or communication channels to access farms and reduce damage. • Repair any unintended damage to private property, including fences, immediately. When working between construction areas, leave farm gates as found. • Once construction stops each day, the landowner should confirm this. If security is compromised by unintended damage to control measures, appropriate security should be provided until repairs are made. • If project activities cause damages to private property, the landowner should be compensated.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>(which will be available for members of local communities).</p> <ul style="list-style-type: none"> • The proposed project may also create indirect informal sector jobs, such as food stalls for construction workers. Due to high unemployment, any formal employment, even for a short time, will likely be beneficial. • Local SMEs providing transport, security, accommodation, catering, etc. may have more opportunities. • Such opportunities will lead to secondary multiplier effects like more employment and disposable income. • The construction of the project will most likely degrade the scenery that has made the area popular among hikers, birders, and other outdoor enthusiasts. • Tourism revenue generated by these visitors in the form of lodging and food may be reduced as a result of changes to the local flora and fauna and/or the visual landscape. • Due to vibrations and ground instability, construction equipment like heavy-duty vehicles can damage nearby properties. Abnormally heavy vehicles can damage farm roads, fences, and gates. Littering during construction could damage farmland and harm domestic and game animals. 	

Environmental Aspect	Potential Impact during Construction	Mitigation
Transport	<ul style="list-style-type: none"> Additional Traffic Generation – Increase in traffic 	<ul style="list-style-type: none"> Ensure staff transport is done in the 'off peak' periods and by bus as far as practically possible. Stagger material, component and abnormal loads delivery as far as practically possible. Construction of an on-site batching plant and tower construction to reduce trips, where required and if practically possible
	<ul style="list-style-type: none"> Additional Traffic Generation – Increase of Incidents with pedestrians and livestock 	<ul style="list-style-type: none"> Upgrade of existing / new access points Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences & access cattle grids where and if required Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible
	<ul style="list-style-type: none"> Additional Traffic Generation – Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Upgrade of existing / new access point Reduction in speed of the vehicles Construction of gravel roads in terms of TRH20 Implement a road maintenance program under the auspices of the respective transport department Possible use of an approved dust suppressant techniques, where required and if practically possible. Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible.
	<ul style="list-style-type: none"> Additional Traffic Generation – Increase in Road Maintenance 	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible.
	<ul style="list-style-type: none"> Abnormal Loads – Additional Abnormal Loads 	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery as far as practically possible. Adequate enforcement of the law
	<ul style="list-style-type: none"> Internal Access Roads – Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Appropriate, timely and high-quality maintenance required in terms of TRH20 Possible use of an approved dust suppressant techniques, where required and if practically possible.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Internal Access Roads – New / Larger Access points 	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM Approval from the respective roads department
Visual	<ul style="list-style-type: none"> Potential alteration of the visual character and sense of place. Potential visual impact on receptors in the study area. 	<ul style="list-style-type: none"> Large construction vehicles, equipment and construction material stockpiles will alter the natural character of the study area and expose visual receptors to impacts associated with construction. Construction activities may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from increased traffic on the gravel roads serving the construction site may evoke negative sentiments from surrounding viewers. Surface disturbance during construction would expose bare soil resulting in visual scarring of the landscape and increasing the level of visual contrast with the surrounding environment. Temporary stockpiling of soil during construction may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact.
Avifaunal	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> 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 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 the ecological and botanical specialist studies must be strictly implemented, especially as far as limitation of the activity footprint is concerned
Bat	<ul style="list-style-type: none"> Loss of existing roosts and/or potential roosts: Some of the bat species that occur on the proposed site are known to roost in rock formations, crevices, derelict aardvark holes and under the bark of tree. 	<ul style="list-style-type: none"> Possible mitigation measures will be recommended in the final bat monitoring report.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Any disturbance of these natural roosting opportunities might have a negative impact on bats. Demolition of the few existing buildings will destroy bat roosts in those buildings (Barclay and Harder, 2003). Attracting bats by artificially creating new roosting areas: The presence of new buildings within the study area may provide additional roost sites for those species making use of man-made structures. 	
Agricultural	n/a	
Surface Water	<ul style="list-style-type: none"> The construction activities will result in the disturbance of aquatic habitats that may contain listed and or protected plant or animal species. However, none of these were observed during this assessment within the tower positions proposed Construction could result in the loss of drainage systems that are fully functional and provide an ecosystem service within the site especially where new access roads are required, or road upgrades will widen any current bridges or drifts. Loss can also include a functional loss, through change in vegetation 	<ul style="list-style-type: none"> Develop and implement a Rehabilitation and Monitoring plan post Environmental Authorisation. This must be developed following the finalisation of the turbine / road layout and a walk down has been completed. This plan should include relocation of suitable plant species, but more important protect any topsoil stores and promote the collection of vegetative material and propagules / seed to assist with the revegetation of the site. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion. A pre-construction walkthrough with an aquatic specialist is recommended and they can assist with the development of the stormwater management plan and Aquatic Rehabilitation and Monitoring plan, coupled to micro-siting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints and especially in areas near the proposed crossings. Prosopis (alien invasive riparian tree) is prevalent in areas to the north of the site, thus care in transporting any material, while ensuring that such materials is free of alien seed, coupled with pre and post alien clearing must be stipulated in the EMPr.

Environmental Aspect	Potential Impact during Construction	Mitigation
	type via alien encroachment for example.	<ul style="list-style-type: none"> • Where roads and crossings are upgraded, the following applies: • Existing pipe culverts must be removed and replaced with suitable sized box culverts, especially where road levels are raised to accommodate any large vehicles. • River levels, regardless of the current state of the river / water course must be reinstated thus preventing any impoundments from being formed. The related designs must be assessed by an aquatic specialist during a pre-construction walkdown. • Where large cut and fill areas are required, these must be stabilised and rehabilitated during the construction process, to minimise erosion and sedimentation. • Suitable stormwater management systems must be installed along roads and other areas and monitored during the first few months of use. Any erosion / sedimentation must be resolved through whatever additional interventions maybe necessary (i.e., extension, energy dissipaters, spreaders, etc). • A detailed monitoring plan must be developed in the pre-construction phase by an aquatic specialist, where any delineated system occurs within 50 m of existing crossings.

Environmental Aspect	Potential Impact during Construction	Mitigation
	<ul style="list-style-type: none"> Potential impact on localised surface water quality (construction materials and fuel storage facilities) during the construction and decommissioning phases During construction earthworks will expose and mobilise earth materials, and a number of materials as well as chemicals will be imported and used on site and may end up in the surface water, including soaps, oils, grease and fuels, human wastes, cementitious wastes, paints and solvents, etc. Any spills during transport or while works area conducted in proximity to a watercourse has the potential to affect the surrounding biota. Leaks or spills from storage facilities also pose a risk and due consideration to the safe design and management of the 30 000l fuel storage facility must be given. Although unlikely, consideration must also be provided for the proposed Battery Energy Storage System (BESS), with regard safe handling during the construction phase. This to avoid any spills or leaks from this system 	<ul style="list-style-type: none"> All liquid chemicals including fuels and oil, including the BESS must be stored in with secondary containment (bunds or containers or berms) that can contain a leak or spill. Such facilities must be inspected routinely and must have the suitable PPE and spill kits needed to contain likely worst-case scenario leak or spill in that facility, safely. Washing and cleaning of equipment must be done in designated wash bays, where rinse water is contained in evaporation/sedimentation ponds (to capture oils, grease cement and sediment). Mechanical plant and bowsers must not be refuelled or serviced within 100m of a river channel. All construction camps, lay down areas, wash bays, batching plants or areas and any stores should be more than 50 m from any demarcated water courses. Note comment regards Camp A that requires micro-siting. Littering and contamination associated with construction activity must be avoided through effective construction camp management. No stockpiling should take place within or near a water course All stockpiles must be protected and located in flat areas where run-off will be minimised and sediment recoverable;
Heritage – Paleontological	<ul style="list-style-type: none"> Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations. 	<ul style="list-style-type: none"> Cross checking of final approved footprint by palaeontological specialist, if necessary, pre-construction walkdown (with fossils recording/ collection) of final footprint by specialist palaeontologist. Chance Fossils finds procedure during construction phase.

Environmental Aspect	Potential Impact during Construction	Mitigation
Heritage – Archaeological	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Heritage – Cultural Landscape	<ul style="list-style-type: none"> • Fragmentation and destruction of the landscape degrading the environment and thus continuous relationship between man and environment • WEF infrastructure construction activity degrades the character of the cultural landscape and the sense of place Integrity of farmsteads and farm roads degraded by insensitive construction or decommissioning activities. • Integrity of local residents to continue their patterns of land use is degraded by the construction and decommissioning activities. 	<ul style="list-style-type: none"> • Appropriate construction and management of the WEF infrastructure will prevent degradation of the historic elements of the cultural landscape. • Appropriate consultation and inclusion of local communities, including non-landowner residents on site and in the region, in all phases will prevent degradation of the socio-economic elements of the cultural landscape as well as potential loss of intangible indigenous knowledge. • Loss of historic local inhabitants of the area due to reduction in economic opportunity or places for habitation and cultivation as a result of the WEF development will negatively impact on the character of the Koup landscape. • Encourage mitigation measures (for instance use of vegetation) to ‘embed’ or disguise the proposed structures within the surrounding tourism and agricultural landscape at ground level, road edges etc; • The continuation of the traditional use of material could be enhanced with the use of the rocks on the site as building material. This would also help to embed structures into the landscape and should not consist of shipping containers or highly reflective untreated corrugated sheeting that clutters the landscape and is exacerbates the foreign intrusion on the natural matte landscape. • Using material found on the site adds to the sense of place and reduces transportation costs of bringing materials to site. • The local material such as the rocks found within the area could be applied to address storm water runoff from the road to prevent erosion. • Duration and magnitude of construction/ decommissioning activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. • Construction/ decommissioning traffic must operate at speeds that reduce dust and noise as far possible.
Noise	<ul style="list-style-type: none"> • Noise impacts during the day – Construction activities relating to hardstand areas, digging of foundations for wind turbines, civil 	<ul style="list-style-type: none"> • No mitigation measures recommended for construction activities at the WTG locations or for substations

Environmental Aspect	Potential Impact during Construction	Mitigation
	<p>works as well as erection of wind turbines</p> <ul style="list-style-type: none"> Noise impacts at night – Construction activities relating to civil works as well as erection of wind turbines 	<ul style="list-style-type: none"> Night-time construction activities closer than 1,000 m from and NSD to be minimized.
Biodiversity	<ul style="list-style-type: none"> The construction activities will result in the disturbance of terrestrial habitats that contain listed and or protected plant or animal species. However, none of the plant species were observed during this assessment within the tower positions proposed. Loss of terrestrial habitats – flora and vegetation – The construction of the proposed infrastructure will require the need to clear vegetation which could then have a secondary impact on ecological connectivity and especially Critical Biodiversity Areas, linked to the large riverine corridors. Loss of terrestrial species – fauna – Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities. 	<ul style="list-style-type: none"> A pre-construction walkthrough by the ecologist is recommended, who can assist with the development of the Rehabilitation and Monitoring plan, coupled to micro-sitting of the final layout. All alien plant re-growth, which is currently low within the greater region must be monitored and should it occur, these plants must be eradicated within the project footprints. Where possible, temporary construction lay-down or assembly areas should be sited on transformed areas; and Rapid regeneration of plant cover must be encouraged by setting aside topsoil during earthmoving and replacing onto areas where the re- establishment of plant cover is desirable to prevent erosion Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers EO must be present on a daily basis to remove any reptiles such as the Karoo Padloper. Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff. Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers; Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them;

Environmental Aspect	Potential Impact during Construction	Mitigation
		<ul style="list-style-type: none"> All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.

Table 23: Operational Phase

Environmental Aspect	Potential Impact during Operation	Mitigation
Geotechnical	Soil Erosion <ul style="list-style-type: none"> Increased erosion due to alteration of natural drainage 	<ul style="list-style-type: none"> Maintain drainage channels Monitor for erosion and remediate and rehabilitate timeously
Social	<ul style="list-style-type: none"> The proposed WEF may lower farm property values directly and indirectly. This may be due to the WEF's appearance and infrastructure within the natural environment. It also hinders the owner's ability to market the land for hiking, bird watching, and other activities. Littering may occur during maintenance, which could damage farmland or harm domestic and game animals. Farm gates may be left open, allowing animals to escape. Stray animals are valuable assets, and rounding them up is inconvenient and may stress the animals. 	<ul style="list-style-type: none"> Continuous communication with municipal and district spatial planning departments. In the event of property prices being significantly reduced, affected landowners should be consulted with regard to the value of compensation. Mainstream must ensure that the value of compensation is agreed by all parties.
Transport	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Traffic 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase of Incidents with pedestrians and livestock 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Dust from gravel roads 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact

Environmental Aspect	Potential Impact during Operation	Mitigation
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Road Maintenance 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Abnormal Loads - Additional Abnormal Loads 	<ul style="list-style-type: none"> The increase in traffic for this phase of the development is negligible and will not have a significant impact
	<ul style="list-style-type: none"> Internal Access Roads - New / Larger Access points 	<ul style="list-style-type: none"> Adequate road signage according to the SARTSM
Visual	<ul style="list-style-type: none"> The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. The night time visual environment could be altered as a result of operational and security lighting at the proposed substation. 	<ul style="list-style-type: none"> The proposed power line and substation could alter the visual character of the surrounding area and expose sensitive visual receptor locations to visual impacts. The development may be perceived as an unwelcome visual intrusion, particularly in more natural undisturbed settings. Dust emissions and dust plumes from maintenance vehicles accessing the site via gravel roads may evoke negative sentiments from surrounding viewers. The night time visual environment could be altered as a result of operational and security lighting at the proposed substation.
Avifaunal	<ul style="list-style-type: none"> 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 11-33kV cables. Mortality due to collisions with the overhead sections of the internal 11-33kV cables. 	<ul style="list-style-type: none"> No turbines should be located in the buffer zones around major drainage lines, waterpoints and dams. A 5km circular No-Go (no turbines) buffer zone must be implemented around the Martial Eagle nest on Tower 162 of the Droërivier Proteus 1- 400kV transmission line. 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. If estimated annual 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 which could include shut down on demand or other proven recommended measures Underground cabling should be used as much as is practically possible.

Environmental Aspect	Potential Impact during Operation	Mitigation
		<ul style="list-style-type: none"> • 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). • Bird flight diverters should be installed on all the overhead line sections for the full span length according to the applicable Eskom standard. These devices must be installed as soon as the conductors are strung.
Bat	<ul style="list-style-type: none"> • Direct collisions with rotating turbine blades: The most important feature of the project that affects bats adversely are the operation of wind turbines, particularly direct collisions from the operational rotating blades. • Fatalities from barotrauma: As the air moves over the turning turbine blades, an area of low pressure is created. Barotrauma occurs when bats experience a sharp decrease in atmospheric pressure near rotating turbine blades. This pressure drop causes a rapid expansion of the lungs, which is unable to be remedied through proper exhalation (Baerwald et al., 2008), thus resulting in haemorrhage of the lungs and ultimately mortality. • Loss of foraging habitat: The turbines, during operation, will influence the natural foraging space of bats. Disturbance resulting from operational activities, such as noise after sunset from engines or generators might also deter bats, resulting in loss of feeding habitat. 	<ul style="list-style-type: none"> • Possible mitigation measures will be recommended in the final bat monitoring report.

Environmental Aspect	Potential Impact during Operation	Mitigation
Agricultural	None	
Surface Water	<ul style="list-style-type: none"> Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities. 	<ul style="list-style-type: none"> Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers. EO must be present on a daily basis to remove any reptiles such as the Karoo Padloper. Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them; All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.
Heritage – Paleontological	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Heritage – Archaeological	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Heritage – Cultural Landscape	<ul style="list-style-type: none"> Inappropriate operational activities degrade the significant ecological elements of the cultural landscape Inappropriate operational activities degrade the significant aesthetic elements of the cultural landscape altering the character and sense of place Inappropriate operational activities degrade the significant historic elements of the cultural landscape altering the character and sense of place Inappropriate operational activities degrade the significant socio-economic opportunities of the cultural landscape 	<ul style="list-style-type: none"> Infrastructure improvement or maintenance work, including new roads and upgrades to the road network, should be appropriate to the rural context (scale, material etc.) and avoid steep slopes over 10% as well as ridges. Prevent the construction of new buildings/structures on visually sensitive, steep (over 10%), elevated or exposed slopes, ridgelines and hillcrests or within farmstead and N12 buffers and 300m of the regional farm roads. Avoid visual clutter in the landscape by intrusive signage, and the intrusion of commercial, corporate development along roads. Duration and magnitude of operational activity must be minimized as far possible to reduce the impact of heavy vehicles on the roads as well as the associated dust from the activity. Lightest vehicles possible should be used to

Environmental Aspect	Potential Impact during Operation	Mitigation
		<p>reduce degradation to the farm roads and the need to upgrade roads to scale and extent that negatively impacts on the integrity of the historic farm roads. Operational traffic must operate at speeds that reduce dust and noise as far possible.</p> <ul style="list-style-type: none"> The impact of WEF turbine night lighting on the wilderness landscape is intrusive and overwhelms the rural character of the landscape, giving it an industrial sense of place after dark. Reduce the impact of turbine night lighting by minimizing the number of turbines with lighting to only those necessary for aviation safety, such as a few identified turbines on the outer periphery, or use aircraft triggered night lighting. Due to the reduced receptors on the roads at night, the impact of the lighting at night is reserved mainly for farmsteads and other places of overnight habitation such as the surrounding tourist facilities, which would be heavily impacted by the light pollution on a long term and ongoing basis.
Noise	<ul style="list-style-type: none"> Noise Impacts during the day - Noises from operating wind turbines Noise Impacts at night - Noises from operating wind turbines 	<p>None</p> <ul style="list-style-type: none"> The noise levels at these NSD are the cumulative effect of three WTG operating within 1,000 m. The noise level is higher than the estimated residual noise level and it is recommended that the applicant consider the use of a mitigated WTG (with a SPL level less than 107.2 dBA re 1 pW) within 1,000 m from the identified NSD, or, the applicant can reduce the number of WTG within 1,000 m from NSDs 1 - 3 from three to two, without increasing the total number of WTG locating within 2,000 m from this NSD (from five to four WTG within 2,000 m).
Biodiversity	Loss of terrestrial species – fauna	<ul style="list-style-type: none"> Clear demarcation during the construction phase of all undisturbed sensitive areas that are not within the direct footprint of the REF to ensure that there is no uncontrolled access by construction vehicles and labourers.

Environmental Aspect	Potential Impact during Operation	Mitigation
	Although most of the species observed are mobile, the increase in vehicle movement could result in an increase in road mortalities.	<ul style="list-style-type: none"> Educate contractors as to the importance of the undisturbed conservations areas and importance of avoiding them. All vehicles must stick to designated and prepared roads and adhere to the speed limit on site of 40km/hr; Mitigating the risk of poaching by fencing in the accommodation compounds of the construction crews, to prevent individuals from wandering in the veld after hours; banning the possession of dogs on site by construction and maintenance staff.

Table 24: Decommissioning Phase

Environmental Aspect	Potential Impact during decommissioning	Mitigation
Geotechnical	<ul style="list-style-type: none"> Ground disturbance during platform earthworks, road rehabilitation, removal of subsurface infrastructure. Increased erosion due to ground disturbance during rehabilitation activities. 	<ul style="list-style-type: none"> Temporary berms and drainage channels to divert surface runoff where needed Restore natural site topography Use designated access and laydown areas only to minimise disturbance to surrounding areas.
Social	Same as Construction Phase	Same as Construction Phase
Transport	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Traffic 	<ul style="list-style-type: none"> Ensure staff transport is done in the 'off peak' periods and by bus. Stagger material, component and abnormal loads Construction of an on-site concrete batching plant to reduce trips.
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase of Incidents with pedestrians and livestock 	<ul style="list-style-type: none"> Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences & access cattle grids Construction of an on-site concrete batching plant to reduce trips.
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Reduction in speed of the vehicles Use of dust suppressant techniques

Environmental Aspect	Potential Impact during decommissioning	Mitigation
		<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site concrete batching plant to reduce trips.
	<ul style="list-style-type: none"> Additional Traffic Generation - Increase in Road Maintenance 	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant to reduce trips.
	<ul style="list-style-type: none"> Abnormal Loads - Additional Abnormal Loads 	<ul style="list-style-type: none"> Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods or stagger delivery. Adequate enforcement of the law
	<ul style="list-style-type: none"> Internal Access Roads - New / Larger Access points & Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Enforce a maximum speed limit on the development Use of dust suppressant techniques Adequate watering by means of water bowser
<p>Visual</p> <ul style="list-style-type: none"> Potential visual intrusion resulting from vehicles and equipment involved in the decommissioning process; Potential visual impacts of increased dust emissions from decommissioning activities and related traffic; and Potential visual intrusion of any remaining infrastructure on the site. 	<ul style="list-style-type: none"> Vehicles and equipment required for decommissioning will alter the natural character of the study area and expose visual receptors to visual impacts. Decommissioning activities may be perceived as an unwelcome visual intrusion. Dust emissions and dust plumes from increased traffic on the gravel roads serving the decommissioning site may evoke negative sentiments from surrounding viewers. Surface disturbance during decommissioning would expose bare soil (scarring) which could visually contrast with the surrounding environment. 	<ul style="list-style-type: none"> All infrastructure that is not required for post-decommissioning use should be removed. Carefully plan to minimize the decommissioning period and avoid delays. Maintain a neat decommissioning site by removing rubble and waste materials regularly. Ensure that dust suppression procedures are maintained on all gravel access roads throughout the decommissioning phase. All cleared areas should be rehabilitated as soon as possible. Rehabilitated areas should be monitored post-decommissioning and remedial actions implemented as required.

Environmental Aspect	Potential Impact during decommissioning	Mitigation
	<ul style="list-style-type: none"> Temporary stockpiling of soil during decommissioning may alter the flat landscape. Wind blowing over these disturbed areas could result in dust which would have a visual impact. 	
Avifaunal	<ul style="list-style-type: none"> Displacement due to disturbance associated with the dismantling of the wind turbines and associated infrastructure. 	<ul style="list-style-type: none"> 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	None	None
Agricultural	None	
Surface Water	<ul style="list-style-type: none"> Same as construction phase 	<ul style="list-style-type: none"> Same as construction phase
Heritage – Archaeological	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Heritage – Palaeontological	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> None
Heritage – Cultural Landscape	<ul style="list-style-type: none"> Same as construction phase 	<ul style="list-style-type: none"> Same as construction phase
Biodiversity	<ul style="list-style-type: none"> Same as construction phase 	<ul style="list-style-type: none"> Same as construction phase

13.3.1 Cumulative

The proposed WEF is located adjacent to several other WEFs within 35km of Kraaltjies WEF. SiVEST undertook every effort to obtain the information (including specialist studies, BA / EIA / Scoping and EMPr Reports) and the Renewable Energy EIA Application Database for SA from the Department of Fisheries, Forestry and Environment (DFFE) for the surrounding developments, however, many of the documents are not currently publicly available to download. The information that could be obtained for the surrounding planned renewable energy developments was taken into account as part of the cumulative impact assessment.

The WEFs that were considered are indicated in **Table 23** and **Figure 51** below:

Table 25: Renewable energy developments within a 35km radius of the proposed Kraaltjies WEF

Project	DEA Reference No	Technology	Capacity	Max number of turbines	Land parcel area km ²	Status of Application / Development
Proposed Beaufort West Wind Farm	12/12/20/1784/1	Wind	140 MW	70	43	Approved
Proposed Trakas Wind Farm	12/12/20/1784/2	Wind	140 MW	70	54	Approved
Jessa Z	TBA	Wind	220 MW	35	39	EIA in process
Jessa M	TBA	Wind	220 MW	29	31	EIA in process
Jessa S	TBA	Wind	203 MW	28	25	EIA in process
Proposed Leeu Gamka Solar Power Plant	12/12/20/2296	Solar	-	n/a	199	EIA in Process
Proposed Koup 1 WEF	TBA	Wind	140 MW	32	28	EIA in Process
Proposed Koup 2 WEF	TBA	Wind	140 MW	32	24	EIA in Process
Proposed Kwagga WEF 1	TBA	Wind	279 MW	45	51	EIA in Process
Proposed Kwagga WEF 2	TBA	Wind	341 MW	55	91	EIA in Process
Proposed Kwagga WEF 3	TBA	Wind	204.6 MW	33	94	EIA in Process
Proposed Heuweltjies WEF	TBA	Wind	240 MW	60	40	EIA in Process

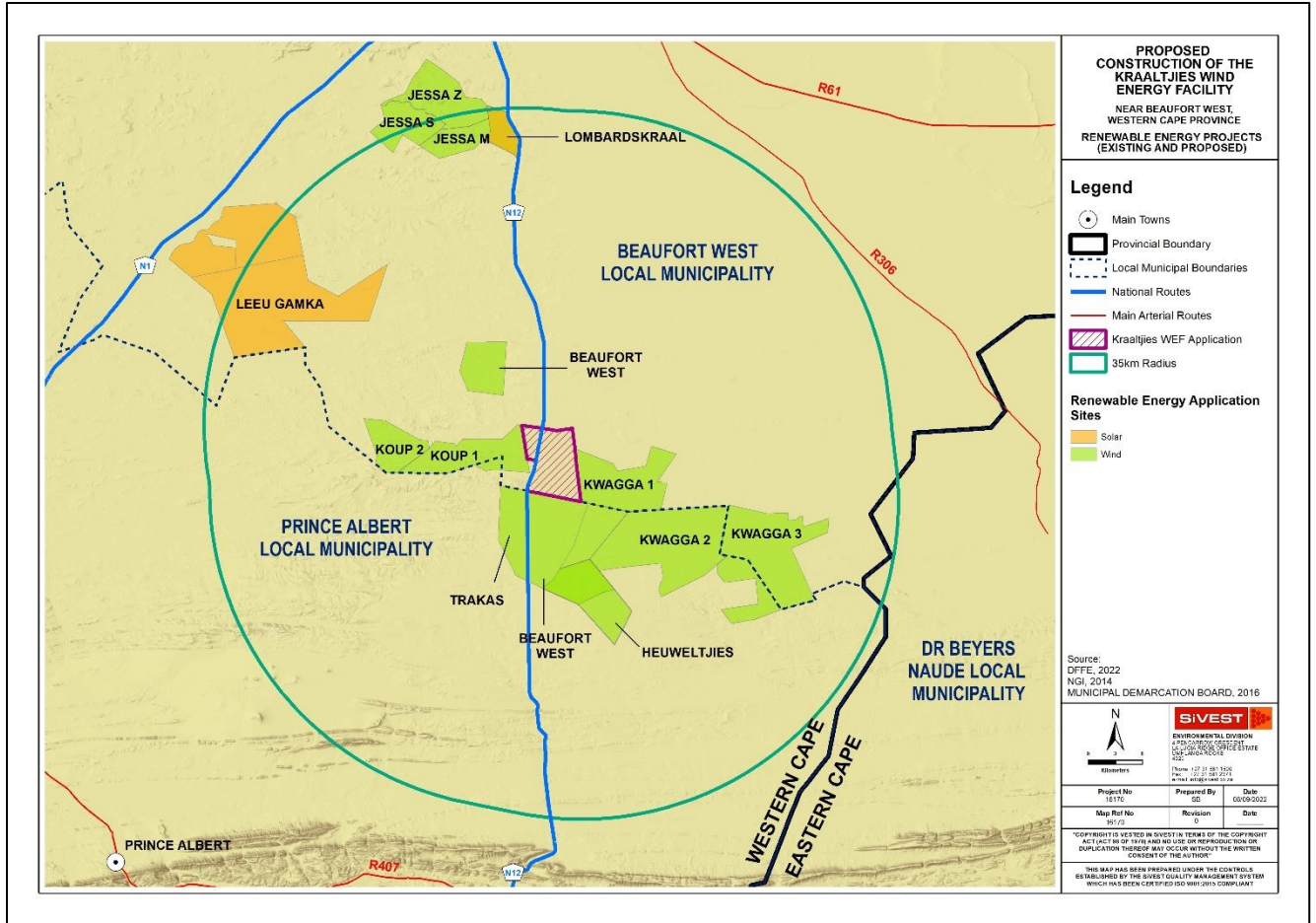


Figure 51: Renewable Energy Projects within 35km of the Kraaltjies WEF

Cumulative Impacts

Table 26: Cumulative Impacts

Environmental Aspect	Potential Cumulative Impact	Mitigation
Geotechnical	n/a	n/a
Social	n/a	n/a
Transport	<ul style="list-style-type: none"> Increase in Traffic 	<ul style="list-style-type: none"> Ensure a large portion of vehicles traveling to and from the proposed development travels in the 'off peak' periods or by bus as far as practically possible. Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible. Co-ordination between all developers in the area as far as practically possible
	<ul style="list-style-type: none"> Increase of Incidents with pedestrians and livestock 	<ul style="list-style-type: none"> Reduction in speed of vehicles Adequate enforcement of the law Implementation of pedestrian safety initiatives Regular maintenance of farm fences, access cattle grids where and if required Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible. Coordination between all developers in the area as far as practically possible
	<ul style="list-style-type: none"> Increase in Dust from gravel roads 	<ul style="list-style-type: none"> Reduction in speed of the vehicles Construction of gravel roads in terms of TRH20 Implement a road maintenance program under the auspices of the respective transport department. Possible use of an approved dust suppressant techniques where required and if practically possible Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible. Coordination between all developers in the area as far as practically possible.
	<ul style="list-style-type: none"> Increase in Road Maintenance 	<ul style="list-style-type: none"> Implement a road maintenance program under the auspices of the respective transport department. Construction of an on-site batching plant and tower construction to reduce trips where required and if practically possible. Coordination between all developers in the area as far as practically possible.
	<ul style="list-style-type: none"> Additional Abnormal Loads 	

Environmental Aspect	Potential Cumulative Impact	Mitigation
		<ul style="list-style-type: none"> • Ensure abnormal vehicles travel to and from the proposed development in the 'off peak' periods. • Adequate enforcement of the law • Coordination between all developers in the area as far as practically possible.
	<ul style="list-style-type: none"> • Increase in Dust from gravel roads 	<ul style="list-style-type: none"> • Enforce a maximum speed limit on the development • Appropriate, timely and high-quality maintenance required in terms of TRH20 • Possible use of an approved dust suppressant techniques where required and if practically possible
	<ul style="list-style-type: none"> • New / Larger Access points 	<ul style="list-style-type: none"> • Adequate road signage according to the SARTSM • Approval from the respective roads department
Visual	<ul style="list-style-type: none"> • Additional renewable energy developments in the broader area will alter the natural character of the study area towards a more industrial landscape and expose a greater number of receptors to visual impacts. • Visual intrusion of multiple renewable energy developments may be exacerbated, particularly in more natural undisturbed settings. • Additional renewable energy facilities in the area would generate additional traffic on gravel roads thus resulting in increased impacts from dust emissions and dust plumes. • The night time visual environment could be altered as a result of operational and security lighting at multiple renewable energy facilities in the broader area. 	<ul style="list-style-type: none"> • Carefully plan to minimise the construction period and avoid construction delays. • Position laydown areas and related storage/stockpile areas in unobtrusive positions in the landscape, where possible. • Minimise vegetation clearing and rehabilitate cleared areas as soon as possible. • Vegetation clearing should take place in a phased manner as far as practically possible. • Where possible, the operation and maintenance buildings should be consolidated to reduce visual clutter. • As far as possible, limit the number of maintenance vehicles which are allowed to access the facility. • Ensure that dust suppression techniques are implemented on all gravel internal access roads. • As far as possible, limit the amount of security and operational lighting present on site. • Light fittings for security at night should reflect the light toward the ground and prevent light spill. • Lighting fixtures should make use of minimum lumen or wattage. • Mounting heights of lighting fixtures should be limited, or alternatively foot-light or bollard level lights should be used. • If possible, make use of motion detectors on security lighting. • The operations and maintenance (O&M) buildings should not be illuminated externally at night.

Environmental Aspect	Potential Cumulative Impact	Mitigation
		<ul style="list-style-type: none"> The O&M buildings should be painted in natural tones that fit with the surrounding environment.
Avifaunal	<ul style="list-style-type: none"> Mortality due to collisions with the wind turbines Displacement due to disturbance during construction and operation of the wind farm Displacement due to habitat change and loss at the wind farm Mortality due to electrocution on the electrical infrastructure 	<ul style="list-style-type: none"> All the mitigation measures listed in the various bird specialist studies compiled for the eleven (11) renewable energy facilities within a 35km radius around the project.
Bat	None	None
Agricultural	None	
Surface Water	<ul style="list-style-type: none"> The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses 	<ul style="list-style-type: none"> The premise of all the reviewed or assessed projects has been the avoidance of impacts on the Very High Sensitivity environments, which have been achieved by the various proposed layouts. The only remaining impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.
Heritage – Palaeontological	<ul style="list-style-type: none"> Disturbance, damage or destruction of fossils at or beneath the ground surface due to surface clearance and bedrock excavations. 	<ul style="list-style-type: none"> Pre-construction walkdown (with fossils recording/collection) of final footprint by specialist palaeontologist.
Heritage – Archaeological	<ul style="list-style-type: none"> The extent that the addition of this project will have on the overall impact of developments in the region on heritage resources. 	<ul style="list-style-type: none"> It can clearly be noted that the area in general is abundant with Stone Age and historical remains.
Heritage – Cultural Landscape	<ul style="list-style-type: none"> Inappropriate cumulative development degrades the significant ecological elements of the cultural landscape 	<ul style="list-style-type: none"> A cautious approach is required to the location of any additional WEF developments in the area. The establishment of clearly defined edges to the WEF clusters need to be identified, for the individual facilities as well as this RE region as a whole.

Environmental Aspect	Potential Cumulative Impact	Mitigation
	<ul style="list-style-type: none"> Inappropriate cumulative development degrades the significant aesthetic elements of the cultural landscape altering the character and sense of place Inappropriate cumulative development degrades the significant historic elements of the cultural landscape altering the character and sense of place Inappropriate cumulative development degrades the significant socio-economic opportunities of the cultural landscape 	<ul style="list-style-type: none"> To reduce the negative cumulative impact of the proposed WEF's on the N12 scenic route and the character and sense of place of the cultural landscape of the Koup region, other than those projects already approved, WEF development should not extend with any further west of the N12, no further south than the Botterkraal to Nuwedam regional road north of the first Swartberg mountain range ridge, no further east than the R306 and no further north than the Amos River. As per the Oberholzer Landscape Report for REDZ (2021), the WEF's should read as separate developments of no more than 30 turbines per cluster with vast spaces of at least 6km in between to continue the reading on the landscape of places amongst the vastness as is the historical trend of farmsteads in the Koup region.
Noise	<ul style="list-style-type: none"> Cumulative noises due to operating wind turbines from other wind energy facilities in the area 	<ul style="list-style-type: none"> No mitigation measures recommended as operating WEFs in the area will not increase the cumulative noise level.
Biodiversity	<ul style="list-style-type: none"> The cumulative assessment considers the various proposed renewable projects that occur within a 35km radius of this site, where the author has either been involved in the assessment of these projects and or review of the past assessments as part of any required Water Use Licenses 	<ul style="list-style-type: none"> The premise of all the reviewed or assessed projects has been the avoidance of impacts on the Very High Sensitivity environments, which have been achieved by the various proposed layouts. The only remaining impacts will be the crossing of internal roads over minor watercourse / drainage lines or areas rated as LOW sensitivity.

13.3.2 Comparative Assessment of Alternatives

A comparative assessment of the alternatives will be provided in the EIA Phase.

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 the Kraaltjies WEF was based on environmental constraints and technical and economic considerations. The size of the wind turbines will depend on the development area and the total generation capacity that can be produced as a result. Therefore, no technology alternatives will be considered.

The project site has been assessed by the specialists in their respective specialist studies. The potentially sensitive areas which have been identified through the environmental scoping study are illustrated in **Figure 52**.

The findings of the Scoping Study indicate that no environmental fatal flaws are associated with the Project site. While some impacts of potential high significance do exist, it is anticipated that avoidance of these areas and/or the implementation of appropriate mitigation measures would assist in reducing the significance of such impacts to acceptable levels. It is therefore recommended, that the development area for the development of the facility be outside of those areas identified as high sensitivity (no-go areas) as far as possible in order to ensure that the development does not have a detrimental impact on the environment. This forms part of the 'funnel-down approach' for the identification of an appropriate development footprint within the development area. Even with the appropriate avoidance of sensitive areas, there is an adequate area within the project site which can accommodate the planned 240MW facility with relatively low impacts on the environment. This identified area is referred to as the development area.

With an understanding of which areas within the development area are considered sensitive to the development of the proposed development, the Applicant is able to design a detailed infrastructure layout for consideration by all relevant specialists in the EIA Phase. The specialist will consider the detailed facility layout and make recommendations for the implementation of avoidance strategies (if required), and mitigation and management measures to ensure that the final assessed layout retains an environmental impact within acceptable limits. The sensitivity map will be further refined in the EIA Phase on the basis of these specialist studies, in order to provide an assessment of environmental acceptability of the final design of the facility.

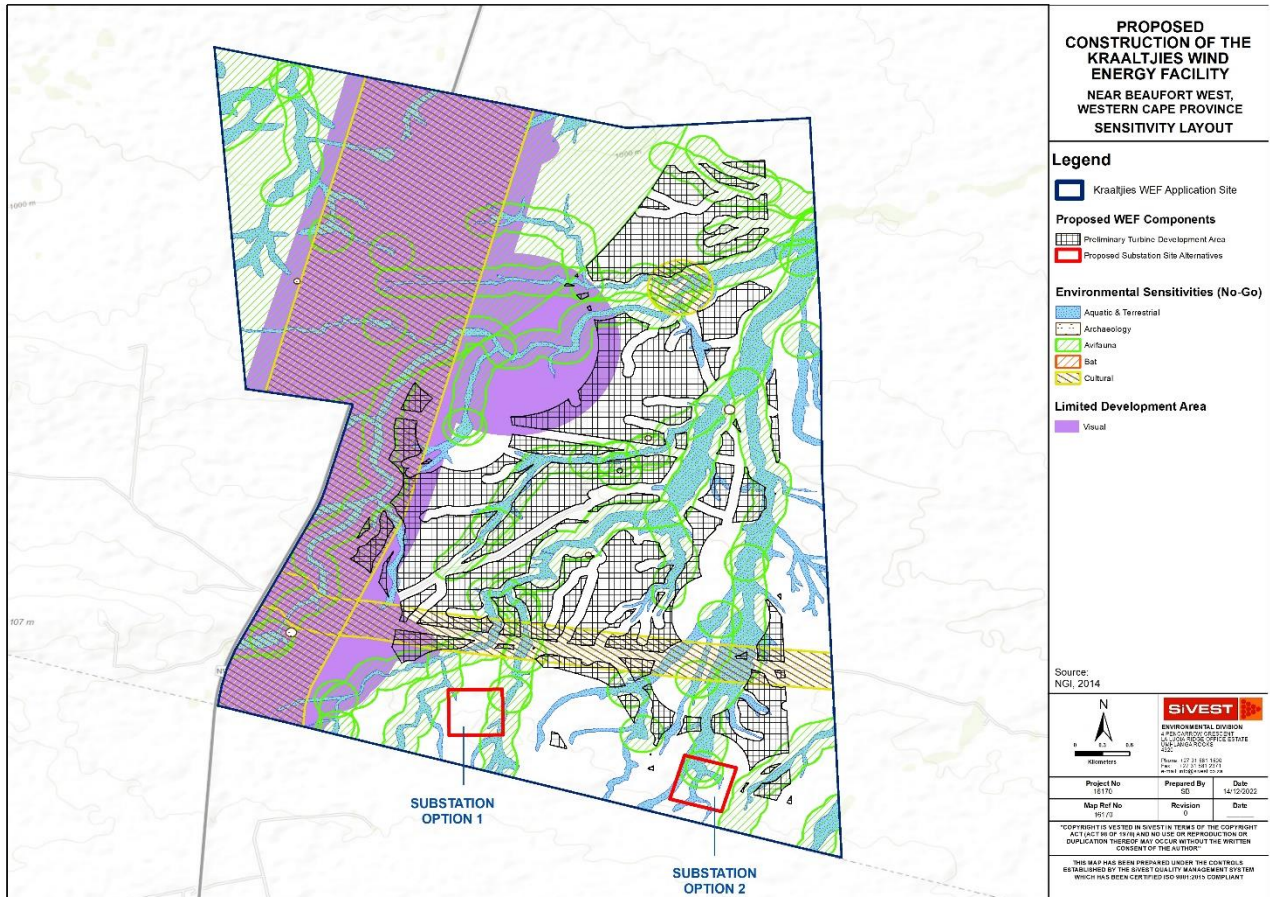


Figure 52: Environmental Sensitivity Map from the results of the scoping evaluation for the Kraaltjies WEF and associated infrastructure.

The sensitivity map indicates the sensitivities for the project site as well as the Kraaltjies development area.

Within this identified development area, a development footprint or facility layout will be defined based on the findings of the Scoping study and will be further assessed during the EIA Phase.

14. PLAN OF STUDY FOR EIA

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

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.
- A Facility Environmental Management Programme (EMPr) as well as a Generic EMPr for the substation 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 12.1.1, no location alternatives are being considered for the Kraaltjies Wind Farm as these sites were selected prior to the commencement of the EIA Process.

14.2.2 Layout Alternatives

The layout for the development of the Kraaltjies WEF will be designed in line with the environmental sensitivities identified during this Scoping Phase. The detailed facility layout will be made available as a layout alternative for assessment and ground-truthing by the independent specialists in the EIA Phase. Where further conflicts are predicted, a mitigation strategy will be developed to meet the objectives of the mitigation hierarchy (avoid, minimise, mitigate), thereby ensuring that the layout plan taken forward for consideration during the EIA Phase is the most optimal from an environmental perspective.

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. Based on the specialist’s assessment, no significant impacts have been identified from an ecological perspective should the development of the WEF not proceed. There is however a high negative impact from a social perspective for the no-go alternative. As such, the no-go alternative will not be taken forward to the EIA Phase for further assessment.

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:

- Geotechnical Assessment;
- Social Impact Assessment;
- Transport Assessment;
- Visual Assessment;
- Avifaunal Assessment;
- Bat Assessment;
- Agricultural Assessment;
- Surface Water Assessment;

- Heritage Assessment;
- Noise Assessment;
- Biodiversity 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.

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 Kraaltjies WEF and the associated infrastructure. The report should include assessment and impact rating chapters/sections for the proposed WEF.
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 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. An MS Word version of this table will be provided by SiVEST.

14.4 EIA methodology

The 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

The DFFE pre-application meeting has been conducted on 03 October 2022.

SiVEST will further consult with DFFE as follows:

- 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.
- 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.

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 IAPs 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 IA&P 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 has covered activities and findings related to the scoping process for the proposed Kraaltjies WEF 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 to date and those to be identified in the full EIA process.

The Scoping Phase sensitivity map provides an informed estimate of the sensitivity on the project site. During the site and desktop surveys, the affected area was investigated in sufficient detail in order to provide definitive insight into the potential for constraining factors on the site. The sensitivity map must be used as a tool by the developer to avoid any areas flagged to be of higher risk or sensitivity and inform the location/layout of the development area and development footprint for the facility. The development area and footprint will be assessed further in detail in the EIA Phase in order to provide an assessment of environmental acceptability and suitability of the facility layout of the Kraaltjies WEF and associated infrastructure.

18. WAY FORWARD

The Draft Scoping Report is currently being circulated for public participation for a period of 30 days (excluding public holidays and the reckoning days) from **14 December 2022** until **05 February 2023**.

All comments received will be responded to in a C&RR, which will be included prior to submission of the Final Scoping Report to the decision-making authority, namely the DFFE. Comments received on the report will be taken into consideration, incorporated into the report (where applicable) and will be used when compiling the Final Scoping and the Draft EIA Report.

All I&APs and key stakeholders are invited to register as I&APs in order to be kept informed throughout the process. To register as an I&AP / stakeholder and/or to obtain additional information, please submit your name, contact details (telephone number, postal address and email address) and the interest which you have in the application to SiVEST Environmental Division, as per the details below:

Contact: Hlengiwe Ntuli
PO Box 2921, RIVONIA, 2128
(Phone : (011) 798 0600
E-mail : sivest_ppp@sivest.com
Fax: (011) 803 7272
Website: www.sivest.com

Please reference '*Kraaltjies WEF*' in your correspondence, should your comments be project specific. SiVEST shall keep all registered I&APs / key stakeholders informed of the EIA process.



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